

**GROUP PROBLEM SOLVING AMONG COMMUNITY ACTIVISTS IN
A SOUTH AFRICAN SETTING: AN EVERYDAY COGNITION
APPROACH**

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ABSTRACT

The study focuses on the everyday problem solving processes of a group of community activists in a rural setting in the Eastern Cape Province of South Africa. It aims to uncover: first, the local knowledge of the participants of the study with reference to the concepts problem and problem solving; second, the participants' group problem solving procedure; and third, the dialectical interrelation between the participants' knowledge and practice with reference to everyday group problem solving. It is contended that the mainstream cognitive approach and the cross-cultural tradition are inappropriate for the study of everyday cognitive processes. A 'situated cognition' approach, based on the notions of activity and cultural mediation, is proposed as a theoretical framework for the study. The ontological and epistemological assumptions underpinning the empirical study were derived from a scientific realist and a hermeneutical paradigm. Data for the inquiry into the local knowledge of the participants was collected through individual interviews. The data was interpreted, using the grounded theory techniques of constant comparison, coding and compiling theoretical diagrams. Data for the inquiry into the participants' group problem solving practice consisted of video-taped group problem solving processes. This data was analysed, using a multi layered process of progressively deeper interpretation, employing a reading guide technique. Analysis of the research data revealed that the participants perceived a problem as an impediment to satisfactory participation in society. Problem solving was considered as an emotive, cognitive and inter-active process, involving particular role players. This process had a certain structure, involved attitudes and actions and relied on particular resources. Successful problem solving was perceived to result in restoration of social equilibrium. The group problem solving procedure used by the participants consisted of a process of developing a common understanding and group consensus. The strategies employed in the process, the roles played by the participants, the rules adhered to by the participants and the structure underlying the process were all congruent with these aims. There was a mutually reinforcing interrelation between knowledge and practice with reference to the participants' problem solving.

**I would like to dedicate this thesis to my parents Pierre and Chris
and my daughters Hannah and Rebecca**

“When people come to us for their research, they go to the best looking house, make themselves comfortable there and ask their questions. They go away and write big books and get degrees. They never make the effort to go around the village to see and to hear how things really are. We never get a chance to show the outside world how things really are.”

(Old man in Rwantsana village, 1992, Eastern Cape, South Africa)

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	1
1. Motivations for the study	1
2. Conceptual framework for the study	2
2.1. An ‘everyday cognition’ framework	2
2.2. An interpretive research paradigm	3
2.3. The research question	3
2.4. The method	4
3. The study process	4
 CHAPTER 2. PSYCHOLOGY IN DEVELOPING COUNTRIES: PEOPLE-CENTERED DEVELOPMENT AND LOCAL KNOWLEDGE	 6
1. Introduction	6
2. The role of psychology in developing countries: A matter of development paradigm	6
2.1. The modernisation approach	6
2.2. Dependency theories	8
2.3. The people-centered development approach	9
3. Key concepts for an appropriate development paradigm	12
3.1. Participation	12
3.2. Empowerment	13
3.3. Local knowledge	14
4. A first motivation for the study	16
 CHAPTER 3. HISTORICAL CONTEXT OF THE STUDY: A PERSONAL MOTIVATION	 18
1. Introduction	18
2. The personal context	18
3. Historical context: The emergence of the Eastern Cape Development and Funding Forum	20
4. Problem identification and data collection for the thesis as part of the ECDAFF process	23

CHAPTER 4. TOWARDS A COGNITIVE-THEORETICAL FRAMEWORK FOR UNDERSTANDING EVERYDAY PROBLEM SOLVING	25
1. Introduction	25
2. Mainstream theories of problem solving	25
2.1. Key features of mainstream problem solving theories	26
2.1.1. Problem solving is an internal process	26
2.1.2. Focus on the description of strategies and stages	26
2.1.3. Experimental research design	27
2.1.4. Use of models of artificial intelligence	28
2.1.5. Focus on the study of expert-novice differences	29
2.2. Critique of the mainstream problem solving approach	30
2.2.1. The experimental design lacks relevance to everyday problems	30
2.2.2. Task independent problem solving strategies are a fallacy	31
2.2.3. Problem solving strategies in everyday life rarely follow formal reasoning rules	31
2.2.4. Superficial study of the differences between novices and experts	32
3. Cross-cultural studies of problem solving	32
3.1. Critique of cross-cultural studies	33
3.1.1. Ethnocentrism in conceptualisation	33
3.1.2. Ethnocentrism in method	33
3.1.3. Culture as an independent variable	34
4. Empirical studies on everyday problem solving	35
4.1. Everyday problems	35
4.2. Everyday problem solving strategies for everyday problems	36
5. Towards a framework for understanding everyday problem solving	38
5.1. Situated cognition	39
5.1.1. Activity as the focus for everyday problem solving research	40
5.1.2. The dialectical interface between the individual and the socio-cultural: cultural mediation	41
5.1.2.1. Mediational means	42
5.1.2.2. Mediated action	44
5.2. The role of meta-cognition in problem solving	46
5.2.1. The importance of epistemic knowledge in problem solving	46
5.2.2. Conceptual and procedural knowledge in problem solving	49
5.3. The framework	51
5.3.1. Some methodological implications of the framework	53

6. A third motivation for the study	53
CHAPTER 5. AN INTERPRETIVE PARADIGM FOR THE STUDY OF EVERYDAY PROBLEM SOLVING	55
1. Introduction	55
2. Paradigms	55
3. The interpretive paradigm	56
3.1. Core metaphysics of an interpretive paradigm	57
3.1.1. The text as discourse	57
3.1.2. Interpretation	58
3.1.2.1. Ricoeur's structural analysis: Integrating interpretation and explanation	58
3.1.2.2. The hermeneutic circle	60
3.1.3. The fore-structure	62
3.1.4. Validity of interpretive accounts	63
3.2. Different approaches to hermeneutics	63
3.2.1. Methodological hermeneutics	64
3.2.2. Hermeneutic philosophy	64
3.2.3. Critical hermeneutics	66
3.2.4. Interpretive anthropology	67
4. Realism	67
5. Proposed paradigm for the study	69
5.1. Ontology	69
5.2. Epistemology	70
5.2.1. Criteria of validity	71
5.3. Teleology	72
6. A fourth motivation for the study	72
CHAPTER 6. THE STUDY	73
1. Introduction	73
2. Aims of the study	74
3. Framing assumptions	74
4. An overview of the research design	76
5. Sample	80

5.1. Profile of workshop participants	81
5.2. Profile of additional participants	81
6. Component A of the research design: Conceptual, procedural and epistemological knowledge	82
6.1. Aim of Component A	82
6.2. Data collection: Component A	83
6.3. Data analysis: Component A	84
6.3.1. Underlying logic of the interpretive-analytic process	84
6.3.2. The interpretive analytical process	87
6.3.3. Justification of the interpretive analytical process	90
7. Component B of the research design: Group problem solving procedure	90
7.1. Aim of Component B	90
7.2. Data collection: Component B	91
7.2.1. Problem solving workshops	91
7.3. Data analysis: Component B	93
7.3.1. The underlying logic of the interpretive-analytical process	94
7.3.2. The units of analysis	95
7.3.3. The interpretive-analytical process	96
7.3.4. Justification of the interpretive-analytical process	103
8. Component C of the research design: An integration of indigenous knowledge and practice of group problem solving	104
CHAPTER 7. CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE OF THE CONCEPTS PROBLEM AND PROBLEM SOLVING	105
1. Introduction	105
2. Levels of interpretive data	105
2.1. First level of interpretive data: The codes	105
2.2. Second level of interpretive data: Theoretical diagrams	106
2.3. Third level of interpretive data: Integrative diagrams	106
2.3.1. Conceptual knowledge of the concept problem	106
2.3.2. Conceptual knowledge of the concept problem solving	108
2.3.3. Procedural knowledge of problem solving	112
3. Fourth level of interpretive data: Contextualised data	117
3.1. The social dimension of problems	117
3.2. The affective component of problems	119
3.3. Problems are conceived as ill-structured	119

3.3.1. Desired end-states are unspecified	119
3.3.2. Problems are dialectic in nature	120
3.4. Problem solving is an inter-active process	120
3.5. Problem solving is a conative and emotive process	122
3.6. The importance of identifying the problem in problem solving	122
3.7. Problem solving is a process of applying existing problem-specific solutions	123
4. Fifth level of interpretive data.: Epistemic assumptions	123
4.1 Social harmony is the criteria for good thinking and acting	124
4.2 Truth is socially constructed	125
4.3. Knowledge and expertise are acquired through ‘real life’ social experience	125
5. Changing assumptions in a process of rapid social change	126
5.1. Consensus through a process of discussion or through a process of voting	127
5.2. Reliance on ‘real life’ social experience or reliance on formal training	127
5.3. Problem solving as a social or an individual process	128
CHAPTER 8. GROUP PROBLEM SOLVING PROCEDURE	129
1. Introduction	129
2. Description of the interpretive procedure	129
2.1. Generation of Level 1 data	129
2.2. Generation of Level 2 data	129
2.2.1. Types of analyses	130
3. Level 2 interpretive data	133
3.1. Interpretation of the structure and the consecutive linkages for each of the workshops	133
3.1.1. Workshop 1A	133
3.1.2. Workshop 1B	138
3.1.3. Workshop 2A	142
3.1.4. Workshop 2B	145
3.1.5. Workshop 3A	149
3.1.6. Workshop 3B	151
3.1.7. Workshop 4A	155
3.1.8. Workshop 4B	158
3.1.9. Workshop 5A	162
3.1.10. Workshop 5B	165
3.2. Interpretation of the quantitative summaries	168
3.2.1. Frequencies of the different forms of the elements IF, C and UF	168

3.2.1.1. Frequencies of the forms of the IF	168
3.2.1.2. Frequencies of the forms of the C	170
3.2.1.3. Frequencies of the forms of the UF	171
3.2.2. Frequencies of the various combinations of the different forms of the elements IF, C and UF	172
3.2.2.1. Frequencies of the combinations of the different forms of IF and C	173
3.2.2.2. Frequencies of the combinations of the different forms of the IF and the UF	174
3.2.2.3. Frequencies of the combinations of the different forms of the C and the UF	174
3.3. Interpretation of the contributions of the individual participants to the workshops	175
3.3.1. Different types of workshops in terms of the role distributions	176
3.3.2. Different approaches used by the participants	177
4. Third and fourth level of interpretive data: The notions of structure, strategy and role	178
4.1. Group problem solving as a process of building a common understanding	179
4.1.1. A structure conducive to enhancing common understanding	179
4.1.2. Strategies conducive to enhancing common understanding	180
4.1.2.1. Understanding of the problem structure	181
4.1.2.2. Understanding of the problem solution	182
4.1.2.3. Understanding of the problem solving task	184
4.1.3. Specific roles conducive to enhancing common understanding	185
4.2. Group problem solving as a process of building group consensus	185
4.2.1. A structure conducive to enhancing group consensus	185
4.2.2. Strategies conducive to enhancing group consensus	186
4.2.3. Specific roles conducive to enhancing group consensus	188
4.3. Group problem solving as mediated action	189
CHAPTER 9. GROUP PROBLEM SOLVING: AN INTEGRATION OF INDIGENOUS KNOWLEDGE AND PRACTICAL PROCEDURE	193
1. Introduction	193
2. Congruency between knowledge and action	193
3. Meta-cognitive speech	195

4. Dialectical interaction between epistemic values, procedural knowledge and procedure	197
4.1. The importance of social harmony	197
4.2. Problem identification as a social construct	198
5. Changing assumptions and practice in a process of rapid social change	198
CHAPTER 10. CONCLUSION: THE AIMS REVISITED	201
1. Introduction	201
2. An empirical investigation into the indigenous knowledge and practice of problem solving of a group of community activists in South African	201
3. A contribution to an ‘everyday cognition’ approach	202
4. A methodological contribution	203
5. An innovative combination between meta-theory, theory and method	205
6. The emancipatory intentions of the study	205
6.1. Research on local knowledge	205
6.2. Empowerment of local people	205
6.3. Improvement of training methodologies	206
6.4. Changing the discourse on everyday cognition	206
BIBLIOGRAPHY	208

LIST OF APPENDICES (BOUND AS VOLUME 2)

APPENDIX 1. INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE	1
APPENDIX 2. INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE	2
APPENDIX 3. EXAMPLE OF A BRAINSTORMING SESSION (COMPONENT A OF THE RESEARCH DESIGN)	ERROR! BOOKMARK NOT DEFINED.
APPENDIX 4. EXAMPLE OF THE PROCESS OF CODING CATEGORIES	9

APPENDIX 5. EXAMPLE OF THE PROCESS OF IDENTIFYING PROPERTIES AND DIMENSIONS	11
APPENDIX 6. EXAMPLE OF THE PROCESS OF ESTABLISHING RELATIONSHIPS BETWEEN CATEGORIES	14
APPENDIX 7. EXAMPLE OF A THEORETICAL MEMO	15
APPENDIX 8. PROBLEM SOLVING WORKSHOPS	16
APPENDIX 9. READING GUIDE 1 FOR THE ANALYSIS OF THE GROUP PROBLEM SOLVING PROCESS	20
APPENDIX 10. EXAMPLE OF A BRAINSTORM SESSION (COMPONENT B OF THE RESEARCH DESIGN)	23
APPENDIX 11. EXAMPLE OF THE APPLICATION OF THE FIRST READING GUIDE ON THE OPERATIONS OF WORKSHOP 1B	32
APPENDIX 12. THEORETICAL DIAGRAMS	49
APPENDIX 13. QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN TERMS OF THE FREQUENCY OF: IF/C/UF	61
APPENDIX 14. QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN TERMS OF THE FREQUENCY OF THE VARIOUS COMBINATIONS OF THE DIFFERENT FORMS OF: IF/C/UF	67
APPENDIX 15. GRAPHICAL REPRESENTATION OF THE LINKS BETWEEN OPERATIONS IN TERMS OF THEIR COGNITIVE-AFFECTIVE CONTENT	79
APPENDIX 16. GRAPHICAL REPRESENTATIONS OF THE NUMBER OF OPERATIONS CONTRIBUTED BY THE PARTICIPANTS, ANALYSED IN TERMS OF: IF/C/UF	80

**APPENDIX 17. GRAPHICAL REPRESENTATIONS OF THE MAJOR
CONSECUTIVE LINKAGES BETWEEN OPERATIONS IN TERMS OF THEIR
COGNITIVE-AFFECTIVE CONTENT**

LIST OF TABLES

Table 1. Profile of workshop participants	81
Table 2. Profile of additional participants	82
Table 3. Interviews conducted	83
Table 4. Group composition of the workshops	92
Table 5. Elements and their forms	99

LIST OF FIGURES

Figure 1. Framework for the study of everyday problem solving	52
Figure 2A. Schematic representation of the research design: conceptual, procedural and epistemological knowledge of the concepts problem and problem solving	79
Figure 2B. Schematic representation of the research design: group problem solving procedure	80
Figure 3. Example of the coding process of interactions	98
Figure 4. Illustration of the sub-division of an inter-action into its constituent operations	100
Figure 5. Diagram showing the relational structure of the data base	101
Figure 6. Integrated theoretical diagram of the conceptual knowledge of the concept problem	107
Figure 7. Integrated theoretical diagram of the conceptual knowledge of the concept problem solving	110
Figure 8A. Integrated theoretical diagram of the procedural knowledge of problem solving process	115
Figure 8B. Integrated theoretical diagram of the procedural knowledge of the problem solving process	116
Figure 9. Graphical representation of the structure of Workshop 1A	136
Figure 10. Graphical representation of the structure of Workshop 1B	139
Figure 11. Graphical representation of the structure of Workshop 2A	143
Figure 12. Graphical representation of the structure of Workshop 2B	146
Figure 13. Graphical representation of the structure of Workshop 3A	150
Figure 14. Graphical representation of the structure of Workshop 3B	153
Figure 15. Graphical representation of the structure of Workshop 4A	156
Figure 16. Graphical representation of the structure of Workshop 4B	159
Figure 17. Graphical representation of the structure of Workshop 5A	163
Figure 18. Graphical representation of the structure of Workshop 5B	166

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VOLUME 1: TEXT AND BIBLIOGRAPHY

CHAPTER 1.

INTRODUCTION

While psychology has the potential to contribute to national development in Third World countries, it is a potential that has hardly been met (Gilbert, 1996; MacLachlan & Carr, 1994; Moghaddam, 1990; Nsamenang, 1993; Sloan, 1990). Several reasons have been suggested for this shortcoming. Psychological research has been dominated by First World researchers and issues of interest rarely involve everyday problems of Third World communities. Psychological theory and concepts, which are generated in First World contexts, are not necessarily appropriate for use in developing societies (Ardilla, 1992; MacLachlan & Carr, 1994; Nsamenang, 1993; Van Vlaenderen, 1993). Most research conducted in developing countries is embedded in a cross-cultural approach and aims to establish universal s regarding the state of the environment or the person rather than to focus on explaining the processes of rapid social change characteristic of most developing countries (Ardilla, 1992; Van Vlaenderen, 1993). Most research aims to enrich the pool of scientific knowledge rather than to influence the condition of the lives of the poor (Moghaddam, 1990; Sloan, 1990; Sloan & Monterro, 1990). This study is an attempt to address some of the shortcomings of psychological practice and research in developing countries. It focuses on uncovering indigenous knowledge and practice of people in a developing context. More specifically, it aims at gaining insight into the notions of problem and problem solving as these are perceived by local people and at gaining an understanding of problem solving,, as it is practiced by people in their everyday lives.

1. Motivations for the study

The research was initiated in an important socio-political era in the history of South Africa. It took place during the time in which the Apartheid regime was finally dismantled and was characterised by a whirlwind of changes which attempted to prepare the people of South Africa for a democratic regime.

Motivation for the study emerged from the researcher's practical experiences in grassroots development work in rural South African communities. This work consisted of a training programme run by a local development organisation for young Africans from different rural communities. The programme aimed at preparing them to provide leadership in development ventures in their communities.

During the training sessions of the programme, incongruencies between the cognitive processes of the trainers (who used a Western style of training) and those of the local people

became apparent. It was hypothesised that these incongruencies resulted from different conceptions and practices of problem solving. This stimulated the researcher to develop a research project to investigate the dynamics of local problem solving processes.

In an attempt to develop a research design for the study, the inadequacy of the dominant cognitive paradigm and its corresponding meta-theory became apparent. An additional aim, therefore, emerged, namely to develop a suitable methodology, based on a meta-theory and a cognitive theory congruent with the research topic and with each other.

2. Conceptual framework for the study

The framework for the study was built on an ‘everyday cognition’ approach and a hermeneutical paradigm.

2.1. An ‘everyday cognition’ framework

Scrutiny of the mainstream cognitive theories revealed several shortcomings with respect to the intended study of everyday group problem solving processes. The mainstream emphasis on cognition as an internal psychological process, on an experimental design and on the use of models of artificial intelligence, were deemed ineffective for the inquiry into everyday problem solving processes. They did not allow for a contextualised insight into the research participants’ knowledge and practice.

A ‘situated cognition’ approach was chosen as the theoretical foundation for the study. Vygotsky's (1978) tenets, that higher mental functions (amongst which is problem solving) emerge when mind and action join together in purposeful activity and that this activity is informed by a social-cultural-historical context, were seminal to this foundation. Inspired by Vygotsky's ideas, everyday problem solving was defined as a goal-directed activity involving affective, cognitive and conative aspects. This activity was assumed to embody an intricate dialectical interface between individual and environment. This interface was defined as cultural mediation (Wertsch, 1995). It was further accepted that mediation comes about through joint interaction between individuals with the help of mediational means (Wertsch, 1995). Those means were identified as cultural values (Baron, 1985), cultural goals (Gauvain, 1995) and models (D’Andrade, 1990).

2.2. An interpretive research paradigm

The meta-theory underpinning the research design was based on aspects of the hermeneutical and the realist paradigms. Hermeneutics maintains that human behaviour is purposive, active and goal-directed (Schwandt, 1994) and that interpretive inquiry takes place in a context delineated by our everyday participatory understanding of people and events. It implies that this understanding is perspectival and does not consist of a correspondence between a theory and the way things really are, but is a matter of uncovering, determined by the access developed towards the object of inquiry. The scientific realist approach regards the objects of knowledge as the structures and mechanisms that generate phenomena. These objects are real structures, which operate independently of our knowledge or experience (Bhaskar, 1979).

The paradigm developed for the study drew from the above two philosophies. It accepted the principle of an independent reality while simultaneously acknowledging that access to such reality is possible only through a participatory, perspectival interpretation. The study aimed to uncover underlying structures of the problem solving processes of the participants in the study, employing principles of the interpretive approach in an attempt to uncover those structures.

The ideas of Ricoeur (1976) on the structural analysis of texts and the notion of ‘hermeneutical circle’ underpinned the interpretive method for the study. The structural analysis according to Ricoeur (1976) involves a dialectical combination of interpretation and analysis of texts, alternately evoking moments of creativity and imposing moments of rigorous validation. The hermeneutical circle refers to the circularity and dialectical nature of interpretations. It implies that interpretation of a whole can only occur as a result of interpretation of its constituent parts and that these parts only make sense in the context of the whole (Taylor, 1994).

2.3. The research question

In order to gain an understanding of the local group problem solving processes, a three-fold aim was identified. The study intended: first, to uncover indigenous knowledge of the concepts problem and problem solving of the participants; second, to uncover patterns, structures and strategies of indigenous group problem solving practice; and third, to uncover the inter-relation between the participants’ knowledge and practice.

2.4. The method

The study did not make use of an established psychological method. Instead, the everyday cognition approach and the interpretive paradigm, developed for the study, provided the principles for a methodological framework on which certain data analysis techniques were anchored. These techniques were chosen for their compatibility with the theoretical and meta-theoretical tenets of the study. The study made use of the constant comparison and coding techniques of the grounded theory approach (Glaser & Strauss, 1967) and the reading guide technique (Mergendollar, 1989).

3. The study process

The study starts with an analysis of the different paradigms of development and the possible role of psychology in Third World countries, congruent with the different paradigms. A people-centered approach is advocated as an appropriate paradigm for psychological practice in developing countries. This approach is built on principles of participation and reliance on people's local knowledge for the building of their individual and communal capacity to master change and to take control of development.

Subsequently, the researcher's personal context, which contributed to the instigation of the study, is described. The conflicting experiences of the researcher in her dual role of academic and grassroots development worker are portrayed in order to explain the motives behind the specific choice of theory, meta-theory and research design.

Chapters 4, 5 and 6 deal respectively with the theory, the meta-theory and the research design for the empirical component of the study.

The discussion on the theoretical background of the study commences with a delineation of the characteristics of the mainstream cognitive approach and the cross-cultural research approach. Subsequently, the shortcomings of these two approaches for the study of everyday cognition are demonstrated. Characteristics of everyday problem solving are then described and a theoretical framework for the study of everyday problem solving constructed, based on a survey of 'everyday cognition' literature. The chapter ends with a presentation of the framework.

The chapter on the meta-theoretical background for the study includes a discussion of the hermeneutical paradigm and the scientific realist philosophy. A paradigm for the study is subsequently developed, based on aspects of both philosophies. The ontological,

epistemological and teleological components of the paradigm with regards to the study are identified.

The research design is firmly embedded in the theoretical and meta-theoretical grounding of the research. These are reflected in the framing assumption presented in Chapter 6, which deals with the empirical study. In this chapter the sample of participants is described. The research design contains three components, respectively dealing with the three aspects of the research question. The first component relates to the inquiry into the participants' local knowledge of the concepts problem and problem solving. A description is provided: first, of the data gathering process, which involved individual interviews and group discussions; and second, of the interpretive analysis, which consisted of a multi-layered process of progressively deeper interpretations, using the grounded theory techniques of coding, constant comparison and theoretical diagrams. The second component relates to the inquiry into the participants' group problem solving practice. A description of the data collection process is provided. This involved video-taping problem solving events. The interpretive analysis consisted of a multi-layered process of progressively deeper interpretations, using the reading guide technique. The third component of the research question involved the integration of the interpretive results of the first and the second components.

Chapters 7, 8 and 9 present the results of respectively components one, two and three of the inquiry process. Chapter 7 presents the results of the inquiry into the participants' local knowledge of the concepts problem and problem solving. Five levels of interpretive data, congruent with the five progressive stages of the interpretative process, are discussed. Each level represents an integrative interpretive summary of the previous stage. The last two stages involve a contextualisation of the interpretive data in the 'everyday cognition' literature. Chapter 8 presents the results of the inquiry into the participants' everyday group problem solving procedure. Four levels of interpretive data, congruent with the four progressive stages of the interpretative process, are discussed. Each level represents an integrative interpretive summary of the previous stage. The last two stages involve a contextualisation of the interpretive data in the everyday cognition literature. Chapter 9 presents a synthesis of the results of the interpretive processes of Components one and two of the research design. This provides an integrative picture of the research participants' local knowledge and practice of problem solving embedded in an 'everyday cognition' framework.

In the concluding chapter of the study the various aims that were set for the study are revisited in an attempt to evaluate the achievements and shortcomings of the study.

CHAPTER 2.

PSYCHOLOGY IN DEVELOPING COUNTRIES: PEOPLE-CENTERED DEVELOPMENT AND LOCAL KNOWLEDGE

1. Introduction

Despite a general recognition that developing countries have been, and still are, grappling with a morass of socio-psychological problems related to rapid social change, psychology has largely remained outside the orbit of national development in Third World countries (Moghaddam, 1990; Nsamenang, 1993; Sloan, 1990). However, during the last thirty-five years, some debate has been generated around the role and relevance of psychology in developing countries (Ardilla, 1992; Blackler, 1983; Jahoda, 1973; Korten, 1980; Sinha, 1984, 1990; Triandis, 1972; Van Vlaenderen, 1993). In these debates it is acknowledged that in Third World countries, where resources are scarce, psychologists are faced with the challenge of providing knowledge and services that contribute to national development. However, opinions on how psychology can play a role in processes of rapid social change vary between psychologists of different persuasions.

The aim in this chapter is to provide a short overview of the various possible roles of psychology in national development, congruent with different development paradigms. A modernisation approach, a dependency approach and a people-centered approach are discussed. The people-centered paradigm is suggested as the preferred paradigm and implications of this approach for psychological research and practice are addressed.

2. The role of psychology in developing countries: A matter of development paradigm

2.1. The modernisation approach

Traditionally, modernisation theories have provided the main development paradigm for psychological practice in developing countries. According to modernisation theories the lack of development of Third World countries is caused by the absence of certain conditions which are present in technologically advanced Western societies (Kindervatter, 1979). Development is defined in terms of a linear progression towards a particular situation, which can be assessed according to certain objective measures, such as Gross National Product (GNP) (Coetzee, 1987). Development is regarded as a process of rapid economic growth through industrialisation, and the adoption of modern scientific approaches to agriculture (Sinha, 1983). "Development strategies based on this traditional modernisation approach emphasise centralised planning and control over the distribution of resources. The focus is on providing

infrastructure and institutions to facilitate the progression towards a Western model and to tackle obstacles on the way” (Oakley & Marsden, 1985, p. 5). It is assumed that capital inputs from outside the Third World will result in a ‘take off’ and the eventual trickle-down of benefits throughout the system (Oakley & Marsden, 1985).

The earlier writings of Durganand Sinha (1973, 1984) and Harry Triandis (1972, 1984) are examples of psychological practice contextualised in a modernisation approach. In these texts, the change towards a Western model is valued and it is argued that people in the developing countries are impatient to catch up with the developed world during the span of a generation (Sinha, 1984, p. 19). It is further argued that this involves telescoping change processes in traditional social institutions such as the existing patterns of social stratification and power mechanisms. In fact a radical transformation in the entire way of life. It is acknowledged that this rapid social change can have both desirable and undesirable consequences. Sinha (1984) argues that the temporal compression and often chaotic nature of changes have caused conditions of instability that led to many socio-psychological problems. Alienation, changing levels of aspiration and increasing discrepancy between aspiration and achievement lead to job dissatisfaction, higher incidence of psychosomatic ailments, marginality and identity diffusion. Triandis (1972) lists commonly observed ill effects of rapid socio-economic development, such as increasing incidence of suicide, violence, riots, alcoholism, crime rate and delinquency, as well as a greater incidence of psycho-somatic ailments and problems of mental health.

Sinha (1983) argues that the psychologist's task in national development is three-fold: to analyse the factors conducive to desirable changes (facilitators); to analyse the factors that act as impediments to change (inhibitors); and to determine ways of avoiding or cushioning the psychological costs of rapid development.

A large body of psychological research in the context of national development focuses particularly on attitudes as impediments to change. Modernisation psychologists tend to look at how local attitudes and values do not fit with those required in 'modern' society. Surveys on the presence or absence of 'modern' attitudes amongst people in developing countries still is a major aspect of the role of psychology in national development. The result of such studies then are used as a basis for educational programmes intended to prepare people for the ‘take off’ stage towards modernisation (Kagitcibasi, 1973; Sinha, 1986; Williamson, 1982).

Modernisation psychologists emphasise that social change and developmental processes are large and complex human problems. Therefore, the parameters of their studies are not only concerned with microcosmic individual processes but at the same time encompass larger social, structural and cultural influences. Sinha (1984, p. 24) argues that if it is to have significant

impact on problems of the Third World, psychology must adopt a more global orientation - a macrocosmic perspective.

Several limitations can be identified in this 'modernisation psychology' approach. First, there is an adherence to the hegemony of Western psychological views as well as Western world views in general. Second, there is a total lack of consideration of power issues, which are an inevitable part of any development process involving a developer and a developing partner. Third, modernisation psychologists concentrate on the socio-psychological consequences of change rather than on the involvement of local people in the development process. People are considered as passive receptors of an imposed development process.

2.2. Dependency theories

During the past three decades, development programmes worldwide have been evaluated. It was shown that they have failed to reduce poverty and underdevelopment. Large numbers of people in Third World countries are still living in absolute poverty, deprived of the most basic resources (Korten, 1990; Oakley & Marsden, 1985; World Bank, 1992).

Recognition of the failure of development programmes, based on the modernisation approach, inspired the emergence of alternative development paradigms such as the dependency theory. Dependency theorists criticise the top-down process of the modernisation approach and its accompanying presumption that people in developing countries are unable to meet their own needs. An historical analysis of the Third World situation, which emerged from the school of dependency theorists during the 1970's, asserts a causal relationship between the development of some countries and the parallel 'underdevelopment' of others. According to dependency theorists, the underdevelopment problem can be attributed to the unequal power relationship between technologically advanced and Third World countries, rather than to Third World countries themselves (Frank, 1975; Harrison, 1982; Hoogvelt, 1976). Underdevelopment should be seen as a direct function of the development of the Western World, which relies heavily on large scale exploitation of the Third World. The unequal relationships of international trade and investment are beneficial to the technologically advanced countries and detrimental to the Third World, and this creates a weak bargaining position for Third World countries, leading to dependency (Frank, 1975; Hoogvelt, 1976).

According to the dependency paradigm, the modernisation approach does not attack the real causes of poverty, which are the economic, social and political world systems and power relations and it does not focus on real solutions, namely increasing the capacity of the deprived to meet their own needs (Harrison, 1982; Hoogvelt, 1976). Oakley & Marsden (1985) go one

step further and state that national governments and international development agencies are part of the problem and, through their development style, positively contribute to underdevelopment.

Goulet (quoted in Kindervatter, 1979) eloquently describes what he calls the total trauma that results from dependency:

The trauma is total because the desire mechanisms of an entire population are altered before it possesses control over the social institutions which would enable it to gain effective use of resources needed to meet these new desires. Those who do not possess the resources or enjoy access to them understandably assist the development efforts of others only to the degree that such an activity enhances their own objectives. Since they are technologically and economically more powerful, transfers of resources, information and personnel consolidate the dominant position of the strong and further accentuate the dependency of the weak (*l.c.* p. 29).

Concurrent with this alternative analysis of development in developing countries, the concept of development obtained a different meaning. Dependency theorists argue that different countries may pursue different goals, depending on their own individual values (Hoogvelt, 1976). According to Goulet (quoted in Kindervatter 1979, p.37) development is not a cluster of benefits given to people in need, but rather a process by which a nation acquires a greater mastery over its own destiny. Development involves overcoming internal and external dependency, caused by relationships with technologically advanced countries.

This 'alternative approach' was well captured in the definition of development provided by the Dag Hammerskjold Foundation in 1975 (Dag Hammerskjold Foundation, 1977). The Foundation describes what it calls 'Another development' in the light of five general attributes. First, appropriate development is need oriented. It is geared at meeting human needs of those that are dominated and exploited. Second, it is endogenous. It stems from the heart of each society and is informed by its own history. Third, it aims at self reliance, implying that each society relies primarily on its own strengths and resources. Local knowledge and survival skills are considered to be the building blocks for community development. Fourth, it is ecologically sound; and fifth, it is based on structural transformations, which are necessary to realise the conditions of self management and participation in decision making by all those affected.

2.3. The people-centered development approach

During the eighties, the ‘people/human-centered’ development approach, which takes cognisance of the dependency theories, gained popularity. This approach is not built on one central theory and so its principles cannot be found in any one document and no single person, group or organisation can be considered the spokesperson. Two sets of authors, who come from different parts of the world, provide insights into this approach.

David Korten (1990), who worked extensively in the Philippines, employs the word ‘people-centered development’ to capture his view on equity-led sustainable development. He argues that ‘growth-centered’ development, which is characteristic of the modernisation and, to a certain extent, also of the dependency approach, puts economic growth ahead of people and the ecology on which their well-being depends. He proposes an alternative development vision in which the well-being of people and the living systems of the planet, that is their home, come first. He defines development as ‘a process by which the members of society increase their personal and institutional capacities to mobilise and manage resources to produce sustainable and justly distributed improvements in their quality of life, consistent with their own aspirations’ (Korten, 1990, p. 67). The above definition emphasises the process of development and its essential focus on personal and institutional capacity. It encompasses the principles of sustainability, justice and inclusiveness. It acknowledges that only the people themselves can define what they consider to be improvements in the quality of their lives.

The ‘people-centered’ development vision is grounded in several explicit values (Korten, 1990). First, priority in the use of the earth's resources should be to allow all people an opportunity to produce a basic livelihood for themselves and their families. Second, current generations have no right to engage in levels of non-essential consumption that deprive future generations of the possibility of sustaining decent human living standards. Third, every individual has the right to be a productive contributing member of a family, community and society. Fourth, control of productive assets should be broadly distributed within society. Fifth, sovereignty resides in the people. The authority of the state is granted by the people and, therefore, may be withdrawn by them. Sixth, local economies should be diversified and reasonably self reliant in producing basic needs. Seventh, people have a right to a voice in making decisions that influence their lives and decision making should be as close to the level of individual, family and community as possible. Eighth, local decision making should reflect a global perspective and an acceptance of the rights and responsibilities of global citizenship.

Korten further argues that ‘people's power’ is the key for development, though its expression must be more than a short-lived mass demonstration. He believes that the expression of ‘people’s power’, as a force for reform, can be sustained and channeled through a combination of mass organisations, individual voluntary initiatives and voluntary organisations (VO's). He

further argues that the widespread belief that development is primarily a task of government has legitimated authoritarianism and created a major barrier to true development progress in developing countries. The belief that the governments can deliver development is based upon a false assessment of the capacity of government and the nature of development. Korten urges for a strong civil society in the form of non governmental organisations (NGO)'s and voluntary people's organisations (VO's). He purports that VO's in their political role supplement political parties as varied and flexible mechanisms through which citizens define and articulate a broad range of interests, meet local needs and make demands on government. In their educational roles they provide training grounds for democratic citizenship, develop the political skills of their members and educate the people on a wide variety of public interest issues. In their watchdog roles they serve as checks on the government.

Max-Neef, Elizalde & Hopenhayn (1989), who have a collaborative endeavour, linking researchers across Latin America, use the term 'human scale development'. Human scale development is based on the satisfaction of fundamental human needs and on the generation of growing levels of self reliance. Adherents of the human scale development emphasise the construction of an organic articulation of people with nature and technology. They argue for a symbiosis of global processes with local activity and for combining personal with social needs. They further promote a balance between central planning and autonomy and between powers of civil society with the state.

The above overview of the main development paradigms provides a framework against which the different possible roles for psychology in service of national development can be cast. Whereas adherence to a modernisation paradigm demands an alliance of the psychologist with the state organs of the developing country and with the foreign developer, the dependency approach and the ensuing people-centered approach are interested in a human-centered process with the focus on the local people. The modernisation approach presumes an acceptance of the superiority of Western values and an undertaking to assist people in obtaining a Western lifestyle and world view. In striving to adjust people to a foreign imposed change, the psychologist's task is remedial rather than pro-active. Modernisation psychology is based on a consensus model rather than a conflict model. The people-centered approach in contrast recognises the power differentials involved in the development process and openly chooses sides for the local people of the developing countries. It sees its main role in assisting local people to fulfill their human needs by building their capacity to do so.

Gilbert & Van Vlaenderen (1995) provide a more detailed list of the role of psychologists in a people-centered development approach. The list follows.

- Focusing on the ‘local’ (which has traditionally been the periphery) for development activity.
- Strengthening and building from what exists at the local level, rather than attempting to replace this with transplanted ideas and technology.
- Ensuring that development processes are sustainable, *i.e.* guaranteeing, at the human level, that the processes of change do not create dependency and, at the environmental level, that finite resources are not over-exploited.
- Building infrastructure to manage and maintain development at the individual and organisational level..
- Addressing people's needs, particularly those of the poor.

3. Key concepts for an appropriate development paradigm

It is argued that for the ‘people-centered’ development approach to succeed, local people need to be empowered to participate in their development process. This requires a capacity building process based on their local knowledge and resources. What follows is a discussion of the concepts participation, empowerment, capacity building and local knowledge, and how these impact on psychological practice and research.

3.1. Participation

There is an abundance of literature on the notion of participation in development (Kelly & Van Vlaenderen, 1996). A full treatise of the different interpretations of participation and their importance for development lies beyond the scope of this study. However, analysis of several authoritative definitions of participation reveals that the core component of participation is decision making (Cohen and Uphoff, 1977; Mathur, 1986; Oakley and Marsden, 1985; Rajakutty, 1991). People participate to the extent that they choose cognitively, affectively and physically to engage in identifying, planning, establishing, implementing and evaluating national and local development programmes. As such, participation can be regarded as a decision making process occurring at the individual and social level.. According to Shaeffer (1994) participation involves the assumption of responsibility in considering the rationale, implications and potential outcomes of development endeavours.

In order for people to make the necessary decisions with regards to their own development they need to be empowered to do so.

3.2. Empowerment

Swift and Levin (1987, p. 72) believe that empowerment refers simultaneously to the phenomenological development of a certain state of mind (feeling powerful, competent, worthy of esteem) and to the modification of structural conditions in order to re-allocate power (e.g. modifying the society's opportunity structure). In other words, empowerment refers to a subjective experience and the objective reality and is both a process and a goal (Yeich & Levine, 1992).

At the macro-level and the meso-level, empowerment can be defined in terms of group possession of actual social influence, political power and legal rights (Swift and Levin, 1987, p. 72). It relates to people's power with respect to access and control of the national resources necessary to protect their livelihood (Mathur, 1986; Yeich & Levine, 1992). According Shaeffer (1994) empowerment means that communities become more explicit in asserting rights and responsibilities in determining the direction of their own development. This power is real, formal and legitimate.

At the individual level empowerment conveys a psychological sense of personal control or influence (Zimmerman, 1990). For empowerment to take place two interrelated changes are required. First, people, individually or in groups, must develop a greater sense of self worth, self confidence, self reliance and a recognition of the value of their own skills and resources. This implies less dependence on external inputs and wisdom and greater pride in the significance and validity of personal and collective knowledge and experience. Second, there must be a change in people's perceptions of their relations with other people and with the institutions that define their social world. This change involves both an understanding of how the broad social world has defined their lives and the potential they have for more actively influencing their own environment. Together these changes make people feel they can determine their own needs and have the right and ability to change their world so that it is more responsive to these needs (Vanderslice, 1984, p. 2).

There is a dialectical relationship between empowerment and participation. People need to have the capacity and the power to participate in decision making, at the same time they need opportunities to participate in decision making in order to build capacity and to empower themselves (Prestby, Wandersman, Florin, Rich & Chavis, 1990). Van Vlaenderen & Gilbert (1993) argue that through involvement in a variety of development activities, people can gain more knowledge, learn better practice and end with a greater awareness of the problems that exist, the causes behind these problems and in some cases their possible solutions.

It is clear from the above discussion that empowerment is not a condition which can be bestowed by one group on another, but is, rather, an ongoing process by which the disempowered seek to fulfill their own needs and preserve their own rights (Swift & Levin, 1987). True empowerment needs to be facilitated rather than imposed on people. This involves building individual and group capacity in local people, so that they can empower themselves to fully participate in decision making processes that influence their lives. Van Vlaenderen & Gilbert (1993) argue that a capacity building process for empowerment involves the following aspects:

- facilitating a process in which people can articulate their needs;
- providing people with a holistic picture of the development situation. This requires mediation between different role players in the development process;
- lobbying, with the people, for their right to participation in all stages and aspects of development;
- providing human resource skills and an enabling environment for the acquisition of skills and the practice of the newly acquired skills. Enabling is defined here as an environment which allows for errors to be made without disastrous effects and for continued evaluation;
- strengthening local groups' sense of community and assisting with the establishment of local community networks;
- facilitating the emergence and strengthening of local leadership, who can take responsibility for development issues;
- acknowledging and accessing local knowledge, skills and resources.

It is with reference to the issue of local knowledge that psychologists have a particular contribution to make to development in Third World countries. In the following section the concept of local knowledge is defined and its importance for empowerment identified. The role of psychologists in accessing local knowledge is elaborated on..

3.3. Local knowledge

In the context of development, people's knowledge has at times been referred to as indigenous knowledge (Brokensha, Warren & Werner, 1980), rural people's knowledge and local knowledge (Chambers, 1985). In the cognitive psychology literature the term everyday cognition has been most popular. The characteristics of everyday cognition and everyday problem solving will be discussed in detail in Chapter 4. For purpose of the current chapter the term local knowledge is used as a general term for the knowledge of ordinary people. This includes the concepts indigenous knowledge and rural people's knowledge.

Local knowledge is the common sense wisdom that comes from everyday life rather than formal learning. It arises from practical activity and is tacit *i.e.* it is not normally consciously reflected upon. It contains knowledge on what is, or exists, as well as on how things are done (Gilbert & Van Vlaenderen, 1995, p.5). It is located in people and only rarely written down. It refers to the whole system of knowledge, including concepts, beliefs and perceptions, the stock of knowledge and the process whereby it is acquired, augmented, stored and transmitted (Gengaje & Setty, 1991).

Local knowledge is of great value for empowerment in a people-centered development approach because it represents successful ways in which people have dealt with their environment in the past and provides a basis to build on. Korten (1980) argues that local people have well established systems and carefully developed methods, which over many years allowed them to survive in very harsh conditions. Local knowledge thus can serve as a guiding force for the local community's behaviour and help in shaping their mental maps. Building on local knowledge and resources reduces the likelihood that a development intervention will 'de-skill' the local people and increase their dependency on external experts (Korten, 1980). On the contrary it empowers local people by increasing their self reliance.

Psychologists can facilitate the empowerment process by building on local knowledge. This involves several tasks:

- accessing and explicating the local knowledge of the people, together with the people. This activity needs to go hand-in-hand with re-building people's confidence in the value of their own knowledge and cognitive abilities. Carmen (1991) emphasises the importance of knowledge empowerment and argues that it is based on a belief that nobody is absolutely ignorant and that all human beings have the innate ability to create knowledge through dialogue. With this newly created knowledge people can influence the course of events to liberate themselves from oppressive situations and determine their own destiny;
- exposing the prejudices of development professionals about the cognitive and other capacities (or rather their perceptions of the lack of capacities) of local people;
- Mediating between local and expert knowledge in order to bridge the gap that usually exists between these two cognitive frameworks. Local knowledge is highly contextualised and specific, while expert knowledge is de-contextualised, formalised, abstracted and refers to general laws and principles. The psychologist needs to create an environment in which both types of knowledge can merge. This involves the facilitation of initial communication channels between expert and local groups, based on equality and mutual respect. Gilbert (1995) argues that it also involves the facilitation of joint activities for developer and local community which will allow for the emergence of

shared goals, the construction of a shared knowledge base and which will lead to further joint practice.

4. A first motivation for the study

Despite the emergence of the people-centered development approach, the majority of psychologists in Third World countries have largely ignored the importance of people's local knowledge.

In Fuglesang's (1982, p.17) harsh, but insightful words, “a significant feature of European culture (and by implication the Western dominated study of psychology) is its disrespect for other cultures and its insensitivity to the miraculous multiplicity of life and human behaviour”. He criticises Westerners for being oblivious to the fact that all other cultures are described and interpreted in the concepts of their own culture, for an ethnocentrism close to total, and for a lack of ability to sense how they express their arrogance in their own language. This negation is a thought tool and a thought trap. Whilst Westerners are educated others are uneducated. People in developing countries are described as illiterate, irrational, pre-logical, ineffective, unproductive.

Considering the above, it is not surprising that well established meta-theories, which can guide research designs appropriate to investigate local knowledge, are currently hardly available. Traditional methods of cognitive and developmental assessment are generally culturally biased, and therefore, relate to ‘our’ knowledge rather than ‘theirs’. They assess the community's level of development in terms of the expert knowledge and ignore or neglect the rich local knowledge. This hampers the psychologist in constructing a mediation process that builds on indigenous knowledge and resources. As a result, development attempts have largely been impositions of information and strategies, alien to the cognitive world of the local community. This misfit between the nature of the cognitive resources and strategies available in local communities and the nature of mediation (based on expert cognitive strategies) has contributed to the failure of numerous development attempts. (Van Vlaenderen & Nkwinti, 1993).

Taking cognisance of the above critique of psychological practice in developing countries, the study aims to explicate local knowledge of group problem solving of a group of young community activists in a rural South African context. It is important to stress that the research focuses not only on the content of people's local knowledge but also on the local processes used in problem solving. The latter has been an even more neglected aspect of people's local resources.

It is hoped that the methodology developed in the study and the study findings will prove useful for local people (especially those involved in the study). It is believed, firstly, that having their tacit knowledge made explicit to them can be an empowering experience in itself and secondly, that they may use that knowledge to further their own development, by strengthening their position *vis-à-vis* the development agents.

CHAPTER 3.

HISTORICAL CONTEXT OF THE STUDY: A PERSONAL MOTIVATION

1. Introduction

Every research process is directed by a variety of motives. The roots of these motives lie in diverse areas. In the previous chapter, one of the roots of this study was traced back through an analysis of the paradigms of development. A people-centered approach, built on concepts of participation, human empowerment and the building of individual and communal capacity to master change, was presented as a useful and appropriate orientation for a psychology for development. In the two chapters which follow this current chapter, attention is given to the theoretical motives linked to a contextually sensitive understanding of cognition and the meta-theoretical assumptions that lie behind an interpretive paradigm to the scientific study of such phenomena. This thesis, however, has its origins beyond such motives.

The questions which initially prompted the study did not arise from a theoretical or a methodological frame. They emerged out of practical involvement in development work in South Africa during a period of rapid and turbulent socio-political change. In other words, the conceptual, methodological and theoretical components of this study were constructed in order to answer questions arising from direct involvement in community development work at a significant point in South Africa's history.

To fully understand the research question, it is necessary then to have some understanding of the personal history that led to the thesis. This is described in this chapter. Locating this discussion at this particular stage in the thesis is necessary because knowledge of these historical and practical motives provides the backdrop for the need for a contextually sensitive understanding of everyday cognition and problem solving (which is examined in Chapter 4) and for an interpretive approach to method (which is examined in Chapter 5).

2. The personal context

I arrived in Grahamstown, a small town in the Eastern Cape Province of South Africa, in 1989. As a result of the prevailing social and political climate (which is described in Section 3 of this chapter) I became rapidly drawn into two different spheres of life: working as an academic and professional psychologist and being a political activist, working to bring about political change with people at grassroots level. The involvement in both spheres provided me with interesting

opportunities. Working in a community-based organisation provided a ‘comradeship’ atmosphere in which to debate and reflect on grassroots socio-political issues. It placed me in a privileged position of being able to interact and to work together with political activists in rural towns and communities. It also provided me with access to numerous group gatherings in which local political and development issues were debated, plans made and evaluated.

On the other hand, being an academic gave me moments to distance myself from the immediacy of action and reflect on the promises and limitations of the local knowledge and underlying processes. Being an academic provided me with theories, methods and tools to make a deeper analysis of the local processes. As such, I had the potential to make a special contribution to the grassroots political movement.

Several tensions existed between these two spheres of involvement which I needed to resolve. This thesis can be regarded as my attempt to address those tensions. The tensions follow.

The cognitive-psychological theories I was familiar with proved inappropriate as a framework for capturing the everyday cognitive processes that I experienced in my grassroots work. Working with grassroots communities exposed me to the African way of being, thinking and interacting, with its emphasis on collectiveness, communal responsibility, flexibility, ‘contextualness’ and the absence of clear cut and mutually exclusive categories (Markus & Kitayama, 1991; Verster, 1986). My theoretical tools were still grounded in positivism, focused on the individual and applied rigid classifications. There was a need to develop an appropriate framework for reflecting on the everyday cognitive processes of the grassroots people I was working with. Appropriate in the sense that it would capture the meaning of their thoughts and actions within their framework rather than in mine. It needed to capture their local knowledge. In order to succeed in such an attempt there was also a need to develop an appropriate meta-theory to guide such framework.

Secondly, the respect for academics and the work of academics was very low in the ‘political activist’ world in South Africa. At best, academics were considered harmless, but useless (Van Vlaenderen, 1993). At worst, they were regarded as instruments of the repressive regime, who produced research documents that were used to provide support for repressive State policies.

As a result of this wariness of academic research, grassroots communities were very reluctant to engage with researchers and to volunteer any local knowledge. The challenge was to show my colleagues at grassroots that reflection on their cognitive thoughts and actions could be a useful and empowering experience for them and that research can have an emancipatory goal

for the research participants. Also, I wanted to prove that psychology had a contribution to make to the daily issues of grassroots people in their process of development.

Lastly, the standard ways of collecting and analysing research data and the standard measures of validity and reliability also proved inappropriate for the study of everyday cognitive processes in the grassroots local communities (Van Vlaenderen, 1993). Traditional data collection and analysis tools rely on predetermined variables for the research and rigour in the research is obtained by controlling or eliminating extraneous variables. This is inappropriate for the discovery of local knowledge. Further, traditional data collection and analysis are geared at investigating states rather than processes, which was the aim of my research. Therefore there was a need to develop different ways of collecting and analysing data that would fit the local 'ways of doing' and that would enable me to capture the local knowledge and the collective cognitive processes.

3. Historical context: The emergence of the Eastern Cape Development and Funding Forum

In order to understand the context in which the study took place it is important to provide a short overview of the South African situation at the time of the data collection.

During the decade 1980-1989 South Africa was characterised by severe State repression, lack of freedom of speech, industrial unrest and demonstrations. Numerous political activists and many ordinary people in cities as well as in the rural areas were detained without trial, tortured and killed. The racial divides were very strong: White and black residential areas were segregated, as were most social and educational services. The majority of black people lived in deplorable conditions. They either resided in what is called 'townships', which are separated residential areas attached to a 'white' town; or they lived on the farms where they were employed, without any property- nor other rights; or they resided in rural villages in what was called 'homelands', which were designated rural areas for black people. In all of these locations they often lacked sewerage systems, refuse services, water and electricity as well as proper roads. Despite a general atmosphere of fear and secrecy, the majority of poor black people were highly politicised and many worked underground or from outside the country for the broad liberation movement.

During the period 1980-1989 the first seeds were sown for the dismantling of South Africa's Apartheid regime. However, the obvious signs of its imminent break down came during the period 1990 -1993 (Sparks, 1994). This was the result of long term pressures from the local United Democratic Front (a broad populist movement), the banned liberation movement

located outside the country, and the economic and other embargo's of the international community. Political prisoners were released, the most important of them being Nelson Mandela. Political parties were unbanned. Apartheid laws were scrapped or replaced with democratic laws. Talks between the Apartheid regime and the black liberation movement about a peaceful solution for a democratic South Africa were gaining momentum and this was publicised in the media. The liberation movement gradually transformed itself into political parties and started to campaign for the upliftment of the poor black majority of South Africa. Nelson Mandela was earmarked to become the new president. All this raised very high expectations amongst the poor. They hoped for better housing, employment, better education, health facilities and other services.

It is within this general atmosphere of high political activity and rapid change that the grassroots work, I became involved, in was situated. As the emerging political leaders approached the moment of entering the new government the enormity of the developmental needs of the majority of the population dawned on them. They acknowledged the need to engage the people in this developmental endeavour as participants rather than as mere recipients of services. This was not an easy task, considering that the majority of people had not enjoyed adequate education, nor had they been allowed to build their capacity as full citizens in South Africa's Apartheid society. Also, most of the grassroots leaders, who would be the main link between the new government and the grassroots, were oriented towards an anti-establishment activism and had not been exposed to development work. The liberation movement, therefore, encouraged various initiatives in different parts of the country. These aimed at: first organising grassroots people around development issues; and second, building capacity for development at grassroots level. My involvement was confined to the processes that unfolded in the Eastern Cape region.

As was mentioned before, during the second half of the decade 1980 -1989, the country had a strong populist movement called the United Democratic Front (UDF). This movement consisted of well-structured civic groupings, with specialised women and youth sections throughout the various communities of the country. It was the Eastern Cape UDF that gave the impetus for the development of the Eastern Cape Development And Funding Forum (ECDAFF), the grassroots development organisation that I worked with. The regional Eastern Cape UDF and several co-opted volunteers, one of whom was myself, organised a series of regional workshops for community based organisations (CBO's), who represented black disadvantaged communities and service and resource organisations (SARO's) in the Eastern Cape region. The idea was to start a process that would lead to the integration of the skills and expertise of the SARO's on the one hand and the organisational experience and the local knowledge and legitimacy of the CBO's on the other. To this end the strategic objective was

the establishment of a Regional Development and Funding Forum, committed to grassroots development, that would serve as a platform for identifying development needs, sharing experiences and jointly setting up of development programmes.

With this commitment to managing development at grassroots level in mind, ECDAFF embarked on the establishment of Local Development and Funding Forums (LODAFFs) in all black communities in the Eastern Cape region. These LODAFFs were to become the focus of intense capacity building for development. The ECDAFF became a regional secretariat with an office, personnel and a democratically elected executive committee, whose task was to assist in co-ordinating regional activities, training and networking between the 36 communities throughout the vast, rural Eastern Cape region.

Initially the focus was on obtaining a profile of the socio-economic conditions of each township in which a LODAFF was active. This involved workshops to strategise what information was needed and regional training sessions for all LODAFFs on how to conduct surveys, how to analyse them and how to compile reports. Concurrently, seminars were held with LODAFFs that dealt with formulating a grassroots participatory development philosophy. Some of the pertinent features that emerged from these discussions was: that development is both a political liberatory as well as a socio-economic empowerment process; that community organisation is an essential underpinning of a development process; that development must affect existing social power relations; that power has to shift away from the elite towards the people; and, that development is about a progressive qualitative movement from one life condition to a better one.

During the period between 1991 and 1993 various LODAFF's became involved in local development projects and initiatives and connected with local service organisations, which assisted them in their local ventures. A newsletter was produced regularly, which was circulated between all LODAFFs and which reported on regional events as well as on local successes and problems. The newsletter was important in providing the necessary network between the isolated rural towns.

After the first democratic elections in April 1994, the executive committee reviewed the role of ECDAFF. Cognisance was taken of the fact that the new government would take time in settling down and that it would need support during its period of transition. It was also considered important that, during the transitional period and beyond, civil society continued to build its capacity in order to keep government in check. Therefore, ECDAFF decided to focus on three areas. First, to build basic organisational management and administrative skills within the LODAFFs. Second, to embark on a socio-economic survey of local subsistence economic

enterprises, with the aim of developing programmes to enhance the capacity of these enterprises. This initiative was considered very important since unemployment, lack of employment facilities as well as training facilities for local business people was, and continues to be, one of the main problems in the Eastern Cape region. Third, to assist in building capacity in the new transitional local government structures. Many of the transitional councilors, appointed after the national election, were recruited from the original LODAFFs. Most of the LODAFF people had never had any exposure to local government structures and their way of functioning. At the time of writing up this thesis, ECDAFF continues to work in this direction.

4. Problem identification and data collection for the thesis as part of the ECDAFF process

Reflection on my interactions with grassroots communities during the various capacity building workshops, meetings and discussions, led to the specific problem identification for this doctoral study. During my involvement over time, I noticed that community members who had attended our courses and training sessions rarely seemed to be applying the knowledge, skills and experiences gained from these training sessions to their own local development contexts. Another important observation was, that the LODAFF participants considered the ECDAFF training as a process in which the trainer was the expert, who provided expert knowledge to the ignorant participant. Even during the training ‘working sessions’, which aimed at active and equal participation of all, participants attempted to create an ‘expert - novice’ atmosphere, in which the facilitator was pushed into the role of expert and knowledge provider and where the participants remained passive recipients.

Several questions kept nagging me. Was there something wrong with the training methodologies (which were predominantly gleaned from the current progressive adult education literature)? Was there a difference in perception between participants and trainers on the essence and purpose of training courses? Were the participants unable, unwilling or simply failing to transfer what happened in the training session to the local everyday situation? And if so, why?

After more reflection I came to hypothesise that there was a fundamental gap between the community and the trainers as far as their perception of the notion problem solving and their application of problem solving strategies was concerned.

This realisation led to the problem identification for the current thesis. There was a need to investigate the problem solving strategies employed by the local communities involved in the ECDAFF process. In order to do this effectively, there was a need to investigate what problem

solving meant to the local people. In other words what was their local knowledge of problem solving. There was also a need to investigate the communal problem solving process as it typically occurred in the local communities. I believed that, if insight could be obtained on these issues, a bridge could be built between the local knowledge and the expert knowledge, resulting in an enriching experience for local people as well as for trainers.

I subsequently communicated my thoughts and intentions to conduct a study into local problem solving strategies to my colleagues at ECDAFF. They showed enthusiasm and we decided to run the investigation jointly. Several discussions took place with all the staff on how we could best go about the data collection for the study. It was decided to include several problem solving workshops in the ECDAFF training course, which would provide the data I needed to answer my questions.

The data collection took place during one five week training course for local people in 1993. The course participants were informed about the research and a discussion took place on the aims, reasons and possible benefits of the study. All participants indicated an eagerness to collaborate. A detailed account of the data collection process is provided in Chapter 6.

As I started the practical process of collecting data I simultaneously focused on developing a theoretical and a meta-theoretical framework which would allow me to interpret the data in a meaningful way. Meaningful in the sense that it would allow the emergence of the local knowledge and group process. These frameworks subsequently inspired the interpretative methodology used to analyse the data.

The following chapters elaborate on the theoretical frameworks and methodology I constructed as an interpretive frame for the empirical study. In the next chapter an everyday cognition paradigm is presented as the theoretical framework for the study. In Chapter 5 an interpretive paradigm is proposed as a meta- theoretical foundation for the methodology. In Chapter 6 the data collection and the interpretation methodology is described.

CHAPTER 4.

TOWARDS A COGNITIVE-THEORETICAL FRAMEWORK FOR UNDERSTANDING EVERYDAY PROBLEM SOLVING

1. Introduction

As indicated in Chapter 1, this study is primarily concerned with everyday problem solving. This should be distinguished from the term problem solving as it is generally used. Problem solving commonly refers to an internal psychological process that follows the rules of logical reasoning and that is measured under experimental conditions. Everyday problem solving, in contrast, refers to a cognitive, affective activity by which people deal with problems they encounter in everyday life.

The intention in this chapter is to construct a cognitive-theoretical framework for the understanding of everyday problem solving, based on the existing literature. This literature developed out of a critique of two bodies of literature, namely mainstream problem solving theory and cross-cultural problem solving research.

The current chapter provides: first, a brief elaboration on the principal characteristics of mainstream problem solving theory and its critiques; second, findings of cross-cultural problem solving research and its critiques; and third, results of empirical problem solving research. Finally a theoretical framework of everyday problem solving is constructed. The role of activity and cultural mediation in problem solving and the importance of meta-cognition are key components of the everyday problem solving framework, proposed for this study.

2. Mainstream theories of problem solving

Problem solving is an aspect of mainstream cognitive psychology that has attracted considerable attention and has generated a substantial amount of experimental research. The mainstream, traditional approach includes behaviourist, gestalt but most importantly, information processing theories. Some key features of the mainstream approach, common to the different theories can be identified. An overview of these features is provided, followed by some critiques leveled against the assumptions and practices of this approach.

2.1. Key features of mainstream problem solving theories

In mainstream cognitive psychology problem solving is considered an internal cognitive process that follows the rules of logical reasoning and that can be studied using an experimental approach.

2.1.1. Problem solving is an internal process

All mainstream problem solving theories have in common the assumption that cognition, and by implication problem solving, is an internal psychological process that needs to be studied as such. They focus on what goes on in a person's mind rather than on the interaction between the person and her environment. Problem solving is typically defined as a process involving: making observations, developing inferences and hypotheses and testing hypotheses (Strohmer & Blustein, 1990). All these are internal psychological processes that can be studied separate from the context in which they occur. Furthermore, memory, perception and individual heuristics employed by the problem solver, all of which are internal psychological processes, are core components of the mainstream problem solving paradigm.

2.1.2. Focus on the description of strategies and stages

Mainstream theories describe strategies and stages of problem solving as generally applied procedures, disconnected from the particular problem solving situation in which they take place. The behaviourist, the gestalt and the information processing approach each have developed more or less detailed descriptions of these general strategies.

Behaviourists characterise problem solving as a process of trial and error or the reproduction of previously learned responses. They assert that new problems are initially solved by trial and error behaviour and that solutions are accidentally amalgamated into responses that are reproduced when the appropriate stimulus is presented (Eysenck & Keane, 1990). Trial and error assumes that a person has no knowledge except knowing how to make moves and whether or not the goal has been reached. One makes moves, or sequences of moves, one after the other until reaching the goal or until giving up (Baron, 1988).

Gestalt theorists (Baron, 1988) view problem solving as a kind of perceptual process in which the problem solver ultimately perceives the relationship between means and end. Problem

solving is defined in terms of having insight into a structure and subsequent productive restructuring of the problem. This insight into the problem often occurs suddenly and is accompanied by an 'Aha' experience. A problem thus is like a gap that needs to be filled and the solution is 'that thing' which fills up the gap. Once the person pays attention to the solution and the problem simultaneously, the relevance of the solution is perceived and insight can occur. It is as if the solution makes the problem into a coherent whole. One of the early attempts to analyse the stages of problem solving was made by Wallas in 1926 (Reynolds & Flagg, 1977). In the tradition of Gestalt theory he distinguished the following stages. First, preparation during which the problem solver chooses a problem, gathers background information and makes initial solution attempts; second, incubation during which the problem solver turns attention aside to other activities including sleep and recreation; third, illumination which involves the 'Aha!' phenomenon; and fourth, verification during which the solution is validated.

Information processing theorists (Chi & Glaser, 1985; Newell & Simon, 1972) define problem solving as a search process in a problem space. Problem solving is seen as trying to reach some goal and finding the means for getting there. All problems have an initial state and they all have some goal. To solve a problem one must perform certain operations on the initial state to achieve the goal and there are rules that specify allowable operations. However, for any given problem there are a large number of alternative paths from the initial state to the goal state. People use their knowledge and various heuristic methods, such as means-end analysis, to search through this problem space and to find a short route from the initial state to the goal state.

Bransford and Stein (1984) assert, based on the information provided by hundreds of pieces of research on cognition, that effective problem solving consist of the following steps: identifying a problem, defining a problem, exploring possible strategies, looking back and evaluating the effects of one's activities.

2.1.3. Experimental research design

The above definitions have in common that they are mainly derived from experimental data. In these experiments, the goal and the premises are provided, the problems are self-contained, only one possibility is counted as achieving the goal and the main difficulty is finding that possibility. Problem solving is defined as involving two clearly distinct states, an initial state and a well defined end state or goal.

The experimental design requires a high degree of control by the researcher over the research process. It is the researcher who identifies the type of problem to be solved. This has led to the adoption of logical reasoning tasks as the prototype problems in problem solving research. Laboratory tasks involving logical reasoning - including propositional and syllogistic reasoning, solving analogies and series completion problems, assessing probabilities and rank ordering expected values of outcomes - have become popular problem solving experiments.

2.1.4. Use of models of artificial intelligence

Underpinning the information processing approach is the view of a top-down process of planning, with plans being successfully refined at progressively lower levels of abstraction. Newell and Simon (1972) embodied this successive refinement, or 'problem de-composition approach' to problem solving in a computer programme called the General Problem Solver (GPS).

The GPS attends to the nature and organisation of component processes that interpret information, set goals, and select among available actions in the process of problem solving. A solution is seen as a successful achievement of a search. The person who attempts to solve the problem (problem solver) has a set of operators that can be used to make changes in the situation.

The GPS contains a programme with general heuristic methods such as means-end analysis. In a means-end analysis the problem solver compares the current situation with the goal situation to identify the differences between them. These differences become the focus of work on the problem and the problem solver is further organised by a priority system that provides a basis for deciding which sub goal to work on first. In means-end analysis the number of possible actions to be considered is reduced by knowledge of which operators are relevant for each of the various sub goals that occur in the problem situation. According to Newell & Simon (1972) the major feature of problem solving is to simplify the search for a problem solution through a complex problem space. This planning-by-simplification process involves omitting the details surrounding the original problem, forming a more general, abstract problem and using the solution to provide a plan for solving the more restricted problem. In the original GPS system, this planning process is rigidly proceeding by solving the most general problem first and then more specific and detailed sub problems. In later versions, tree structures of alternative goals and operators were built into the programme that flexibly allowed for increases in plan complexity while adhering to the overall top down direction.

Where the original GPS was characterised by a top-down process of planning, later computer models and theories within the information processing approach more and more took into account the need for some form of planning-in-action (Rebok, 1989).

Sacerdoti (1977) developed a computer model, called Nets of Action Hierarchies (NOAH), which constructs an abstract problem solving plan that can be revised or improved during its execution, depending on the consequences of various actions. However, like GPS, NOAH is still basically a top-down model, with high level plans guiding and constraining the formulation and execution of lower-level plans (Rebok, 1989).

Barbara and Frederick Hayes-Roth (1979) developed the Opportunistic Planning Model (OPM), which conceptualised problem solving as a multi directional, opportunistic process that includes both top-down and bottom-up abstractions. As the problem solver works down the hierarchy of abstraction, low-level concrete plans may suggest abandonment, revision, or updating of high-level plans into successively more detailed sub-plans.

The above computer models all have in common that they use artificial intelligence as a model for the study of human problem solving.

2.1.5. Focus on the study of expert-novice differences

Studies on expert versus novice problem solving are frequently used by the information processing approach to shed light on problem solving strategies. A major finding is that expert problem solving is confined to certain problem domains and that nobody can be considered a universal expert (Chi & Glaser, 1985). Research data reveals several differences between novice and expert problem solving. These are listed below.

- Novices in solving particular domain problems are limited to direct representations of problems, based on data explicitly given in the problems. The novice problem solver is acting in a knowledge-poor situation where he/she has little useful past experiences. Experts, on the other hand, have an elaborate network of conceptual knowledge and are able to construct sophisticated representations of the problem that include relations not specified explicitly in the problem (Carpenter, 1986), such as contextually relevant information (Davidson & Freebody, 1986). They represent problems by using underlying structures and conceptual features of the problem context.
- Problem solving experts in a particular domain tend to work forward and novices tend to work backward from the goal. Hatano & Inagaki (1986) contend that experts have learned how to classify problems with respect to the type of solution required. In the absence of such learning, novices do better by working backward than they would do by

trying to blunder blindly ahead. People learn to work forward through experience in solving related groups of problems.

- Novices in a specific problem domain tend to use universal, weak methods, such as means-end analysis. Experts have more highly developed executive cognitive strategies and can choose task-appropriate strategies (Hiebert 1986).
- Experts in a specific problem domain are able to deal with information in a re-contextualised, more abstract fashion and they become less dependent on concrete situational information.

2.2. Critique of the mainstream problem solving approach

The mainstream problem solving paradigm, in particular the information processing approach, has made an important contribution to the field of cognitive psychology. However, mainstream problem solving theories have recently been criticised for their shortcomings for the study of everyday problem solving. Some of these shortcomings follow.

2.2.1. The experimental design lacks relevance to everyday problems

As indicated in Section 2.1.3., the information processing approach bases its theory almost exclusively on experimental research. Experiments usually employ a specific type of problem which shows little relevance to the problems people encounter in everyday life. First, 'experiment problems' are usually well-structured. The problem solver is provided with: explicit premises (all the knowledge necessary to solve the problem is present in the problem statement); guidelines for solving the problem; and a particular goal that needs to be achieved. Reaching that goal amounts to solving the problem. Everyday problems, in contrast, are ill-structured (Jodelet, 1993). They are ill-defined to the extent that the information available, the permitted strategies, and the desired end states are left relatively unspecified (Strohm Kitchener, 1983). Second, problem solving in everyday life, unlike problem solving in experiments, usually involves a fair amount of background knowledge in that particular problem domain. Research has revealed that use of domain specific knowledge of the problem area has a profound impact on the problem solving strategies (Chi & Glaser, 1985). Third, in the experimental approach, the problem is imposed by the researcher as an arbitrary exercise and the boundaries of the exercise are provided by the researcher. This leaves very little initiative and responsibility to the problem solver. In everyday problem solving the problem is identified by the problem solver herself as an integral part of her daily experiences and she usually takes the initiative to attempt to solve it. Fourth, the content of 'experiment problems'

are usually irrelevant to people's everyday life. Puzzle problems such as the 'Tower of Hanoi puzzle' (Eysenck & Keane, 1990) and the 'Missionaries and cannibals puzzle' (Eysenck & Keane, 1990) have very little significance to people's life. The lack of significance of the problem content and the lack of personal involvement in the problem have implications for the motivation, attitude and cognitive strategy of the problem solver.

2.2.2. Task independent problem solving strategies are a fallacy

The mainstream problem solving theories are predominantly concerned with the discovery of a universal description of problem solving and assume that those internal mental structures manifest themselves in a uniform performance across a broad spectrum of tasks regardless of task content. In other words, they assume that a person will apply the same problem solving strategies to a variety of problems, ranging from the typically 'Hanoi puzzle' problem to a problem of how to budget one's household money. Findings of 'everyday cognition' studies (D'Andrade, 1981; Jodelet, 1993; Lave, 1988), show, however, that the type of problem has an important bearing on the choice of problem solving strategies. Everyday cognition theorists consider problem solving not as an internal mental structure that is applied to a problem, but as an interaction within a specific context. The problem content is a part of that context and its specific nature will evoke particular assumptions, interpretations and knowledge, which will influence the person's choice of problem solving strategy (Berg & Calderone, 1994).

2.2.3. Problem solving strategies in everyday life rarely follow formal reasoning rules

Information processing theorists define problem solving in normative terms as formal reasoning, rather than being based on general conceptual capabilities that people may have as a result of their everyday experience. Information processing theorists neglect the social relationship and context within which cognition is embedded. They ignore the collectively created and shared symbolic meaning systems that control this type of cognition (D'Andrade, 1981; Jodelet, 1993).

Lave (1988) also criticises a definition of problem solving strategies in terms of logical reasoning. She examined how people carry out everyday arithmetical operations while grocery shopping or beginning a diet programme, comparing their problem solving in these commonplace situations with that discovered in the formal confines of the laboratory. Her data reveal such striking differences between the kind of cognitive activity that occurs in different settings that she formulated a situation specific anthropologically sensitive understanding of

human concepts in which the culture of the setting plays a significant part in shaping the nature of the problem solving processes that are likely to occur. Lave (1988) insists that the problem solving operations that occur in everyday life follow different rules of practice from those typically discovered in the laboratory.

2.2.4. Superficial study of the differences between novices and experts

Mainstream problem solving research does not attempt to explain the dynamics responsible for the expert versus novice problem solving behaviour. It focuses on the differences in capacity of, and on the process and heuristics used by, experts and novices but it does not contextualise these within the broader environment of the problem solver. It does not make inquiries into the reasons for the contrast between the problem solving strategies of experts and novices.

Furthermore, mainstream theories have dedicated insufficient effort to the study of the process by which novices become experts. Their rather 'static' approach has focused on the existing differences between novice and expert and these differences are located at an intra-psychological level. However all experts in a particular domain started off as novices and went through a process of 'becoming expert'. It is argued that this process is of an inter-personal nature. Lave's (1990) studies on the craft apprenticeship among Vai and Gola tailors in Liberia are a prime example of research on the social process by which novices become experts.

3. Cross-cultural studies of problem solving

Cross-cultural studies of problem solving and the critiques leveled against them form another informative body of literature for the development of a framework for everyday problem solving.

Cross-cultural studies on problem solving are mainly method driven and focus on testing problem solving theory across cultures and sub-cultures. Cross-cultural researchers are interested in establishing quantitative and qualitative differences in cognitive processes among cultural groups and link these to the differences in socio-cultural context.

Berry's (1976) major study of human ecology and cognitive style is a typical example of the cross-cultural approach. In this study he collected data from 18 cultural groups, who varied in their settlement patterns, community sizes, political and social stratification and other such cultural variables. He then constructed an acculturation index, composed of: years of schooling; involvement in the wage economy and urbanisation. These two clustered independent variables (cultural group and acculturation index) were then used to test performance on cognitive tasks, such as the Koh's block test and Raven's matrices. Berry found

a strong relationship between the eco-cultural index and performance on these problem solving tasks.

3.1. Critique of cross-cultural studies

The cross-cultural approach suffers from some of the same shortcomings as the mainstream problem solving approach. It employs predominantly an experimental design and it often relies on logical reasoning as the norm for problem solving. This has led to a Western ethnocentrism in problem solving research.

3.1.1. Ethnocentrism in conceptualisation

Cole & Scribner (1974) argue that many of the earlier cross-cultural researchers showed a modernisation prejudice and introduced highly ethnocentric assertions regarding animistic, primitive and pre-logical thought of non-Western societies. Although later work is more moderate, ethnocentrism is still a major problem. For the most part the (Western) investigator either explicitly or, more typically, implicitly begins research from within her own cultural framework and turns to other cultures in order to increase the generalisability of the underlying principles that have been located 'at home' (Bornstein, 1995; Goodnow & Warton, 1992).

3.1.2. Ethnocentrism in method

Cross-cultural researchers have also been criticised for importing inappropriate Western methods and techniques in their research in other cultures.

Verster (1986) argues that cross-cultural research on the cognitive capabilities of the peoples of Africa has predominantly made uncritical use of standard European IQ testing technology and merely succeeded in replicating ethnocentric prejudices about the nature of 'primitive mentality'.

Some of the problems of applying Western standards in other cultures are expressed by Cole & Scribner (1974) and Luria (1979). They argue that to people who have been socialised outside the Western world, psychological experiments often do not have the same meaning as for those populations for whom doing experiments are culturally accepted practices. They argue that people in traditional societies refuse to remain within the boundaries of the problem presented by an experimenter. The terms of the problem are often not accepted and modified and

additional information is supplied in order to bring the statements and their implications into closer conformity with the factual world of experience.

Cole (1995) further contends that the difficulty with experimental paradigms is that the problem solving tasks used to assess cognitive processing derive from the structure and content of (Western) formal schooling. They are really mute with respect to cognitive processes in systems of activity organised for different purposes. His research revealed that Kpelle farmers are better in classifying varieties of rice than geometrical figures. The commonsense explanation for this is that one is good at what one is used to doing. The very fact that Liberian rice farmers undergo such different experiences than, for instance, American office workers is the source of barriers to the use of the familiar apparatus of experimental research (Cole, 1995). Lave (1977) came to the same conclusion. In her research on Liberian tailors she found that years of tailoring was the best predictor of performance of tailoring mathematics; years of formal schooling the best predictor for school mathematics and that there was little correlation between them.

Goodnow (1980) concurs with the above criticism and provides a tentative list of the kinds of information processing tactics called for in formal education which transfer to problems and tests devised by cross-cultural psychologists. These include: placing a high value on the search for universals; finding pairs, sets, things that go together and that are 'the same'; the demand for complete answers - answers that take all the available information into account; the belief that more inclusive solutions or descriptions are better than narrow, specific ones; the belief that guessing and trial and error are better than not making an attempt; the belief that getting to a solution quickly and efficiently is better than deliberation and meandering. Those values may not be held by adults in everyday problem solving across different cultures.

3.1.3. Culture as an independent variable

Congruent with the experimental approach of most cross-cultural research, culture is considered as an independent variable and cognitive processes as a dependent variable (Berry, 1993). Dichotomising culture and cognition as independent, separable entities constrains an understanding of their interface. The manifold ways in which culture and cognition may potentially interact are all precluded. Moreover, the cross-cultural approach does not make allowance for the role of the person. Culture and cognition are defined independently of the person who interprets and acts creatively within that cultural reality. Lucariello (1995) argues, however, that persons are not simply participants in cultural activity, nor constrained only to form mental reproductions of this activity. They interpret reality through socially and culturally shared categories.

4. Empirical studies on everyday problem solving

The two previous sections identified shortcomings of respectively the mainstream cognitive approach and the cross-cultural approach with reference to the study of everyday problem solving. The current section aims to identify the characteristics of everyday problems and problem solving strategies. It provides a short overview of the literature on the results of everyday problem solving research.

4.1. Everyday problems

It has been argued earlier in this chapter that everyday problem solving relates to everyday problems rather than to artificially designed experiments. In order to study everyday problem solving there is a need to identify what qualifies as an everyday problem.

Hartley's (1989) research on people's perception of everyday problems provides some important insight into the nature of everyday problems. The participants in his study identified problems as referring to difficulties in human relationships, but also comprising difficulties at school at work or in professional activities. A problem was most often a difficult interpersonal relation or a personal choice, less often it was a difficulty in managing the routine or special demands of school, home or the workplace. Rarely was it a challenge of mathematics, science or formalised games or puzzles. He concluded that it seems that the lay person makes a distinction between problem solving and exercising cognitive skill. Exercising cognitive skill happens in a field of expertise. There is a problem to be solved rather than a skill to be applied only when the individual does not know what the sequence of operations is or how to find that sequence.

According to Sinnott (1989) the most important differences between formal and everyday problem solving is that the latter deals with ill-structured problems. Ill-structured problems are complex problems with the following characteristics.

- The information provided is often incomplete (Strohm Kitchener, 1983).
- The premises may only be implicit in the information provided (Galotti, 1989).
- The permitted operations are left relatively unspecified (Strohm Kitchener, 1983).
Established procedures of problem solving rarely exist (Galotti, 1989).

- The desired end states are left relatively unspecified. Problems are usually not self contained. Several possible answers may exist, and those answers may vary in quality. It is often unclear when a given solution, even if it is recognised as the best available, is sufficient for one's purposes (Galotti, 1989; Strohm Kitchener, 1983).
- A considerable amount of domain specific knowledge is required (Eysenck & Keane, 1990).
- Due to the lack of 'self-containedness' of ill-structured problems, epistemic considerations and personal values are very important. The strategy that a person will develop to deal with an ill-structured problem will depend highly on her epistemic cognition (Meacham & Emont, 1989; Strohm Kitchener, 1983).

Strohm Kitchener' (1983, p. 224-225) borrows Churchman's model (Churchman, 1971) of inquiry systems (IS), which can be defined as decision making procedures required to solve problems, in order to describe the characteristics of ill-structured problems. She explains that ill-structured problems are typical for the Kantian and the dialectical IS. The problems characteristic of a Kantian IS are those for which there are two or more complementary conceptualisations or potentially valid solutions. The dilemma is to decide which set of theoretical assumptions best fit the problem and the evidence at hand and how to integrate them into a single solution. In dialectical IS different and opposing assumptions underlie each side. Individuals on opposing sides define the problem in different ways and marshal the same evidence in support of their perspective. A solution or synthesis lies in re-framing both or several perspectives into a more general model of the problem.

4.2. Everyday problem solving strategies for everyday problems

It has been argued in Section 2.2.3 of this chapter that everyday problem solving does not follow formal reasoning rules. Everyday problems, as described in Section 4.1., require a different type of problem solving strategy from those typically encountered in experiments. Some studies have focused on everyday problem solving strategies and the skills involved in employing such strategies. A summary of the main findings follows.

- Everyday problem solving involves cognitive, affective and conative elements (Willis and Shaie, 1986). To solve problems one must be motivated (Meacham & Emont, 1989).
- In everyday problem solving the problem is contextualised within a specific physical and interpersonal context (Willis and Shaie, 1986).
- Everyday problem solving often involves redefining the problem (Meacham and Emont, 1989; Scribner, 1986).

- Analogies and metaphors are frequently used in everyday problem solving (Rogoff, 1984). It is argued that they permit the use of auxiliary structures that can be used as supplementary models in everyday reasoning. They provide ways in which new structures are introduced into problems to aid in reaching a solution.
- Everyday problem solvers apply schemata based on domain specific knowledge (Cole & Cole, 1989; Johnson-Laird 1983; Lave, 1988; Willis & Schaie, 1986). D'Andrade (1981) argues that these models consist of ordinary representations of the world and are used to assess whether certain things could or could not happen. He further argues that these representations are often surprisingly concrete and particular.
- Everyday problem solving makes use of hunches (Scribner, 1986).
- Everyday problem solving involves listening to expert opinion (Strohm Kitchener, 1983).
- Everyday problem solvers use others through interpersonal problem solving conversation (Hartley, 1989; Meacham and Emont, 1989; Scribner, 1986). Meacham & Emont (1989) argue that it is in dialogue with others that one's mental sets are broken., as friends suggest new ways of thinking about situations, point to inconsistencies in one's logic, provide a counterbalance to one's emotional attachments in a situation and suggest new means for solving problems.
- Everyday problem solving involves arguing, integrating or synthesising diverse data and opposing opinions (Strohm-Kitchener, 1983). Chapman (1993) argues that since everyday problem solving involves interpersonal argumentation, the inferential structure of everyday problem solving is influenced by the structure of argumentation (pragmatic rules of language) and this structure differs substantially from formal reasoning. According to Chapman (1993), argumentation is an activity by which an attempt is made to convince other persons of a particular point of view by providing them with reasons for doing so. Argumentation deserves to be considered as an example of reasoning, both because it is based on an appeal to reason and because it involves inferential processes. For example inference is involved in the effort to maintain consistency among one's assertions in the course of a discussion. A common move in argumentation is to show that some of one's opponents statements have implications which conflict with other propositions that the opponent accepts. The avoidance of inconsistency among one's commitments in argumentative discourse corresponds to the logical principle of non contradiction The identification of the unstated commitments, implied by a stated proposition, follows inferential processes that have close structural parallels in deductive logic. However, the context of inference in interpersonal argumentation differs from that of deductive logic in some fundamental ways. For example, persons engaging in argumentation may make inferences based on assumptions about a speaker's intentions in

affirming a given proposition. In contrast, such interpretative assumptions do not have a place in logical deduction, and psychologists studying reasoning as intra-psychic inference accordingly consider them as irrelevant and misleading. If in contrast the concept of reasoning is expanded to include the interpersonal argumentation, then such interpretive processes become part of the phenomena to be studied. In argumentation, arguments are often based on forms of justification that are weaker than deductive inference, this is called presumptive evidence, which is justifying a conclusion by appealing to what is known to be normally or typically the case, under the assumption that one is not dealing with an atypical case.

Grice (1975) elaborates on the idea that everyday reasoning may retain more of its discursive origins than does formal reasoning. He provides a list of discursive norms. These norms include what he calls 'The maxim of quantity', which means 'provide as much information as is required to communicate your meaning but not more than is necessary'; 'The maxim of quality', which means 'be truthful and avoid statements that are either false or unfounded'; 'The maxim of reality', which implies 'be relevant' and 'The maxim of manner', which implies 'avoid ambiguity and obscurity'. Grice further argues that the underlying assumption is that successful communication depends on, at least, general adherence to these maxims. Accordingly, competent speakers acquire an expectation that those norms will be adhered to by anyone seriously intending to engage in communicative interaction. Most of the common errors of formal reasoning may be explained in terms of the conflict between the syntactic rules of logic and pragmatic rules of discourse such as Grice's maxims.

The review of research data on everyday problems and everyday problem solving strategies confirms the arguments made earlier in this study, namely that there are important differences between the mainstream and everyday cognition approaches to problem solving. In the latter, problems are perceived to relate to human relationships and are often ill-structured. In contrast, the mainstream approach identified problems as logical reasoning tasks. In the mainstream approach problem solving was mainly identified as an internal cognitive process whereby the individual made a search in a problem space. Everyday problem solving is defined as a socially contextualised process involving cognitive, affective and conative elements.

5. Towards a framework for understanding everyday problem solving

The realisation of the shortcomings of the dominant problem solving research paradigm for the study of everyday cognition has obviated the need for a paradigm for problem solving research that focuses on people's everyday lives. In this section the background theories and concepts

for a framework for everyday problem solving are discussed. Two overlapping areas of psychology are drawn upon: the emerging field of situated cognition, which has its roots in a Vygotskian perspective and, recent developments in theory on meta-cognition. With regard to the former, particular attention is given to the centrality of activity as a unit of analysis for understanding cognition and the idea of mediated action. Under meta-cognition three elements are considered: epistemic, conceptual and procedural cognition.. In Section 5.3 a framework, based on these elements, is presented.

5.1. Situated cognition

Several studies have emphasised the need for the study of situated cognition or cognition embedded in an everyday socio-cultural setting. (Goodnow, 1980; Lave & Wenger, 1991; Rogoff, 1984; Rogoff, 1990; Scribner 1984; Sternberg and Wagner, 1986). This approach has been called either a socio-cultural approach (Wertsch, 1991), a socio-genetic approach (Valsiner & Leung, 1994) or a cultural psychology (Shweder, 1989). Some studies focused specifically on problem solving in everyday situations. Such studies are: Cole and Bruner's (1971) study of the mathematical problem solving of the Kpelle rice farmers of central Liberia; Scribner's (1986) study of dairy workers' strategies for loading crates; Saxe's (1991) mathematics of candy selling by Brazilian children; De la Rocha's (1985) weight watchers dieters and Lave's work on tailors' strategies for measurement (1990) and Southern Californian housewives' strategies for finding best buys in supermarkets (1988).

Vygotsky (1978) pioneered the 'situated cognition' approach by emphasising the importance of doing research in practical situations. He contends that since all cognitive activity is embedded in the socio-historical contexts of the day, effective interpretations must be offered, not from within the controlled conditions of a laboratory setting, specifically isolated from the confounding influences of everyday affairs, but specifically from within actual everyday social life.

Lave (1988), based on the outcome of her research, argues strongly against the use of the laboratory culture in which experimenters call all the shots, not only by structuring problems in their own terms but also by establishing a normative definition of the correct solution to these problems, thereby confirming a narrowly elitist definition of human thinking - the Western positivist model. She argues for the need to study and value the everyday world of human problem solving in cultural context, in which people actually engage in cognitive activity involving problems they define in situations of immediate relevance to them and in which there are no expertly defined normative standards of correctness. She believes that a person's point of view is essential if one's interest lies in understanding cognitive processes. Cole (1995),

based on his work with school children in Liberia, came to a similar conclusion to Lave and argues that an explication of the cultural foundations of thinking needs to begin from an analysis of what people do in their everyday lives.

5.1.1. Activity as the focus for everyday problem solving research

The notion of activity is central to the study of problem solving in a 'situated cognition' approach. One of the important premises of activity theory is that human behaviour and thinking, and by implication problem solving, occur within meaningful contexts as people conduct goal-directed activities (Gauvain, 1995; Leont'ev, 1981; Wertsch, 1985).

Vygotsky's (1978) ideas on activity and cognition are central to the tenets of this study. For Vygotsky (1962) higher mental functions - amongst which is problem solving - emerge when mind and action join together in purposeful activity. He argues that in order to understand the intellectual processes involved, it is critical to examine activity as a whole and not its component parts which alone cannot account for the psychological structure of a person's performance. He further argues that actions have both operational and intentional aspects that derive structure and meaning from the goal or purpose of the activity.

Vygotsky's notion of activity is influenced by Marx's theory, which poses that people come to know the world through activity (Thorlindsson, 1983). Cognition is not a passive but an active way of approaching reality. Cognition involves and rests on human practical activity. How people perceive and understand reality depends on what kind of activity they are engaged in and what kind of social relations they enter into. Knowledge is produced and reproduced in relation to the material aspects of one's life, which are tied to the structure of people's relationships with each other, manifest in human practical activity.

Leont'ev's (1981) elaboration on the notion of activity adds to the understanding of the concept. According to Leont'ev, activities are composed of actions, which are systems of co-ordination in the service of goals, which represent intermediate steps in satisfying the motive. Actions in turn are composed of operations, the means whereby an action is carried out under specified constraints.

Vygotsky (1978) emphasises that activity is informed or structured by a social-cultural-historical context. He argues that people's actions are conducted in the context of the activities of the other people with whom they share their lives. In other words, even the apparently most individual and autonomous actions are situated in a context which must itself be viewed as an active component in the structuring of their activities.

5.1.2. The dialectical interface between the individual and the socio-cultural: cultural mediation

The social nature of goal-directed action, which is central to a situated view of cognition, necessitates a rejection of the strict separation between the individual and her social and cultural environment. The individual and the social cannot be seen respectively as dependent and independent variable but need to be defined as mutually constitutive elements of a single, interacting system. Eckensberger (1979) suggests that the action itself can be regarded as the interface between the individual and the situational context. Several other authors emphasise that the activity, which forms the unit of analysis for study, should reflect its social origins (Downs & Liben, 1993; Newman, Griffin & Cole, 1989; Rogoff, 1984; Scribner, 1986; Wertsch, 1985).

It is argued, in accordance with other authors, that the relation between individual and environment is of a dialectical nature. Neisser (1968) contends that properties of the environment do not enter the problem solving process deterministically or automatically, but assume a function only through the initiative and constructive actions of the problem solver. Valsiner & Leung (1994) and Wertsch (1995) also emphasises the active contribution of social and individual. They contend that although human beings learn to think and solve problems in their daily lives through the appropriation, use and adaptation of social practices and material and symbolic tools developed by their culture over time, this does not mean that the organism has no contribution. Culture is a shared system of meaning that humans create and sustain.

Bhaskar's (1979) model of the human - society dialectic adds a useful dimension to the framework proposed in the study. He argues that people in their conscious, purposeful activity, for the most part unconsciously reproduce and occasionally transform society. He contends that people do not marry to reproduce the nuclear family or work to sustain the capitalist economy. Yet it is nevertheless the unintended consequence of, as it is also a necessary condition for, their activity. Moreover, when social forms change, the explanation will not necessary lie in the desires of agents to change them that way, though as a very important theoretical and political limit it may do so. Bhaskar (1975) emphasises the need to distinguish then between the genesis of human activity, lying in the reasons, intentions and plans for people, on the one hand and the structures governing the reproduction and transformation of social activities on the other. It should be noted that engagement in a social activity is itself a conscious human action which may, in general, be described either in terms of the agent's reason for engaging in it or in terms of its social function or role. When praxis is seen as process, human choice becomes functional necessity. The model of the society/person

connection proposed by Bhaskar then can be summarised as follows. People do not create society, for it always pre-exists them and is a necessary condition for their activity. Rather society must be regarded as an ensemble of structures, practices and conventions which individuals reproduce or transform, but which would not exist unless they did so. Society does not exist independently of human activity. But it is not the product of it. On the other hand actors are usually capable of reflecting on their action, but actions also have a tacit component. The knowledgeability of humans is always bounded by the unacknowledged conditions of action on one side and by its unintended consequences on the other.

In arguing for an individual-environment dialectic it is important to acknowledge the complex nature of the environment component. The cultural environment consists of a social and a spatial component (Downs & Liben, 1993). These interact with each other. The individual's access to the social aspects of the environment may be mediated by the physical aspects of the environment and *vice versa*. Places in different physical environments (for example low density rural areas versus medium density suburban areas) offer people very different patterns of spatial access and hence social interaction with peers, family members and other adults. In turn, the person's opportunity to interact, to explore and experience places in the physical environment may itself be mediated by the social environment. There is an inseparability and reciprocity between the shape of society and space.

In order to build an effective framework for everyday problem solving research the notion of 'socio-cultural embedded action' is operationalised using the concept of mediation. It is argued that the dialectical process between individual and society involves two levels of mediation. One level relates to cultural tools that individuals employ in their social activities, the other level relates to mediation by others in the process of the individual's internalisation of these cultural tools. These two levels of mediation are discussed in the following two sections.

5.1.2.1. Mediational means

Wertsch (1995, p.89) defines mediational means as the societal things people employ when acting in order to achieve some goal. In defining the nature of mediational means, Wertsch makes some points akin to those of Bhaskar (1979). He argues that mediational means embody a tension between the potential they have to shape action in accordance with convention on the one hand and the unique use of these cultural means with all the accompanying unpredictability and creativity on the other (p.91). He further argues that mediational means both empower and constrain the individual (p.93) and that they come into being for reasons other than to facilitate many of the kind of actions they in fact end up shaping (p.94).

Within the proposed framework it is argued that mediational means of different orders can be distinguished. First, there are cultural tools that structure the world for people and enable them to see things in a certain way. These come in the form of sign systems or in more complex groupings, such as cultural models. Second, there are values and beliefs which are mediational means in the sense that they provide the boundary conditions for actions and activity. They determine whether an activity is worthwhile and if certain ways of acting are acceptable. Third, there are cultural goals which shape the cognitive processes of the individual. A description of the different mediational means follows:

(i) Sign systems and cultural models

Vygotsky (1962) emphasises the importance of socio-culturally defined sign systems as tools in the interface between social and psychological. He contends that what fundamentally determines the socio-genesis of the higher psychological functions is the use of semiotic systems (sign systems) as a set of tools which have evolved historically. These typify the given culture and a child learns these via the other and internalises them, first as a means of communication and later as a means of her own behaviour. As Vygotsky (1962, p. 56) states, all the higher psychological functions are mediated processes and signs are the basic means used to master and direct them. Vygotsky argued that language is the most important mediational tool. He believes that the primary function of speech is social, namely communication. It is that social speech that is subsequently internalised in an inner self-regulatory speech. Valsiner & Leung (1994) concur with Vygotsky. They argue that human beings are sign-constructing and sign-using organisms. The signs that are constructed by active human beings are bound by the kind of signs that are afforded by the phylogenetic history of the species.

D'Andrade (1990) focuses on the development of cultural models as the link between social and individual. According to d'Andrade (1990, p.99) cultural models are cognitive schemata that are inter-subjectively shared by a social group. Cognitive schemata can be defined as conceptual abstractions that mediate between stimuli received by the sense organs and behaviour responses. They are abstractions that serve as the basis for all human information processing (Casson, 1983). Because cultural models are inter-subjectively shared, interpretations made about the world on the basis of cultural models are experienced as obvious facts of the world. As a result, cultural models need not be made explicit, since what is obvious need not be stated. In other words, cultural models consist mainly of tacit knowledge.

The role of cultural models in problem solving will be further elaborated on in Section 5.2.2. on conceptual and procedural knowledge.

(ii) Values and beliefs

Baron (1985) emphasises the importance of culture for providing beliefs and values as a framework for cognitive development and performance. He proposes that problem solving fundamentally addresses decisions and beliefs including decisions about what beliefs to believe. Good thinking yields beliefs that are functional in the world as the person encounters it, decisions that advance the person's general goals.

Gauvain (1995) also emphasises the importance of a value system for the shaping of problem solving activity. Values such as co-operation and competition, individualism, sex roles and traditionalism have been extensively studied in their relation to cognition. She further argues that cultural context helps to determine human activity by prescribing appropriate ways of participating in and managing cognitive activity (Gauvain, 1995, p.31). Goodnow and Warton (1992) add that cultures do not necessarily provide a single message or provide a single explanation of an event or a single correct solution for a problem, they motivate for what they call a 'pluralist' view to context, which allows for co-existing alternative beliefs and social representations of problems.

The role of values and beliefs in the shaping of problem solving strategies will be re-visited in Section 5.2.1. on epistemic knowledge.

(iii) Goals

Guberman & Greenfield (1991) argue that a major way in which the socio-cultural context comes to be internalised in individual cognitive processes is in the form of goal representation. Recent research demonstrates how an individual's daily activities are goal-directed and reflect the culture within which the individuals participate (Gauvain, 1995). The work of Saxe (1991), for instance, shows that mathematical problem solving is handled differently and more successfully when the goal of the mathematical exercise is culturally meaningful. These goals are, however, not passively accepted and are not always completely formulated in advance and unchangeable. Gauvain (1995, p. 32) argues that some goals may be purposefully left unspecified, enabling a person to take advantage of opportunities in the context in the course of refining the goal.

5.1.2.2. Mediated action

Goals, beliefs and schemata become psychologically significant to the individual through an ongoing process of mediated action. This is a process by which the individual's action is shaped by her environment, while simultaneously shaping that environment. Craig (1990) aptly argues that knowing is transformative, the being which acts and the tasks acted upon are transformed through this transaction, and this constitutes the continuous spiral of individual-social development.

Vygotsky's socio-historical perspective is again critical for the understanding of the notion of mediated activity. Vygotsky (1978) focuses on higher psychological functions, that is complex human behaviour that combine tools or instrumental materials with symbolic processes to accomplish psychological activity. For Vygotsky (1962), higher mental functions can only be understood as dynamic processes that embody their own individual and social history as well as their potential. It is through social mediation that the higher psychological functions evolve historically in humans. Higher psychological functions appear twice, or on two planes.: first, they appear on the social plane (between people) and then on a psychological plane (intra-psychological). According to Vygotsky (1978) the internalisation of the social into the psychological occurs through a process of mediated activity in a zone of proximal development, which he defines as 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, p.86). The zone of proximal development can also be regarded in its general conception as the structure for joint activity in any context where there are participants who exercise differential responsibility by virtue of different expertise. For Vygotsky (1962) ideal partners are not equal, but the inequality is in skills and understanding rather than in power. For this reason either adults or peers can bring about cognitive growth, but for cognitive development to occur in the course of interacting with a peer, the partner should be more capable.

This mediation process has also been defined as a process of enculturation. Perkins, Jay & Tishman (1993) list four dimensions of enculturation: cultural exemplars, which are artifacts and people modeling or otherwise exemplifying cultural knowledge; direct transmission of key informants, which is the straight forward teaching of concepts, vocabularies and information related to cultural knowledge; involvement in cultural activities, which entails 'hands on' practice, using aspects of cultural knowledge; and, involvement in cultural interactions, which refers to learner/learner and mentor/learner interpersonal exchange, using and embodying cultural knowledge.

The mediation process is considered as socio-culturally specific. Craig (1990) contends that universal (human) capacities for problem solving find particular expressions which are space and time dependent. The individual-social development, over time and space, produces problem solving situations which essentially define and constrain that development and the tasks which are part of it. Rogoff (in Cole & Cole, 1989) similarly argues that culture influences the child's development, by arranging the occurrence of specific contexts and the relative frequency with which particular contexts are encountered and which will foster different skills.

5.2. The role of meta-cognition in problem solving

The information processing approach has revealed a deeper understanding of cognition through the introduction of the notion of meta-cognition. Meta-cognition is a form of cognition that encompasses an awareness of the goals of cognitive activity as well as the plans and procedures for reaching them. According to Flavell (1976) meta-cognition concerns the monitoring of one's cognitive processes. A distinction can be made between knowing about one's own individual cognitive processes - what they are, how they work and when to apply them - and knowing about knowledge and the validity of truth claims in general. In recent years, through the work of Craig (1990), Greeno (1989) and Strohm Kitchener (1983), meta-cognitive studies have been linked to the 'situated cognition' view.

Meta-cognition is examined in this study with the purpose of enriching the proposed framework for the study of everyday problem solving. Two components of the everyday cognition framework, namely cultural models, and cultural beliefs will be revisited in terms of their meta-cognitive nature.

Three meta-cognitive processes can be distinguished, namely epistemic, conceptual and procedural processes.

5.2.1. The importance of epistemic knowledge in problem solving

According to Strohm Kitchener (1983), epistemic cognition involves the processes an individual invokes to monitor the epistemic nature of problems and the truth value of alternative solutions.

Epistemic knowledge includes:

- the individual's knowledge about the limits of knowing, the certainty of knowing and the criteria for knowing;
- the knowledge used to identify and choose between the forms of solution required for different problem types;
- rules about what may count as evidence for specific knowledge claims;
- criteria by which knowledge or claims of knowledge can be evaluated.

It is argued, that in order to understand how people solve everyday problems, there is a need to study their epistemic assumptions. According to Strohm Kitchener (1983) epistemic assumptions provide a framework through which individuals understand the nature of problems and define and choose acceptable strategies and solutions. Research has shown that individuals have implicit theories of intelligence, abilities, knowing and learning that influence the fundamental nature of the activities of knowing, problem solving and learning (Belenky, Clinchy, Goldberger & Tarule, 1986; Dweck, 1983; Goodnow, 1980).

Epistemic cognition may take different forms depending on different underlying epistemic assumptions, such as the assumption that there is an objective reality that is absolutely knowable and known, or alternatively that objective knowledge does not exist in any sense, or that knowledge is the outcome of ongoing critical inquiry (Strohm Kitchener, 1983). Strohm Kitchener (1983) adds that differences in epistemic assumptions are particularly critical when individuals are engaged in identifying appropriate solutions for ill-structured problems.

In accordance with the argument put forward in Section 5.1.2.1.(ii) epistemic beliefs are shaped by the intricate interplay between individual and environment. According to Greeno (1989) thinking is situated in contexts of beliefs and understandings about cognition that differ between individuals and social groups, and fundamental properties of thinking and learning are determined by these contexts. Arce and Long (1992) argue that contexts provide different grounds for the belief in and different procedures for validation of knowledge claims, in other words distinct epistemic values.

Markus and Kitayama (1991) have provided interesting data on epistemic consequences of the psycho-social construal of the self. Their work is cited here as an in-depth example of cultural influence on epistemic knowledge.

Markus and Kitayama argue that people in different cultures have strikingly different construals of the self, of others and of the inter-dependence of the two. These construals influence, and in

many cases determine, the very nature of problem solving. They distinguish between an independent (mostly associated with western people) and an inter-dependent (mostly associated with non-western people) view of the self. Since this study deals with problem solving in a non-Western context the example of the inter-dependent view of the self will be used to exemplify the epistemic consequences of culture.

For those with inter-dependent selves some aspects of knowledge representation and some of the processes involved in social and non-social thinking alike are influenced by a pervasive attentiveness to the relevant others in the social context. Thus one's actions are more likely to be seen as 'situationally bound', and characterisations of the individual will include this context. In the inter-dependent self there is a fundamental bond of human beings to each other. An imperative of these cultures is to maintain this inter-dependence among individuals. Experiencing inter-dependence entails seeing oneself as part of an encompassing social relationship and recognising that one's behaviour is determined, contingent on, and to a large extent organised by, what the actor perceives to be the thoughts, feelings and actions of others in the relationship. Within such construal, the self becomes most meaningful and complete when it is cast in the appropriate social relationship. The inter-dependent self possesses and expresses a set of internal attributes, such as abilities, opinions, judgments and personality characteristics. However these internal attributes are understood as situation specific and thus as sometimes elusive and unreliable. As such they are unlikely to assume a powerful role in regulating overt behaviour. In many domains of social life one's abilities and opinions are assigned only secondary roles - they must instead be constantly controlled to come to terms with the primary task of inter-dependence. Such voluntary control of the inner attributes constitute the core of the cultural ideal of becoming mature. An inter-dependent self cannot be properly characterised as a bounded whole, for it changes structure with the nature of the particular social situation. The reciprocal inter-dependence with others, that is the sign of the inter-dependent self esteem, seems to require constant engagement of what Mead (1934) meant by taking the role of the other. It involves the willingness and ability to feel and think what others are feeling and thinking to absorb this information without being told and then to help others satisfy their wishes and realise their goals.

Some consequences of the idea of an inter-dependent self for problem solving can be derived.

- Inter dependent selves will engage in greater cognitive elaboration of the other or the self-in-relation-to-other during problem identification and problem solving.
- The unit of representation of a problem will include the self and the other in a relatively specific social context in which the self and the other are embedded.
- The problem solving process is inseparable from the content. Global inferences about persons and contexts are regarded as not meaningful or informative.

- Problem solving involves establishing a connection or an inter-dependence among the elements rather than deriving abstraction and analysing common features.

Irvine's (1969a, 1970) analysis of beliefs of the people of Mashonaland (Zimbabwe) is another example of how culture influences epistemic values. Irvine concludes that intelligent acts for the Mashona are to be understood in the context of a world-view that is entirely different to that in the West. Important cognitive abilities defined by the Mashona are alertness, observation and vigilance and correct inference from environmental cues. Decision making, according to the Mashona, demand carefulness and foresight on the one hand and opportunism on the other hand. Conformity, both in personal relationships and in relation to the spirit-world serves as a criterion for judging the goodness (intelligence) of behaviour. The emphasis on relationships, both with the spiritual forces of the living and with the ancestral spirits of dead kin, implies that cognitive acts have no meaning outside of the affective climate.

The examples discussed in this section demonstrate the importance of epistemic values for people's actions. It is, therefore, considered necessary to include an inquiry into the epistemic values underpinning problem solving in everyday problem solving research.

5.2.2. Conceptual and procedural knowledge in problem solving

Conceptual knowledge of a problem can be defined as a mental representation of that problem, a 'knowing that'. According to Hiebert (1986) conceptual knowledge can be thought of as a connected web of knowledge - a network in which the linking relationships are as prominent as the discrete pieces of information. Relationships pervade the individual facts and propositions so that all pieces of information are linked to some network. In fact a unit of conceptual knowledge cannot be an isolated piece of information, by definition it is part of conceptual knowledge only if the holder recognises its relationship to other pieces of information. Sub-types of concepts include taxonomic categories, causal models, spatial representation and temporal representation.

Procedural knowledge is 'knowing how', or the knowledge of the steps required to attain a specific goal. Procedures are mental representations that detail the actions that one should perform to attain a goal and the order in which these actions need to be performed. Procedures have been characterised using constructs such as skills, strategies and rules (Byrnes, 1992; Hatano, 1982).

It is argued, that an insight into conceptual and procedural knowledge of individuals and groups involved in problem solving activities is important for the understanding of everyday problem solving.

In accordance with section 5.1.2.1.(i) on cultural models, conceptual and procedural knowledge of individuals and groups need to be regarded as the result of an intricate interplay between culture and individual. D'Andrade (1981) argues that procedural and conceptual knowledge are inter-subjectively shared within a particular culture. As a result conceptual and procedural knowledge are often tacit within a particular culture and cannot easily be described by the members of that culture. Individuals apply the conceptual and procedural knowledge common to their social setting but cannot produce a good description of them.

Wearne and Hiebert (1989) assume that there are separate conceptual and procedural knowledge systems, but indicate that there are important inter-linkages between them. Several studies emphasise the interplay between conceptual and procedural knowledge.

Some studies have shown that a high level of conceptual knowledge facilitates the execution of procedures (Byrnes & Wasik 1991; Haselhorn and Korkel, 1986; Pinker, 1984). Hiebert (1986) provides various arguments for the importance of the influence of conceptual knowledge on procedural knowledge. He contends that conceptual knowledge provides tools for the development of procedures; it helps with recalling procedures and it enhances problem representation. Problems are solved by building mental representations of the problems and then dealing with the representations to select appropriate procedures. Relevant conceptual knowledge can be brought to bear on the task by elaborating the problem context. Related conceptual knowledge is accessed and the problem representation is enriched. Problem representations, drawing on conceptual knowledge to place the problem in a meaningful context, influence the selection of procedures and raise the accuracy and efficiency of the applied procedure. Conceptual knowledge can be of use as an executive control in the use of procedures. It can monitor the choice of appropriate procedure, discourage the selection of inappropriate procedures and monitor procedural outcomes. As has been mentioned before, the amount of available conceptual knowledge in a specific problem domain differentiates between novice and expert problem solver.

Glaser and Bassok (1989, p. 636) and Hatano (1982) emphasise the dialectical interplay between conceptual and procedural knowledge. They argue that conditionalised knowledge of procedures can be acquired only through actual use of declarative knowledge in solving problems. The initial solution is generated by applying the available declarative knowledge, using general problem solving heuristics or weak methods such as means-end search, or

analogy to an example. This knowledge compilation occurs through a process of proceduralisation (comparing the problem states before and after generating the solution and creating production rules and composition, collapsing a sequence of productions into a single production). Through practice people may gain new insights into the corresponding conceptual knowledge underlying a skill. This new knowledge in turn provides additional understanding of the utility of the skill. Through this process, the skill gains meaning and becomes available for use in new domains. It is assumed that people can form the conceptual knowledge through performing the procedural skill and through that conceptual knowledge they can invent other procedural knowledge. This process is useful for explaining the process by which a novice becomes an expert problem solver.

Hatano (1982) makes a point of particular interest to this study, which deals with problem solving strategies in a context of rapid social change. He argues that the elaboration of conceptual knowledge through variation in the use of practical skills (procedures) is most likely to occur in times of rapid cultural change. The studies of Brenner (1985) and Saxe (1985) illustrate this. They documented the elaboration of indigenous knowledge by children upon their introduction to Western style schooling. They believe that new experiences, such as entering a novel educational system provide children with a context to modify their existing procedural knowledge in the service of novel goals, resulting in the construction of new conceptual knowledge.

5.3. The framework

Taking into account the various arguments made in favour of a 'situated cognition' approach, a framework for the study of everyday problem solving can be put forward. This framework intends to be practical in the sense that it provides a tool for research, rather than being a mere theoretical exposition. With particular reference to this doctoral thesis it provides a framework for selecting the unit of analysis for the empirical component of the study as well as a tool for the analysis and interpretation of the empirical data. The framework is presented in Figure 1.

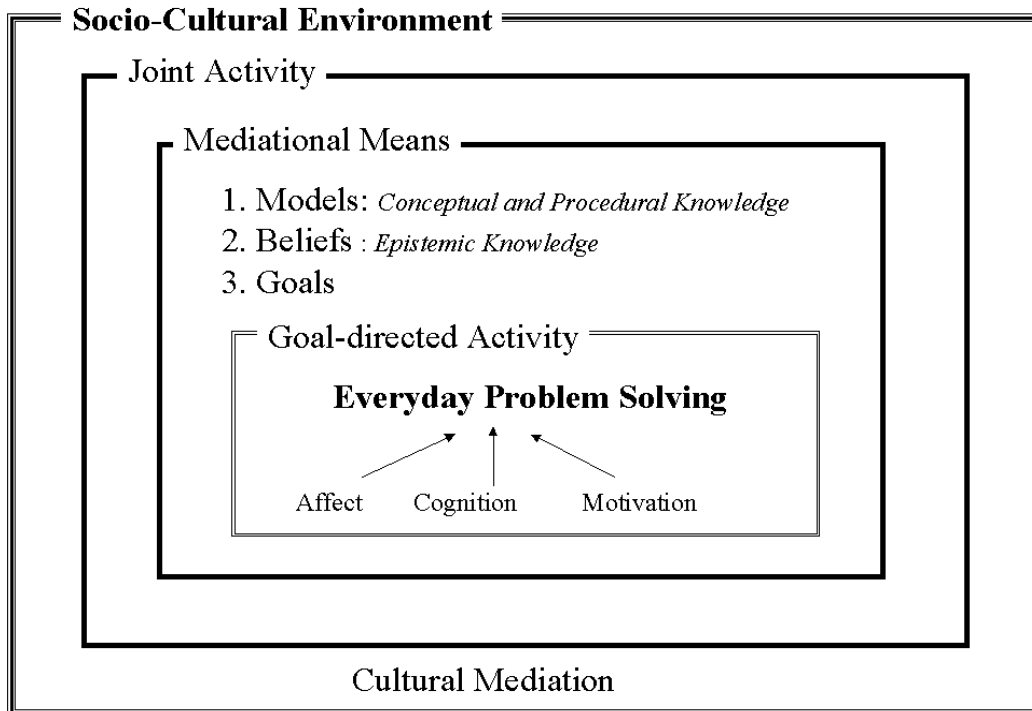


Figure 1. Framework for the study of everyday problem solving

The tenets of the framework follow.

- Everyday problem solving is a goal-directed activity by an individual (or group) that involves affective, cognitive and conative aspects. It is a meaningful activity in the sense that the individual identifies a goal and makes an intentional attempt to reach that goal. That intentionality is influenced by the person's cognitive and affective interpretation of the problem context and her values and beliefs.
- Problem solving activity embodies an intricate dialectical interface between individual and environment. This interrelationship can be operationalised by the notion of cultural mediation. This mediation has two levels. The first level consists of mediational means and the second of joint activity.
- Mediational means are the societal things people employ when acting in order to achieve some goal (Wertsch,1995 p.89). Three different types of mediational means can be identified, cultural values and beliefs, cultural goals and cultural models. These can be accessed through the study of their meta-cognitive underpinnings. Cultural models in problem solving can be accessed through people's conceptual and procedural knowledge. Cultural beliefs and values can be accessed through people's epistemic knowledge. The cultural goals can be derived directly from the identification of people's goal-directed-everyday activities.

- Joint activity is the process by which the individual, through interaction with others, internalises the mediational means.

5.3.1. Some methodological implications of the framework

The everyday problem solving framework, suggested for the study, differs considerably from the mainstream problem solving paradigm. This needs to be reflected in the methodology used in the study. Some important methodological implications of the framework follow.

- In order to capture the dialectical interplay between individual and environment, the research needs to focus on activity between people.
- There is a need to identify everyday problems. To find appropriate tasks in which to study everyday problem solving actions, it is necessary to take cognisance of the everyday, culturally defined activities of the members of a society (Cole, Gay, Glick & Sharp, 1971; Cole & Scribner, 1974; Goodnow, 1980). Cole (1995) states that appropriate research should therefore begin with an analysis of the way in which human thinking occurs within culturally organised forms of activity. This involves the analysis of local discourse and the use of field notes and videotapes to document thinking in-situ, and attention to the way in which individuals' responses fit into the activity that they help to constitute.
- There is a need to develop indigenous concepts of problem solving. The contention that everyday problem solving research needs to be situated within particular societal or eco-cultural contexts, implies that it needs to uncover indigenous conceptions of notions such as problem and problem solving strategy as part of the research. Kim & Berry (1989) concur with the need to access indigenous interpretations of problem solving and add that this requires a collective approach. They argue that it is accepted within the field of everyday cognitive research that there is a need for obtaining of subjective data in which the person's cognitive interpretation and construction of events themselves are important. However, since cognitive life is not merely an individual phenomenon, but is influenced by the cultural norms and practices with which one grows up, collective views need to be studied and drawn into the interpretation of the obtained data.

6. A third motivation for the study

In Chapter 2, a motivation for the current study was provided from within a people-centered development paradigm. In Chapter 3, an impetus for the study was traced back to a personal history in development work. A third motivation comes from the realisation that, while

everyday cognition research has an important contribution to make, relatively few researchers have conducted research within an 'everyday cognition' approach (Wertsch, 1995).

The lack of support for this approach seems to be particularly evident in Africa. Several reasons for the scarcity of everyday problem solving research can be identified. There is a lack of established appropriate methodology; there is a lack of theoretical models; there is a lack of appreciation from the mainstream scientific community and lastly the pragmatic issues raised by the study of this type of reasoning seem overwhelming, especially in contrast to the relatively few practical difficulties of studying formal reasoning. In the latter the experimenter supplies the premises and can manipulate the situation by changing the content of the problem while keeping the structure constant.

Sinnott (1993) argues for the importance of everyday cognition research. According to Sinnott the study of everyday cognition allows us to ask better questions. It gives us a whole different set of questions related to process and dialogue. This is very important because in the everyday cognitive world nothing lasts for long and process is our most important product. She further argues that because everyday cognitive research is very complicated, it pulls our attention to narrowing that complexity to a meaningful but tolerable level, to choosing a truth..

This study aims to provide a framework for the study of everyday cognition that contributes to the theory of everyday cognition and that provides cognitive psychologist with a methodological tool to conduct everyday cognition research.

CHAPTER 5.

AN INTERPRETIVE PARADIGM FOR THE STUDY OF EVERYDAY PROBLEM SOLVING

1. Introduction

In this chapter the aim is to provide the philosophical framework that underpins this study congruent with the arguments made in both Chapters 2 and 4. The methodological considerations introduced in the previous chapter, which derive from an everyday cognition approach, are further substantiated by this framework. What follows is a substantial elaboration on the philosophical framework that underpins the study.

2. Paradigms

A general paradigm may be regarded as a set of basic beliefs (or metaphysics) that deals with first principles. It represents a world view that defines, for its holder, the nature of the world, the nature of individuals and their possible relations to the world or parts of it. The beliefs are basic in the sense that they have to be accepted simply on faith. There is no way to establish their ultimate truthfulness (Guba & Lincoln, 1994).

Research paradigms, which are paradigms specifically developed for the purpose of research endeavours, define for inquirers what it is they are about and what falls within and outside legitimate inquiry (Guba & Lincoln, 1994). The basic beliefs that define research paradigms can be summarised by the responses given by proponents of any given paradigm to four fundamental questions. These are interconnected in such a way that the answer given to one question, constrains the answers to the others. The ontological question refers to the form and nature of reality and what it is that can be known about it. The epistemological question refers to the nature of the relationship between the knower or would-be-knower and what can be known. This includes what is considered as valid knowledge. The teleological question relates to the aim of the inquiry. Finally, the methodological question refers to how the researcher can go about finding out whatever she believes can be known (Guba & Lincoln, 1994).

This chapter deals with answering three of the four paradigmatic questions from the researcher's perspective. The ontological, the epistemological and the teleological issues will be addressed in the following sections of this chapter. The methodological issue is addressed in the next chapter. Before turning to those questions, interpretivism and realism, the two

philosophical paradigms underpinning this research, will be outlined. Only those elements of relevance for the current study will be dealt with.

3. The interpretive paradigm

Hermeneutics, social constructionism and interpretivism are terms that routinely appear in the lexicon of social science methodologists and philosophers. Yet their particular meanings are shaped by the intent of their users. As general descriptors of a loosely coupled family the above strands of interpretive inquiry can be defined as a philosophy of the interpretation of meaning. Interpretivists, in general, focus on the processes by which meanings are created, negotiated, sustained and modified within a specific context of human action (Schwandt, 1994).

The world of lived reality, and situation-specific meanings, constitute the general object of interpretivists' investigations. This world is considered to be constructed by social actors. That is, particular actors, in particular places, at particular times, fashion meaning out of events and phenomena through prolonged, complex processes of social interaction involving history, language and action (Schwandt, 1994). Hermeneutics holds that human behaviour is purposive. Social agents are considered autonomous, intentional, active and goal-directed. They construe, construct and interpret their own behaviour and that of their fellow agents.

According to Packer & Addison (1989a, p. 23) interpretive inquiry begins not from an absolute origin of unquestionable data or totally consistent logic, but at a place delineated by our everyday participatory understanding of people and events. It begins there in full awareness that this understanding is corrigible, and that it is partial in the sense of being incomplete and perspectival. Truth is not a matter of correspondence between a theory or account and the way things really are, it is a matter of uncovering. What is uncovered in an interpretation depends on the access we have developed. What is uncovered in the course of a true interpretation is a solution to the problem, the confusion, the question, the concern and the breakdown in understanding that motivated the inquiry in the first place.

Packer & Addison (1989a, p.34) argue that the circularity of understanding and interpretation is not vicious. If inquiry is shaped and motivated by a practical concern or difficulty, and if, as a consequence of interpretation, a solution to that difficulty is uncovered, one should not consider this as finding only what one reads into things. The truth of an account will be suited to the perspective adopted in the inquiry, but this is not vicious circularity. It is precisely what is wanted. It does imply that one has to be careful to adopt an appropriate perspective and become aware of what one's practical concern is. A true interpretive account then, is one that helps the researcher and the people studied - one that furthers people's concerns. Interpretive

inquiry must not be misunderstood as just an effort to describe, or even just understand, human phenomena. Interpretation always begins from concerned engagement. There is no pure truth that lies outside human engagement in the world.

The social constructionists, as part of the overall interpretivist approach, emphasise that to understand the world of meaning one must interpret it. The inquirer must elucidate the process of meaning construction and clarify what and how meanings are embodied in the language and actions of social actors. According to the social constructionist, ‘to prepare an interpretation is itself to construct a reading of these meanings. It is to offer the inquirer's construction of the constructions of the actors one studies’ (Schwandt, 1994, p.118).

3.1. Core metaphysics of an interpretive paradigm

This chapter does not provide scope for a detailed discussion of all the subtle differences between the various sub-approaches of the broad interpretivist approach. It intends to outline only those metaphysics which are of particular relevance for the paradigm of this study.

3.1.1. The text as discourse

The importance of ‘the text’ as the focus for interpretation is particularly emphasised by Ricoeur. Ricoeur (1976) argues for the necessity to consider language as an event (*parole*) in addition to language as a system of signs (*langage*). In case of the former, language is usually considered as speech or discourse and distinguished from the latter by a number of traits: it is realised temporally, it is self referential, it is about something, *i.e.* it refers to a world outside it, it is aimed at an addressee.

He elaborates on the referential relation of discourse and explains that it means that when the subject of discourse in addressing herself to another speaker, says ‘something’ about ‘something’, that about which she speaks is the referent of the discourse. This referential function is supported by the sentence, which is the first and the simplest unit of discourse. Ricoeur (1976) believes that the referential function is so important that it compensates for another characteristic of language, namely the separation of signs from things. By means of referential function language brings back into the world those signs which the symbolic function separated it from things. As a result, all discourse is, to some extent, thereby connected to the world.

Ricoeur (1976) points out the difference in speech between spoken and written discourse. He sees text as a discourse fixed by written language. He argues that when the text takes the place

of speech, something important occurs. In speech, the *interlocutors* are present not only to one another, but also to the situation. The surroundings and the circumstantial milieu of discourse is fully meaningful. In living speech, the ideal sense of what is, relates to the real reference, to that about which is spoken. Ricoeur believes that this is no longer the case when the text takes the place of speech. The reference is intercepted at the same time as dialogue is interrupted by the text. Written words become words for themselves (Ricoeur, 1981).

A seminal argument, put forward by Ricoeur (1981), is that the disconnection between the written text and its world, as explained above, affects the relation of the text to the subjectivities of the author and the reader. Ricoeur (1981) constructs a paradigm of text, containing the following principles. First, writing represents the fixation of meaning in which the said assumes greater importance than the act of speaking. Second, with written discourse the author's intention and the meaning of the text cease to coincide. The meaning of an utterance is different from the intention of the utterer. The surpassing of the intention by the meaning signifies precisely that understanding takes place in a non-psychological and properly semantic space which the text has created by disconnecting itself from the mental intention of its author. Third, a text surpasses the ostensive references of spoken discourse by opening up possible modes of being, potential horizons, over and above the restricted situation in which the partners of a dialogue find themselves. Through its display of non-ostensive references the text, in a way, frees the meaning of discourse from the situation (Ricoeur, 1981).

Ricoeur (1981) purports that, in analogy to texts, meaningful actions can assume a fixed form in which the meaning becomes detached from the event and the intention from the consequences of action. Flowing from this autonomy is the ability for the meaning of an action to transcend the social context in which it originated so that it may be re-appointed differently in new social conditions (Bleicher, 1980).

3.1.2. Interpretation

The main focus of interpretivist researchers is interpretation, a process of constructing meaning. This process may take a variety of forms, depending on the researcher's specific sub-paradigm. Some of these interpretive processes, relevant to the study, are discussed below.

3.1.2.1. Ricoeur's structural analysis: Integrating interpretation and explanation

Congruent with his paradigm of text, Ricoeur proposes a structural analysis as an interpretive tool, which, he argues, integrates explanation and interpretation. His structural analysis aims at querying the surface semantics of the text in order to unveil a depth semantics. He argues that

if structural analysis is seen as a necessary stage between naive and critical interpretation, between surface and depth interpretation, then it seems possible to integrate the opposed attitudes of explanation and interpretation within an overall conception of reading as the recovery of meaning (Ricoeur, 1981).

Ricoeur (1981, p.162 -163) argues that to explain is to bring out the structure, that is, the internal relations of dependence which constitute the statics of the text. To interpret is to follow the path of thought opened up by the text. Ricoeur explains how, during a structural analysis, the attitudes of explanation and interpretation confront one another in the act of reading. As a reader, he says (Ricoeur, 1981, p. 152), one can remain in the suspense of text, treating it as a world-less and author-less object. In this case, the text is explained in terms of its internal relations, its structure. On the other hand one can lift the suspense and fulfill the text in speech, restoring it to living communication. In this case the text is interpreted. These two possibilities both belong to the reading, and reading is the dialectic of these two attitudes. We can undertake a first type of reading which formally records as it were the text's interception of all the relations to a world that can be pointed out and to subjectivities that can converse. On the basis of this choice the text has no outside but only an inside, it has no transcendent aim, unlike a speech which is addressed to someone about something. This reading allows the possibility of an explanatory attitude with regard to the text.

He further explains how a complementary and reciprocal relation between explanation and interpretation can be established (Ricoeur, 1981, p.158). He argues that to fulfill the text in the present speech is the real aim of reading in a structural analysis. For this attitude reveals the true nature of the suspense which intercepts the movement of the text towards meaning. To read is to conjoin a new discourse to the discourse of a text. This conjunction of discourses reveals, in the very constitution of the text, an original capacity for renewal which is its open character. Interpretation is the concrete outcome of conjunction and renewal. Initially the text had only one sense, that is, internal relations or a structure, now it has meaning, that is a realisation in the discourse of the reading subject.

Thus, according to Ricoeur (1976), to interpret is to appropriate here and now the intention of the text. As was established above, the meaning of the text is not essentially the presumed intention of the author, the lived experience of the writer, but rather what the text means for whoever complies with its injunction. If the intention is that of the text, and if this intention is the direction which it opens up for thought, then depth semantics must be understood in a fundamentally dynamic way.

It is the kind of world opened up by the depths semantics of a text, a discovery, which has immense consequences regarding what is usually called the sense of text. The sense of a text is not behind the text, it is in front of it. What has to be understood is not the initial situation of discourse, but what points towards a possible world thanks to the non-ostensive reference of the text. It seeks to grasp the world-propositions opened up by the reference of the text. The reference born by the depth semantics. The text speaks of a possible world and of possible ways of orienting oneself within it. The dimensions of this world are properly opened up by and disclosed by the text.

According to Ricoeur (1976) the process of analysis is one of guessing and validating. There is a need for an initial guess. There are no good rules for guessing, but there are rules for validating guesses. Validation, according to Ricoeur (1976), follows a logic of probability rather than a logic of empirical verification. To show that an interpretation is more probable in the light of what is known is different from showing that a conclusion is true. Validation is not verification. It is an argumentative discipline comparable to the juridical procedures used in legal interpretation - a logic of uncertainty and qualitative probability.

Ricoeur (1976) argues that guess and validation are in a sense circularly related as subjective and objective approaches to the text. This circle is not vicious because there are procedures of invalidation similar in criteria to falsifiability. The role of falsification is played by the conflict between competing interpretation, in the sense that an interpretation must not only be probable, but more probable than another interpretation. Although there is always more than one way of construing a text, it is not true however, that all interpretations are equal. The logic of validation allows us to move between the two limits of dogmatism and skepticism, it creates a dialectic between understanding and guessing and explanation and validation (Ricoeur, 1976).

3.1.2.2. The hermeneutic circle

For many interpretivists the concept of hermeneutical circle is central to the concept of meaning. What the hermeneutical circle does, is connect a certain reading of a text, expression or action with other readings. These other readings serve as an interpretive framework for the interpretation of that text. The circle can also be put in terms of part-whole relations. When interpretivists are trying to establish a reading for the whole text or act, they appeal to readings of its partial expression or actions, and yet because expressions only make sense or not in relation to other expressions, the readings of partial expressions depend on those of others and ultimately of the whole (Taylor, 1994). Because understanding inevitably involves reference to what is already known, it operates in a circular, dialectical fashion (Palmer, 1969). Woolfolk,

Sass & Messer (1988, p.3) provide an example of the meaning of a sentence to clarify the concept. The sentence derives its meaning from the individual words it comprises, but the interpretation of the meaning of the words within a sentence is also governed by their relations within the sentence and the meaning of a sentence as a whole. Thus, interpretation occurs within a circle in which parts are always interpreted within some understanding of a whole, which in turn is understood by coming to understand constituent parts. The hermeneutical circle describes the contextual nature of knowledge. A fact does not stand on its own, independent from its context or its interpreter, but rather is partially constituted by them. A fact can be evaluated only in relation to the larger structure of theory or argument of which it is part. At the same time, this larger structure is dependent on its individual parts, as well as other related information. In explicating the circle of understanding, we move back and forth between part and whole. (Woolfolk *et al.*, 1988).

To interpretivists, the meaning of a given predicament has the following articulation: it is a meaning for a subject, it is not the meaning of the situation in a vacuum, but for a specific subject, a group of subjects, or for the human subject in general. As such, meaning is of something. One can distinguish between a given element, situation or action and its meaning. But this is not to say that they are physically separable. Rather we are dealing with two descriptions of the element, one of which is characterised in terms of its meaning for the subject. But the relations between the two descriptions are not symmetrical. For, on the one hand, the description in terms of meaning cannot be unless descriptions of the other kind apply as well, or put differently, there can be no meaning without a substrate. On the other hand, it may be that the same meaning is borne by another substrate e.g. a situation with the same meaning may be realised in different social conditions. Lastly, things only have a meaning in a field, that is in relation to the meanings of other things. This means that there is no such thing as a single, unrelated meaningful element, and it means that changes in the other meanings in the field can involve changes in the given element (Taylor, 1994, p.186).

Meaning requires a sense of coherence. If one applies the requirements of meaning, as set out above, to behaviour as an action, then behaviour must make sense. This is not to say that all behaviour must make sense, in the way of avoiding contradiction, confusion of purpose and the like. Plainly a great deal of our action falls short of this goal. But in another sense, even contradictory, irrational action, is made sense of when we understand why it was engaged in. We make sense of action when there is a coherence between the actions of the agent and the meaning of the situation for her. We find her action puzzling until we find such a coherence. This coherence in no way implies that the action is rational. The meaning of a situation for an agent may be full of confusion and contradiction, but the adequate depiction of her contradiction makes sense of it. Making sense in this way through coherence of meaning and

action, the meanings of action and situation, cannot but move in a hermeneutical circle. Our conviction that the account makes sense is contingent on our reading of action and situation. But these readings cannot be explained or justified except by reference to other such readings and their relation to the whole (Taylor, 1994).

It is important to emphasise that the hermeneutical circle is ontological rather than simply epistemological or methodological. Projection is, first of all a structure of our way of being in the world, our living, our actions and interactions, before it characterises our knowledge and our sciences (Packer & Addison, 1989a, p. 34).

3.1.3. The fore-structure

The circularity of understanding can be further explained with Heidegger's notion of fore-structure. According to Heidegger (1962) when studying a new phenomenon one is always projected into it. Unless it is totally alien one will have some preliminary understanding of what kind of phenomenon it is, and of what possible things might happen to it. This means that one both understands it and at the same time misunderstands it. The researcher inevitably shapes the phenomenon to fit a fore-structure that has been shaped by expectations and preconceptions and by her lifestyle, culture and tradition. Understanding always takes place within a horizon or framework that is projected by human beings and which Heidegger (1962) calls 'Dasein'.

Packer & Addison (1989a) provide an elaboration of the concept of interpretation based on Heidegger's 'Dasein'. They argue that it must be seen as the working out of possibilities that have become apparent in a preliminary, dim understanding of events. This pre-understanding embodies a particular concern, a kind of caring. It provides a way of reading a preliminary initial accessibility, a stance or a perspective (a fore-structure) that opens up the field that is being investigated. Packer & Addison (1989,a) further argue that this does not mean that interpretive accounts are undisciplined guesses. They are ordered, organised and guided by the fore-structure or projection. The guidance is, however, not automatic. The researcher has a responsibility to prepare so that she 'enters the circle' with an appropriate fore-structure in order to conduct her interpretation in a proper manner.

It has become increasingly clear to interpretation theorists, that the manner in which a text is interpreted is not only dependent on a fore-structure of the research field, but also vitally dependent on historically located conventions of interpretation among researchers. These interpretive dispositions determine, in an important way, how a text is interpreted. People exist within a contemporary 'horizon of understandings' and these understandings inevitably fashion

their interpretation of text (Gergen, 1989). Gergen (1989) points out that the chief limitation of interpretation in the psychological sciences lies within these conventions of discourse, shared by the psychological community of interpreters. That is, various interpretations of data relevant to psychological processes and mechanisms, may be sustained to the extent that conventions of language use within the relevant community of interlocutors are shared. Gergen (1989) believes that as new forms of discourse are developed, or as one moves to other interpretive communities, alternative interpretations may be favoured (Gergen, 1989).

3.1.4. Validity of interpretive accounts

The central notions of the interpretivist approach obviate the need to define validation in a radically different fashion from its meaning within a positivist approach. Validation in the hermeneutical paradigm is not concerned with empirical verification, with an assessment of the fit between explanation, reality and truth. It is, however, concerned with usefulness, the extent to which a problem has been solved, with qualitative negotiated probability- in other words with reasonability.

Packer & Addison (1989b) aptly use the word evaluation rather than validation and argue for the criteria of reasonability in evaluating interpretivist accounts. They propose that the following approaches to evaluation in interpretive inquiry are reasonable: consistency; relation to other material; response of research participants; communicability to peer; response of these peers; relations to alternative perspectives; and practical implications. They emphasise, however, that neither together nor separate do these approaches indicate whether an interpretation corresponds to the way things really are. They are not ways of validating. They are, rather, ways to consider whether what has been uncovered in an interpretive inquiry answers the practical question that was of concern for the researcher.

Packer & Addison (1989b) argue that their approach to evaluation is satisfactory even though it cannot provide interpretation-free validation, because of the following two reasons. First, interpretation is not a matter of conjecture and guess. The notions of fore-structure and hermeneutical circle make this obvious. As a result, stringent validation refutation in the positivist sense is unnecessary. Second, true interpretation is one that uncovers an answer to the concern motivating the inquiry, not one that seeks absolute truth.

3.2. Different approaches to hermeneutics

Within the broad hermeneutical tradition there is an abundance of theorists and sub-paradigms, each with its own specific convictions and concerns. Those with specific relevance for the construction of the researcher's paradigm are briefly outlined below.

3.2.1. Methodological hermeneutics

Methodological hermeneutics refers to those approaches whose specific aim is to reform, broaden and humanise the social sciences. Writers in this tradition, amongst whom we can situate Ricoeur (1981), assume that appropriate methods for the human sciences will diverge from those of the natural sciences (Woolfolk *et al.*, 1988). The methodological hermeneutic endeavour consists of approaching meaningful interpretations with a set of canons which have been formulated in order to facilitate the correct interpretation of human expression (Bleicher, 1980).

3.2.2. Hermeneutic philosophy

It is precisely the hope of finding a basis for the scientific investigation of meaning, the endeavour of the methodological hermeneutics, that hermeneutic philosophy - also labeled ontological hermeneutics- rejects (Bleicher, 1980).

Hermeneutic philosophy views understanding as a fundamental mode of being in the world and through an exploration of the nature of interpretation seeks truths that are foundational for and clarifying of the nature of all inquiry, including science. Writers in this group also aim at the recovery of a kind of philosophic and cultural sensibility that has been nullified by those forms of philosophy that make epistemology and methodology their primary concern (Woolfolk *et al.*, 1988).

Gadamer (1975), a proponent of the ontological hermeneutic approach, analyses the social sciences extensively but his aim is not the reformation of scientific understanding, but rather the elucidation of the ontological relation of methodical (method-driven) knowledge to the Heideggerian pre-understanding. Gadamer states that his hermeneutics is not a methodology of the human sciences, but the quest for an understanding of what the human sciences are in truth, beyond their methodical self-consciousness and what connects them with the whole of our experience of the world.

Heidegger's fore-structure, which was introduced above, is central to the understanding of hermeneutic philosophy. In the course of his existential analytic of 'Dasein', Heidegger (1962) advanced the thesis that scientific activity takes place within a context of pre-understanding

that derives from a certain 'situatedness' in the life world and from participation in various activities that include practical dealing with tools and implements. Such practical dealings and understandings are achieved in the course of various customary, everyday transactions with the environment. These occur within a taken-for-granted cultural and historical background that consists of practices, habits, and skills, but cannot be spelled out explicitly and comprehensively because it is so pervasive that we cannot make it an object of inquiry. This is the lived-world of what Heidegger called 'everydayness'. In the Heideggerian view, the conscious experience of another person or culture cannot be ascertained in any objective sense. He criticised the efficacy of phenomenological as well as other, more positivistic methods of inquiry, in the hermeneutic venture.

According to Heidegger (1962), the horizontal character of Dasein makes it impossible to retain faith in the transparency and certitude of phenomenological description. 'Dasein' can know its own being only in an approximate, tentative and indirect way - not by taking its own ordinary self-understanding at face value, nor through some quasi-scientific method of direct intuition with access to certain and foundational data. Heidegger (1962) also emphasises the shared and public nature of the contexts of significance that mediate human awareness. To a great extent, it is the customs, institutions and language of a given culture, not the idiosyncratic perspectives of isolated individuals that channel and constitute human experience. Thus, even the nature of one's own self-interpretations or self-understandings are largely determined by the possibilities laid open by a shared world of social practices and institutions. In the view of ontological hermeneutics, humans are constituted by their self interpretations, but for the most part these interpretations are not freely chosen or consciously recognised, since they are so deeply embedded in culture, history and bodily being, and since they are so pervasive as to be nearly invisible. One implication of this is that self-understanding cannot be obtained by studying individual subjectivity alone, it requires understanding of a culture, of language and of history (Woolfolk et al., 1988).

Gadamer (Woolfolk et al, 1988, p.16) offers a vision of knowing based on the phenomenology of game-playing which clarifies some of Heidegger's doctrine. According to Gadamer, the players of a game play the game, but do not completely determine or create the game. One's play and, hence one's actual existence as a player are, in part, constituted by all the various features of the game. In some sense the player is also played by the game.

This bring us to a central insight of hermeneutic philosophy, which asserts that the social scientist or interpreter and the object are linked by a context of tradition which implies that she already has a pre-understanding of her object as she approaches it, thereby being unable to start with a neutral mind. Hermeneutic philosophy does not aim at objective knowledge

through the use of methodical procedures but at the explication and phenomenological description of human 'Dasein' in its temporality and historicity (Bleicher, 1980).

3.2.3. Critical hermeneutics

Authors within the critical hermeneutic approach seek to expose and criticise ideological underpinnings of all social practices, including political and scientific activity. They attempt, in particular, to reveal sources of domination and coercion that prevent open discourse, the free exercise of reason and the enhancement of possibilities for human self determination (Woolfolk et al., 1988).

Critical perspectives, which originated with the Frankfurt School (Horkheimer, 1972), maintain a dual conception of criticism: To examine critically the valuation underpinnings and normative dictates underlying existing theories and to develop alternative conceptualisations. A general preference is expressed for theories that do not mirror commonsense conceptions but transform them. It is hoped through criticism and the generation of new alternatives, people may be emancipated from their present interpretations of reality and may realise more fulfilling life patterns. Critical theorists often share with dialectic theorists an interests in praxis. Critical theory entails inquiry into the conditions affecting the character of knowledge and the development of alternatives for purposes of social action. In other words, the aim of critical hermeneutics is not exclusively to understand the world but also to change it so as to further human emancipation (Gergen, 1982).

Habermas, as a core representative of critical hermeneutics, challenges the idealist assumptions underlying a hermeneutical philosophy. His critical hermeneutics combines a methodical and objective approach with the striving for practically relevant knowledge. Critical should here be taken to mean mainly the appraisal of existing states of affairs in view of standards that derive from the knowledge of something better than already exists as a potential or a tendency in the present (Bleicher, 1980).

Much of the work within the critical perspective also argues for alternative conceptions of human behaviour and of science. For example Sampson (1977) counters the dominant thesis of self-contained individualism with that of communal inter-dependence. Theories of inter-dependence would locate the responsibility for social actions in the larger community rather than with the individual. This emphasis on inter-dependence as the desired end to be served by social theory is shared by others (Gergen,1982). Along similar lines, others have argued for a perspective that treats humans as active, responsible and changing agents (Harre & Secord, 1972).

3.2.4. Interpretive anthropology

Interpretive anthropology is an interpretive theory of culture. Because of its focus on culture, and by implication its relevance for the current study, it is deemed necessary to briefly outline Geertz's interpretive anthropological ideas. Geertz (1994), as the leading theorist in this field, regards culture as a complicated, ideational, and fundamentally an irreducibly interactive, hermeneutical phenomena that requires interpretation, not causal explanation. Culture is a context, something within which behaviour, institutions and processes can be intelligibly - 'thickly-described' (Geertz, 1994, p. 214). The language and other symbols in a culture do not simply refer to objects but are constitutive of them, hence Geertz claims that people are animals suspended in webs of significance that they themselves have spun. The actions of the members of a culture (and the actions and writings of the anthropologist) are both constructed and signify meaning. Following Ricoeur, Geertz argues that the ways in which meanings are constituted in a culture must be read or interpreted by the anthropologist in much the same manner as one would read or interpret a complex text. For Geertz (1973) there is no world of social facts out there waiting to be observed, recorded and described and analysed. Rather the inquirer constructs a reading of the 'meaning making process' of the people she studies. What the activity of writing fixes is 'the said of an event' the anthropologist observes the meaning, the gist, the thought of a speech event - not the event itself. In doing so, the inquirer rescues the activity of participants' meaning making, changing it from a passing event, which exists only in its own moment of occurrence, into an account, which exists in its inscription and can be consulted. According to Geertz (1973), access to the meaning of an event is not to be had through some process of emphatic identification with an informant or respondent. Rather, the activity of understanding unfolds as one looks over one's respondents' shoulders at what they are doing. The task of anthropology is not observation and description, but the inscription of 'thick description' of these meanings of human action. The anthropologist inscribes a text that is itself a second- or third order interpretation of the respondent's interpretation. This text offers a theoretical formulation or interpretation, a statement of what meaning particular social actions have for the actors whose actions they are. It demonstrates meaning about the society in which it is found and, beyond that, about social life as such. Yet, Geertz (1973) understands theory (interpretation) to be always grounded and local - not speculative and abstract

4. Realism

Aspects of the realist philosophy provide further grounding for the paradigm of this study. The general philosophical thesis of realism is an ontological doctrine to the effect that objects in the

physical, social and psychological world exist and have properties independently of our concepts of them and theoretical discourse about them (Manicas & Secord, 1983, p. 135).

Scientific realism regards the objects of knowledge as the structures and mechanisms that generate phenomena. These objects are neither phenomena, nor human constructs imposed upon the phenomena, but real structures which endure and operate independently of our knowledge, our experience and the conditions which allow us access to them. According to this view, both knowledge and the world are structured, both are differentiated and changing, the latter exists independently of the former. In this view, science is not an epiphenomenon of nature, nor is nature a product of man. It is argued that if there were no science, there would be still a nature and it is this nature which is investigated by science. Whatever is discovered in nature must be expressed in thought, but the structures and constitutions and causal laws discovered in nature do not depend upon thought (Bhaskar, 1979). Consequently realists talk about two dimensions and two kinds of objects of knowledge: a transitive dimension, in which the object is the material cause or antecedently established knowledge which is used to generate the new knowledge, and an intransitive dimension in which the object is the real structure or mechanism that exists and acts quite independently of people and the conditions which allow people access to it (Bhaskar, 1979).

According to Bhaskar (1979) scientific realism must be distinguished from naive realism. He argues that to base one's analysis on the constant conjunction of events is to conflate three domains, namely: the empirical, which consists of experience and sense impressions; the actual, which consists of events; and the real, which consists of entities and structures that produce events. That is, events themselves are not the ultimate focus of scientific analysis. Rather events are to be explained by examining the causal structures that produce events and events are produced by complex interactions of a multitude of underlying causal entities. In other words, reality consists not only of what we can see but also of the underlying causal entities that are not always directly discernible. Reality then is stratified, events are explained by underlying structures, which may eventually be explained by other structures at still deeper levels. The process of scientific discovery is, therefore, continuous. According to Manicas & Secord (1983) the real world is complex and stratified so that one is always discovering more complex layers of reality to explain other levels.

Bhaskar (1979) argues that scientific explanation of a phenomenon typically consists of the construction of a model. This involves utilising cognitive materials and operating under the control of something like a logic of analogy and metaphor, or a mechanism which, if it were to exist and act in the postulated way, would account for the phenomenon in question. The reality of the postulated explanation must then be subjected to empirical scrutiny. For in general, more

than one explanation will be consistent with the phenomenon concerned. Once this is done the explanation must then in principle itself be explained.

5. Proposed paradigm for the study

It is argued that, since researchers have pre-conceptions about the nature of the phenomena they study and of the nature of research, metaphysics enter the theories and methods researchers apply from the very onset of their investigation processes. It is, therefore, important for a study to explicate its underlying philosophical framework.

The paradigm adopted in the current study can be situated within what is broadly referred to as 'new paradigm' research (Reason & Rowan, 1981). As indicated above, it has been inspired by aspects of interpretivist and realist philosophy. What follows are the adopted paradigm's ontological, epistemological and teleological assumptions. It is argued that the specific combination of these metaphysics contribute, in an important way, to the uniqueness of this study.

5.1. Ontology

The ontological position of the study can be situated between the extreme constructionist approach and the realist approach. The constructionist argues that knowledge about social life is not to be viewed as a reflection of what there is, but as a transformation of experience into a linguistic ontology. Therefore the constraints on knowledge as a language are not furnished by reality but by a social process (Gergen, 1982). The realist on the other hand argues that knowledge exists totally separate from reality and that it is not dependent on social discourse for its existence (Manicas & Secord, 1983, p. 135).

In the current study the apparent contradiction between these two views is circumvented by integrating them with respect to the scientific endeavour. It is argued that there is a reality, separate from any specific interpretation of that reality. However scientific research is concerned with investigating that reality and the only tools to do so are people's, and in particular the researcher's, constructions of that reality. Therefore, knowledge of reality can only be considered as socially constructed. The fact that an independent reality exist does not alter this. Here, the interpretivist assumptions hold. The investigator creates through her theoretical lens what facts there are to be studied and the way to study them.

Accepting the realist's ontological principle of an 'independent or transcendental reality principle' (Bhaskar, 1979) has epistemological and methodological implications for the study.

It implies that there are better and worse interpretations of reality, or, that there are more or less realistic constructions of reality. This postulate forces methodological rigour and allows for a measure of validation or evaluation of the theory and model used in the study.

5.2. Epistemology

Epistemology deals with accepted ways of obtaining knowledge about what is assumed to be reality. It deals with the relationship between the researcher and the research topic and the justification for the methods used to collect, describe and interpret knowledge. An important aspect of epistemology of scientific research are the issues validity.

The epistemology underpinning the current study is significantly influenced by the metaphysics of Ricoeur (1976) and Geertz (1994), both of whom are considered to provide a convenient bridge between realist and interpretivist approaches. Both authors rely on the discovery of underlying structures to explain reality and both authors acknowledge the importance of the analysis of discourse to move from a 'thin to thick description' of reality. This can easily be reconciled with the attempt to develop models, or theories, proposed by the realist approach.

Both realism and interpretivism provide a dialectical reasoning concerning the dichotomy of explanation and interpretation, in that they do not see them as two irreconcilable processes but rather as mutually dependent on each other. Ricoeur is especially explicit about this. The current study concurs with Ricoeur's explanation-interpretation dialectic.

A further epistemic underpinning this study is the belief that the reality of an event, act or process can only be approached through the discovery of its meaning. This meaning can only be discovered by the inquirer through a methodologically sound process, involving the manipulation of pre-constructed ideas, a dialectic process of subjective immersion in the data and distanciation from the data. The meanings resulting from this process subsequently need to be socially negotiated with colleagues and research participants. This epistemic can again be traced back to the metaphysics of the realist and the interpretivist approach. Both paradigms purport the existence of a fore-structure (interpretivists) or theoretical lens (realists) and the application of certain procedures to interpret and explain data (at least methodological hermeneutics). The paradigms differ, however, in their respective emphasis on methodology (realists) or negotiated interpretation (interpretivists) as measures of validity. The current study attempts to balance both aspects of validity equally. This will be clarified in the following section.

5.2.1. Criteria of validity

It is believed that, as argued within the hermeneutic approach, all actions are subject to multiple interpretations and that interpretations favoured during any given epoch may be replaced in the next. Historically situated conventions thus govern what is taken to be true and valid (Gergen, 1982). However, the acceptance of an independent reality, prevents the researcher from surrendering totally to social and historical determinants of validity.

In agreement with Reason & Rowan (1981) it is accepted that developing an idea of validity in new paradigm research must be based on an interactive, dialectical logic. There is a need to develop some notion of reality which gets away from the subject-object split reality as either all out there, objective and therefore discoverable, or all in the mind, subjective and ineffable. Swartz and Ogilvy (1980, p. 35) argue that we can move away from notions of objectivity and subjectivity by developing the notion of perspective. This defines a personal view from some distance and suggests neither the universality of objectivity nor the personal bias of subjectivity. There is a need to learn to think dialectically, to view reality as a process, always emerging through a self contradictory development, always becoming. Any notion of validity must concern itself both with the knower and with what is to be known. Valid knowledge is a matter of relationship.

Reason and Rowan (1981) argue that validity is threatened when the dialectical process of emerging truth gets stuck. The basic way in which this happens is that one ceases to pay attention to that part which one creates: one blocks the dialectic by working one-sidedly. Paradoxically, such one-sidedness occurs in both subjectivism and objectivism. In the former, one looks only inwards, so all one can learn about is one's pre-conceptions. In the latter one looks only outwards at the phenomenon one is trying to understand, and in doing so one forgets the part that one plays as knower, and therefore fails to see how one is unknowingly contributing.

The study is based on the belief that validity is personal and interpersonal, as well as methodological. One cannot understand any psychological state without the capacity to experience it, nor any social situation unless one can get into the world-taken-for-granted perspective of those involved. Yet at the same time the researcher needs to be able to maintain a perspective on it and needs a sound interpretive method. Explicating method and measures of rigour applied by the researcher in the interpretation process are important for providing inter-subjective validity. The study relies on multiple cycles of data analysis as a methodological criteria to enhance validity. In these cycles, theory and concepts are progressively extended and refined, differentiated and integrated, reaching towards a theoretical saturation. This provides a

rigour of clarity, accuracy and precision in the interpretation process which enhances communicability of the end interpretation and consequently the possibility of real inter-subjectivity and self knowledge by the researcher.

Bateson (1979) focuses on another aspect of inter-subjective validity. He points out that an increment of knowledge may result from multiple versions of the world. Accordingly, the study relies on the enhancement of validity through involvement of co-researchers, who attempt actively and consciously to deny, contradict, disprove, the data which are available and the propositions about that data which has been developed.

5.3. Teleology

According to Greenwood (1992) human action is a matter of following rules and the aim of social sciences is to uncover these rules. Rules are facts about communities. Only a few of the rules that people follow are consciously before their minds, when they are following them and there are others that are so evident that they may never have formed themselves into words in people's minds. Nevertheless those that explain people's behaviour must somehow be represented in them. Greenwood (1992) further argues that to the extent that actions are the result of following rules, they must involve other people. For rules come with enforcement clauses and enforcement requires others.

The current study aims to render the actions of a group of people involved in problem solving tasks intelligible by uncovering the rules of action (interaction) of the event, through interpretation and explanation, resulting in the construction of an underlying structure or model of rules that guides their behaviour.

6. A fourth motivation for the study

Meta-theoretical frameworks, appropriate for everyday cognition research, have been lacking. The meta-theoretical model proposed in this study primarily aims to first, provide a philosophical foundation for this study and other similar studies, compatible with the theory of everyday cognition and second, to enhance the methodology of everyday cognitive research.

Congruent with the proposed paradigm, the study aims to uncover underlying structures of the phenomenon of inquiry which represent the researcher's perspective. While it does not claim to provide a reflection of the truth, it does attempt to provide a useful perspective.

Congruent with the critical hermeneutical approach, the study has an emancipatory intention. Through the use of a specific discourse around everyday knowledge, the study aims to alter the often derogatory perceptions of this field of study and to bring it into the mainstream psychological inquiry. Gergen (1982) provides a pertinent motivation for the emancipatory aim of social theory from a hermeneutic perspective. He purports that if one accepts the argument for a socially constituted order, and grants a functional link between the linguistic practices of the culture and its other patterns of conduct, then alterations in linguistic practices have implications for the social order. In this way social psychological theory acquires a role as 'change agent' in social life.

Rosenberg (1988) adds to the above by promoting a reflexive theory, which he describes as social science that has a moral dimension. Reflexive theory does not merely describe the way the world is, but provides positive guidance about the way the world ought to be. It prescribes the direction in which action should take place. Critical theorists hold that the claim of social science is not just intelligibility of human actions but also enlightenment as to their true meanings and emancipation from false beliefs about the nature of society and their morally unacceptable effects on people. This emancipation is seen as twofold in the study. It is directed at opening new horizons of research and practice for researchers and practitioners. It is also aimed at the emancipation of the participants involved in the study.

CHAPTER 6.

THE STUDY

1. Introduction

Considering the shortage of research on everyday cognition and appropriate methods to investigate everyday cognition, the study had two broad goals. first, to investigate the knowledge and practice of everyday problem solving of a group of young community activists from disadvantaged communities in a rural area of South Africa; and second, to develop a method for the investigation of group problem solving in an everyday cognition framework.

The development of the method presents a particular challenge to the presentation of the study. The method was developed to be appropriate to the task of interpreting everyday knowledge of problem solving and everyday group problem solving procedures and therefore, particularly at the level of data analysis, deviates significantly from standard analytical techniques used in psychology. For this reason considerable detail of the research design and the specific steps taken in the collection and analysis of data are given. These, however, need to be read in conjunction with the preceding chapters, which provide the theoretical and meta-theoretical

underpinnings of the study. In the current chapter the aim is to operationalise both of the above theoretical considerations into an appropriate and effective method for the study.

2. Aims of the study

The study had the following aims:

- to interpret the indigenous conceptual, procedural and epistemological knowledge of the concepts problem and problem solving of young adults from disadvantaged communities in South Africa;
- to interpret the group problem solving procedure of the same target group. This included focusing on the mediating role provided by the group process in the problem solving event;
- to interpret the interrelation between the indigenous conceptual, procedural and epistemological knowledge of problem solving and the group problem solving procedure uncovered in the study;
- to explicate the methodology used for the investigation of the above aims.

Congruent with an everyday cognition approach, problem solving is, for the purpose of this study, broadly defined as the approach and strategies used in a situation in which one or more goals need to be achieved and where it is not immediately clear which steps to take to achieve those goals (Hartley, 1989). Problem solving is deliberately loosely defined in order to allow indigenous concepts and ‘ways of doing’ to emerge during the interpretation phase of the study.

Conceptual knowledge refers to the mental representation the participants have of the concept problem and problem solving (Hatano, 1982). Procedural knowledge refers to the problem solving process and implies a ‘knowing how’, or the knowledge of the steps required to attain a goal (Byrne, 1992). Epistemological knowledge refers to the underlying assumptions and beliefs of the participants about intelligence, abilities and knowing, which influence problem solving (Dweck, 1983).

3. Framing assumptions

The following principles underpin the study:

- (i) **Triangulation across different kinds of data, data collection techniques and data analysis techniques.**

Triangulation is a metaphor derived from navigation. It refers to the investigation of several sources in order to establish a common conclusion (Bromley, 1986). In research methodology triangulation can refer to combining different sources of data as well as combining different methods of data collection and data analysis. Triangulation is geared at improving the validity of the constructs and results of a study by relying on different sets of data and on different research techniques. In this study triangulation of data sources was achieved by collecting data of group interactions and group discussions as well as information from individuals. Triangulation of data collection techniques was achieved by conducting interviews as well as video-taping. Triangulation of the interpretive-analytic process was achieved by using grounded theory techniques and the reading guide method.

(ii) A combination of creative interpretation and methodological rigour

Congruent with a hermeneutic approach, the interpretation of texts was the main activity of this study. In order to enhance validity the interpretive process combined creative moments of interpretation with methodological rigour. This was operationalised in the study by using the coding technique of the grounded theory approach (Glaser & Strauss, 1967), the reading guide method (Mergendollar, 1989) and the capturing and analysing of the coded elements of the data in a computer data base which was specifically developed to assist in examining the linkages between the coded elements (Data Perfect 2.3, Word Perfect Corporation, 1993).

(iii) Progressive interpretation-

The data analysis involved a multi-staged process of progressively more in-depth interpretation. In this process, each level of analysis provided the data for the next interpretive stage. The use of the grounded theory technique of coding enabled the construction of the different analytical stages for the interpretation of the participants' indigenous knowledge of problem solving. The development and use of consecutive reading guides and the computer data base provided the means for a multi-staged interpretation process for the group problem solving procedures. Sections 6.3 and 7.3 of this chapter elaborate on this multi-staged process.

(iv) Explication of the method

The explication of an appropriate method for the study of everyday group problem solving was attempted by spelling out in detail the different steps in the research procedure and by contextualising this in the meta-theory adopted in the study. This rigorous description of the research procedure also served to enhance validity, in the sense that it improved communicability and allowed for scrutiny.

(v) Negotiated interpretation

The search for negotiated interpretations of research data was another procedure used to enhance validity. This was attempted by having the crucial interpretative processes replicated by a second researcher as well as by the researcher herself. The interpretive data and the successive steps in the research process were also reflected upon with colleagues involved in the ECDAFF development programme.

(vi) Action as the unit of analysis

Everyday group problem solving inter-actions of the participants provided the units of analysis for part of the study. Actions are considered to be goal-directed and include affective, cognitive and conative dimensions. The adoption of social action as the unit of analysis is congruent with an everyday cognition approach, in which the unit encapsulates the person-environment (culture) dialectic. This assumption is dealt with in detail in Chapter 4, Sections 5.1.1. and 5.1.2.

(vii) Participation

Congruent with the principles of empowerment, the participants in the research were considered as partners in a dialogue, rather than as research subjects (Sampson, 1977). Their perceptions and reflections on the research issues were considered as an integral part of the research.

4. An overview of the research design

The research design encompasses three main components.

- A** An investigation into the research participants' indigenous conceptual, procedural and epistemological knowledge of the concepts problem and problem solving.
- B** An investigation of the group problem solving procedure, used by the participants.
- C** An interpretation of the interrelation between the indigenous conceptual, procedural and epistemological knowledge of problem solving and the group problem solving procedures uncovered in the study.

Components A & B required a separate process of data collection, analysis and interpretation. Component C involved the integration of the results of Components A and B. A schematic representation of the research process involved in the first two components of the research

design is presented in Figure 2. Further on in the chapter a detailed explanation of each component is provided.

PHASE 1: DATA COLLECTION

The following sets of data were used:

- * individual interviews with six workshop participants before the first workshop
- * individual interviews with six workshop participants after each of the four workshops
- * fourteen individual interviews (with an additional sample)
- * video tapes of two group discussions with workshop participants

PHASE 2: PREPARATION OF THE DATA FOR INTERPRETATION

STEP 1: Transcription of video tapes and interviews

PHASE 3: INTERPRETATION OF THE PARTICIPANTS' CONCEPTUAL AND PROCEDURAL KNOWLEDGE OF THE CONCEPTS PROBLEM AND PROBLEM SOLVING.**STAGE 1: Interpretive analysis of each separate individual interview and group discussion**

STEP 1: Reading of transcripts

STEP 2: Creative brainstorm of the data

STEP 3: Coding of categories with reference to conceptual and procedural knowledge of the concepts problem and problem solving

STEP 4: Identification of properties and dimensions of the coded categories

STEP 5: Identification of inter-relations between coded categories

This process resulted in a first level of interpretive data (Level 1). This consists of a series of coded categories.

STAGE 2: Integration of Level 1 interpretive data for each of the four sets of data into four series of theoretical diagrams

STEP 1: Comparison and integration of codes with reference to the participants' conceptual knowledge of the concepts problem and problem solving and the participants' procedural knowledge of problem solving within each of the four sets of data.

This process resulted in a second level of interpretive data (Level 2). This consists of four series of theoretical diagrams.

STAGE 3: Integration of Level 2 interpretive data into one series of integrative diagrams

STEP 1: Comparison and integration of the theoretical diagrams of the four sets of data.

This process resulted in a third level of interpretive data (Level 3). This consists of one series of integrative theoretical diagrams.

PHASE 4: CONTEXTUALISATION OF THE INTERPRETIVE RESULTS WITHIN THE LITERATURE**STAGE 1: Contextualising the interpretive data**

STEP 1: Comparison of the Level 3 interpretive data with the literature on everyday problem solving.

This process resulted in a fourth level of interpretive data (Level 4). This consists of contextualised Level 3 data.

STAGE 2: Interpretation of epistemic assumptions of the participants about the concepts problem and problem solving.

STEP 1: Integration of Level 4 interpretive data with literature on epistemologies.

This process resulted in a fifth level of interpretive data (Level 5). This consists of contextualised Level 4 data.

Figure 2A. Schematic representation of the research design: conceptual, procedural and epistemological knowledge of the concepts problem and problem solving

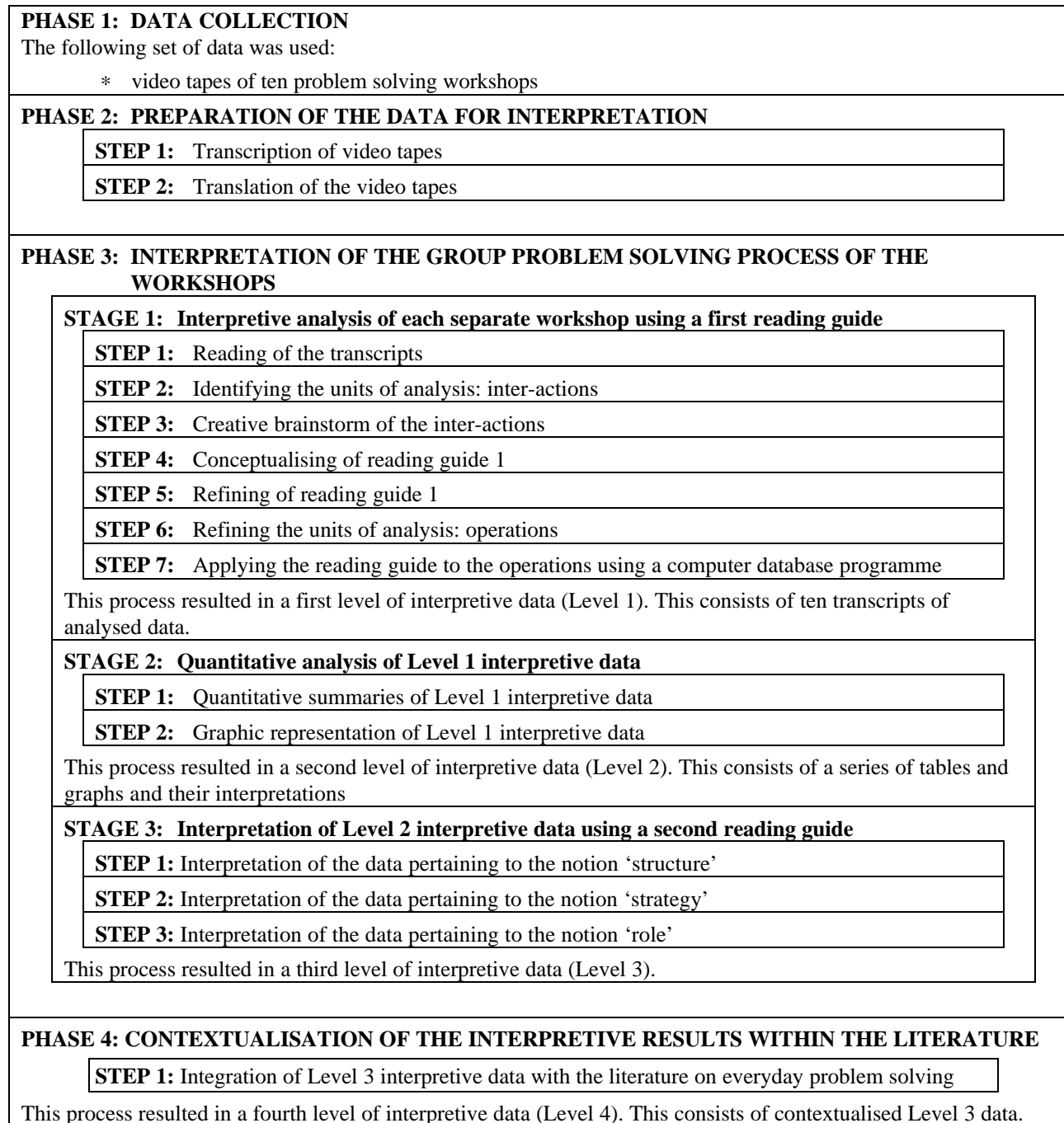


Figure 2B. Schematic representation of the research design: group problem solving procedure

5. Sample

The majority of the data collected for Components A and B of the research design formed an integral part of a development course run by the Eastern Cape Development And Funding Forum (ECDAFF) during February 1993 (for more contextual information on ECDAFF and the course, see Chapter 3). The data were collected over a period of five weeks, during which

a group of fourteen participants conducted weekly problem solving workshops, and during which weekly individual interviews were held with some of the participants. Interviews were subsequently held with an additional sample of fourteen people.

5.1. Profile of workshop participants

The fourteen participants, who took part in the workshops, were inhabitants of townships (residential areas reserved for black people during the Apartheid era) of small rural towns in the Eastern Cape Province, South Africa. All were involved in community development work in their communities and belonged to a Local Development and Funding Forum, the local affiliate to the regional ECDAFF (see Chapter 3 for more information on the context). All were nominated by their communities to represent them at the course. There were thirteen Xhosa first language speakers and one Afrikaans first language speaker. All had a good command of spoken English. With the exception of two participants, all can be considered as young adults being under the age of thirty at the time of data collection. Except for three participants all had obtained a Standard 10 educational qualification, which means they had completed their secondary education. The profile of the workshop participants is presented in Table 1.

Table 1. Profile of workshop participants

NAME	AGE	GENDER	EDUCATION
Ayanda	23	M	Std 10
Buyiswa	23	F	Std 10
Funeka	28	F	Std 9
James	55	M	Std 8
Khaya	23	F	Std 10
Lulama	22	F	Std 10
Matthew	23	M	Std 10
Sindiswa	25	F	Std 10
Sipho	23	M	Std 8
Sizwe	36	M	Std 10
Thami	22	M	Std 10
Theo	20	M	Std 10
Theodora	22	F	Std 10
Thozie	25	M	Std 10

This sample was used for the collection of data for Components A and B of the study.

5.2. Profile of additional participants

Fourteen additional participants were identified by the researcher through her local network of development work. The research purpose was discussed with each prospective participant as well as with the organisation or project she or he belonged to and co-operation was elicited. All contacted persons showed interest and willingness to participate. The fourteen additional participants complemented the profile of the initial sample. Although they did not belong to a LODAFF, all additional participants were connected to community development organisations in their area. All were inhabitants of townships attached to small towns in the Eastern Cape. Thirteen were Xhosa first language speakers and one was Afrikaans speaking. All had a good command of spoken English. All had a similar education background. The ages of the additional participants were somewhat higher than the initial group, four were over the age of 30 at the time of data collection. The profile of the additional participants is presented in Table 2.

Table 2. Profile of additional participants

NAME	AGE	GENDER	EDUCATION
Belinda	39	F	Std 7
Danielle	23	F	Std 10
David	33	M	Std 10
Jack	21	M	Std 10
Mncedisi	26	M	Std 10
Mzwake	24	M	Std 10
Nancy	26	F	Std 10
Nkosana	34	F	Std 7
Pelia	29	F	Std 10
Shakes	24	M	Std 10
Priscilla	26	F	Std 10
Sizwe 2	37	M	Std 10
Sydney	29	M	Std 9
Zingisile	28	M	Std 10

This total sample was used for Component A of the study.

6. Component A of the research design: Conceptual, procedural and epistemological knowledge

6.1. Aim of Component A

The aim of Component A of the research design was to gain insight into the conceptual, procedural and epistemological knowledge of the notions of problem and problem solving of the research participants and to develop a suitable methodology to do so.

6.2. Data collection: Component A

Several steps were undertaken in the data collection. These follow.

(i) Individual interviews with workshop participants

From the group of fourteen workshop participants, six volunteers were selected for purpose of collecting individual interview data on conceptual, procedural and epistemological knowledge. They were interviewed, using a structured interview schedule (see Appendix 1). An initial interview with each of the six participants took place before the first workshop. An additional four interviews with each of the six participants was planned to take place after each of the following five workshop. No interviews were held after workshop five because of lack of availability of the participants. A different interview schedule (see Appendix 2) was used for the four additional interviews. Because of unavailability of some of the participants for some of the subsequent four interviews, other workshop participants were interviewed instead. In the light of the grounded theory approach used in this research this change in procedure did not endanger the validity. A list of the interviews conducted is presented in Table 3.

Table 3. Interviews conducted

NAME	INTERVIEWS				
	1	2	3	4	5
Ayanda	x	x	x	x	x
James			x	x	
Khaya			x		
Lulama	x	x		x	x
Matthew	x	x		x	x
Sipho			x		x
Sizwe	x	x			x
Thami			x		
Theo	x	x	x	x	
Theodora	x	x		x	x

An interpretive analysis, using a grounded interpretative approach, was conducted on the above interview data (see Section 6.3 on data analysis).

(ii) Interviews with an additional sample of fourteen people

In line with a grounded interpretive approach, additional interviews were subsequently conducted with the additional sample of fourteen participants (see Table 2) in order to verify and enrich the interpretive data obtained from the initial workshop participants. The same

interview schedule as for the initial interviews was used, with the exception of one additional question: "Is there a difference between individual and group problem solving?"

All interviews (44 in total) were conducted by the researcher in English. The answers were written down verbatim. No tape recorder was used.

(iii) Group discussions

The fourteen workshop participants were divided into two sub-groups. Each group held a discussion on what the concepts problem and problem solving meant to them. One of the groups was joined by Linda, an ECDAFF training staff member. The group discussions, which were held partly in English, partly in Xhosa, were video taped and translated where necessary. Both were transcribed. This was done jointly by the researcher and a Xhosa speaking colleague from ECDAFF. The transcripts formed the raw data for the group discussion analysis.

(iv) Informal discussions

Data that ensued from informal discussions with the workshop participants throughout the data collection process were noted.

6.3. Data analysis: Component A

The data of the individual interviews and the group discussions were analysed, using an interpretive approach. What follows is: first, a brief explanation of the underlying logic of the interpretive-analytic approach used in the data analysis of Component A; second, the practical interpretive steps taken in the analysis; and third, a justification for the interpretive-analytical process. A series of appendices is provided to illustrate and clarify the different steps taken in the process.

6.3.1. Underlying logic of the interpretive-analytic process

The interpretive approach used for this part of the study is inspired by the interpretive grounded theory approach (Addison, 1988). The interpretive grounded theory is essentially a bottom up approach to the conceptual analysis of qualitative data (Pidgeon, Turner & Blockley, 1991).

The grounded theory approach was initially developed by Glaser and Strauss (1967) as a means for systematic discovery of theory from the data of social research and was mainly

intended for sociological research. It has since developed into a general methodological approach that can be used for the study of diverse phenomena in a variety of disciplines (Strauss & Corbin, 1994). The approach has also been adapted to fit a more interpretive paradigm (Strauss & Corbin, 1994). Across its diverse applications and interpretations, the core of the grounded theory approach remains its characteristic methodological procedures and techniques. These are coding, constant comparison, theoretical and integrative diagramming, memo-ing and theoretical sampling.

The current study makes use of the grounded theory techniques of coding, constant comparison, memo-ing and integrative theoretical diagramming (Strauss, 1987) in order to conduct a detailed, systematic and intense analysis of the data.

A brief explanation of the grounded theory processes of coding, constant comparison and compilation of integrative theoretical diagrams is provided.

Coding is the allocation of a conceptual label to a category of fragments of data. The initial coding is done by scrutinising the data very closely, line by line, or even word by word. The researcher breaks down and conceptualises observations, sentences, ideas and events into categories. The following questions are asked about each fragment of data: What are they? what do they represent? The initial coding is influenced by conjunctive experiential data (Strauss, 1987). This is everyday practical knowledge, as well as the knowledge of technical and literature which the analyst brings into the inquiry.

Coding is based on a concept-indicator model (Strauss, 1987). The indicators are facts, behavioral acts or events embodied in the texts that form the data of the research. Through the method of constant comparison, indicators are examined comparatively by the analyst. By making comparison of indicator to indicator, the analyst is forced into confronting similarities, differences and degrees of consistency of meaning amongst them. Indicators that reveal an underlying uniformity are then coded into a conceptual category. They become indicators of that particular category. Once a conceptual code is generated, the indicators to the conceptual code are sharpened to achieve their best fit of data. This occurs through re-visiting the data, applying the previously generated codes.

An important process in constructing conceptual categories is developing them in terms of their properties and dimensions. Properties and dimensions are attributes or characteristics of a phenomenon. Each category has several general properties and each property varies over a dimensional continuum. An example from the current study can clarify this. The coded category 'problem solving attitude' has the property 'flexibility' and a dimension of that

property is the ‘degree of flexibility’; Flexibility can be dimensionalised as ‘high or low’. The dimensional profile represents the specific property of a category under a given set of conditions. Each indicator of the property ‘flexibility’ can be dimensionalised. Dimensionalising can be done according to dimensions such as degree, extent, frequency, intensity and duration. Properties and dimensions are important to recognise and systematically develop because they form the basis for identifying and developing relationships between categories and sub-categories.

Coding has the following characteristics:

- it follows upon and leads to generative questions;
- it fractures the data, thus freeing the researcher from description and forcing interpretation to higher levels of abstraction;
- it moves towards the discovery of a core category or categories and so moves toward ultimate integration of the entire analysis as well as yielding the desired conceptual density.

In the initial stages of the analytic process, the coded categories are provisional. Through a process of continuous comparison of the coded categories with additional data, the categories obtain gradually more theoretical saturation until a well grounded theory is obtained.

The constant comparative method of the grounded theory approach involves the continuous questioning of gaps, omissions, inconsistencies and ‘not-yet’ understandings. As a result, the initial coding is frequently interrupted in order to write a theoretical memo which allows for the recording of these questions. This leads quickly to accumulated memos and moves the analyst further from the data and into a more analytical realm. It also leads to further sampling of new data, or revisiting existing data, in order to find answers. The comparative method is reflected in the analytical process employed in this study, through a continuous revisiting of the existing data (see different steps discussed in Section 6.3.2.). The constant comparison continues until the researcher is satisfied that the coded categories are theoretically saturated (Strauss, 1987).

The final stage in the process is the writing of theoretical and integrative diagrams. Theoretical diagramming involves the presentation of the coded categories (and their dimensionalised properties) and their accompanying theoretical memo’s in a diagram format. This aims at elucidating the interrelations between the various categories (see Appendix 12 for examples of theoretical diagrams). The compilation of integrative diagrams involves the integration of all the researcher’s separate cumulative analyses. There should not be one integrative diagram but

a succession of them throughout the research process, until a satisfactory diagram is produced, which represents the conceptual analysis of the research topic. (Strauss, 1987).

6.3.2. The interpretive analytical process

In Section 4, Figure 2A, an overview of the research design was sketched. In the current section a further elaboration of Phase 3 of Component A is provided congruent with the underlying logic provided in the previous section. The consecutive stages, and steps within each stage, as well as the levels of interpretive data obtained at the end of each stage are explained. An example of the execution of each of the steps is provided in appendices for clarificatory purpose.

STAGE 1: Interpretive analysis of each separate individual interview and group discussion

Step 1: The transcript was read and re-read to enhance familiarity with its content.

Step 2: The transcript was subjected to a detailed creative brainstorming session, during which various possible meanings of each word or, in certain instances clusters of words, were gleaned and written down. In Appendix 3 an example of the brainstorming exercise for one interview is provided. The context in which words were used, the researcher's conjunctive experiential knowledge, a thesaurus and data from informal discussions with participants in the workshops, were used in this process. It must be noted that the researcher is familiar with the particular use of the English language of the participants (which has a strong local flavour) and took this into account while brainstorming the interviews. This brainstorming process was intended to prepare the analyst's mind for a meaningful coding session.

Step 3: Prepared by the brainstorm data, categories and sub-categories with relevance to conceptual and procedural knowledge of the notions problem and problem solving were gleaned. In other words, categories with reference to an understanding of the concepts of problem and problem solving as well as an understanding of the procedure of problem solving were gleaned. These categories were coded (provided with a conceptual label) and the indicators (words and sentences in the data) they referred to, were noted. The indicators were subsequently compared in order to refine or adjust the coded categories (see Appendix 4 for the results of Step 3).

Step 4: The brainstorm data in conjunction with the coded categories obtained in Step 3 were revisited in order to identify properties. These ‘property categories’ were obtained through a process of scrutinising the data with the following questions in mind: who, where, how, what effect, which conditions, when, why? These categories were subsequently coded (provided with a conceptual label) and, in conjunction with the brainstorm data, subsequently revisited in order to determine their dimensions. Dimensionalising was done by establishing the extent, frequency, intensity and duration of the property categories. The indicators were subsequently compared in order to refine or adjust the coded categories (see Appendix 5 for an example of the result of Step 4).

Step 5: The categories and sub-categories obtained from Step 3 and Step 4 were revisited in conjunction with the brainstorm data in order to establish the inter-relations between them. (see Appendix 6 for an example of the results of Step 5).

Throughout this stage questions about the data arose, which were noted in theoretical memos and used to enhance the process of constant comparison (see Appendix 7 for an example of a theoretical memo).

The result of Stage 1 was a first level of interpretive data. This Level 1 consists of a series of coded categories, sub-categories and their interrelations with relevance to conceptual and procedural knowledge of the notions problem and problem solving for each individual interview and group discussion separately.

STAGE 2: Integration of Level 1 interpretive data into theoretical diagrams for each of the four sets of data

In this stage the Level 1 interpretive data was pooled into theoretical diagrams for each of the four sets of data (see Figure 2A, Phase 1 for a description of the four sets of data).

Step 1: Within each set of data, the codes (initial categories/ properties/ dimensions) of each of the individual sources of data (Level 1 data) were compared with each other and with each other’s indicators. This was aimed at integrating the codes from the different interviews and discussions and at the same time refining them. Subsequently, for each set of data a series of three theoretical diagrams, consisting of the obtained (refined and integrated) codes and their interrelations was compiled. These three diagrams referred respectively to the conceptual knowledge of the concept problem, the concept problem solving and the procedural knowledge of problem solving. Within each set of data, the theoretical diagrams were subsequently applied to the brainstorm data that had been

generated within that set of data during Stage 1, Step 1 of the interpretive process in order to assess their appropriateness.

Note: The above process of brainstorming, coding, memo-ing and diagramming was duplicated by a second researcher for the first set of data (individual interviews with six workshop participants before the first workshop) and subsequently discussed between the two researchers until consensus was achieved. The establishment of inter-subjective consensus was intended to enhance validity. Duplication of the interpretation process for the first set of data was considered sufficient, as it was presumed that this would establish a pattern of interpretation for the researcher which she could apply to the rest of the data.

Stage 2 resulted in a second level of interpretive data. Level 2 consists of four series of theoretical diagrams. These are presented in Appendix 12. One series of theoretical diagrams refers to the individual interviews with workshop participants before the workshops; one series to the interviews with the workshop participants after the various workshops; one series to the interviews with the additional sample and one for the two group discussions. Each series of theoretical diagrams consists of three diagrams, one for the participants' concept of problem, one for their concept of problem solving and one for their procedural knowledge of problem solving.

STAGE 3: Integration of Level 2 interpretive data into one series of integrative diagrams

In this third stage the Level 2 interpretive data was integrated into one series of integrative diagrams, which reflects the perceptions of all participants in the study.

Step 1: The theoretical diagrams produced during Stage 2, Step 1 were re-read and compared with each other with the aim of refining the codes for the participants' understanding of the notions problem and problem solving and their understanding of the problem solving procedure. The result of this process was the construction of one series of integrative theoretical diagrams of coded categories. These diagrams were subsequently applied to all the brainstorm data of all the transcripts in order to assess their 'fit to the data' and their interpretive value. This process led to several re-worked versions and refinements of the initial integrative theoretical diagrams until the researcher was satisfied that theoretical saturation was obtained.

Stage 3 resulted in Level 3 interpretive data. Level 3 consists of one series of three integrative theoretical diagrams. The integrative diagrams are presented in Chapter 7, Section 2.3. Figures

6 and 7 refer to the participants' conceptual knowledge of respectively the notion problem, and problem solving. Figure 8 refers to the participants' procedural knowledge of problem solving.

6.3.3. Justification of the interpretive analytical process

It is argued that the interpretive grounded theory technique, used in the above analytical process, fitted the theoretical and meta-theoretical paradigm chosen for this study several reasons.

- It relied on text as the basis for discourse analysis, which is in accordance with Ricoeur's ideas.
- It relied on the assumption that behaviour and knowledge can only be understood in context and that research participants are purposive agents.
- It relied on the principle of the hermeneutical circle Elements of the data (words and clusters of words) were interpreted in their relation to the whole (interview) and in turn the whole was made up by the interpretation of its sub components and their interrelations.
- It assumed that the researcher approached the research topic with a specific fore structure, while at the same time the emphasis of the inquiry was upon the creative task of uncovering meaning from data rather than utilising the data to test hypotheses generated by a specific prior theory.
- It allowed for the 'surplus meaning' of the concepts problem and problem solving to be uncovered. The meaning discovered through the interpretive process encompassed more than the intention of any one of the interviewees.
- It allowed for a qualitative integration of the analysis of the different sources of data, resulting in the construction of an integrated model of everyday problem solving.
- It ensured validity through the principle of theoretical saturation. In the grounded theory approach theoretical saturation and by implication a valid interpretation of the data is achieved if new data does not create new core categories and if the constant comparative method does not throw up new codes. This complies with the notion of validity through methodological rigour as proposed in the paradigm for this study. The multiple cycles of analysis and the application of the constant comparison technique in this study ensured theoretical saturation of the concepts problem and problems solving.

7. Component B of the research design: Group problem solving procedure

7.1. Aim of Component B

The aim of Component B of the research design was to gain insight into the group problem solving procedure of the participants. This included focusing on problem solving strategies employed in the problem solving process, the structure of the problem solving process and the role played by the various participants in the process.

7.2. Data collection: Component B

The researcher ran five problem solving workshops. Each workshop focused on a different problem. The group of fourteen workshop participants (see Table 1) was divided into two equal groups, which independently but simultaneously worked on the five problems. As a result ten 'workshop data units' were obtained. Dividing the group into two smaller groups aimed at ensuring sufficient participation of all participants in the problem solving process.

7.2.1. Problem solving workshops

The problems used in the problem solving workshops are presented in Appendix 8 They were constructed in accordance with the following criteria.

- They fitted into an everyday cognition framework. They were complex and multi-dimensional problems (Willis & Shaie, 1993) in which a certain amount of domain specific knowledge was required to solve them (Eysenck & Keane, 1990). They were contextualised in a specific physical and interpersonal context and attitudes and beliefs were necessarily important aspects of the solution of the problem (Strohm Kitchener, 1983; Willis and Shaie, 1993).
- They were ill-structured problems. This implies that they allowed for two or more complementary conceptualisations and potentially valid solutions, which could vary in quality. The permitted operations in the problem solving process were relatively unspecified and there was no clear criteria to validate the solution (Galotti, 1989).
- They related to real-life community development issues experienced by the participants. These real-life simulations were developed by the researcher, based on her own involvement with the participants' communities, in consultation with colleagues involved in ECDAFF development work. All problem situations related to the function of a LODAFF in a community (see Chapter 3, Section 3 for more information on LODAFF). All workshop participants were active in a LODAFF in their own communities and it was assumed that they would therefore be able to identify with the problem situations. Although the problems were constructed with the aim of providing enough familiarity to the participants, so that their domain specific knowledge could be called upon, they were carefully designed to provide enough novelty in order to enhance the necessity for problem solving behaviour and group mediation in the problem solving process. Three of

the workshops (Workshops 1, 3 and 4) involved a choice between various options. The remaining two workshops involved the need for a mathematical calculation and the designing a plan (Workshops 2 and 5).

At the start of each workshop, the researcher introduced the problem to the whole group of fourteen participants. The problem was written down on newsprint for ongoing reference by the participants and clarification was provided when necessary. No discussion was held on how to solve the problem. The groups were provided with newsprint on which they were required to note their results. Immediately after the introduction of the problem the group was divided into the two smaller groups (of seven) who were requested to deal with the problem. It must be noted that not all participants were available for all the workshops and that the composition of the groups was not always identical. The composition of the two groups for each of the workshops is provided in Table 4.

Table 4. Group composition of the workshops

Problem Group	1		2		3		4		5	
	A	B	A	B	A	B	A	B	A	B
Ayanda		x		x	x			x		x
Buyiswa				x	x		x			x
Funeka	x		x		x			x		x
James		x	x			x		x	x	
Khaya				x		x		x		x
Lulama						x	x		x	
Matthew	x			x		x		x		x
Sindiswa	x		x							
Sipho		x	x		x		x		x	
Sizwe	x						x		x	
Thami		x	x			x			x	
Theo		x		x	x			x		
Theodora		x		x		x	x			x
Thozie	x		x		x		x		x	
Linda ¹	x									x
Hilde ¹		x	x	x			x		x	

¹ Linda, who is a colleague of the researcher from ECDAFF, and Hilde, the researcher herself had a small input in the groups. Linda provided support for the group process in Workshop 1A as a participant and provided an explanatory input in Workshop 5B. Hilde provided some explanatory and group supportive assistance, when approached by a group.

After each workshop session, a *rapporteur* from each group provided a short report back in a plenary session. An opportunity was provided for participants to ask questions about the report back.

The workshops, which lasted between thirty and forty minutes each, were video-recorded. The plenary sessions were also video-taped and a summary written down on newsprint. These plenary sessions did not form part of the formal data used in the data analysis. However, where appropriate, it was used as corroborating information in the interpretive process.

The formal data collection process resulted in ten video-taped workshop sessions, two groups each conducting five different workshops. The video sessions were partly in Xhosa and partly in English. This was due to the nature of the participants' use of the two languages. In their everyday conversations the participants spontaneously alternate English and Xhosa. The fact that one of the participants was an Afrikaans first language speaker, whose Xhosa was not as fluent as the others, encouraged the use of English in the group in which she participated.

The video tapes were translated by two independent translators (Xhosa first language speakers with a good knowledge of English). The transcribing was done by the researcher simultaneously with the first translation. The simultaneous transcription and translation (which implied a joint viewing of the tapes by translator and transcriber) enabled the researcher to make notes on the non-verbal behaviour that accompanied the group interactions. The non-verbal behaviour was not considered formal data for the interpretive process of this research, it was used however, to assist subsequent interpretation of the formal data where necessary. Where inconsistencies were revealed between the two translators the first and second translator were asked to re-translate the relevant sections. In most instances this resulted in an agreement between both. In the few instances where no common translation could be obtained the assistance of a third person was called upon. During the second and third translations, the researcher made the necessary amendments to the transcripts. As stipulated before, a large proportion of the tapes were in English for which no translation was necessary.

7.3. Data analysis: Component B

The video taped data of the problem solving workshops were analysed using a layered interpretive approach. What follows is: first, a brief explanation of the underlying logic of the interpretive approach; second, a motivation for the identification of the unit of analysis chosen for this part of the study; third, the practical interpretive steps taken in the analysis; and fourth, a justification for the interpretive-analytical process.

7.3.1. The underlying logic of the interpretive-analytical process

In order to contextualise the practical interpretive steps used in Component B within the broad research paradigm of this study, some notes on the underlying logic of the interpretive-analytical process are necessary.

(i) Videos as interpretive data

The researcher opted for the use of video material for Component B of the research design. Craig (1988) argues the importance of video recordings for the extraction of meaning. According to Craig (1988) video recording remains available for the analyst to return to and therefore records the event or object of interpretation in a medium well suited to an analysis aimed at capturing the meaning of an event. According to Craig (1988) by fixing an event or events on a video-recording, the analyst preserves from life that which is usually fleeting to the causal observer. In this way, the imposition of meaning on events can be prolonged for a later stage in the analysis. At the same time the video tape affords one the opportunity to reverse time so that actions separated in time or not occurring chronologically may be compared with one another. A stream of actions recorded on video, therefore, allows the piecing together of bits of information in a manner similar to the construction of a puzzle (Craig, 1988, 96). In this study, the video material enabled the researcher to capture the meaning of the data by combining verbal and non-verbal data of the videos into the text. It also allowed the researcher to revisit the raw data in order to enhance the interpretive process.

(ii) A multi-layered process of interpretation

The interpretive-analytical process was of a multi-layered nature. This allowed for a deep interpretation and the uncovering of underlying structure. The first stage of interpretive-analysis aimed at unraveling the texts into their basic units of analysis for purpose of enhancing the emergence of meaning from the data (see Figure 2B, Phase 3, Stage 1) The second and third stage of interpretation aimed at an integrative interpretive process (see Figure 2B, Phase 3, Stages 2 and 3).

The second and third stages of the interpretive process contain similarities with what Geertz (1973) calls 'applying of a thick description', and which refers to the application of a coherent story to the different bits of data. Craig (1988), based on Geertz's ideas, argues that data must reveal the potential story that the analyst, in the process of analysis, must construct in its fullness. The analyst draws on theory and data and the relation between these - part to whole - in order to construct a coherent account. It is an interpretive-explanatory process in that it

involves the explanation on the basis of a co-ordination of the different bits of data into patterns of behaviour. This means explicating the generative mechanisms for patterns in behaviour. The thick description relates to why the actions were performed from the actor's point of view and simultaneously provide underlying functional structures or generative mechanisms which produce action and which are culturally influenced. This refers back to Ricoeur's notion of 'surplus meaning'.

(iii) The reading guide method

The reading guide method was used for the interpretation of the video transcripts. A reading guide method (Mergendollar, 1989) of textual interpretation aims at extricating those features of texts which clarify the meaning of a text. It is a grounded hermeneutical tool (Addison, 1992) based on the assumption that an interpretive process is a reflective process of engaging with data guided by successively revised and better formulated questions (Mergendollar, 1989). It involves generating a set of questions through which the data are read. As a result it brings an order to and facilitates the exploration of the data.

The analytical process of Component B of this study made use of two consecutive reading guides. The first reading guide (see Appendix 9) was constructed using a grounded theory approach, the second reading guide was determined more by the research question and the researcher's fore-structure. Both reading guides were inspired by the notions of mediated action (see Chapter 4, Section 5.1.2.2.) and mediational means (see Chapter 4, Section 5.1.2.1).

The reading guide method was considered appropriate for the multi-layered approach to the analysis in the sense that the results of the first reading guide provided the data for a more in-depth interpretation at the level of the second reading guide. An intermediate step separated the application of the first and the second reading guide (see Figure 2B, Phase 3, Stage 2). This step re-arranged the results of the first reading guide application, by summarising and graphically representing them. The aim of this was to re-arrange the data in order to enable the further meaningful interpretation through the application of the second reading guide.

7.3.2. The units of analysis

The ideas of Harre and Secord (1972) on the analysis of social actions and the ideas of Leont'ev (1981) inspired the definition of the units of analysis of this study. A layered framework of different units of analysis was constructed.

(i) Workshop

The group problem solving **workshop** was considered the broadest unit of analysis. The workshop unit corresponds with Harre and Secord's notion of episode, which is any sequence of happening in which human beings engage, which has some principle of unity and which has a beginning and an end. The workshop complied with this definition since it was a time limited event with a specific focus, namely solving the problem.

(ii) Inter-action

Each workshop unit was divided into **inter-actions**. These are comparable to Leont'ev's (1981) actions, which he defines as systems of co-ordination in the service of goals which represent intermediate steps in satisfying the motive (to solve the problem). In the workshop, an inter-action is an utterance of a workshop participant delimited by an previous utterance of a different participant and a subsequent utterance of a different participant. This inter-action also comprises non verbal behaviour that corresponds with the verbal utterance. The term inter-action was adopted rather than the term action in order to emphasise the inter-active aspect of the unit.

(iii) Operation

Operations are akin to Leon'tev's notion of **operation**, which he defines as the means whereby an action is carried out under specified constraints. An operation was identified within an inter-action as a part of the participant's whole utterance with a specific meaning, separate from the rest of the utterance of that inter-action. The meaning was identified in terms of how it related to other inter-actions and to the workshop as a whole. The identification of the operations were the result of an interpretive process and as a result did not take place at the onset of the analytical process, but at a later stage, when sufficient interpretive data was available.

It is argued that this layered framework of units of analysis provides for an interpretive context conducive to a structural analysis. It emphasises the need for a simultaneously taking into account of all layers throughout the process for the construction of meaning.

7.3.3. The interpretive-analytical process

In the current section a further elaboration of Phase 3 of research Component B is provided, congruent with the underlying logic provided in the previous section. The consecutive stages, and steps within each stage, as well as the levels of interpretive data obtained at the end of

each stage are explained in this section. Where it is deemed appropriate examples of the steps are provided in appendices and figures for clarificatory purposes.

STAGE 1: Interpretive analysis of each separate workshop using a reading guide

Step 1: In this step the focus was on the **workshop** as a unit of analysis. For each workshop, the transcript was read and re-read to enhance familiarity with the content. At various stages during this process the videos were revisited in order to get a better understanding of the context in which certain extracts of the conversation were embedded.

Step 2: Each transcript was sub-divided into **inter-action** units (see Section 7.3.2.(ii) for a definition of inter-action). Each inter-action was numbered and allocated the name of the participant who produced the inter-action. It needs to be noted however, that although in general each inter-action could be identified with one participant, in few instances, one inter-action involved two participants. This was the case when the utterance of one participant was accompanied by a recording on paper of that utterance by another participant.

Step 3: Each inter-action (in conjunction with re-viewing the tapes) was subjected to a creative brainstorming session during which the following questions were posed and provisionally answered: How does it relate to the problem? Does it reflect personal experience and beliefs? How does it relate to the previous and the subsequent inter-actions and how does it relate to the workshop? Whom in the group is it directed at? What is its function? What is its impact? What emotions does it carry? Is this a meta-cognitive input? Any additional reflections of the researcher on the data were also noted (see Appendix 10 for the results of Step 3).

Step 4: The brainstorm data on the inter-actions generated in Step 3, in conjunction with the inter-actions themselves, provided the basis for the development of the reading guide. The guide was compiled using the grounded interpretive approach discussed in Section 6.3.2. Stage 1, Step 3. From the brainstorm data, categories with relevance to the meaning of the inter-actions within the context of the workshop were gleaned and coded. An example of this coding process is given in Figure 3. This Figure contains an extract of the brainstorm data of the inter-actions of Workshop 1B which are in the process of being coded. The codes are indicated in bold face text in brackets behind the brainstorm data.

- **Inter-action 1: brainstorm**
- Repeats the question/brings question to the group (**repetition**) (**inform**)
- Opens the group discussion (**invite**) (**initiates**)
- Importance to know problem structure (**facts**) (**content**)
- Sets the task for the group (**overall task-oriented function**)
- Stresses the group spirit (**overall group-related item**)
- Asks to make the problem clearer to authority/person who poses the problem (**inquire**) (**question**) (**response to previous input**)

- **Inter-action 2: brainstorm**
- Negative response to previous input (**rejects**) (**response to previous input**)
- Group member denies others the chance of having it clarified (**own needs**) (**opinions**)
- Understands the question and therefore expects others to understand/or sees it as sufficient if one participant understands (**clarify**)
- Has something to say that he is not sure about (**mumbles**)

Figure 3. Example of the coding process of interactions

The coded categories provided the items for the reading guide. Initially various possible reading guides, based on different interpretations and arrangements of the coded categories emerged. During this process some of the coded categories were identified to be sub-categories of others. Each provisional guide was applied to the inter-actions of the workshops with the aim of testing its suitability.-suitability in the sense of its meaningfulness within an everyday cognitive framework as well as the closest fit to the data. As a result of this process a draft of the final version of the reading guide was obtained.

Step 5: The first draft was applied to all the inter-actions of all the workshops in order to verify its validity. During this process, several revisions were done in order to obtain a 'best fit' with the data. Some categories and sub-categories were re-coded, some sub-categories were deleted, added or moved across to another category. After each amendment, the guide was re-applied to all the inter-actions.

The final reading guide provided the structure for the analysis of the inter-actions and included three questions. These questions related to three different characteristics of the inter-actions. The questions were: What is the immediate inter-active function of the inter-action towards the preceding inter-actions?; What is the cognitive-affective content of the inter-action?; and what is the underlying function of the inter-action towards the workshop as a whole? Thus each inter-action could be examined with reference to three elements: Immediate Inter-active function, Cognitive-Affective content and Underlying

Function. Each of these three elements could be broken down into a number of forms (see Table 5).

Table 5. Elements and their forms

Immediate Inter- active Function (IF)	Cognitive-Affective Content (C)	Underlying Function (UF)
clarify	example	amplifying
comment	fact	compromise
inform	inference	consensus u
inquire	interpretation	consensus a
invite	opinion	contribution
justify	reflection	group
offer	repetition	memory
query	own ideas	
reject	own needs	
request	participation	
seek	task	
suggest		
support		
record		
dictate		

Full details of the different forms of the elements are given in Appendix 9.

Step 6: During the application of the reading guide to the inter-actions it was found that some inter-actions could be read in function of more than one form of each of the elements of the reading guide. This elucidated the need to sub-divide inter-actions into smaller units of analysis. These were defined as **operations**. An example to illustrate this is given in Figure 4. This Figure shows how one inter-action of Workshop 1B is sub-divided into its constituent operations. Note that each operation is identified by a number that indicates the inter-action and the operation within that inter-action.

Interaction 37:			
Thami: I agree (to Theo) We have been given a choice between two workshops so we must decide, as LODAFF people we must decide for our community which should be the first one. As we are discussing here it is the RDP, the RDP should be the first workshop.			
IF: SUPPORT	C: OPINION	UF	TASK
		:	
CLARIFY	REPETITION		CONSENSUS U
COMMENT	REFLECTION		TASK
SUGGEST	REPETITION		CONSENSUS A
Interaction 37 was sub-divided into operations 37.1, 37.2, 37.4			
Operation 37.1			
Thami: I agree (To Theo).			
IF: SUPPORT	C: OPINION	UF	TASK
		:	
Operation 37.2			
Thami: We have been given a choice between two workshops so we must decide, as LODAFF people we must decide for our community which should be the first one.			
IF: CLARIFY	C: REPETITION	UF	CONSENSUS U
		:	
Operation 37.3			
Thami: As we are discussing here,			
IF: COMMENT	C: REFLECTION	UF	TASK
		:	
Operation 37.4			
Thami: it is the RDP, the RDP should be the first workshop.			
IF: SUGGEST	C: REPETITION	UF	CONSENSUS A
		:	

Figure 4. Illustration of the sub-division of an inter-action into its constituent operations

The process of identifying and analysing operations coincided with providing each operation (where appropriate) with a reference number. This reference number indicated to which other operations the operation was linked. In Appendix 9 a full explanation of the referencing of the operations is provided and in Appendix 11 an example of the referencing is shown.

Step 7: The analysis of all the operations of all the workshops, using the reading guide, was captured in a relational database computer program (DataPerfect 2.3, WordPerfect Corporation, 1993). This was done to allow subsequent manipulation of the data for further interpretation. The database was set up with related data tables (referred to as panels by DataPerfect), which contained the specific components of the data set as determined by the reading guide. The tables are as follows: Workshop; Participants; Interaction; Operation; Immediate Inter-active Function; Cognitive-Affective Content; Underlying Function. The relational structure of these tables is shown in Figure 5.

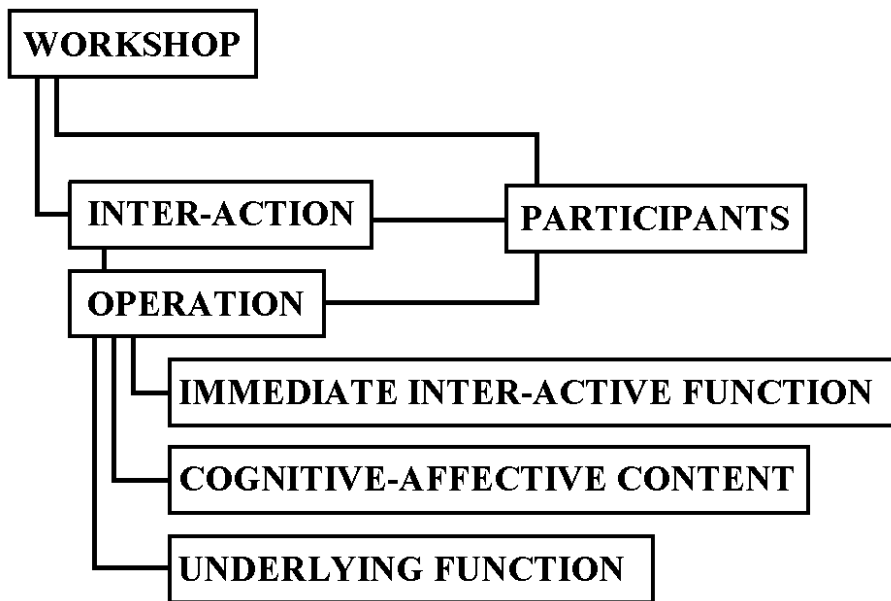


Figure 5. Diagram showing the relational structure of the data base

The interpretive process of Stage 1 resulted in a first level of interpretive data. This Level 1 interpretive data consists of the results of the computerised application of the reading guide to all operations of all workshops. Appendix 11 provides an example of the result of Step 7.

STAGE 2: Quantitative analyses of Level 1 interpretive data

Level 1 interpretive data was subjected to various further analyses. These consisted of the production of quantitative analyses and graphical representations and their interpretations. The database (see Stage 1, Step 7) was used to generate output of two kinds: first, output of database contents sorted on various parameters; and second, quantitative analyses of data. The outputs were made with the 'report' facility in DataPerfect, and sent to disk so that the resultant reports could be manipulated and analysed further with a spreadsheet program (Excel 7.0a, Microsoft Corporation, 1996). The spreadsheet was used to generate charts of workshop data in a graphical format.

Step 1: The following quantitative analyses of operations within each individual workshop and across all workshops were produced:

- quantitative analyses of the frequencies of the different forms of the Immediate Inter-active function, the Cognitive-Affective Content and the Underlying Function. This data is presented in Appendix 13;
- quantitative analyses of the frequencies of the various combinations of the different forms of the Immediate Inter-active Function and the forms of the Cognitive-Affective Content; the various combinations of the different forms of the Immediate Inter-active Function and the forms of the Underlying Function.; the various combinations of the different forms of the Cognitive-Affective Content and the forms of the Underlying Function. This data is presented in Appendix 14.

These quantitative summaries were interpreted.

Step 2: The following graphical representations of the analyses of operations for each individual workshop were produced:

- graphical representations of the chronology of the operations, analysed in terms of their Immediate Inter-active Function, Cognitive-affective Content and Underlying Function. This data is presented in Chapter 8, Section 3.1;
- graphical representations of the links between operations in terms of their cognitive-affective content (an example of this data is presented in Appendix 15);
- graphical representations of the number of operations contributed by the participants towards the workshop, analysed in terms of their Immediate Inter-active function, their Cognitive-Affective Content and their Underlying Function. This data is presented in Appendix 16.

These graphical representations were interpreted.

The interpretive process of Stage 2 resulted in a second level of interpretive data. This Level 2 interpretive data consists of a series of tables and graphs and their interpretations. This data is presented in Chapter 8 and its accompanying appendices.

STAGE 3: Interpretation of Level 2 interpretive data using a second reading guide

The interpretive process of this stage made use of Level 2 data in conjunction with Level 1 data, the brainstorm data and the raw workshop data.

A second reading guide which consisted of three items, respectively pertaining to the notions structure, strategy and role was used.

Step 1: This step attempted to answer **Question 1** of the reading guide: "What can the data reveal with respect to the notion **Structure**" ? For the purpose of this study the notion 'structure' refers to the way in which the problem solving process is constructed. This includes issues of chronology as well as the nature of the links between the various operations throughout the workshop.

Step 2: This step attempted to answer **Question 2** of the reading guide: "What can the data reveal with respect to the notion **Strategy**?" For the purpose of this study the notion 'strategy' refers to the approaches, methods and techniques used by the participants in the problem solving process.

Step 3: This step attempted to answer **Question 3** of the reading guide: "What can the data reveal with respect to the notion **Role** ?" For the purpose of this study the notion 'role' refers to different functions fulfilled by the participants in the problem solving process.

This stage resulted in Level 3 interpretive data. This data consisted of interpretations regarding the notions structure, strategy and role. This data is presented in Chapter 8, Section 4.

7.3.4. Justification of the interpretive-analytical process

It is argued that the layered interpretive approach and the reading guide technique, used in the above analytical process, fitted the paradigm chosen for this study for the following reasons.

- It relied on text as the basis for discourse analysis, which is in accordance with Ricoeur's ideas.
- The unit of analysis was activity, which is in accordance with an everyday cognitive framework.
- The brainstorming and the subsequently developed reading guide included questions which reflect the application of an everyday cognition framework in which a cognitive act is defined in terms of its interpersonal, contextualised, goal-directed, affective and conative characteristics (Guberman & Greenfield, 1991; Willis & Shaie, 1993).
- The analytical process was of a multi-layered nature, enabling a progressively more in-depth interpretation.
- The combination of creative interpretation (*i.e.* The brainstorm and the development of the reading guides) and methodological rigour (adherence to pre-determined steps and re-arrangement of data by means of quantitative summaries and graphic representations) is in accordance with the framing assumptions of the study.

- It relied on the principle of the hermeneutical circle. Elements of the data (operations) were interpreted in their relation to the whole (workshop) and in turn the whole was made up by the interpretation of its sub components and their interrelations.
- It assumed that the researcher approached the research topic with a specific fore structure, while at the same time the emphasis of the inquiry was upon the creative task of uncovering the meaning of the participants' problem solving procedure.
- It allowed for the 'surplus meaning' of the group problem solving process to be uncovered. The meaning discovered through the interpretive process (in particular the application of the second reading guide) encompassed more than the intention of any one of the participants and it revealed the underlying structure of the inter-actions.
- The use of a computer data base enhanced the rigorous application of the analytical-interpretative process and the transparency of the interpretive process. As a result it enhanced the validity of the analysis.

8. Component C of the research design: An integration of indigenous knowledge and practice of group problem solving

A last phase in the interpretive analysis of the data involved the integration of all the previous interpretive-analytical phases of Components A and B of the research design with the existing literature on everyday cognition. Through a cross-reading of the interpretations on conceptual, procedural and epistemological knowledge of problem solving with the interpretations of the group problem solving process, the researcher aimed at completing a full picture of the indigenous conceptualisation of problem solving and group problem solving procedures among the research participants. The results of this process are presented in Chapter 9.

CHAPTER 7.

CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE OF THE CONCEPTS PROBLEM AND PROBLEM SOLVING

1. Introduction

This chapter presents the results of the inquiry into the participants' conceptual, procedural and epistemological knowledge of the concepts problem and problem solving.

2. Levels of interpretive data

The interpretive approach used in this study and the specific interpretive-analytical procedure applied to the data were discussed in detail in Chapter 6 Section 6.3. It is important to remind the reader that in the paradigm proposed for this study (see Chapter 6) it was argued that creative interpretation and enforcing methodological rigour should be regarded as complementary actions in the analytical process. In this chapter the notion of rigour refers to the pre-determined phases in the examination of the data. The notion of interpretation refers to the creative moments which form the substance of the steps in the analysis. This section presents the different levels of interpretive data that resulted from the interpretive-analytical process.

2.1. First level of interpretive data: The codes

The first level (Level 1) of interpretive data consists of 46 individual scripts of interpretive data relating to the participants' perception of the concepts problem and problem solving and their understanding of the procedure of problem solving. These were obtained from the analysis of the following four sets of data:

- individual interviews with six workshop participants before the first workshop (six scripts);
- individual interviews with six workshop participants after each of the four workshop (24 scripts);
- two group discussions (two scripts);
- individual interviews with the additional sample of fourteen participants (fourteen scripts).

The interpretive data for each of those 46 individual scripts contains:

- the initial brainstorm data (see Appendix 3 for an example);
- the coded categories (see Appendix 4 for an example);

- the identified properties and dimensions of the coded categories (see Appendix 5 for an example);
- the identified relationships between the coded categories (see Appendix 6 for an example).

The amount of data obtained at this level is too cumbersome to be presented in the thesis in its totality. The examples presented in Appendices 3, 4, 5 and 6 are deemed sufficient for the reader's comprehension of the process.

2.2. Second level of interpretive data: Theoretical diagrams

The second level (Level 2) of interpretive data consists of four series of theoretical diagrams, which are the result of integrating the interpretive data with reference to the conceptual knowledge of the notions problem and problem solving and the procedural knowledge of problem solving for each of the four different sets of data. At this level of interpretation, therefore there are twelve theoretical diagrams. Three diagrams for each of the four sets of data. These theoretical diagrams are presented in Appendix 12.

2.3. Third level of interpretive data: Integrative diagrams

The third level of interpretive data (Level 3) consists of a series of three integrated theoretical diagrams, which consolidated all the interpretive data contained in the previous levels of interpretation as well as the theoretical memo's which were compiled throughout the interpretive process. These diagrams represent the participants' local conceptual and procedural knowledge of the concepts problem and problem solving.

2.3.1. Conceptual knowledge of the concept problem

The integrated theoretical diagram of the conceptual knowledge of the concept problem is presented in Figure 6.

Various interpretations can be gleaned from Figure 6.

- The participants made a distinction between the characteristics of a problem experienced by an individual (individual problem) and a problem experienced in a group (group problem) In the subsequent discussion the notions ‘individual problem’ and ‘group problem’ will be used to refer to a problem experienced respectively by an individual or a group. The participants’ distinction between a group and an individual problem is partly due to the nature of the data collection process. Participants were asked to define a problem (in general terms) as well as to describe the problem experienced in their group during the research.
- The participants employed a tacit typology of problems, based on the problem bearer’s (one who experiences the problem) perception of the different possible causes of a problem. There are three types of individual problems and there is one type of group problem.
- Problems were always situated within a social sphere of life and each type of problem could be situated in any of the different spheres.
- Problems were acknowledged to have a psychological effect on the problem bearer as well as on the society at large.

2.3.2. Conceptual knowledge of the concept problem solving

The integrated theoretical diagram of the conceptual knowledge of the concept problem solving is presented in Figure 7.

Various interpretations can be gleaned from Figure 7.

- Problem solving was perceived as an action process including various possible role players. A distinction was made between those involved in the problem and the outsider(s). Those involved are the problem causer (the individual who displays unacceptable behaviour) and the affected. Within the category of affected, a distinction was made between direct and indirectly affected. The directly affected party refers to the person to whom the unacceptable behaviour is directed or to the person who has an unfulfilled need. The indirectly involved are those who experience unpleasant consequences as a result of their relation with the directly affected party.
- The outsider is a person who is not involved in the problem, but who is called upon to assist with the problem solving process. The outsider can be an ‘advice giver’, an ‘empathiser’ or a mediator. The ‘advice giving’ and ‘empathising’ role can be fulfilled by the same person.
- In group problem solving all the group members are simultaneously causers and affected. Sometimes a group member emerges as a leader and takes the role of outside mediator. This is, however, not always the case and depends on the nature of the group, such as the presence of a person with leadership qualities.
- Problem solving was considered to be a process that consists of various chronological stages. In the case of an individual problem, the problem solving process involves phases in which the problem bearer may act on her own and phases in which there may be interaction between the problem bearer and some or all of the other role players. When and how much individual and joint action occurs depends on the type of problem and the individual capacity (resources and attitudes) of the problem bearer. The participants believed that the more difficult the problem is perceived to be by the problem bearer the more interactive (need for outside help) the problem solving process will be.
- In the case of a group problem, the problem solving process was considered to involve all the group members throughout the process.
- The problem solving process makes use of resources. A distinction was made between human resources that are located within the role players and external resources that are consulted by the role players. An outside adviser may be chosen for her experience and expertise in problem solving, her position of authority in a community organisation

and/or her qualifications. Qualifications as a teacher, social work and/or minister of religion were considered important for problem solving. An advisor may also be chosen for her expertise in common sense reasoning, information gathering and for possessing specialised knowledge. An outside mediator is chosen for her expertise in negotiation and conflict management.

- Several attitudes were considered to be necessary for successful problem solving. These are to be displayed by all role players. An outside ‘empathiser’ is chosen for her ability to empathise with the problem bearer. This role player is often a friend of the problem bearer. An outside mediator is chosen for her display of attitudes of impartiality and fairness.
- All those involved in problem solving experience certain emotions during the process. All role players may experience any one or a combination of these emotions.
- The participants believed that problem solving can either be successful or it can fail. A problem solving process succeeds if the role players make a concerted effort and if resources and attitudes are applied appropriately and effectively. When a problem is successfully solved, it has several positive results for the role players and for the society at large. Problem solving fails if the role players are not serious and honest about the endeavour. If the problem solving process fails, the problem and the effects of the problem will become progressively worse.

2.3.3. Procedural knowledge of problem solving

The integrated theoretical diagram of the procedural knowledge of problem solving is given in Figure 8. Figure 8 consists of two parts, one dealing with the stages in the problem solving process (Figure 8A) and the other with the actions involved in the problem solving process (Figure 8B).

Several interpretations can be gleaned from Figures 8A and 8B.

(i) The problem solving process (Figure 8A)

- The participants identified several chronological steps in the problem solving process. A distinction was made between the steps in the process of solving an individual problem and a group problem.
- In both processes, however, identifying the problem, which implied acknowledging that an impediment is experienced, was considered of importance. The main emphasis was on analysing the problem and selecting a solution. As a result a more detailed description of these steps was obtained.
- Both the analysis and solutions were defined in terms of their social context.
- In both processes a distinction was made between planning the solution and implementing it.
- The main difference between the two processes is in the ‘solution finding’ step. Where in the problem solving process for an individual problem the focus is on selecting an existing solution, in the process of solving a group problem the focus is on finding a group consensus.

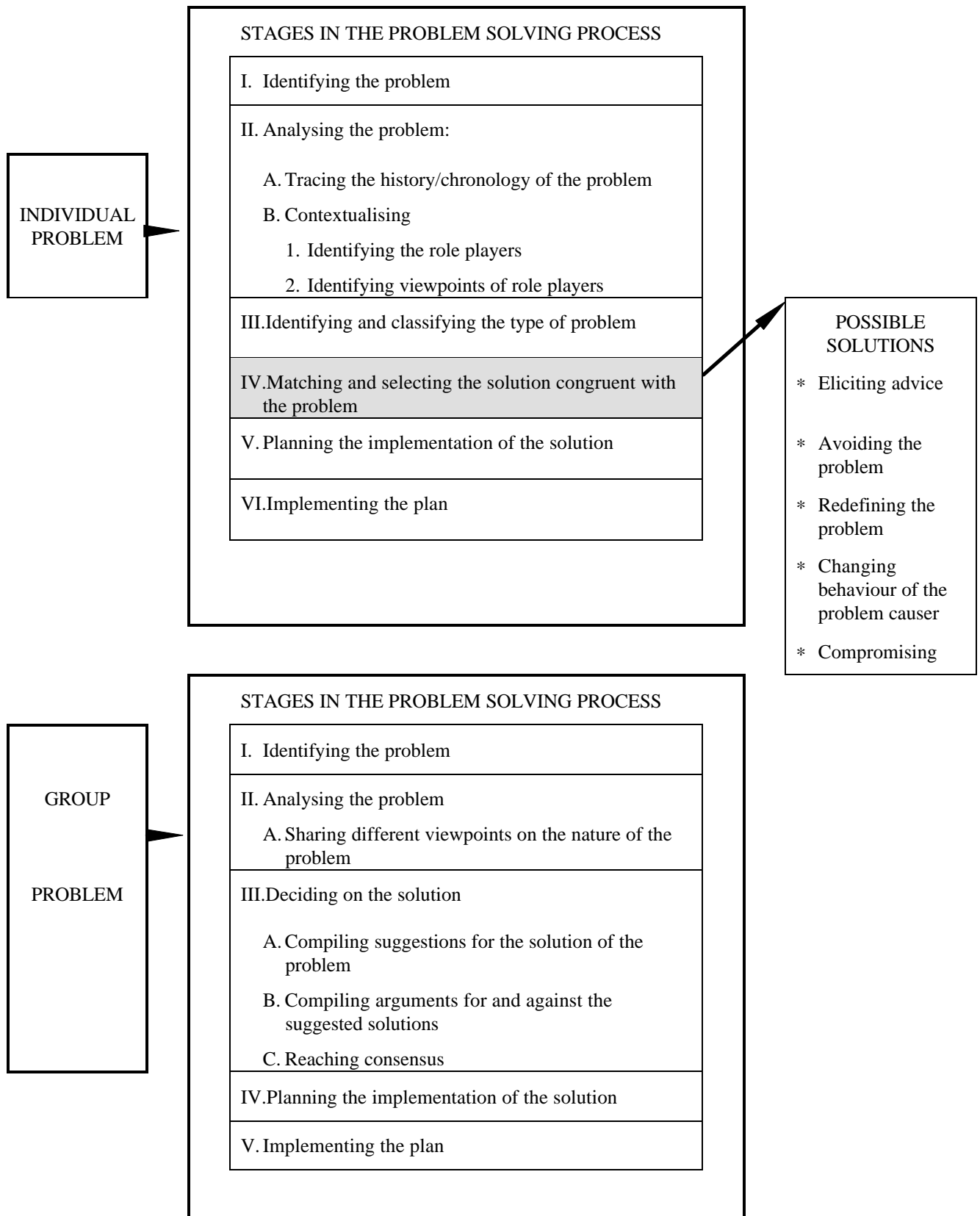


Figure 8A. Integrated theoretical diagram of the procedural knowledge of problem solving process

(ii) Problem solving actions (Figure 8B)

- A distinction was made between the actions in the process of solving an individual problem and those in solving a group problem. However, the majority of the actions in both processes are of an inter-active nature and the main focus is on listening, observing and talking; and on various ways of talking such as suggesting or clarifying.
- A second distinction was made between the actions of the different role players in the problem solving process. In the individual and the group problem solving process there is a particular role player endowed with the task of mediating.

3. Fourth level of interpretive data: Contextualised data

In the previous sections of this chapter the results of various successive steps in the interpretive-analytical process were discussed. The end result of this process consisted of the integrative theoretical diagrams provided in Section 2 of this chapter, which present the participants' conceptual and procedural knowledge of the notions problems and problem solving. The fourth phase in the interpretive analysis involves a further interpretation of this interpretive data within a context composed of the raw interview data, the theoretical memo's and the 'everyday cognition' framework discussed in Chapter 4. A return to the notion of hermeneutical circle (see Chapter 5) is necessary to provide a motivation for this phase in the analysis. The hermeneutical circle contends that parts (bits of data) can only be interpreted within a whole (context). It is argued that combining the raw data, interpretive data and theory provides an alternative (to the previous interpretation phases) and rich context for interpretation and as a result is conducive to new, complementary and/or alternative interpretive insights. It is believed that this phase in the interpretive process, which approaches the data from a different angle (against a different contextual background), enhances the validity of the interpretation of the participants' notions of problem and problem solving. What follows are the results of this interpretive phase.

3.1. The social dimension of problems

The participants considered a problem as primarily inter-relational rather than intra-individual. There is ample evidence in the research data to substantiate this statement.

- Individual problems were perceived in terms of an unacceptable or deficient relationship between the individual and society. Group problems were conceived as a disagreement

or the experience of a dilemma between the members of the group. Quotes from the interview data clearly illustrate this perception.

- (A problem is). “between two people, within an individual or maybe two or more people have wronged you” (workshop).
- (A problem is). “they fire you without notice and they abuse your rights” (Theo).
- “Problems in yourself, like behaviour and attitude” (Matthew).
- “I may have a problem that I cannot look after my family because I am unemployed. I may have a problem with my neighbours who are always drunk. Problems always involve other people” (Sizwe).
- “The problem was to choose. We argued about that” (Lulama).
- “Mixing with people may be a problem. If you discuss with people from different ideological backgrounds and you differ about something” (Pelia).

Hartley’s (1989) survey on people’s perception of everyday problems provides similar results to those obtained in this study. The survey participants mostly identified problems as difficult inter-personal problems.

- The participants situated problems in different social spheres of life, such as the family, workplace and social organisation. This is illustrated by the following quotes.
 - “Some are family problems. It could be not getting help from your parents, like not getting money for school, or not having a job. It can be society, political, something that you do not like about it” (Nancy).
 - “There are inside problems, these are home problems and outside problems such as township problems and organisational problems. There are also love problems”(Olifant).
- The participants provided detailed descriptions of the different types of role players involved in problems. There is a distinction between problem causer, affected and indirectly affected. This is illustrated by the quotes that follow.
 - “The person that lead to the problem”(workshop).
 - “People around you can cause the problem for you or it can be in yourself” (Nancy).
 - “The person involved (means causes) and other people who are affected” (workshop).
 - “a problem between two people.. both sides of the involved” (Jack).
 - “the person with whom you have a problem” (Sizwe).
- The participants considered the effects of a problem to have individual (for the problem bearer) as well as social implications. The following quotes illustrate this.

- “If there are no problems then everybody is happy and you are happy” (Sydney).
- (why do you solve problems?) “For the benefit of the community, because otherwise you stay with it and it bothers you” (David).
- “You cannot live with a problem. Everybody wants the problem to be solved” (Mncedisi).

3.2. The affective component of problems

From the data it is clear that a problem was not perceived as an intellectual exercise in a vacuum, separate from the problem bearer. To the contrary, all participants stressed the personal relevance and the pervasive emotional impact on the problem bearer as key components of their concept of problem. The importance of personal relevance of everyday problems is addressed by several everyday cognition theorists such as Chapman (1993), Galloti (1989), Sebyy & Papini (1991). Meacham & Emont (1989, p.9) poignantly contend that “The essence of a problem is the having it”.

Several quotes from the interview data illustrate the importance of the affective component of problems for the participants. The importance of the personal relevance as well as the emotional effect of the experience of a problem are emphasised.

- “A problem is something somebody has” (Sizwe).
- “Something that one finds oneself confronted with” (Olifant).
- “A problem is a thing you cannot live with” (Priscilla).
- “Something that frustrates you that puts you in a corner. Problems can lead to suicide” (Nancy).
- “Something that hurts inside” (Lulama).
- “Something you cannot cope with. It irritates” (workshop).

3.3. Problems are conceived as ill-structured

In Chapter 4, Section 4.1. several characteristics of ill-structured problems, based on research of ‘everyday cognition’ theorists, were described. Some of those characteristics correspond with the knowledge of the participants.

3.3.1. Desired end-states are unspecified

Galotti (1989) and Strohm Kitchener (1983) argue that in ill-structured problems the desired end states are left relatively unspecified. The participants’ tacit knowledge of the concept problem reveals a similar conjecture. They identified the desired state in very broad and general

terms as fulfillment of a need or restoration of personal and social equilibrium, rather than in problem-specific terms. The following quotes serve to illustrate this point.

- “People want things right” (Matthew).
- “To feel comfortable” (Sizwe).
- “Because you cannot have a better life with a problem” (Theo).
- “So that everybody is happy” (Theodora).
- “Because they want their lives to be better. They want to move easily in what they are doing. It enables them to move safely” (Olifant).

3.3.2. Problems are dialectic in nature

Another description of ill-structured problems that corresponds with the participants’ tacit knowledge of the concept problem is that by Strohm Kitchener (1983) based on Churchman’s model of Inquiry Systems (IS) (see Chapter 4, Section 4.1). She argues that ill-structured problems are typical for dialectical IS. In ‘dialectical problems’ individuals on opposing sides define the problem in different ways, based on different assumptions, and marshal the same evidence in support of their perspectives. A solution or synthesis lies in re-framing both or several perspectives into a more general model of the problem.

There is evidence in the interviews that corroborates this perception of the concept problem. The participants laid a major emphasis on the problem definition. This involves the identification and integration of the different perspectives of those involved. The following quotes illustrate this.

- “We looked at it from different sides”(Danielle).
- “You listen to both sides. What do people think the problem is? Bring them together and let them say their view and then I say my view. They often find it is a misunderstanding” (Sydney).

3.4. Problem solving is an inter-active process

Interpretation of the data revealed that problem solving was predominantly conceived as an inter-personal process. This notion of inter-personal process fits very well with the idea of mediated action as described in the proposed framework for the study of everyday cognition in Chapter 4. The participants considered the process of problem solving to take part, first on a social plane and second, on an individual plane. Problem identification and generating of solutions was seen as a social activity that is subsequently internalised by the problem bearer(s). This is in contrast to the mainstream cognitive contention that problem solving is

predominantly an internal process. The following interpretations gleaned from the data provide evidence for the participants' perception of problem solving as an inter-personal process.

- With regards to an individual problem, asking for help and advice from outsiders was regarded as a key feature of problem solving. The following quotes illustrate this.
 - “You go and get advice from others” (Nkosana).
 - “Problem solving is consulting” (Workshop).
 - “Casting the net wider till a solution is found, even if the other cannot solve my problem they can talk to more people” (Lulama).
 - “Talking about it” (Sizwe).
 - “You must go to somebody and tell him. Maybe he has no means to help you, but he can make suggestions. You have to speak it out” (Lulama).

- The participants stressed the importance of dialogue between all people involved in the problem in order to achieve a satisfactory solution to a problem. The following quotes illustrate this.
 - “Co-operation between the person involved and other people who are affected” (workshop).
 - “Trying to bring two groups involved together in trying to find a solution” (workshop).
 - “Bringing the affected and the involved together” (workshop).

- With reference to group problem solving, the participants emphasised the importance of the participation and contribution of all group members in reaching a solution. The following quotes illustrate this.
 - “Problem solving is participating. The whole group” (James).
 - “Collective thinking” (Theo).
 - “Working together” (Belinda).

- With reference to group problem solving the participants emphasised joint problem identification by all those involved. The following quotes illustrate this.
 - “In the group all decide what the problem is” (Olifant).
 - “Everybody saw it was true.. we all thought the same” (Lulama).

- The participants considered attitudes conducive to effective problem solving to be mainly of an inter-personal nature. Hartley (1989) obtained similar results in his research. He found that problem solving skills and attitudes are defined by lay persons in terms of social competency.

- The participants identified the specific actions involved in a problem solving process as predominantly of an inter-personal nature. They particularly emphasised the importance of argumentation and motivation in problem solving. The following quotes illustrate this.
 - “I like problem solving. I like the verbal war between the two sides” (Theo).
 - “You have to talk with others, you must try to convince them and not to upset them, that is difficult” (Belinda).
 - “You have to give arguments, reasoning, you have to communicate your reasoning” (Lulama).
 - “You just have to use your brain and not just say things at random, you must motivate what you say. We need to find the motive behind what we said” (Matthew).

In Chapter 4, Section 4.2 argumentation was described as an important characteristic of everyday problem solving. The ideas of Chapman (1993) were elaborated on. Of particular importance is his argument, that it is precisely the reliance on argumentation that makes everyday problem solving different from problem solving defined in the traditional sense (as an internal cognitive process that follow the rules of logic). The importance and impact of argumentation on the nature of the problem solving process will be further discussed in Chapter 8 in the discussion of the results of the workshop analysis.

3.5. Problem solving is a conative and emotive process

Congruent with the assumption of most everyday cognition theorists, the participants defined problem solving in terms of conative, cognitive and affective attributes, rather than exclusively in cognitive terms. In fact, the conative aspect in problem solving was considered the most important. The following quotes from the interview data illustrates this.

- “To sit down and work on it. It is a chance to do your best. Problem solving depends on dedication. If I am lazy it will be difficult, if I am not lazy it will be easy” (Matthew).
- “You must take things serious. You must not take things lightly” (Ayanda).
- “You need to be disciplined” (Mncedisi).

3.6. The importance of identifying the problem in problem solving

Analogous with the findings of Sternberg, Wagner and Okagaki (1993) the research participants stressed the importance of a detailed description of the problem for successful problem solving. The general assumption is that once a problem is clearly defined, a suitable solution can be selected and executed. Defining a problem involves tracing its history and contextualising it with reference to those involved and their perceptions of the problem. The

crucial role of identifying the problem, including contextualising and tracing the history, is illustrated by the following quotes.

- “You identify the problem. You look at the situation, at the environment” (Olifant).
- “If you understand the problem it (problem solving) is easy” (Theo).
- “You identify the type of problem and take the solution which seem suited to the problem. You look at exactly what is needed” (Ayanda).
- “How did it (the problem) come about, you analyse it” (Sydney).
- “You need to assess the environment where the problem is before you can go down to the roots”(Zingisile).
- “I start by going back to try and see what is the actual problem and who is involved. Then we must discuss all together and put everything on the table and then we can have a solution” (Pelia).

3.7. Problem solving is a process of applying existing problem-specific solutions

In the previous section it was contended that the participants place more emphasis on problem identification than on the development of problem solving strategies. Very little data referred to the elucidation of general problem solving strategies. The assumption appeared to be that there are ‘problem-specific, already developed’ solutions for each problem.

It can further be gleaned from the data that the participants considered the selection of a solution appropriate to the identified problem as a process that almost ‘automatically’ ensued from an efficient problem identification. The following quotes from the interview data illustrate this.

- (Problem solving) “is easy provided you know the channels to solve the problem. If you do not know the problem it is difficult” (Sizwe).
- (In problem solving) “you look exactly at what is needed. You tackle it straightforward. You identify the different type of problems and take the solution which seems to be suited to the problem. That is all” (Matthew).

4. Fifth level of interpretive data: Epistemic assumptions

The stated intention of this chapter is to describe the conceptual, procedural and epistemological knowledge of the research participants. So far only the first two aspects have been directly dealt with. Delaying the focus on epistemological knowledge was deemed necessary because it refers to a predominantly tacit knowledge and could therefore not easily be gleaned directly from the raw data. It is argued that at this final phase of the analysis,

sufficient interpretation has taken place to provide a suitable context for gleaning the participants' epistemic assumptions underlying their concepts of problem and problem solving.

In Chapter 4, Section 5.2.1 the ideas of Markus and Kitayama (1991) on the influence of an inter-dependent view of the self on problem solving were discussed. They argued that people with an inter-dependent self view aim to: feel connected with the social context; be flexible; promote other's goals; read others' minds, maintain harmony with social context and desire to succeed in inter-dependent relationships and statuses. Markus and Kitayama argue that the inter-dependent self view is mostly associated with non-western people.

Verster (1986) refers to a concept similar to that of the inter-dependent view of the self when he talks about the Nguni term '*Ubuntu*'. Freely translated it means 'humaneness'. It refers to the pursuit of harmony and solidarity of the group. Verster argues that *Ubuntu* would seem to represent an important value in traditional African value systems and might account for the consistency observed in indigenous conceptions of competence throughout sub-Saharan Africa.

Interpretation of the research data reveals that the participants' epistemic assumptions with reference to problem solving are firmly embedded in the philosophy of Ubuntu. Several epistemic assumptions and their influence on problem solving can be identified:

4.1 Social harmony is the criteria for good thinking and acting

The central characteristic of '*Ubuntu*' is the notion of social harmony. This notion very strongly influences the participants' perception of the concepts of problem and problem solving. This is illustrated by the following insights.

- The participants emphasised the importance of contextualising problems in their social context. They emphasised the need to define those involved in the problem, their viewpoints and to develop an accurate description of the history of the problem (see Section 3.6).
- The participants emphasised the importance of a negotiated solution, which is satisfactory to all involved (see Section 3.4.).
- People with good social skills are considered competent problem solvers (see Section 3.4.).

4.2 Truth is socially constructed

Congruent with *Ubuntu*, and the aim of social harmony, the participants assume that truth is a social construct. According to the participants, truth cannot be defined in absolute and objective terms, but needs to be considered as relative. Knowledge does not exist outside those who define it and should be beneficial to those who define it. It is argued that the participants' emphasis on joint problem identification by all those involved, is derived from these assumptions about truth. The notion of socially constructed truth implies that truth is determined through a process of argumentation and motivation leading to consensus. This is strongly reflected in the research data. The participants emphasise the need for hearing different arguments and points of view in establishing the truth and the need for motivations when people make truth claims (see Section 3.4).

4.3. Knowledge and expertise are acquired through 'real life' social experience

Congruent with the inter-dependent self view, the participants consider knowledge and expertise to be derived from experiences in real-life social interactions. Only those with real life experience in problem solving situations are regarded as experts on problem solving in these situations. The following quotes from the interview data capture this assumption poignantly.

- “People who solve problems are people who have come across the problem before, experts on it. Not an imitation, something is real if it is practical, not theorising” (Matthew).
- “The one (who solves problems) who has experience, the one who had the problem before; experience of the past and the present, of life in general and of specific things” (Theo).
- “People who had experience with such as problem. They can say how they dealt with it” (Sizwe).
- “It is difficult if you have not experienced it before. I like problem solving, it gives you experience, you can solve the same problems again” (Theodora).

The notion of problem solving expertise, acquired through experience implies the importance of cultural and social context in everyday problem solving. The problem solver requires knowledge (experience) of (socio-culturally defined) concepts, values and problem solving procedures and resources related to the (socio-culturally defined) problem.

In Chapter 4, the importance of culture in problem solving and in particular the notion of cultural models or schemata was discussed. Glaser (1987) argues that schemata are prototypes

in memory of frequently experienced situations which individuals use to integrate and interpret situations. There seems to be a close fit between the participants' concept of 'experientially-acquired-solutions' as presented in this section and cultural schemata. Borrowing the essence of Glaser's definition, the participants' perception of problem solving can be described as 'the application of prototypes in memory of previously experienced situations of identifying and classifying problems and matching them with solutions'.

The participants' concept of experts being people who have developed cultural schemata to deal with particular problems through experience is congruent with the literature on expert problem solving. Bryson, Bereiter, Scardamalia & Joram (1991) argue that experts have accumulated problem schemata, which assists them in recognising a situation as an instance of some problem type and then apply previously learned procedures appropriate to the problem type. Experts appear to solve complex - though familiar- problems by making strategic use of extensive and well-structured domain knowledge, rather than relying on effortful problem solving procedures.

5. Changing assumptions in a process of rapid social change

As stated in Section 4, the participants' thinking and acting is significantly influenced by the traditional African philosophy of '*Ubuntu*'. However, the research data reveals evidence of emerging assumptions and concepts which deviate from the traditional '*Ubuntu*' philosophy. This is not surprising, considering the characteristics of the research participants. They are young adults who live in a country in which traditional life has been seriously disrupted through political domination backed by an ideology of racial consciousness and which recently has gone through a very rapid transition from Apartheid to a system of democracy. This process of rapid social change has an impact on the participants' epistemic assumptions and their concepts of problem solving. The following quote very poignantly illustrates the participants' ambivalent position between the traditional and the 'new ways of doing'.

"In the past in black culture we did not have such a thing as problem solving strategies. We just sat down and discussed with relatives. These days there are newly developed strategies for problem solving, they have come about because of technology. With the new problem solving strategy you can do it alone or with two or with a large group. The new strategy involves definition, prioritising needs, evaluation and conclusion. I am not really sure what all the different parts are. Because of the new way of solving problems the same problem solving strategy is used for all problems, those at the workplace, at school, in general. With the traditional way of solving problems there is no exact formula, here are no specific steps, all can have a general input" (Sizwe 2).

The quote shows that Sizwe realises the influence of two paradigms on his concept of problem solving. Namely the traditional and the new. Not all the participants referred as explicitly to the influence of different world views on their perceptions and beliefs. However several signs of ambivalence between the two could be gleaned from the data:

5.1. Consensus through a process of discussion or through a process of voting

Throughout the discussion in Section 3 there has been ample evidence for the participants' belief in the importance of argumentation and motivation for the establishment of consensus in problem solving. However, the changing socio-political environment in which the participants found themselves, influenced them to experiment with alternative ways of decision making in problem solving. In the data relating to group problem solving the notion of voting tentatively appeared as an alternative to reaching consensus through argumentation. The fact that the dynamics of voting were a dominant theme of popular consciousness at the time of the research may serve as an explanation for this. NGO's throughout the country had launched a massive voters education programme in anticipation of the first democratic elections. However, a great amount of ambivalence and uncertainty was displayed concerning this 'new approach' to reaching consensus. Overall the need for motivation and argumentation remained of primary importance for reaching a satisfactory consensus. The following quotes illustrate the emergence of and the ambivalence towards the notion of voting.

- “It (the problem solving process) was difficult because of the voting, two people were not happy. We had to give in” (Theodora).
- “Everybody had been asked individually who she/he chooses and then motivate the answer. At the end we voted. The majority voted for number five. It (the problem solving process) was difficult. There were four against one. I had no chance to speak. All the others came up with ideas. The decision must be shown by a majority, but with facts (refers to motivations)” (Theo).

5.2. Reliance on 'real life' social experience or reliance on formal training

Throughout the discussion in Section 3 there is ample evidence that the participants consider 'real life' experience as the basis for acquiring knowledge about problem solving and the development of expertise. Some of the participants acknowledged the possible impact of training as a formal activity disembedded from everyday life on the development of problem solving expertise. However, when they did so, they invariably still emphasised the importance of 'real life' experience. The following quotes illustrate the emergent acknowledgment of training as a source for expertise.

- “I like problem solving, I am used to it. I went on a course as para-legal. The more I solve problems the more I want to solve problems” (Sizwe).
- “Those who have been exposed to the new methodology (solve problems); university people, trained people, organisations” (Sizwe 2).

5.3. Problem solving as a social or an individual process

Congruent with the emerging belief in the individual’s capacity to develop expertise through formal training, the perception of problem solving as a social process moves to one of an individual intra-personal process. It changes from being perceived as a social encounter, that is context specific, to a mechanistic process of applying rules (see quote of Sizwe in the introduction of Section 5.) However, although the individual’s capacity to solve problems on her own was mentioned by some of the participants, invariably they returned to the need to engage others, especially if the problems are considered difficult. The following quotes illustrate the emerging notion of individual problem solving.

- “There are problems for which you only need brains to solve them” (Ayanda).
- “I can look for the cause on my own, I can take advice, I can look in the books. I believe I can do it myself. If it is very difficult I will get support” (Matthew).

CHAPTER 8.

GROUP PROBLEM SOLVING PROCEDURE

1. Introduction

This chapter presents the results of the inquiry into the participants' group problem solving procedure. It presents the different levels of interpretive data that resulted from the interpretive process described in Chapter 6, Section 7.3.

2. Description of the interpretive procedure

The interpretive approach used in this study and the specific interpretive-analytical procedure applied to the data were discussed in detail in Chapter 6, Section 7.3. As was argued in Section 2 of Chapter 7, the analysis of the data should be regarded as a complementary process of creative interpretation and methodological rigour.

2.1. Generation of Level 1 data

The generation of Level 1 interpretive data consisted of compiling ten scripts of interpretive data. Each script included:

- the transcribed and translated workshop data, divided up into inter-actions and each inter-action further divided up (where appropriate) into operations;
- the interpretation of each operation in terms of the applied reading guide. This reading guide enabled the analysis of each operation in terms of its Immediate Interactive Function, its Cognitive-Affective Content and its Underlying Function. The reading guide is provided in Appendix 9.

The amount of data obtained at this level is too cumbersome to be presented in the thesis in its totality. An example is given in Appendix 11 to help the reader comprehend the process.

2.2. Generation of Level 2 data

The generation of Level 2 interpretive data consisted of first, generating tables and diagrams presenting different types of analysis of Level 1 data and second, interpreting these diagrams and tables. The tables and diagrams should not be regarded as statistical data, but should be viewed as quantified data. They are a re-arrangement of Level 1 data in order to provide a new context (additional to the raw data and the Level 1 data) for a deeper interpretation of the data. As such, Level 2 data should be seen as a first step towards integrating the Level 1 interpretive data in preparation for the application of the second reading guide, which provides a second

step towards integrating the interpretive data. This argument is congruent with the idea of the hermeneutical circle discussed in Chapter 5 and the arguments of Geertz on applying thick description (see Chapter 6, Section 7.3.1.). Employing the quantitative analyses in the sense argued for in this thesis, implies that only those aspects of the quantified data which are considered valuable for the further interpretive stages of the research are interpreted. As a result the interpretation of each table and diagram is not necessarily exhaustive. It also implies that the quantitative analysis is not interpreted in the traditional sense of providing ‘hard facts’, but is used to guide the interpreter in discovering broad trends and underlying structures in the data. The latter argument re-emphasises the necessity to read the quantified data in conjunction with Level 1 and the raw workshop data. This again is congruent with the notion of hermeneutical circle.

Before presenting and discussing the results of the analyses, two issues are explained: first, an explanation of the different types of analysis is provided; and second, the types of tables and graphical representation used in these analyses and as tools of presentation are explained.

For purpose of convenience the terms for the three elements of the operations: Immediate Inter-active function, Cognitive-Affective Content and Underlying Function will be abbreviated respectively as IF, C and UF throughout the discussions that follow.

2.2.1. Types of analyses

The following types of analysis were conducted:

(i) Frequency of the forms of IF, C and UF

Quantitative analyses for each workshop separately and a summary analysis across all workshops of the operations in terms of the frequency of the different forms of the elements IF, C and UF.

These summaries are presented in Tables 1-11 in Appendix 13. Each table consists of three blocks, respectively referring to each of the three elements of the operation. The first column of each block shows the different forms of the element. The second column shows the number of operations having that form, the third column shows the percentage of operations having that particular form.

(ii) Frequency of the combinations of the forms of IF, C and UF

Quantitative analyses for each workshop separately and a summary analysis across all workshops of all operations in terms of the frequency of the various combinations of the different forms of the elements IF and C; the different forms of the elements C and UF and the different forms of the elements IF and UF.

These summaries are presented in Tables 1-11. in Appendix 14. Each table consists of three blocks, respectively referring to each of the three elements of the operation. The first column of each block shows the different combinations of the forms of the element. The second column shows the number of the particular combination, the third column shows the percentage of operations having that combination of forms.

(iii) Workshop structure

Colour coded graphical representations of the structure of each workshop. These colour-coded graphical representations for each of the workshops separately are presented in Figures 9 -18 in Section 3 of this chapter.

Each figure shows the consecutive operations of the workshop, represented by a series of bars divided into cells. The bar on the left consists of two columns. Cells in the column on the left contain the operation number, cells in the column on the right contain the name of the participant who provided the operation. The second, third and fourth bar, consist of a single column with cells containing respectively the corresponding IF, C and UF form for the operation. The bars are annotated by descriptions of the various stages in the workshop. Each stage consists of one or more operations and is numbered consecutively. These stages were the result of an interpretation of the graphical representation itself in conjunction with the raw data. A stage is regarded as a section of the workshop that can be separated from other sections as a result of its content. Each stage is defined in terms of the issue, or cluster of issues, that is dealt with.

(iv) Linkages in terms of the element C

Graphical representations of the links between the operations of each workshop in terms of the element C. The links are identified with respect to inferences, examples, interpretations, repetitions and facts (derived from the given problem structure). These forms of C signify a carrying over of the content (or parts of the content) from one operation (or several

operations) into another. For each of these forms the link to the operation it refers to is indicated. In certain exceptional cases the links are not indicated. These cases refer to: interpretations and inferences made about the problem solving process as a whole; facts that refer to the task process; and issues that are based on personal background knowledge of the participants. In these circumstances a direct link could not be identified. Possible links with respect to opinions and reflections are not identified. It is argued that these bring new information to a previous content and do not carry through the previous content. An example of this graphical representation is presented in Figure 1 in Appendix 15.

The figure shows the consecutive operations of the workshop, represented by a bar consisting of three columns divided into cells. Cells in the column on the left contain the operation number; cells in the middle column contain the name of the participant who provided the operation, and the column on the right indicates the analysis of the operations in terms of their Cognitive-Affective Content.

The links between the operations are indicated by lines connecting the linked operations. A link between two operations is represented by a line that connects the 'referring operation' to the operation it refers to and ends there with an arrowhead. Where such links form a series of consecutive linkages the node between those links is indicated by a dot. In such cases the arrowhead is drawn at the initial operation in the link series. By following the dots one can identify a string of consecutive linkages. A reference to the problem structure (the problem which was provided to the participants on newsprint) is indicated by a grey colouring of the operation number cell. A reference to the paper, on which the participants took notes during the workshop process, is indicated by a yellow colouring of the operation number cell. An operation can have a link to several previous operations, or simultaneously to a previous operation and to the problem structure

(v) Contributions of the participants

Graphical representations indicating the number of operations contributed by the participants to each of the workshops, analysed in terms of the forms of IF, C and UF. These representations are presented in Figures 1-10 in Appendix 16.

Each figures contains three bar charts, with the participants represented by the bars and the number of operations contributed forming the vertical axis. Charts 1, 2 and 3 each represent the total number of operations contributed by each participant analysed respectively in terms of the IF, C and UF forms. The bars in Chart 2 differ in size from Chart 1 and 3 since not all operations have a content.

3. Level 2 interpretive data

This section provides the results of the quantitative analyses, the graphical representations and their interpretations for each of the workshops. The interpretations of the quantitative summaries of the workshops (see type (i) and (ii) analyses described above) will be dealt with in this section in the form of one interpretive summary for all the workshops. The quantitative summary tables are presented in Appendices 13 and 14. The colour coded diagrams of the workshop structure (see type (iii) analysis described above) and their interpretations will be presented in this section and dealt with for each workshop separately. The graphical representations of the links between the operations of each workshop (see type (iv) analysis described above) will not be presented in the thesis, since they are considered to be a preparatory step towards identifying consecutive links. However, an example of this type of diagram is presented in Appendix 15 to enable the reader to comprehend its significance. The major consecutive linkages for each of the workshops are extracted from these consecutive linkage diagrams and redrawn to show the pattern of linkages. These are presented in Figures 1-10 in Appendix 17. The interpretations of these diagrams is presented in this section and dealt with for each workshop separately. The graphical representations indicating the contributions of the participants for each of the workshops (see type (v) analysis described above) will be dealt with in the same way as the quantitative summaries. An interpretive summary will be provided in the text while the bar charts for each of the workshops are presented in Figures 1-10 in Appendix 16.

The presentation of the results as described above was determined by its usefulness for the next step in the interpretive process and by the need to be concise.

To enable the reader to fully grasp the interpretation of the diagrams and tables that are dealt with in the next section (and its accompanying appendices), it is deemed important to provide a short summary of the problems that were the topic for each of the workshops at the beginning of the analysis of each of the workshops. A full description of the different problems can be found in Appendix 8.

3.1. Interpretation of the structure and the consecutive linkages for each of the workshops

3.1.1. Workshop 1A

The problem for Workshop 1A involved a choice between two options. As part of the problem

structure five facts were provided which could be used in order to decide between the two options.

(i) Workshop structure

The workshop structure is presented in Figure 9. A simultaneous reading of the raw data, the problem description and Figure 9 enabled the following insights concerning the workshop structure.

- Stages 1, 3, 5, 7 and 9 deal with various motivations in favour of Option 1. The motivations in Stage 1 are based on Fact 1 and on personal background knowledge. In Stage 3 the motivation is based on Facts 3 and 5 and on personal background knowledge. In Stage 5 the motivation is build on Fact 3 and on personal background knowledge. In Stage 7 personal background knowledge is used and in Stage 9 the motivation is build on Fact 3, inferences from Fact 5 and on the participants' background knowledge. Stages 3, 5, 7 and 9 also serve to build group support for Option 1. Stage 11 serves to reach a final consensus.
- Discussions on the conceptual aspects of the problem solving process are interspersed with discussions on task issues (Stages 2, 4, 6, 8, 10).
- There is no disagreement in the workshop. The workshop reflects a process of alternating creative contributions (suggestions, justifications) with building a common understanding (clarifications) and group consensus (support). In the beginning of the workshop a lot of facts from the problem structure are brought into the workshop. Towards the end of the workshop inferences derived from the facts, repetitions and opinions are more prominent. These aim at strengthening the common understanding and the consensus.
- The stages in the beginning of the workshop are shorter than those towards the end of the workshop.
- The workshop is dominated by one person (Sizwe) supported by the others. The workshop starts with a suggestion from Sizwe and the first half of the workshop is mainly allocated to Sizwe's ideas. Only towards the middle of the workshop is participation from others elicited.

- The process of recording is considered an important element of the workshop and forms the content of two stages of the workshop.

Figure 9. Graphical representation of the structure of Workshop 1A

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 9 and the raw workshop data provided several insights.

- There are several referrals back to the problem structure and later on in the workshop to the newsprint used to make notes.
- There are several short consecutive links. These refer to repetitions for purpose of explaining a concept or for amplifying an idea.
- There are nine relatively extensive consecutive linkages. These refer to the choice of Option 1 and the various motivations for that option. These are presented in Figure 1 in Appendix. 17

Several inferences can be drawn from the figure.

- Six linkages are introduced by Sizwe. The majority of his ideas are based on personal background knowledge. Three linkages are introduced by Matthew. Two of these are based on facts contained in the given problem structure.
- The linkages relating to the various motivations for Option 1 are generally introduced at an early stage (Stages 1 and 3) in the workshop and run parallel throughout the workshop.
- The linkages largely consist of repetitions. Most of the repetitions are provided by the person who introduced the initial idea, some are, however, provided by the other participants. This implies that the linkages serve to amplify a person's ideas as well as to build group support and common understanding.
- Referral back to the facts of the problem structure in the first half of the workshop is considered important by the participants.
- The paper on which the participants take notes is used as a tool in the discussion. It is argued that it serves as evidence for what has been agreed in the group. This explains the importance allocated by the participants to the process of recording of ideas during the workshop.

3.1.2. Workshop 1B

The problem for Workshop 1B was the same as for Workshop 1A

(i) Workshop Structure

The workshop structure is presented in Figure 10. A simultaneous reading of the raw data, the problem description and Figure 10 enabled the following insights concerning the workshop structure.

- There are fourteen stages in the workshop. Stages 2, 4, 6, 7, 8, 9, 12, 13 and 14 deal with the conceptual content of the problem solving process. In Stage 6 a motivation based on the participants' background knowledge is used in motivation of Option 2. In Stage 7 and 3 motivations respectively based on Fact 3 and Fact 5 of the given problem structure and one based on personal background knowledge are used in motivation of Option 1. In Stage 8 Option 1 is rejected and Fact 4 is used in motivation of Option 2. In Stage 9 personal background knowledge is used to motivate for Option 1. In Stage 12 Facts 1, 3 and 5 are used to motivate for Option 1 and personal background knowledge is used to motivate for Option 2. Stage 13 serves to reach a compromise. This compromise involves considering Option 2 after Option 1 has been fulfilled.
- The stages dealing with the conceptual issues of the debate are interspersed with stages that deal with task and group issues (Stages 1, 3, 5, 10 and 11).
- A fairly extensive discussion (Stages 1, 3 and 5) is allocated to reaching a common understanding of the problem and the problem solving process.
- Stages 10 and 11 aim at diverting the discussion away from an immediate clash between opinions to the less confrontational issue of jointly discussing what the task involves.

Figure 10. Graphical representation of the structure of Workshop 1B

- The workshop reflects a debate between two parties. One party is represented by one participant (Theo), the other party is represented by the other participants with Thami as the leader. A compromise is reached and reinforced towards the end of the workshop (Stages 13 and 14).
- The stages in the beginning of the workshop are shorter than later on in the workshop.
- When the discussion revolves around the task process all the participants are involved.
- Creative contributions are always embedded in attempts to reach common understanding and agreement.
- Although there is debate, the frequency of direct rejections and opposition is relatively low. The strategy used involves promoting one's ideas rather than rejecting the ideas of other's.
- There is a fair amount of new content (opinions, inferences and interpretations) towards the end of the workshop. This is needed to reach a common understanding of the suggested compromise.
- The debate intensifies as the workshop unfolds. There are a relatively high number of 'own ideas' immediately before the compromise is reached.
- As the debate intensifies, personal background knowledge, rather than facts contained in the given problem structure is relied upon.
- A wide variety of Inter-Active Functions and Cognitive-Affective content is used in Stages 6 and 7 where the different options to solve the problem are presented, motivated for and agreed upon.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 10 and the raw workshop data provided several insights.

- Throughout the workshop there are links back to facts contained in the problem structure.

- The newsprint on which notes are taken is not used as a reference during the workshop. It is argued that because there was debate till the last stages of the workshop, the newsprint could not be used as a document reflecting group consensus.
- There are several short consecutive links. These links consist of repetitions and serve to reinforce the ideas which formed the content of the initial operation in the link.
- There are six relatively extensive consecutive linkages. These refer to Options 1 and 2 and motivations for each of these options and to the problem solving process. These are presented in Figure 2 in Appendix 17.

Several inferences can be drawn from the figure.

- The two choices in the workshop are introduced early in the workshop and carried through till the end of the workshop.
- Only two justifications for the choices are embraced by the group and carried through while the others are not built on in the discussion. These justifications are Fact 1 and an opinion build on personal background knowledge.
- The consecutive link related to the choice of Option 2 involves Theo only.
- Theo's only justification for his choice is based on personal background knowledge. Theo's justification is repeated by Ayanda and James. These repetitions serve a supportive purpose. This implies that although Theo's choice is not supported by the others they do support the content of his justification.
- The justification for the option introduced by Thami is a fact contained in the problem structure. It is provided by Theo and repeated by the others. This implies that although Theo does not approve of Thami's choice, he does acknowledge the value of the justification.
- The two inferences from the figure made above, imply that participants may support the justification for an option without adhering to that option. Even when a participant does not really agree with the ideas of another participant, she may still initially support the ideas in order to come to a common understanding.

- Several consecutive links stop with a recording. This implies that recording serves as a sign to the group that the issue is closed.
- Discussions on the problem solving process are repeated throughout the workshop. A common understanding is shaped through repetitions and interpretation.

3.1.3. Workshop 2A

The problem for Workshop 2A involved drawing an inference from given facts (Aspect 1 of the problem) and providing a plan of action (Aspect 2 of the problem).

(i) Workshop Structure

The structure of the workshop is presented in Figure 11. A simultaneous reading of the raw data, the problem description and Figure 11 enabled the following insights concerning the workshop structure.

- The workshop has fifteen stages. Stages 1, 6, 10 deal with building a common understanding of the content of the problem structure. Stages 4, 9, 10 and 12 deal with building a common understanding on the problem solving process. Stages 2, 3, 5, 7, 8, 11, 13, 14 and 15 deal with suggestions for the solution of the problem.
- A large part of the workshop deals with building a common understanding of the content of the problem structure. This takes place at various intervals throughout the workshop. Large parts of this discussion (Stage 10) are not essential to the solution of the posed problem and are based on personal background knowledge of the participants. This personal knowledge is, however, integrated with the data provided in the problem structure.

Figure 11. Graphical representation of the structure of Workshop 2A

- Aspect 1 of the problem is dealt with in Stages 2 and 3 of the workshop. The solution is suggested by one participant and accepted by the others. One participant disagrees with the outcome, but this rejection is ignored. At a much later stage (Stage 11) this issue is re-opened for discussion and resolved.
- In Stage 5, a suggestion to solve Aspect 2 of the problem is introduced but not discussed. It is taken up again at the end of the workshop in Stages 14 and 15. In these stages, disagreement with the suggestion is voiced and a compromise is reached.
- Large parts of the workshop are allocated to task issues and building of a common understanding. There are very few new creative contributions towards the solution of the problem in the second half of the workshop.
- Stages dealing with conceptual issues also contain some task issues.
- The issue of how to record is dealt with at several stages.
- The discussion in Stage 11 which involves a disagreement on a suggestion to solve the problem changes into a discussion on task and group issues (Stage 12).
- New stages are often introduced by a suggestion (which brings new a conceptual idea) or by requests and comments (which shift the discussion to task issues)
- There is debate at the very end of the workshop. Reaching of a compromise occurs at the second but last operation.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 11 and the raw workshop data provided several insights.

- During the first half of the workshop there are a fairly large number of links back to the problem structure.

- Throughout the workshop, but especially during the last quarter of the workshop there are referrals back to the newsprint used by the participants to record the outcome of their discussion.
- There are several short consecutive links. These concern repetitions in order to support a particular idea or piece of information, or to clarify an issue. These links refer to conceptual issues as well as to task issues.
- There are eight relatively extensive consecutive linkages. These are presented in Figure 3 in Appendix 17.

Several inferences can be drawn from the figure.

- Linkage (a), which deals with Aspect 1 of the problem structure is the most elaborate linkage.
- Most linkages involve all participants. All participants are involved in starting consecutive linkages.
- The second aspect of the problem is not dealt with in much depth. There are no extensive consecutive linkages dealing with it.
- Linkages (c), (d) and (e) show that different aspects of the same discussion run parallel in the workshop.
- The majority of the linkages consist of repetitions

3.1.4. Workshop 2B

The problem for Workshop 2B was the same as for the Workshop 2A.

(i) Workshop Structure

The structure of the workshop is presented in Figure 12.

Figure 12. Graphical representation of the structure of Workshop 2B

A simultaneous reading of the raw data, the problem description and Figure 12 enabled the following insights concerning the workshop structure.

- The workshop consists of twenty stages. Stages 2, 4, 7, 9, 10, 11, 12, 14, 15, 16, 17 and 18 deal with suggestions for the solution of the problem. Stages 1, 6, 13 and 19 deal with building a common understanding of the problem structure and the available information. Stages 3, 5, 7 and 8 relate to the problem solving process. Stage 20 serves to reach final consensus.
- The stages dealing with suggestions to solve Aspect 2 of the problem have a similar structure. They start with an invitation to provide suggestions, then a suggestion is provided followed by building a common understanding of that suggestion and providing support for it.
- The stages dealing with building a common understanding of the problem structure and the available information are spread throughout the workshop.
- The stages dealing with the problem solving task, process and the group interactions are located in the beginning of the workshop. This indicates that the rules for the task are set at the beginning of the workshop.
- The different stages are fairly short. A lot of different issues are dealt with and none are discussed in detail.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 12 and the raw workshop data provided several insights.

- There are a large number of links back to the problem structure throughout the workshop
- In the middle of the workshop and towards the end there are referrals back to the newsprint used by the participants to record the outcome of the discussion.

- There are several parts in the workshop in which there are dense consecutive links (linkages in close succession).
- There are several short consecutive links. These concern repetitions in order to support a particular idea or piece of information, or to clarify an issue. These links refer to conceptual and task issues.
- There are six relatively extensive consecutive linkages. These are presented in Figure 4 in Appendix 17.

Several inferences can be drawn from the figure.

- The majority of the consecutive linkages start with an inference or information from the given problem structure. A large percentage of the inferences made in the consecutive links are based on a combination of previous inputs and the problem structure.
- Most linkages involve all participants.
- The majority of the linkages start with an opinion or inference from Matthew.
- Consecutive linkage (a) is long and complex. It involves a large number of inferences and there are several referrals to the newsprint. This implies that the solution to Aspect 1 of the problem is dealt with in depth.
- Consecutive linkage (b) is relatively extensive and involves a large number of interpretations, which implies that clarifying the problem structure is dealt with in depth.
- The consecutive linkages for the various suggestions towards the problem solution are relatively short and are situated in one particular part of the workshop. They mainly consist of repetitions. This implies that they were not revisited once the initial discussion was closed.

3.1.5. Workshop 3A

The problem for workshop 3A involved making a choice between six options. Some information on each of the options was provided.

(i) Workshop Structure

The workshop structure is presented in Figure 13. A simultaneous reading of the raw data, the problem description and Figure 13 enabled the following insights concerning the workshop structure.

- The workshop contains sixteen stages. Stages 3, 5, 7 and 11 deal with task issues. Stages 1, 2, 4, 5, 6, 8, 9, 10, 12, 13, 14, 15 deal with choices of Options 1,2,3,4,5 and 6 of the problem structure and motivations in favour and/or against these options. These motivations are all based on the information contained in the problem structure. Stage 11 serves to invite the group to reach consensus on Option 5 but the group is not ready to reach consensus. In Stage 14 consensus is attempted in the form of a compromise. The compromise consists of a combination of Option 5 and 2. Stage 16 serves to establish final consensus. This involves choosing Option 5.
- The stages in the beginning of the workshop are shorter than those at the end.
- Reaching consensus happens in stages. It was introduced in Stage 11, then revisited in Stage 14 and finalised in Stage 16.
- Option 5, which was introduced at the very beginning of the workshop is eventually accepted by the group as the solution to the problem.
- Invitations are used as cues for changing the topic of discussion.
- In the first ten stages there is no real debate in the group. Each option is considered for its merits and its pitfalls by the group. The justifications serve to build a common picture of the different options and to explore the content of the problem structure. In Stages 11, 12 and 13 there is debate about the options and different participants try to impose their own ideas.

Figure 13. Graphical representation of the structure of Workshop 3A

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 13 and the raw workshop data provided several insights.

- There are a large number of links back to the problem structure throughout the workshop.
- There are several short linkages and a few longer ones. These linkages refer to: first, the choices of the different options and motivations in favour and against these options; and second, to task related issues. The linkages relating to most of the options are very short and confined to one particular stage. This implies that the discussion and the motivations used in the debate relied on bringing in lots of different ideas, rather than repeating content. The relatively extensive consecutive linkages relate to Option 5. Three major consecutive linkages are presented in Figure 5, Appendix 17.

Several inferences can be drawn from the figure.

- There are few long consecutive linkages
- Linkages for Options 5 and 1 are the only ones that re-appear in the discussion at various stages in the workshop. The linkage relating to Option 5 is introduced at the initial stage of the workshop and subsequently lays dormant during the first half of the workshop. It is revisited in the second half of the workshop.
- Most participants are present in most of the linkages. They repeat each others ideas. This implies that they are all involved in motivating in favour and against the various options. The process resembles building a common understanding of the problem structure rather than a debate between different parties. Theo is the only participant who insists on Option 5. He is very prominent in the linkages related to Option 5.
- The only long motivation for an option is based on facts provided in the problem structure.

3.1.6. Workshop 3B

The problem for Workshop 3B was the same as for Workshop 3A.

(i) Workshop Structure

The workshop structure is presented in Figure 14. A simultaneous reading of the raw data, the problem description and Figure 14 enabled the following insights concerning the workshop structure.

- The workshop has eighteen stages. Stages 5, 9 and 16 deal with group and task issues. Stage 1 deals with building an understanding of the problem structure and Stages 2, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15 and 17 deal with conceptual issues. Stage 18 serves to establish final consensus.
- Stages 2, 3, 4, 6, 7 and 10 are very similar. They each involve an invitation to consider one of the six options of the problem structure, support and rejections of the option, motivations for each position and building a common understanding of the motivations. The motivations are based on the available data. Stages 8, 11, 13 concern a revisiting of Options 2 and 5 for further discussion. Stage 12 is an interpretive summary of the preceding discussion on the options.
- Stage 14 aims at reaching a compromise by avoiding a choice between the Options 2 and 5. Stage 15 involves a discussion of that compromise and a support for Option 5. The rejection of the compromise in Stage 17 is based on a discrepancy between what is suggested as a compromise and the facts of the problem structure.
- In Stage 16, disagreement about the support for Option 5 is discussed disguised as a criticism about the attitudes of the group members.
- Discussion on an issue is often abruptly terminated with a request or invitation to move to a different issue. This implies that the group prefers to deal with all the different issues ‘superficially’ before revisiting them for further discussion.
- The stages at the end of the workshop are shorter than in the beginning. The more heated the debate the quicker there is a shift from one issue to the next. When the participants attempt to impose their ideas against the group consensus the process is diverted by a request to consider another issue.

Figure 14. Graphical representation of the structure of Workshop 3B

- Reaching consensus on the problem solution develops in stages. It starts with narrowing down the choices between two options in Stage 12, subsequently a further discussion of these two options leads to the suggestion of a compromise. The compromise is discussed, re-iterated further on in the workshop and finally an overall agreement is reached.
- There are more inferences, interpretations and facts at the beginning of the workshop and more repetitions and opinions towards the end of the workshop.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 14 and the raw workshop data provided several insights.

- There are a large number of links back to the problem structure throughout the workshop
- There are several short linkages and a few longer ones. These linkages refer to the different options provided in the problem structure and motivations in favour and against these options. Most of the linkages relating to motivations are very short and are contained with one stage. There is one short linkage on a task related issue. It concerns a request to proceed with the problem solving task. Seven relatively extensive linkages are presented in Figure 6 in Appendix 17

Several inferences can be drawn from the figure.

- The most extensive consecutive linkages are those relating to the Options 2 and 5. These linkages are spread over several stages throughout the workshop.
- Theodora, Lulama and Khaya are prominent in the linkage relating to the choice of Option 2 and the linkage rejecting Option 5. Matthew, Thami and James are prominent in the linkages relating to the choice of Option 5. The division of the participants in different linkages is indicative of a strong debate.
- The linkages involve a relatively high number of interpretations.

- The fact that the linkages relating to most of the options are short and confined to a short period in the workshop implies that the discussion and the motivations used in the debate relied on bringing in lots of different ideas rather than repeating similar ideas.
- Khaya and James are prominent in the compromise linkage. It is argued that Khaya is well placed to bring the compromise to the workshop since she was first more prominent in the linkage in favour of Option 2 and towards the end of the workshop moved to the linkage on Option 5.

3.1.7. Workshop 4A

The problem for Workshop 4A involved making a choice between five options. Information was provided which could assist with making the choice.

(i) Workshop Structure

The structure of the workshop is presented in Figure 15. A simultaneous reading of the raw data, the problem description and Figure 15 enabled the following insights concerning the workshop structure.

- The workshop contains sixteen stages. Stages 1 and 3 deal with building a common understanding of the problem structure and coming to an agreement on the problem solving task. This process involved disagreement between Sizwe and the other participants which was not satisfactorily resolved. Stage 4 involves a further attempt to come to a common understanding of the problem solving task.
- Stages 2, 3, 5, 6, 8, 9, 10, 12, 13, 14, 15 deal with the choice of Option 4 as the solution to the problem, motivations in favour of the choice and building of a common understanding and group support for the choice of Option 4. Stages 6, 12 and 15 include debate about the content and specific meaning of the motivations made in favour of Option 4.
- Stages 7 and 8 involve disagreement about what and how ideas need to be recorded. This leads to negative group dynamics. Stage 11 relates to an inquiry about the task process from an outsider. This input was not responded to.

Figure 15. Graphical representation of the structure of Workshop 4A

- Only one of the options provided in the problem structure is dealt with. The other options are not considered.
- There is a certain routine in the workshop. The stages including the different motivations have a similar structure. They start with an invitation to provide ideas, subsequently a contribution is made and a common understanding and group support is build.
- When the debate intensifies the discussion turns to group issues.
- The process of building the final consensus is very short.
- Recording the ideas is considered as an important issue. It is done regularly after each new issues has been discussed.
- The information provided is not used. Sizwe builds the context for the problem solving process from his personal background knowledge.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 15 and the raw workshop data provided several insights.

- There are several links back to the problem structure in the beginning of the workshop.
- There are several short and long linkages. These linkages refer to: first, clarifications of the problem structure and the information available; second, to one of the options provided in the problem structure and motivations in favour of that option; and third, to task related issues. Six relatively extensive consecutive linkages are presented in Figure 7 in Appendix 17.

Several inferences can be drawn from the figure.

- The linkages motivating for Option 4 involve a relatively large number of interpretations and inferences from the problem structure. Motivation based on interpretations of the

problem structure imply that understanding the problem is an important part of the problem solution. Motivating involves clarifying the existing situation and building a common understanding.

- All participants are involved in most of the linkages through repetitions and interpretations. They jointly build a common understanding. Sizwe provides most of the initial interpretations as the basis for building the common understanding. The other participants play a supportive and clarificatory role.
- The linkage representing the choice is long and runs throughout the workshop. This implies that the group participants have a need to re-enforce their choice as a group.
- The linkage relating to the motivations and simultaneous building of common understanding of the problem structure are complex webs of inter-linkages. This provides evidence for the participants' consideration of the complex nature and the embeddedness of the problem structure.
- The linkages that start with an interpretation span over a longer period than those introduced by an opinion. This implies that interpretation and building of common understanding is a process that develops in stages and is revisited whereas opinions are dealt with and, if not challenged, are not revisited.
- Different interpretations of the same concepts is the basis for debate between Thami and Sizwe.

3.1.8. Workshop 4B

The problem for Workshop 4B was the same as for Workshop 4A.

(i) Workshop Structure

The workshop structure is presented in Figure 16.

Figure 16. Graphical representation of the structure of Workshop 4B

A simultaneous reading of the raw data, the problem description and Figure 16 enabled the following insights concerning the workshop structure.

- The workshop contains twenty stages. Stages 2, 6, 9 and 11 deal with building a common understanding of the available data in the problem structure (specifically Option 1). Stages 1, 3, 5, 8, 10, 11, 12, 14 and 15 deal with issues of the problem solving task and group interaction. Stages 4, 15, 16, 17, 18 and 19 deal with the choice of and motivations in favour of Option 4. These stages include building of a common understanding of the motivations. Stage 7 refers to the suggestion of a compromise which involves including Option 4 in Option 1. This compromise is restated in Stage 13. In Stage 20 the suggestion for the compromise is reinforced.
- The stages in the beginning of the workshop are shorter than those later in the workshop.
- Recording plays an important role in building common understanding of the problem structure and in the final acceptance of ideas by the group.
- There is no real disagreement in the group, but there is a lot of discussion on the problem solving procedure. This discussion is repeated in several stages of the workshop.
- A potential disagreement between participants over the choice of option is pre-empted by the suggestion of a compromise.
- The participants make full use of the available data. The majority of the workshop is allocated to reaching a common understanding of the available data and finding the right method to manipulate it in order to solve the problem. The participants use personal background knowledge to make sense of the available data.
- The last third of the workshop is allocated to discussing motivations for the choice of Option 1. There is a lot of clarifying. This implies a overlap in motivating and building a common understanding.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 16 and the raw workshop data provided several insights.

- There are several links back to the problem structure in the middle of the workshop.
- There are several short and long linkages. These linkages refer to: first, clarifications of the problem structure and the available information; second, to two of the options provided in the problem structure, motivations for these options and clarifications of these motivations; and third, to task related issues. The short links which represent repetitions with the aim of emphasising an idea or a task issue will not be further discussed. Ten relatively extensive consecutive linkages are presented in Figure 8 in Appendix 17

Several inferences can be drawn from the figure.

- The linkage relating to the method used in the problem solving process is extensive and runs throughout the workshop. The method was novel to the participants, as it was introduced in the ECDAFF course they were attending at the time. It is argued that this necessitates a large effort to build a common understanding since there is no common background knowledge available. This explains the use of a lot of repetitions, inferences and interpretations.
- Several of the linkages consist of a complex web of interpretations and inferences. This reflects the complexity of the process of building a common understanding and the participants' grasp of the embeddedness of the different elements of the problem structure.
- Examples (taken from personal background knowledge) play a role in clarifying ideas and issues.
- The participants use a combination of data from the problem structure and personal background knowledge and opinions in their motivations.
- The linkages that start with an interpretation span over a longer period than those introduced by an opinion. This implies that interpretation and building of common understanding is a process that develops in stages and is revisited. whereas opinions are dealt with and, if not challenged, do not need revisiting.

- All participants are involved in most of the linkages through repetitions and interpretations.
- Ayanda is prominent in the linkages on the problem solving process.

3.1.9. Workshop 5A

The problem for Workshop 5A involved two aspects. Aspect 1 involved providing a plan of action. Aspect 2 involved drawing an inference from given facts.

(i) Workshop Structure

The structure of the workshop is presented in Figure 17. A simultaneous reading of the raw data, the problem description and Figure 17 enabled the following insights concerning the workshop structure.

- The workshop consists of thirteen stages. Stages 2, 3, 4, 5, 8 and 12 relate to conceptual issues of solving the problem. Stages 1, 6, 7, 9, 11 and 13 relate to the problem solving task.
- Several stages relate to debate on recording issues. It is in the process of recording, which signifies an ultimate consensus, that disagreements lead to clashes between the participants.
- There is a large amount of debate in the workshop concerning the task process and the conceptual issues. All the conceptual stages include building a common understanding of what is suggested. This building of a common understanding often involves debate.
- There is confusion about the content of the problem structure. This leads to debate in the group about the problem solving task. The multitude of stages allocated to building a common understanding is evidence for the importance allocated to a thorough knowledge of the problem structure. A combination of personal background knowledge and facts from the problem structure are used in the process of building a common understanding.

Figure 17. Graphical representation of the structure of Workshop 5A

- There is little attempt to reach a final group consensus at the end of the workshop.
- Disagreement is often presented as a difference in understanding.
- Disagreement on the solution of Aspect 1 of the problem (which was reached early in the workshop) is re-addressed at the end of the workshop.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representation of the linkages, Figure 17 and the raw workshop data provided several insights.

- There are several links back to the problem structure throughout the workshop. At the end of the workshop, the newsprint is used in the discussion for reference purpose.
- There are several short and long linkages. These linkages refer to: first, clarifications of the problem structure and the available information; second, to two of the options provided in the problem structure; third, to motivations for the choices and clarifications of these motivations; and fourth, to task related issues. The short links which represent repetitions with the aim of emphasising an idea or a task issue will not be further discussed. Three relatively extensive consecutive linkages are presented in Figure 9 in Appendix 17

Several inferences can be made from the diagram.

- Building a common understanding is very important. The common context is created by Sizwe. He introduces most of the consecutive linkages with inferences and interpretations from the problem structure.
- Only three participants are prevalent in the consecutive linkages.
- The problem context is repeated often. There is a need to reinforce the same ideas in order to develop a common understanding.
- The consecutive linkage web (a) provides evidence for the complexity of the process involved in solving the problem.

- Consecutive linkage (c) provides evidence for the use of recording as a means to ratify consensus of the conceptual content and agreement on it. The various interpretations represent the participants' interpretations of the implications of different ways of recording ideas.

3.1.10. Workshop 5B

The problem for Workshop 5B was the same as for Workshop 5A.

(i) Workshop Structure

The structure of the workshop is presented in Figure 18. A simultaneous reading of the raw data, the problem description and Figure 18 enabled the following insights concerning the workshop structure.

- The workshop consists of twelve stages. Stages 1 and 12 deal with group conduct rules. Stages 4, 7, 9 and 11 deal with discussions of the problem solving task. Stages 2, 3, 6 and 12 deal with building an understanding of the problem structure and the available data. Stages 3, 5, 6, 8, 10 and 12 deal with the conceptual ideas used to solve the problem.
- There are long periods in the workshop allocated to building an understanding of the problem structure. These are spread over the whole workshop.
- The different suggestions to solve Aspect 1 of the problem are separated in different stages. Once discussed, they are not revisited further on in the workshop. These stages involve the provision of a contribution, the building of a common understanding of the contribution and the building of group support.
- The stages dealing with task issues are spread throughout the workshop. They ensure a continued common perception of the process.

Figure 18. Graphical representation of the structure of Workshop 5B

- When difficulties arise in comprehending the available data the discussion turns to group and task issues.
- There are several discussions on what and how to record. Recording is regarded as a final agreement. Presentation of ideas is regarded as important.

(ii) Consecutive Linkages

Simultaneous reading of the graphical representations of the linkages, Figure 18 and the raw workshop data provided several insights.

- There are several links back to the problem structure, especially in the first half of the workshop. In the second half of the workshop the newsprint is used to summarise and build common understanding of the ideas that have been generated during the problem solving process.
- There are several short and long linkages. These linkages refer to: first, clarifications of the problem structure and the available information; second, to the suggestions for the solution of Aspects 1 and 2 of the problem.; third, motivations for the suggestions and clarifications of these motivations; and fourth, task related issues. The short links which represent repetitions with the aim of emphasising an idea or a task issue will not be further discussed. Seven extensive consecutive linkages are presented in Figure 10 in Appendix 17

Several inferences can be drawn from the figure.

- Inferences drawn from the various aspects of the problem structure are repeated throughout the workshop to strengthen a common understanding.
- The web of linked consecutive linkages indicate the complex nature of the problem solving process.
- The solution to the problem is anchored in the process of building a common understanding.

- Most of the ideas introduced and discussed in the beginning of the workshop are repeated further on in the workshop.
- Matthew is responsible for most of the initiation of the linkages. He provides most of the facts, inferences and interpretations. Theodora, Khaya and Funeka are involved in the repetitions.

3.2. Interpretation of the quantitative summaries

This section deals with the interpretation of the quantitative analyses of the different forms of the three elements contained in the reading guide. Before the different aspects of the analyses are dealt with some comments are made about the application of the reading guide to the data.

- It was difficult to maintain mutual exclusiveness between the forms of the underlying function: group issues, task issues and own needs.
- Justifications often included a clarificatory aspect
- Building a common understanding of the conceptual issues included an aspect of building group agreement.
- Task related issues included an aspect of building a common understanding.
- Contributions, which introduced new conceptual data in direct function of solving the problem, included an aspect of building a common understanding.

It is argued that the above insights should not be regarded as shortcomings of the reading guide, but should be incorporated as valuable tools for interpretation in the next stage of the interpretive process. This argument is congruent with the hermeneutic approach adhered to in this study (see Chapter 5). This approach acknowledges the value of developing the questions posed to the data during the research process. It argues that an important part of the research process is to discover increasingly better questions and through this, better ways of articulating the phenomena under study (Kelly & Van Vlaenderen, 1996).

3.2.1. Frequencies of the different forms of the elements IF, C and UF

Appendix 13 provides the tables for the quantitative summaries of the operations of all workshops in terms of the different forms of each of the three elements (Table 1); and the quantitative summaries of the operations in terms of the different forms of each of the three elements for each workshop separately (Tables 2-11).

3.2.1.1. Frequencies of the forms of the IF

The following general trends can be gleaned from Appendix 13, Table 1, Block A.

- Suggesting and supporting are the most frequent forms of the Immediate Inter-active Function of the operations. Suggesting consists of proposing conceptual content to the group for acceptance. Supporting involves indicating approval of other operations.
- Justifying, clarifying, commenting and requesting are the second most frequent forms of the Immediate Inter-active Function of the operations. Justifying consists of providing arguments in favour of a position or grounds for a claim. Clarifying consists of making the meaning of conceptual content intelligible to others. Commenting refers to making statements about the problem solving process and requesting involves asking others to do something towards the problem solving task.
- Informing and inquiring are the third most frequent forms of the Immediate Inter-active Function of the operations. Informing involves providing new conceptual facts. Inquiring consists of seeking clarifications.
- Inviting, recording and rejecting are the fourth most frequent forms of the Immediate-Interactive Function. Inviting consists of soliciting conceptual content from others. Recording involves making a written record of ideas of the participants and rejecting refers to indicating an unfavourable opinion about certain conceptual content or an aspect of the problem solving process.
- The participants make infrequent use of the forms dictating, offering, querying and seeking. Offering refers to suggesting to render a service to the group, querying is indicating to others a doubt in the worthiness or truthfulness of conceptual content or aspects of the problem solving process. Seeking refers to soliciting support from others.

Examination of Blocks A of Tables 2-11 reveals some discrepancies in the frequencies of the different forms of the Immediate Inter-active Function across the different workshops. The following insights can be gleaned from the tables.

- The majority of workshops have a moderate to high percentage of clarifications. Workshop 1B however, has a low frequency of clarifications and Workshop 5B a very high frequency.

- The majority of workshops have a moderate or high frequency of comments and requests. However, Workshop 2A has a very high frequency and Workshop 2B a very low frequency of comments. Workshop 3A has a low frequency of requests.
- The frequency of dictating ranges from moderate to non-existent.
- The frequencies of informing, inquiring, inviting, seeking, recording and rejecting are moderate to low in all workshops except in the following cases: Workshop 4B has a very high frequency of informing and Workshop 4A has a high frequency of inquiries; Workshop 3A has a high frequency of invitations; Workshops 3A and 3B did not involve recording; Workshop 1A did not have rejections.
- The frequencies of justifications differ significantly across the workshops. Workshop 1A has an extremely high percentage and Workshop 2A has a low percentage. The other workshops range from very high to moderate.
- The frequencies of offers and queries range from low to non-existent except for Workshop 3B, which has a moderate frequency of queries.
- The frequencies of suggesting and supporting range from moderate to very high.

3.2.1.2. Frequencies of the forms of the C

Some general trends can be gleaned from Appendix 13, Table 1, Block B.

- Repetition is the most frequent form of the Cognitive-Affective content of the operations. Repetitions are re-occurrences of previously introduced conceptual content.
- Opinion is the second most frequent form of the Cognitive-Affective content of the operations. Opinions are personal beliefs, desires and feelings.
- Facts, inferences and interpretations are the third most frequent forms of the Cognitive-Affective content of the operations. Facts refer to information provided in the problem structure or information based on the participants' personal background knowledge. Inferences are conclusions drawn from premises and interpretations are specific ways of understanding the meaning of conceptual content.

- The participants make infrequent use of reflections and examples. Reflections are verbalisation of an occurring cognitive, emotive or behavioural process. Examples are illustrations of a general rule.

Examination of Blocks B of Tables 2-11 reveals some discrepancies in the frequencies of the different forms of the Cognitive Affective content of the different workshops. The Following insights can be gleaned from the tables.

- The frequency of facts, interpretations and inferences range from high to low.
- The frequency of repetitions is extremely high for all workshops except for Workshop 3B.

3.2.1.3. Frequencies of the forms of the UF

Some general trends can be gleaned from Appendix 13, Table 1, Block C.

- Building of a common understanding (consensus u) is the most frequent form of the Underlying Function of the operations.
- Discussing issues related to the problem solving task and process is the second most frequent form of the Underlying Function of the operations.
- Building of agreement in the group (consensus a) is the third most frequent form of the Underlying Function of the operations.
- Providing the essential conceptual contributions for the solution of the problem and committing conceptual content to memory are the fourth most frequent forms of the Underlying Function of the operations.
- Own ideas are the fifth most frequent form of the Underlying Function of the operations. Own ideas refers to the promotion of a participant's ideas against the group consensus.
- Amplifying, compromising, dealing with group dynamics, promoting own needs against the group needs and encouraging participation are infrequent forms of the Underlying Function of the operations. Amplifying refers to the strengthening of the participant's

ideas to enhance its acceptance by the group. Compromising refers to a reconciliation of clashing inputs. Encouraging participation refers to the encouragement of conceptual contributions towards the solution of the problem

Examination of Blocks C of Tables 2-11 reveals some discrepancies in the frequencies of the different forms of the Underlying Function of the different workshops. The following insights can be gleaned from the tables.

- Amplifications have a low frequency across the workshops with the exception of Workshop 1A, in which amplifications have a high frequency and Workshop 3B, which has a moderate frequency.
- Reaching consensus is high to extremely high in frequency across all workshops, except for Workshop 5A, which has a low frequency.
- Reaching a common understanding has a very high or extremely high frequency except for Workshop 2B, which has a high frequency.
- The provision of creative contributions ranges from very high to low.
- Group issues are low in frequency for all workshops, except Workshop 1B, for which the frequency is moderate.
- The frequencies of attempts to commit ideas to memory, to push own ideas and needs and to elicit participation range from non existent to high.
- Task related issues range from a high frequency to an extremely high frequency across the different workshops.

3.2.2. Frequencies of the various combinations of the different forms of the elements IF, C and UF

Appendix 14 provides the tables for first, the quantitative summary of the operations across all workshops and second, summaries for each workshop separately.

3.2.2.1. Frequencies of the combinations of the different forms of IF and C

In the interpretive process that follows attention will be given to those elements of the Immediate Inter-active Function which are deemed important for the following stage in the interpretive process.

Several insights can be derived from Appendix 14, Tables 1-11, Blocks A.

- The forms of the Cognitive-Affective Content most frequently associated with supporting in all the workshops are opinions and repetitions.
- The forms of the Cognitive-Affective Content most frequently associated with clarifying in all the workshops are repetitions, interpretations and inferences. Workshop 1B frequently employs all of these forms of content and also frequently uses examples. Workshops 3B and 4B frequently employ inferences and interpretations. Workshops 4A and 5B frequently use repetitions and interpretations. Workshops 1A, 2A, 2B, 3A and 5A rely mainly on one of these form.
- The forms of the Cognitive-Affective Content most frequently associated with comments consists of opinions and reflections. Workshops 1B, 2B and 3A also use a high frequency of repetitions when they comment.
- A large range of forms of the Cognitive-Affective Content are associated with justifying. Across the different workshops the forms of the cognitive-affective content frequently associated with justifying differ. Workshops 1A and 4B use repetitions and opinions frequently to justify. Workshop 1B uses facts and opinions frequently. Workshop 2A only uses repetitions frequently, Workshops 2B frequently uses repetitions facts and inferences. Workshop 3A frequently uses facts, interpretations, inferences, opinions and repetitions. Workshop 3B frequently uses interpretations, opinions and repetitions. Workshop 4A frequently uses opinions and interpretations. Workshop 5A frequently uses opinions, inferences and interpretations and Workshop 5B uses a high frequency of inferences, opinions and repetitions.
- The forms of the Cognitive-Affective Content frequently associated with rejecting are: opinions, inferences, interpretations and repetitions. The majority of the workshops mainly use opinions to reject. Workshop 1B frequently uses repetitions, and Workshops 2A and 2B frequently use respectively inferences and interpretations.

- The forms of the cognitive-affective content frequently associated with suggesting are opinions and repetitions. Workshops 2A, 2B and 5A also frequently use inferences.

3.2.2.2. Frequencies of the combinations of the different forms of the IF and the UF

Several insights can be derived from consultation of Appendix 14, Tables 1-1, Blocks B.

- Across the workshops clarifying, inquiring and informing are frequently used to reach a common understanding.
- Comments are predominantly used to deal with task issues in all workshops.
- Rejections are frequently used to impose ideas against the group consensus in all workshops.
- Supporting is predominantly used to reach group consensus in all workshops
- Seeking approval serves mainly to reach consensus and a common understanding in all workshops.
- Querying frequently serves to enhance a common understanding and to impose ideas against the group consensus in all workshops.
- In Workshops 2A, 2B, 5A and 5B, justifications are mainly used to enhance a common understanding or impose ideas amongst the participants. In the other workshops (those which dealt with a problem involving making a choice), justifications mainly form the direct contributions towards the problem solution.
- Suggesting mainly aims at providing direct contributions towards the problem solution. In some of the workshops it frequently aims at: Reaching a common understanding (Workshops 2A, 4A, 5B), reaching group consensus (Workshops 1B, 3A) or to impose ideas (Workshop 5A) against the group consensus.

3.2.2.3. Frequencies of the combinations of the different forms of the C and the UF

Several insights can be drawn from consultation of Appendix 14, Tables 1-11, Blocks C.

- Facts are predominantly used to reach a common understanding. In Workshops 1B and 3A, however, facts provide the main content for contributions.
- Interpretations are predominantly used to reach a common understanding. In Workshop 3A, however, interpretations are frequently used in contributions. In Workshops 3B and 5A interpretations frequently serve to impose own ideas.
- Across all workshops, inferences mainly provide the content for contributions and attempts to reach a common understanding.
- Reflections are predominantly used for task and group related issues in all workshops.
- Opinions are mainly used in attempts to reach consensus, in creative contributions towards the problem solution and in task related issues. In Workshop 5A opinions are also frequently used to impose ideas against the group consensus.
- Repetitions are most frequently used in attempts to reach a common understanding, to reach group consensus and in order to commit ideas to memory. In Workshop 1A repetitions are frequently used to amplify ideas, in Workshop 1B repetitions are frequently used in task issues and in Workshop 3B repetitions are frequently used to push own ideas.

3.3. Interpretation of the contributions of the individual participants to the workshops

This section deals with the interpretation of the bar charts representing the operations contributed by the different participants for each of the workshops. The operations are analysed in terms of the form of respectively their Immediate Inter-active Function, their Cognitive-Affective Content and their Underlying Function. The bar charts for each of the workshops are contained in Appendix 16, Figures 1-10.

Congruent with the proposed everyday cognition framework of this thesis, the inputs of the participants are not interpreted in terms of personality traits or individual cognitive abilities. They are interpreted in terms of their significance for the problem solving process.

Simultaneous reading of the bar charts, the figures representing the structure of the workshops (Figures 9-18), the consecutive linkage diagrams (Figures 1-10 in Appendix 17) and Level 1 interpretive data enabled several insights to emerge.

3.3.1. Different types of workshops in terms of the role distributions

The workshops can be divided into three categories. Category 1 consists of workshops 2A and 3A and is characterised by a fairly even distribution of the operations of the workshop amongst the various participants. Category 2 consists of workshops 2B and 5A and is characterised by a less even distribution of the operations. One participant shows a high frequency of operations, others a moderate frequency and few have a low frequency. Category 3 refers to those workshops which have a very distinct differential in the frequency of operations between the one with the high frequency and those with a lower frequency. This category refers to workshops 1A, 1B, 3B, 4A, 4B, 5B.

In Category 1 workshops, no distinct differences can be found between the participants in terms of the analysis of their operations with reference to the forms the of Immediate Interactive Function, the Cognitive-Affective Content and the Underlying Function. In Categories 2 and 3 several broad trends can be established:

- The participant with the high frequency of operations (the active participant) contributes a multiplicity of forms of the underlying function. She provides a relatively high percentage of operations that relate to task issues, to building a common understanding, to building group consensus and to providing creative contributions towards the problem solution. She ensures participation of the group participants in the process. The active participant provides generally large inter-actions consisting of several operations and is active throughout the various stages of the workshop. In workshops that are high in attempts to impose ideas and needs against the group consensus, this person claims a relatively large amounts of these attempts. The active participant initiates a relatively high number of the consecutive linkages.
- One participant, or in certain cases two participants, are predominantly concerned with building a common understanding of the creative inputs provided by the 'active' participant. This person is particularly active during stages of building understanding and provides a relatively high amount of the interpretations in the linkages.
- One participant has a similar profile to the 'active' participant in terms of the different forms of the underlying function. Her input, however, is smaller. This participant

provides the inputs necessary to engage the ‘active’ person in debate in the workshop. She is usually active throughout the workshop, but often increases activity towards the second half of the workshop. She initiates a relatively high number of linkages.

- One or two participants deal predominantly with task related issues. Two types can be distinguished. First, there is the participant who guides the problem solving process by commenting on requirements of the process and by requesting elements of the task to be fulfilled. Second, there is the participant who fulfills a service rendering task in the problem solving process. She does this by recording and by inquiring about the needs of the recording process. In some of the workshops these two types are combined in one participant. The ‘task-related’ participant is mainly active in the stages that deal with task and group issues and with building a common understanding of the problem structure. This participant initiates linkages, mainly consisting of repetitions, relating to task issue.
- In some of the workshops, a participant is predominantly active in promoting group consensus. This participant is active mainly in the consensus building stages and usually has very small inter-actions, consisting of one operation only. This participant provides a relatively high number of repetitions in the consecutive linkages.
- Several participants have a small input, which do not show any specific focus with respect to the forms of the underlying function.
- All participants provide a relatively high percentage of operations that aim at building a common understanding.

3.3.2. Different approaches used by the participants

Several approaches and techniques were identified.

- Most participants use a variety of forms of the Immediate Inter-active Function. The frequency of the forms used depends to a certain degree on the type of problem that was presented in the workshops and on the group dynamics of the workshop.
- Three approaches, or styles, can be distinguished with respect to the Immediate Inter-active Function. There is a ‘supportive style’, which involves the employment of a large frequency of supportive statements. There is a ‘probing’ style, which refers to the

employment of a relatively high frequency of requests, inquiries, invitations and seeking approval and there is a 'providing' style, which involves the employment of a relatively high frequency of suggestions, informing, clarifications and justifications. Intermediate forms of these three approaches are prevalent.

- Most participants use a variety of forms of the Cognitive-Affective Content. However a distinction can be made between a more 'interpretive cognitive' approach, which relies on the use of inferences, interpretations and facts and an 'affective' approach, which relies on the use of opinions and repetitions.
- A distinction can be made between a predominant reliance on personal background knowledge and a predominant reliance on facts contained in the provided problem structure.

4. Third and fourth level of interpretive data: The notions of structure, strategy and role

In the previous sections of this chapter the results of Stages 1 and 2 of the interpretive process towards uncovering group problem solving procedures were discussed. Stage 1 employed a first reading guide which fractured the workshop data into small meaningful units of analysis. This provided the framework for creative interpretation. Stage 2 employed tables and graphs in order to initiate the integrative process of combining Stage 1 interpretations into a coherent description of group problem solving procedures. The third stage of the interpretive process completes this integrative interpretive process. Stage 3 employed a second reading guide in order to condense the data of the previous stages into a meaningful description of the group problem solving procedure used by the participants of the study. This reading guide focuses on three elements of the procedure: structure, strategy and role. Structure refers to the way in which the problem solving process is constructed. Strategy refers to the approaches, methods and techniques used by the participants in the problem solving process. Role refers to the functions fulfilled by the participants in the problem solving process.

This section presents the third level of interpretive data which is the result of the application of the second reading guide on Level 2 interpretive data and the raw workshop data (see Chapter 6, Section 7.3.3, Stage 3). This Level 3 data is contextualised in the everyday cognition literature.

It needs to be stressed that the aim was to uncover underlying structures of the problem solving procedure common to all workshops. Scribner (1986) argues aptly that practical

thinking is marked by flexibility and that the same problem can be solved in different ways fitted to the occasion. As a result formal models of problem solving fail to account for the variability in the everyday problem solving events. The discussion that follows does not aim to provide such formal model, but attempts to capture the commonalities that underlie the different problem solving processes that were studied, while preserving the opportunity for flexibility.

4.1. Group problem solving as a process of building a common understanding

The core issue of the group problem solving processes, in which the participants took part during the workshops, is the joint building of a common understanding. The structure of the problem solving process, the strategies used in the process and the roles fulfilled by the participants provide evidence for this argument.

4.1.1. A structure conducive to enhancing common understanding

The problem solving process consisted of different stages. These are parts of the process delineated by their focus on a particular aspect or cluster of aspects of the problem solving event. Three different aspects could be identified. These are: the problem structure, the problem solving process and the creative contributions towards the problem solution.

Stages relating to the problem structure involved a joint ascertaining of the different elements of the problem, building an understanding of the content of these elements and establishing the network of inter-relations between the various elements.

Stages dealing with creative contributions towards the problem solution involved the provision of suggestions, clarifications and justifications of these suggestions and support for the suggestions.

Stages dealing with meta-cognitive considerations of the group problem solving task related to issues such as, deciding on the choice of methods, establishing group conduct rules, assessment of progress of the problem solving process, changing problem solving requirements and dealing with negative group dynamics.

The three categories of stages alternated throughout the problem solving process. This ensured a parallel process of re-affirming and consolidating common understanding of the three different aspects throughout the process. As a result, effective dialectical enriching between the categories was possible. For instance, enhanced common insight into the requirements of the

problem solving task assisted in building a deeper understanding of the problem structure and *vice versa*. Also, a better understanding of the problem structure enhanced the attempts to solve the problem.

The stages which aimed at building a common understanding of the problem structure and those relating to building consensus about the problem solving task were prevalent in the beginning of the process, but occurred throughout the workshop. Issues introduced in the early stages were re-visited towards the middle and the late stages of the process. These stages were relatively long and encompassed argumentation between the participants based on different interpretations of the problem structure and the task with the aim of enhancing common understanding. Towards the end of the process the problem and the problem solving task were repeated again in order to assess if they had been dealt with appropriately.

The stages dealing with problem solving attempts unfolded in three alternative ways. One alternative was that the stage dealt exhaustively and satisfactorily with a particular component of the solution to the problem.; satisfactorily in the sense that a common understanding and consensus was reached amongst the group. In such event the component was not returned to later in the process. This was the case when the component was considered of minor importance to the solution of the problem. These type of stages were relatively short and tightly structured containing suggestions, building a common understanding of the suggestions and building agreement about the value of the suggestion.

In the second alternative, the stage failed to deal satisfactorily with the issue under discussion and led to disagreement in the group. In such case it was abruptly abandoned in order to avoid escalation of negative group interactions and confusion. The discussion was diverted towards a different component of the problem solving attempt or to the meta-cognitive aspects of the problem solving task. At a later stage the issue was returned to in order to attain a satisfactory resolution.

A third alternative was, when the stage dealt satisfactorily with a component of the problem, but the issue was revisited at a later stage for further discussion. This latter situation refers to a core issue of the problem solving attempt. In this case the issue was revisited because of it was deemed to be important by the participants. Further discussion aimed at deepening the common understanding and consensus. Stages dealing with the core conceptual issues were often introduced early on in the process and repeated several times.

4.1.2. Strategies conducive to enhancing common understanding

The paragraphs that follow deal with the strategies used by the participants to enhance common understanding.

4.1.2.1. Understanding of the problem structure

Several strategies were used to enhance the understanding of the problem structure.

(i) Repetition

Repetition was a frequently used strategy to enhance common understanding of the problem structure. The participants repeated the problem structure at different strategic points in the problem solving process; strategic in the sense that it could influence the development of the problem solving process. This ensured continued common understanding of the problem and assisted the problem solving process. Often one or two group members were assigned the task of ‘bringing the problem back’ into the group discussion.

(ii) Building a common framework

Participants invested considerable effort into building a common framework for interpreting the problem structure. This was deemed particularly important when the problem structure provided little background information. The participants drew upon their personal knowledge to contextualise the problem structure in such a manner that it provided a concrete, meaningful and identifiable image to all. According to Willis and Shaie (1986) this is a common characteristic of everyday problem solving strategies.

Very often the participants constructed the context in great detail. This process of contextualising typically commenced by drawing upon one participant’s personal background knowledge, which was subsequently built on by others in order to produce a shared product. Quotes from the workshop data illustrate the use of the participants’ background knowledge.

- “What is the problem of your (specific) community Funeka?” (Matthew).
- “Is there a library where you live James?” (Khaya).
- “In places like Hofmeyer there are ..” (Khaya).
- “Just like Orient theater or Standard in East London” (Theo).
- “There are schools who have got 5 (classrooms). There are schools who have got 6 classes. Where I live we have got 6. Standard 1 can be in 1 class and sub a and sub b can be in 1 class, 3 and 4 can be combined” (counts on her fingers) (Sindiswa).

Resnick (1991) emphasises the importance of common background knowledge in facilitating problem solving. She argues that a shared background influences the strategies used in problem solving to a large extent.

(iii) Redefining the problem

In their endeavour to enhance common understanding, the process of contextualising the problem structure in communal background knowledge often led to a redefinition of the problem structure into a form that was more familiar and more congruent with the epistemic values of the participants. Meacham and Emont (1989) and Scribner (1986) reported similarly on the practice of redefining problems in everyday problem solving. The participants often changed the problem of ‘choosing between two mutually exclusive options’ into a problem of ‘finding a solution that satisfied all people involved in the problem structure as well as in the group’. It is argued that providing a familiar background for the problem structure encourages a desire to congruently familiarise the problem structure *per se*.

In certain groups two clashing approaches occurred. Some participants adhered to the problem as presented in the problem structure and tried to encourage common understanding by repeating the problem throughout the process. Other participants preferred to redefine the problem in their attempt to encourage common understanding. As a result two, albeit different, attempts to enhance common understanding led to confusion. This type of confusion was an important source of disagreement in the group. The following extract from the workshop data illustrates this confusion.

- “It makes sense we choose the Reconstruction and Development Programme (RDP). The RDP includes the Transitional Local Government (TLG), it can accommodate the TLG. The municipality and the youth can join the RDP workshop and what they discuss and the aim of the workshop will also include the TLG (Theo).
 “The workshop has two issues, RDP and TLG?” (looks confused) (Thami).
 “We have an advantage because maybe we can get funds” (Ayanda).
 “Listen we are still at an advantage, the business man will only fund us if we run a workshop on the RDP. So if we run on both we may not get the funds” (Thami).

4.1.2.2. Understanding of the problem solution

In order to build a common understanding of suggestions to solve different aspects of the problem structure, strategies similar to those described above in relation to building a common understanding of the problem structure were employed.

(i) Contextualising

The participants contextualised their suggestions in personal background knowledge in order to enhance common understanding. The following quotes from the workshop data illustrate the gradual integration of the background knowledge of the different participants.

- “I have a problem with this..., the support needed by the mayor” (Thami).
- “What does the mayor want?” (Thozie).
- “No its is needed, the mayor is needed” (Sindiswa).
- “Where I come from we have projects, we started by doing a research and then started the projects without going to the mayor” (James).
- “Areas are different” (Sindiswa).
- “It depends on the place we are talking about” (Funeka).
- “We have organisations like SANCO in other areas that keep the people informed. In some places there are situations like that” (Sipho).

(ii) Joint action

The joint manner in which suggestions to solve the problem were dealt with by the group also served to build a common understanding. A creative contribution towards the problem solution was usually followed by clarifications, justifications and the provision of support. Most participants provided ‘building blocks’ in this process alternatively as ‘clarifier’, ‘justifier’ or ‘supporter’. As a result the process was shared amongst the group rather than usurped by the one who provided the creative contribution. This enhanced the building of a shared vision.

(iii) Repetition

The participants’ frequent use of repetitions also served to build a common understanding of creative contributions. Each creative contribution was embedded in repetitions, which manifest aim was to indicate group support for the contribution, but indirectly served to familiarise the group with the new idea. Very often the repetition would involve a rephrasing of the same content. This aimed at enhancing the clarificatory effect.

(iv) Recording

Recording the data fulfilled a role in enhancing the common comprehension of attempts to solve the problem. At regular intervals recorded data was revisited. This aimed at ‘taking stock’ of the progress of the problem solving process, but implicitly also provided a ‘check’ for

the sustained common understanding of the contributions that had been made. Frequently, reading the recorded data opened up a process of new interpretations and clarifications, which transcended previous levels of common understanding. The following extract from the workshop data illustrates the use of the recorded data as a means of enhancing common understanding.

- “We should have 6465” (Sizwe).
- “Erase this and write the right thing” (Thozie) (Thami corrects on the newsprint).
- “You should write total here (shows a place on the newsprint). The total is 6465” (Sizwe).
- “This is not accounting” (Lulama).
- “We have only one bank account, one account. That is what we have done, we have accounted here” (points at the paper) (Sizwe).
- “The two projects have a separate account. That is what we have done (refers to the writing on the newsprint), we have this account this side and the other the other side, but we have only one bank” (Lulama).

Recording the data also served as an aid to collective reasoning and by implication collective understanding, particularly in the workshops that involved the need for arithmetic inferences. Calculations were often made on the newsprint and added to or corrected by different participants. The newsprint provided an anchor for the development of the joint inferential process.

4.1.2.3. Understanding of the problem solving task

Building of a common understanding of the problem solving process involved a retrospective approach. Very often the requirements of the problem solving process were relatively briefly introduced in the beginning of the workshop. Rather than engaging in extensive planning of the different steps of the process, practical requests were made with regards to the immediate concrete needs of the process. At later stages in the process meta-cognitive comments and queries about, interpretations of, and reflections on the process that had already unfolded followed. It is argued that discussing the concrete process as it had unfolded within the group was more conducive to building a common understanding than attempting to create a common vision of an abstract plan at the beginning of the workshop. The following extracts show the use of practical requests to guide the problem solving process.

- “Why do we not start with this question. Will they give us the funds” (Theodora).
- “You can just write here “yes” and then we will show the reason” (Theodora).
- “Shall we start with statistics?” (Ayanda).

The following extracts show the reflective nature of some of the meta-cognitive comments about the problem solving process.

- “I have already written down what you are explaining to them” (Theodora).
- “That means you want us to vote” (Sipho).
- “Do we really have to choose only one point?” (Ayanda).
- “We have written so little points” (Thami).

4.1.3. Specific roles conducive to enhancing common understanding

All participants were active in the process of enhancing a common understanding of the different aspects of the problem solving process. However, in most of the workshops, the common understanding was further enhanced by specific roles played by particular participants.

One or two participants fulfilled the role of clarifying the problem structure and the conceptual suggestions towards the problem solution. This was done mainly by providing interpretations and repetitions of the problem structure and of creative conceptual input.

One or two participants fulfilled the role of ensuring a sustained common understanding of the problem solving process. They fulfilled this role by introducing new, or by repeating and clarifying previously introduced, problem solving issues at regular intervals in the process in order to ensure that its requirements were met. They also reflected on the research process in order alert the group on how the task had evolved.

4.2. Group problem solving as a process of building group consensus

It was argued in the previous section that group problem solving is a process of building a common understanding. It is contended that this process is inextricably connected to a process of building consensus. The processes of enhancing comprehension and consensus develop concurrently and dialectically. The structure of the problem solving process, the problem solving strategies and the roles fulfilled by the participants in the problem solving process, while being geared at attaining a common understanding also, serve to reach group consensus.

4.2.1. A structure conducive to enhancing group consensus

The structure of the workshop, described in the previous section, was conducive to the building of consensus. Each stage of the problem solving process included the provision of group support. This was provided by repetitions or opinions of approval by the different

participants. Consensus building applied to the stages relating to the problem structure, the problem solving process and the attempts to solve the problem. Consensus building was ongoing and the final consensus was reached through a progressive process of consensus building on the different elements of the solution. As a result there was no need to dwell on reaching agreement at the end of the process.

4.2.2. Strategies conducive to enhancing group consensus

What follows are the different strategies used to reach and sustain group consensus

(i) Recording

Recording of results of the group discussions was a very important aspect of the consensus building process. Large sections of the process were allocated to discussions about what to record and how to record it. Recording assisted to refine the agreement that was established verbally into a statement that accurately reflected the consensus. Although written agreements were sometimes reconsidered for further analysis, they reflected a stronger sense of group consensus than verbal agreements.

(ii) Participation

Participation of all participants was elicited in an attempt to avoid neglect of the opinions or needs of any one participant.

(iii) Argumentation

Argumentation was very important in reaching a consensus on the solution to the problem, especially in the workshops that involved making a choice. In many of the workshops two participants (the 'leader') and another participant (a 'sparring partner') fulfilled the roles of two opposing parties in order to facilitate debate. The argumentation style employed by the participants was conducive to reaching consensus rather than developing dissent. First, arguments were rarely identified with a specific person. They were instead considered as entities detached from the participants who used them. This implied that rejection of an argument was not connected to rejection of a participant's opinion. It is argued that the latter often instigates conflict within a group. Second, the rejection of a position did not necessarily lead to the rejection of the arguments in favour of that position. An argument of a previous speaker was usually acknowledged by a participant as valuable before another (opposing)

argument was introduced. Often participants would support arguments for a position which they did not favour. This implied a respect for the position of participants whose opinions differed from them. Third, rejections and queries were used relatively infrequently by the participants. Their approach involved stating their own positions or indicating a lack of understanding of others' positions rather than rejecting positions..

(iv) Avoidance of conflict

In their attempt to reach and sustain consensus, a considerable effort was made to avoid open conflict. Conflict for purpose of this thesis is defined as negative group dynamics. Several strategies were employed to that end.

- When discussion between participants was perceived as endangering consensus, the focus of the conversation was abruptly changed to a less confrontational issue. The potentially 'conflict inducing issue' was re-introduced at a later stage, when the climate was more conducive to discuss it, due to an enhanced common understanding or a stronger consensus base.
- The participants' practice of redefining the problem structure (which was discussed in the previous section) provides further evidence for their desire to maintain consensus and avoid conflict. This re-definition was considered more important than retaining the problem structure. The following quotes illustrate attempts to satisfy all group members by changing the problem structure.
 - “She can be an additional member, she is not chased away” (James) (This quote illustrates an attempt to embrace two options rather than choosing one).
 - “And in the community center you can still get a clinic, in the same building” (Theo) (This quote illustrates an attempt to combining two options instead of choosing one).
- When disagreement on conceptual issues was not prevented through either of the strategies discussed above, the participants dealt with the issue at a meta-cognitive level. By discussing the problem structure and the nature of the problem solving task they attempted to diffuse conflict on the conceptual issue.
 - “It must be written as it (the different arguments) is. It will depend on what we all agree on between the TLC and the RDP” (James). This quote comes after repeated opposing arguments.

- “Just like when we were looking at number 5 lets look at them (other options) this way and then try to differentiate” (Thozie). This quote comes after a disagreement on the choice of an option.
- When discussion at meta-cognitive level did not suffice to avoid escalation of conflict, an appeal was made to the group participants to restore consensus. This appeal called upon their culturally defined rules of conduct for group interactions. This includes calling for an outside mediator. The following quotes illustrate the participants’ appeal for avoidance of escalation of conflict.
 - “Let us not make things difficult for us. Let us focus on right and wrong and put them together” (James). This quote comes after a disagreement on whose opinion to record.
 - “and we should be disciplined” (Thami).
 - “Can you help in the debate (to the researcher)? some say RDP and others say TLC, what do we do, so that we can..” (brings hands together) (Theo).
- The majority of disagreements revolved around the technical aspects of the problem solving task. In particular around how and what to record. It is hypothesised that because recording as an aspect of group problem solving processes, is a relatively new practice amongst the participants and as a result involves less common experience, more insecurity and consequently more potential for disagreement. The fact that recording data was considered as reaching firm group consensus and the fact that it needed to be presented to people outside the group also added stress to the process of recording.

4.2.3. Specific roles conducive to enhancing group consensus

All participants were active in the process of reaching group consensus. However, in most of the workshops the common understanding was further enhanced by specific roles played by particular participants.

The leadership role (see Section 3.3.) was important in the creation of group consensus. This leadership involved providing a strong direction for the development of the problem solving process, by contributing a large amount of the conceptual ideas, constructing the framework for the interpretation of the problem structure and providing the meta-cognitive inputs on the problem solving process. The leader minimised the development of dissent by providing a ‘homogenous’ climate based on his needs and views.

In some of the workshops one or two participants particularly focused on enhancing group consensus. This was done by providing support for the contributions of the group participants and by repeating the contributions that were made in the group.

4.3. Group problem solving as mediated action

It has been argued in the previous sections that a joint building of group consensus and collective understanding were the two underlying principles of the group problem solving process. It was contended that the structure of the problem solving process built by the participants, the strategies used in the process and the roles taken by the participants, were congruent with these principles.

It is further contended that the structure of the problem solving process, the strategies and the roles employed by the participants, can be considered as cultural mediators (see Chapter 4, Section 5.1.2.2.) in a process of mediated action, in which the individual and the group process were dialectically linked (Cole, 1991; Wertsch, 1995). It is argued that individual contributions and group dynamics were both essential for the problem solving process and had an enriching effect on each other. This is congruent with the argument of Resnick (1991), that the social context in problem solving is an integral part of the activity. In the discussion that follows evidence will be presented for this argument.

(i) Structure as a mediational means

It is maintained that the participants had a common implicit knowledge of how to construct the structure of the problem solving process (see Section 4.1.). This knowledge is culturally based and provided the participants with a meaningful framework within which they made their contributions. This common background knowledge of the participants can appropriately be described using d'Andrade's (1990) notion of cultural models. Such models are cognitive schemata that are inter-subjectively shared. They are conceptual abstractions that serve as the basis for information processing

The structure of the problem solving process consisted of a spiral of consecutive stages with alternating foci on the three different aspects of the problem solving process (problem structure, problem solving task and problem solving attempt). This spiral allowed the differential insights of participants in each of these aspects to build on each other, resulting in an increased level of understanding of each participant, while simultaneously enhancing the process of reaching a solution.

A finer analysis of the structure of the problem solving process divides each stage up into several inter-actions (see structure of the workshops discussed in Section 3.1), each of which fulfilled a different function. Some interactions were clarificatory in nature, others aimed to justify, while others queried. Each stage consisted of a 'ladder' of interactions, which fulfilled a similar function to the 'spiral of stages'. It allowed each participant to provide a small contribution, congruent with her available knowledge at the moment. This contribution provided a step of the ladder to be used by the other participants, congruent with their available knowledge at that moment. The ladder was simultaneously constructed and used by the participants in a synchronous process of learning and contributing to the problem solution. This notion of a ladder is akin to Vygotsky's (1978) notion of proximal development, in the sense that it provides a structure for joint activity in a context of participants who show differentials in expertise at various stages in the process. It is argued that without the ladder, the participants would have been hampered in solving the problem. On the other hand, the ladder would have been dysfunctional without the creative contributions of the participants. A well build, solid ladder is essential for the solution of the problem and emancipatory for the participants.

(ii) Strategies as mediational means

The strategies used by the participants in the problem solving process (see Sections 4.1.2 and 4.2.2.) provided another mediational means. An example will be used to illustrate this.

It was argued in Section 4.1.1., that participants contextualise the problem structure in common background knowledge in order to enhance common understanding. The personal background knowledge of one of the participants was used as a starting point for this process. This participant provided a first step towards common understanding. Through clarifications and inquiries by other participants, insights into this specific personal background knowledge was enhanced and merged with the problem structure and background knowledge of the other participants. This provided a learning experience for those who were provided with that specific knowledge, but also for the participant who volunteered the knowledge, since she experienced the merging of her specific knowledge with that of the problem structure of the group. Both parties in this process, the 'knowledge provider' and the 'knowledge manipulators', mediated each others learning. In turn this learning process pushed the group closer to the problem solution. The broader cultural background needs to be added as a further aspect of the mediation process. The dialectical interaction between the two parties was made possible because of a sufficient common background knowledge between all the participants. This knowledge not only refers to conceptual knowledge about the content of the problem structure but also to the procedural knowledge of how to provide the personal background

knowledge to the participants and how to manipulate that knowledge. Insufficient common background knowledge could have severed the spiral of learning.

(iii) Tools as mediational means

The participants' use of certain tools in the problem solving process (see Section 4.1.2.2.) provided another mediational means. An example will be used to illustrate this.

The participants used newsprint to record the different aspects of the problem solution at various stages throughout the problem solving process. The newsprint served to gather contributions of the various participants in order to have them ratified by the group. It also served to build a full picture of the problem solution by visualising the different steps towards that solution. The use of newsprint in the problem solving process corresponds with Vygotsky's notion of mediational tools (1962). Vygotsky argues that mediational tools assist in the interface between the social and the individual. It is argued that the newsprint provided first a social 'place' (to bring individual creative contributions) and second an individual 'place' for each of the participants to enhance their understanding of the problem solution. This enhanced individual understanding in turn assisted the further development of the group problem solving process, because the participants were in a better position to provide new contributions. It was noted earlier in this chapter that a certain degree of conflict was experienced with respect to the 'recording process'. It was hypothesised that this was due to the fact that the technique of recording was quite new to the participants. It can be argued that a lack of common, culturally embedded, procedural knowledge was responsible for the sometimes inefficient 'mediating capacity' of the 'recording tool'.

(iv) Roles and rules as mediational means

A further mediator in the problem solving process was provided by the roles and rules used in the problem solving process. These were strongly influenced by the participants' epistemic values. The importance of a shared value system for the shaping of problem solving activity has been emphasised by Gauvain (1995). She argues that cultural values prescribe appropriate ways of participating in cognitive activity.

The shared belief amongst the participants in the value of obtaining and sustaining consensus provided the participants with roles and rules for group interactions. These roles and rules are simultaneously constraining and emancipating (Bhaskar, 1979). They constrained participants by providing limitations on what was 'culturally acceptable' in the problem solving process. They were emancipatory because they provided tools with which the participants could

influence the group in an acceptable manner (Grice, 1975). The creation (and acceptance by the group) of the leadership role (see Section 4.2) serves as an example of this argument. The existence of a leadership role was constraining in the sense that some participants felt they could not present opinions that opposed the ideas of the leader. It was emancipating in the sense that it provided a shared, accepted way in which the problem solution could be reached. The participants felt comfortable in the group because everybody adhered to the rules.

The rules of argumentation serve as another example of the importance of cultural rules as mediators in the group process. The construction of an 'opposition' between the leadership role and the 'sparring' partner role provided the basis for an acceptable argumentation style for the group, which would not endanger the underlying group consensus.

The above discussion corresponds with the everyday cognition theory on mediated action presented in Chapter 4. However, to date, most of the everyday cognition literature has focused on 'vertical' interactions in relation to mediated action. This involves the application of cultural tools by a more 'advanced' person to teach a less 'advanced' person. Typically, it concerns the parent-child dyad. This thesis has added to the theory of mediated action by adopting a 'horizontal' interaction focus. It is argued that many social interactions involve individuals with comparable capabilities and that mediation in such interactions differs from vertical interactions. However, it is acknowledged, in agreement with Hatano and Inagaki (1991), that this does not mean that horizontal relationships exclude the possibility that some members are more capable than others at any given moment. It means that roles among members are changeable in the interaction process.

CHAPTER 9.

GROUP PROBLEM SOLVING: AN INTEGRATION OF INDIGENOUS KNOWLEDGE AND PRACTICAL PROCEDURE

1. Introduction

In Chapter 7 the results of the inquiry into the participants' indigenous conceptual, procedural and epistemological knowledge of the concepts problem and problem solving were discussed. In Chapter 8 the results of the inquiry into the group problem solving procedure, employed by the participants, was reported on. This chapter aims to fulfill the third aim of the empirical study: to interpret the interrelationship between the participants' local knowledge of problem solving and the procedure they adopted in a group problem solving situation.

Scrutiny of the two previous chapters reveals a close correspondence between the participants' knowledge, their epistemic values and their actions. A similar image of problem solving emerged from the inquiry into the participants' knowledge of problem solving and from analysing their group problem solving activity. This is akin to the ideas of Belenky *et al.* (1986), Dweck (1983), Goodnow, (1980) and Strohm Kitchener (1983) on the use of epistemic assumptions as a framework for practice. They contend that individuals and groups use their epistemic knowledge (see Chapter 4, Section 5.2.1.) to define and choose acceptable strategies for problem solving.

In the discussion that follows the congruency and the dialectical interrelation between the participants' actions and their conceptual, procedural and epistemic knowledge, will be dealt with.

2. Congruency between knowledge and action

Several aspects of the participants' epistemic values and their accompanying conceptual and procedural knowledge about the concepts problem and problem solving were reflected in their actions during the problem solving workshops.

(i) Social harmony

Reaching a state of social harmony was an epistemic value underlying the participants' notion of problem solving. Attempting to reach consensus amongst those who are involved in the problem solving process and those for whom the solution is sought, was considered important (see Chapter 7, Section 4). The problem solving activity of the participants provided ample

evidence of attempts to reach consensus. First, problem solutions often took the form of a compromise in order to accommodate all group members and all people contained in the problem structure. Second, the structure of the problem solving process emphasised the need for regular demonstrations of group support. Third, the group problem solving strategies were geared towards enhancing and sustaining consensus or to avert and minimise conflict when it arose (see Chapter 8, Section 4.2). Argumentation was an important strategy in reaching solutions. The rules of argumentation adhered to by the group were geared towards reaching and sustaining consensus (see Chapter 8, Section 4.2.). Fourth, several implicit rules of conduct conducive to maintaining harmony were adhered to by the group.

(ii) The social construction of knowledge

The participants' epistemic knowledge of problem solving revealed a belief in the social construction of truth. Congruent with this epistemic, they indicated an appreciation of a thorough, joint analysis of the problem structure (see Chapter 7, Section 4). This was reflected in the problem solving procedure of the participants. Large parts of the problem solving processes were allocated to, and several strategies aimed at, reaching and sustaining a shared understanding of the problem structure (see Chapter 8, Section 4.1.).

The participants emphasised the importance of a 'shared' problem identification. In practice this was reflected in their strategies of 'contextualisation in common background knowledge' (see Chapter 8, Section 4.1) and a progressive building of understanding through combining clarifications, provided by the different participants.

Similar to their emphasis on joint problem identification, the participants' local knowledge revealed a belief in the importance of a joint building of the solution. This was viewed as a process in which all the participants engaged jointly in providing suggestions, arguments in favour and against those suggestion, and reaching consensus. This knowledge was very accurately transferred into their problem solving procedure. Analysis of the problem solving processes revealed that the stages relating to attempts to solve the problem consisted of suggestions, clarifications, justification and attempts to reach consensus. All participants were involved in providing the building blocks of the arguments.

(iii) Procedural knowledge and procedure

The participants' procedural knowledge reflected the importance attached to structure in the problem solving process. They distinguished stages allocated to respectively identifying and analysing the problem, deciding on a solution and planning and implementing the solution. The

problem solving activity of the participants revealed a similar structure. However, the chronology was less rigid. Stages of problem analysis and attempts at solutions alternated with each other in a gradual process of building consensus.

The participants identified certain actions required in the problem solving process. Several of these independently emerged from the creative brainstorm session on the workshop data. This reveals a close fit between the knowledge and practice of the actions involved in group problem solving. Actions which were identified in both knowledge and practice were: listening, talking, suggesting, clarifying, compromising, motivating, opposing, convincing, confirming, arguing, eliminating, mediating. Congruent with their knowledge, the role of a leader was to encourage participation, give direction and integrate viewpoints.

(iv) Problem ‘specificness’

The participants’ knowledge and practice of group problem solving reflected a merging of problem identification and problem solution and a downplay of the importance of general formal problem solving methods (see Chapter 7, Section 3.7). The ideas of Hiebert (1986) on the interaction between conceptual and procedural knowledge can assist in interpreting the insignificance of standard problem solving procedures. Hiebert argues that conceptual knowledge of a problem provides tools for the development of procedures for problem solving. Hiebert argues that problems are solved by building mental representations (models) of the problem and then dealing with these representations to select appropriate procedures. The ideas of d’Andrade (1990) on cultural models provides a similar argument.

For the participants, the conceptual knowledge (based on their epistemological knowledge) of a problem includes: the perception of a socially constructed definition of a problem; the perception of a socio-culturally embeddedness of a problem, which implies that each problem is in a way unique; and the perception of the need for practical experience and motivation for successful problem solving (see Chapter 7). These perceptions are incongruent with the application of general formal problem solving procedures. They are, however, in accordance with the procedure used by the participants, which relies on contextualising the problem in common familiar background knowledge in an attempt to understand the ‘context’ and the ‘specificness’ of the problem, and which subsequently embarks on a process of emphatic negotiation to reach consensus on a solution to the problem.

3. Meta-cognitive speech

The influence of the participants' knowledge of problem solving on their problem solving activity was not completely implicit. The workshop data provides evidence of the use of meta-cognitive discourse on the problem solving process. At times the participants deemed it necessary to vocalise their epistemic knowledge of good problem solving to influence the problem solving process. To this end, they made comments and requests about the problem solving task and the group process. The following quotes illustrate the importance attached by the participants to: reaching a common understanding; the execution of a leadership role and the adherence to rules of group conduct.

The following quotes reflect the importance attached to reaching a shared understanding.

- “We must discuss” (Theo).
- “If you do not erase that number you will confuse us” (Khaya).
- “You seem to be lost” (Matthew).
- “She seems to be puzzled” (Matthew).
- “Khaya you said you understand it?” (Funeka).
- “Tell me in your own words what is happening, because I can hear Matthew but I do not understand him” (Matthew).

The following quotes reflect the execution of a leadership role

- “I will give a direction” (Theo).
- “I like the group to be short and precise. Even if they are three, they are good points” (Thami).
- “Are we going to summarise” (Thozie).
- “We have passed question 1” (Theo).

The following quotes relate to group conduct rules.

- “Let us not beat about the bush” (Sizwe).
- “and we should be disciplined” (Thami).
- “It all depends on us” (James).
- “This is not done” (Sindiswa).

The meta-cognitive comments were most frequent in relation to the process of recording. This can be explained by the fact that recording was a relatively new element in the problem solving procedure of the participants and therefore a thorough common understanding had not yet developed. There was a need to build a common understanding and more chance of disagreement or misunderstanding.

4. Dialectical interaction between epistemic values, procedural knowledge and procedure

It was argued that the compatibility between knowledge and activity was derived from the participants' reliance on epistemic values in their problem solving procedure. It is further contended that the participants' epistemic values are equally influenced by their problem solving practice. In the discussion that follows two examples are provided to illustrate the dialectical interaction between knowledge and practice in the group problem solving process.

4.1. The importance of social harmony

It was argued in Chapter 7, Section 4 that the concepts of social harmony and inter-dependent self view are pervasive in the culture of the participants.

The notion of social harmony was strongly reflected in the participants' epistemic knowledge of problem solving. The notions of conflict and disequilibrium were considered critical for the definition of a problem, and numerous references were made to the importance of consensus and satisfaction of all involved in the problem solving process. In the previous section the congruence between the knowledge and activity of the participants regarding the notion of consensus has already been dealt with. Some further discussion is, however, deemed relevant. The inter-dependence of the participants was particularly apparent in their argumentation style. There is ample evidence for this: first, when a new argument was introduced or when an argument was opposed it was usually preceded by some form of positive acknowledgment of the previous argument; second, arguments often included aspects or parts of previous arguments; third, suggestions and arguments were embedded in repetitions and clarifications made by different participants. This aimed at building a common understanding, but it simultaneously transformed the argument from being associated with one participant to being a shared one, one that is owned and used by the group in order to solve the problem, rather than for maintaining opposition between participants. The fact that arguments were regarded as separate from the intentions of the initial utterer of the argument (see Chapter 8, Section 4.2) and could be used by different participants, serves as further evidence for the importance of maintaining an underlying harmony and inter dependence.

When the participants employ these culturally embedded strategies of argumentation, they have a high probability of being successful in their problem solving attempt, because the strategies are appropriate to the context and they are shared by the group. Whenever the strategies lead to success, they re-enforce the faith of the participants in their effectiveness and in the values and rules that support them. As a result, the possibility that these strategies will be chosen

again in the future will be enhanced. This spiral of mutual influence enhances the problem solving skills as well as the epistemic, conceptual and procedural knowledge underlying the skill.

4.2. Problem identification as a social construct

It was argued previously in this chapter that participants placed great emphasis on identifying and analysing the problem structure. It involved accessing the interpretations of the problem of all the people involved in the problem. This was reflected in the structure of, and strategies employed in, the problem solving activity. Participants jointly built a picture of the problem. This picture was based on the creative contributions of the individuals but superseded the individual interpretations (see Chapter 8, Sections 4.1 and 4.3). This joint picture enriched each individual participant's understanding of the problem. As a result, the participants were in a better position to solve the problem. It is argued that repeated experiencing of individual enrichment and subsequent successful joint solving of the problem leads to an enhanced skill in problem identification and a strengthened belief in the importance of joint problem identification.

5. Changing assumptions and practice in a process of rapid social change

In Chapter 7, Section 4.1. it was stated that the participants' knowledge was predominantly steeped in a traditional African philosophy of '*Ubuntu*'. It was also argued that there is evidence of emerging knowledge which deviates from this traditional knowledge. It is not surprising then, taking into account the congruency and dialectical interrelation between knowledge and activity, that there is evidence in the research data for the emergence of disparity in the problem solving strategies and rules of the participants.

Several theorists emphasise the progressive change in people's knowledge and practice (Bhaskar, 1979; Valsiner & Leung, 1994 and Wertsch, 1995). They argue that although individuals appropriate cultural tools in order to effectively function in their everyday lives, they also contribute to the change in that culture. Culture is a shared system of knowledge and tools that humans create, sustain and re-create.

A gradual change in knowledge and practices is natural and enables individuals to adapt to changing conditions. However, in Chapter 7 it was argued that the changes in the participants' knowledge were due to the situation of rapid social change the participants found themselves in. It is contended that in a process of accelerated change, the expedient dialectic between the environment and the individual is vulnerable and could be damaged, leading to ineffective

practice and knowledge. Major differences between the participants' problem solving strategies, t epistemological and procedural knowledge, as a result of differential adaptation to the changes in the environment, could lead to conflict and to a breakdown in the group problem solving process. Moreover, such breakdown would be difficult to overcome since the common epistemic framework, needed to reach consensus, would be disrupted.

Although the problem solving procedure adhered to by the participants was sufficiently alike and predominantly concomitant with the traditional African philosophy, some differences in approach emerged.

(i) Tension between the traditional and the emerging ways of reaching consensus.

Some participants were in favour of voting, others preferred a process of argumentation until everybody was satisfied.

Analysis of the role distributions in the different problem solving processes revealed that some groups preferred a process guided by a traditional authoritative leadership, in which the leader provided the a majority of conceptual inputs and guided the task and the group process. Other groups preferred more equality in the role division, without strong leadership.

(ii) Tension in argumentation style.

The traditionally accepted argumentation style involved acknowledgments of each others arguments and indirect ways of opposing others through asking for clarifications and through making alternative suggestions. The emerging style used direct rejections and queries.

(iii) Tension between different approaches to obtaining the truth and achieving the 'right' solution.

Although the reliance on background knowledge and personal experience, and the reliance on the facts provided in the problem structure, generally complemented each other, at times they were incompatible. An example illustrates this. In one of the workshops there was a clash between two approaches. The one approach involved abandoning the choice of one option in order to choose two options (with the aim to satisfy the needs of all participants). The other approach dismissed this as unacceptable, because the problem that was presented to the group involved choosing one option, not two.

(iv) Tension between the collective approach and the more individually oriented approach

In some of the workshops one participant made a series of inferences on a piece of paper before presenting it to the group. This individual thought process was in contrast to the traditional approach of combining small contributions of different people into one shared thought process. This led to confusion in the group and requests for clarifications. The result of the individual cognitive effort had to be repeatedly explained to the rest of the group.

(v) Tension between the traditional ‘organic’ approach to the problem solving task and a more formal methodological approach.

The traditional approach involved immersion in the problem identification and argumentation, firmly anchored in the problem context. The emerging approach involved the adoption of a more formal analysis of the problem data and the compilation of a problem solving strategy.

CHAPTER 10.

CONCLUSION: THE AIMS REVISITED

1. Introduction

The inquiry that constitutes the subject of this thesis was driven by several motives and aspired to achieve particular goals. It is appropriate in this concluding chapter to revisit the various aims that were set for the research and to evaluate the extent to which they have been fulfilled. Before embarking on this process it needs to be emphasised that the different goals, although relating to different aspects of the research, are inter-linked. As a result achievements and shortcomings with reference to one goal has repercussions for the others.

2. An empirical investigation into the indigenous knowledge and practice of problem solving of a group of community activists in South African

The empirical component of the study had a three fold aim. First, it intended to uncover the indigenous knowledge of the concepts problem and problem solving of the participants of the study. Second, it intended to uncover the group problem solving procedures employed by these participants and third, it aimed at uncovering the interrelation between the participants' knowledge and their procedure with reference to group problem solving.

Chapters 7, 8 and 9 report on the findings of this inquiry. In Chapter 7 the conceptual, procedural and epistemological knowledge of the concepts problem and problem solving of the participants was discussed. A problem was defined in terms of an impediment to satisfactory participation in society and the perception of lack of consensus. Four different types of causes of a problem were identified and the effect of a problem was defined in terms of unhappiness and disruption of harmony. Problem solving was considered by the participants as an emotive, cognitive and action process, involving particular role players and aimed at overcoming a problem. This process had a certain structure, involved attitudes and actions and relied on particular resources. Successful problem solving was considered to result in restoration of social equilibrium and a feeling of satisfaction. A further interpretation of the participants' knowledge of problem solving revealed that problem solving was considered to be essentially a social, interactive process and that problem identification was considered more important than the development of problem solving strategies. It was also revealed that the principal epistemic values underlying the procedural and conceptual knowledge of the participants were: first, a valuing of social harmony; second, a joint construction of truth; and third, a valuing of knowledge that is derived from experience.

In Chapter 8 the group problem solving procedure of the participants was discussed. Group problem solving consisted of a process of developing a common understanding and group consensus. The strategies employed in the process, the roles played by the participants, the rules adhered to by the participants and the structure underlying the process were all instrumental to achieving these aims.

In Chapter 9, the interrelation between the participants' indigenous knowledge about problem solving and their problem solving procedure was discussed. A close fit between knowledge and action was revealed. It was argued that this relationship between knowledge and practice is dialectical and dynamic and that due to the rapid social change in which the participants found themselves new knowledge and practices were emerging.

It is argued that the research has succeeded in its aim of obtaining insights into the participants' knowledge and procedures of problem solving. It is believed that the interpretive data on the problem solving procedure is especially valuable, since the investigation of local thought processes between peers has been a particularly neglected area.

It is, however, argued that the research results should neither be considered as final nor as reflecting a general truth. Congruent with the interpretive paradigm adopted in this study, it is contended that: first, research findings are not the end of a process towards finding a truth but provide a basis for developing new and better questions for further research; and second, the research findings are one particular reflection of reality, based on the dialectical interaction between the researcher's fore-structure and the research data. The reader is, therefore, urged to regard the research findings as a temporary horizon of understanding and to incorporate these in the ongoing scientific debate on everyday problem solving.

Besides the more conventional aims of the empirical component of the research, the study had additional ambitions.

3. A contribution to an 'everyday cognition' approach

In Chapter 4 it was stated that the study aimed to contribute to the theory and practice of the study of everyday cognition. To this end a framework for everyday cognition research, based on a survey of the existing everyday cognition literature, was constructed. The framework was build on the notion of mediated action, which is a core-concept in 'everyday cognition' literature. Mediated action (Wertsch, 1995) refers to the dialectical interaction between the individual and her surroundings, mediated by cultural means, consisting of models, beliefs and goals. This framework was used as a basis for the empirical research. It determined the nature

of the units of analysis and the components of the different reading guides, which directed the interpretation. Secondly it was used as a framework for the interpretation of the final level of interpretive data. As such the empirical research was firmly embedded in an everyday cognition approach, thereby enriching its theoretical and practical base. The use of the framework provided the following main advances.

- It enabled the explication of the participants' everyday problem solving practice.
- It enabled the explication of the dialectics between culture, group and individual.
- It enabled the explication of the nature of mediated action amongst peers.
- It enabled the explication of the dialectics between conceptual, procedural and epistemic knowledge and activity.
- It captured the nature of the tensions created by the process of rapid social change in which the participants found themselves.

4. A methodological contribution

In Chapter 5 it was stated that the study aimed at developing an appropriate philosophical paradigm for the study of everyday knowledge. Chapter 6 intended to develop a method appropriate to the study of everyday cognition. The realisation of the above two aims needs to be evaluated jointly.

The method, used in the study, does not correspond to any established method as such. It consisted of an eclectic combination of techniques, grounded within a combination of realist and hermeneutical approaches (Schwandt, 1994). A methodological paradigm based on these two approaches guided the process of discovering meaning in the research data and of uncovering underlying structures.

The reading guide technique (Mergendollar, 1989) and the techniques of coding and constant comparison (Glaser & Strauss, 1967) were employed congruent with the principles of the methodological paradigm developed for the study (see Chapters 5 and 6). The main philosophical principles that guided the research were Ricoeur's (1976) notion of structural analysis of texts, the notion of the hermeneutical circle (Taylor, 1994) and the notion of discovering underlying structures (Bhaskar, 1979).

Due to the innovative nature of the research method, the research process developed in an exploratory fashion. This implied that the research process was continuously shaped and re-shaped during the research process.

It is argued that the method used in the research provided several contributions to the field of interpretive methodology. The most important of these are mentioned below.

- The study demonstrated the effective use of quantitative data in the interpretive process, providing it with rigour and enhancing its validity.
- The study showed that realist and interpretive principles can be combined to create a process of uncovering underlying structures.
- The study demonstrated the process of progressively deeper interpretation through alternate phases of interpretation and formulating new questions.
- The study demonstrated the effectiveness of an eclectic use of techniques embedded in a framework of paradigmatic principles.
- The study combined creative interpretation and methodological rigour.

Although the method was considered useful in its attempt to fulfill the aims of the study, the particular combination of method, research topic and the practical constraints provided by the research context contained some tensions. The following tensions were experienced.

- The analytical process relied on texts derived from interviews and group discussions of the participants. Part of this data was provided by the participants in English, which is their second language and part of it was provided in Xhosa (their first language) and subsequently translated into English in preparation for analysis. It can be argued that the use of a language that is not a mother tongue and the process of translation may have caused some of the essence of the local knowledge to be lost.
- It may be argued that interview data for the uncovering of local indigenous knowledge can not be regarded as exhaustive and that additional data gathering through techniques such as participant observation or the analysis of proverbs relating to problem solving could provide important complementary insights.
- Although the problems used in the problem solving workshops were carefully gleaned from the participants' everyday experiences and were ratified by the ECDAFF personnel, they were still one step removed from the participants' everyday life situation and imposed an artificial component to the problem solving situation. This may have had an influence on the problem solving behaviour of the participants, especially on their motivations to solve the problem. However, they participated actively in the workshops, using the cultural tools they possess, in their attempt to solve the problems.
- There was an ongoing tension between the attempts at creative interpretations and at maintaining rigour. In the compilation of the reading guide the process of developing categories and imposing these categories on the data (which created rigour) provided a continuous danger of reducing the richness of the data and of losing meaning. The same criticism applies to the presentation of the data in tables and graphs. This presentation of data provided a context for deeper interpretation, but it may at the same time have

introduced a reductionist thrust. It is acknowledged that this tension between creativeness and rigour is inherent in the scientific interpretation process, however, it needs to be kept in balance.

5. An innovative combination between meta-theory, theory and method

It is argued that the main contribution of this study is its combination of an interpretive paradigm, an ‘everyday cognition’ approach and a method based on grounded theory techniques and the reading guide technique. The research design based on an integration of these three components was effective in uncovering indigenous knowledge and processes. It provided methodological tools that differ from those of the mainstream cognitive psychologist and allowed for a creative interpretive process that revealed the underlying structures and principles of the participants’ knowledge and practice of everyday problem solving. Because the method consists of the application of techniques with a strong paradigmatic grounding, its is considered flexible and adaptable to other studies within the field of everyday cognition.

6. The emancipatory intentions of the study

The study aimed at emancipation of different kinds

6.1. Research on local knowledge

It was stated in Chapter 2 that by contributing to the relatively small body of scientific psychological data in the realm of local knowledge, the study aims to attract more interest into this area of research and to provide it with a status equal to the more conventional cognitive psychological research. It is hoped that the study results and the particular care taken in describing the interpretive methodology, used in the study, will provide researchers with the necessary tools to evaluate the findings and will provoke the interest of a significant scientific audience.

6.2. Empowerment of local people

It was stated in Chapter 2 that the research aims at empowering the participants through making their tacit knowledge explicit to them and by encouraging them to use this knowledge in their interactions with development agents. At this stage, this aim has not been reached and it is understood that this will be very difficult to accomplish. The process that unfolded between the initial gathering of data and the resulting interpretive data has been long and complex and has been exclusively appropriated by the researcher. The participants were not

involved in the different stages of the conversion from the raw data to the deepest level of interpretation. It is, therefore, doubtful that the participants will be able to identify with the research findings as ‘something that belongs to them’. This assumption is based on similar experiences in the researcher’s development work. When raw research data was taken away from local people for analysis and interpretation, before being brought back to them in a ‘scientific’ form, it was disowned, because it had become unrecognizable. However, in order to honour the resolve made in the beginning of the research process and despite reservations, attempts will be made to return the interpretive data to the participants.

6.3. Improvement of training methodologies

Another stated aim of the study, is to provide useful insights to development workers and adult educators, especially those who work with people from rural areas in South Africa and the trainers in ECDAFF. In Chapter 3, it was argued that the current study arose from a dissatisfaction with the researcher’s practical development work. There was a lack of congruency between the adult education methodologies, used in training sessions, and the trainees’ (local people) strategies of processing the cognitive content provided during the training. At this stage the aim of influencing adult education methodology has not been fulfilled. However, the researcher is confident that the insights provided by the current study can be effectively distributed amongst those who can benefit from it in their development work. In particular, the insights obtained from the study on the tensions created by rapid social change can provide a significant contribution to improved training. It is, however, important to re-emphasise that the results of the research are transient, not only because they are subject to improvement through further research, but also because the participants’ procedures and knowledge are dynamic in nature. Therefore, the practical application of the results of the research will need to be accompanied by ongoing research and reflection.

6.4. Changing the discourse on everyday cognition

Congruent with the aim of promoting an ‘everyday cognition’ approach, the study of local process and the empowerment of local people, the research intends to influence the discourse on everyday cognition. It aims to alter the often derogatory perceptions of everyday knowledge and everyday cognitive processes amongst social scientists. In order to achieve this aim, two strategies were used.

First, the researcher acknowledged the influence and importance of her fore-structure on the interpretive process. This included some pre-conceived ideas about everyday knowledge, due to her training in the traditional cognitive approach. Having recognised this fore-structure,

attempts were made to capture the participants' knowledge and cognitive processes within their framework rather than in a rigid traditional cognitive framework. Several means were used to this end.

- The researcher worked for several years in the communities of the participants in order to obtain a thorough understanding of the local culture.
- The process of data collection was jointly determined by the researcher and the participants.
- The problems used in the problem solving workshops were carefully gleaned from the participants' everyday life.
- The interpretive process of the different components of the empirical research commenced with a creative brainstorm session, allowing the 'data to talk to the researcher'.
- The researcher consciously manipulated her fore-structure in the research process.
- The principle of the hermeneutical circle was honoured. The interpretive process involved a repeated return to the raw data (provided by the participants) as part of the contextual framework for interpretation. This ensured that interpretation remained firmly connected to the world of the participants.

Second, attempts were made to use an appropriate language to describe the emerging knowledge. A conscious effort was made to describe the participants' everyday cognition in affirmative terms rather than with traditional ethnocentric terms such as illogical, unsophisticated, or undifferentiated.

Evaluation of this attempt at emancipatory discourse is difficult at this stage. Acceptance and adoption of a changed discourse amongst scientists in a specific discipline is a slow and semi-conscious process. The attempt made in this study can only hope to provide a small contribution to this process.

From the concluding remarks in the sections above, it is clear that the study cannot be considered as a final product. Some of its aims have not been fulfilled, its methodology can be improved, and its results are provisional. It is therefore appropriate to end this conclusion with the resolve to continue the process that was started in this study and to invite others to join in this endeavour.

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TYPOLOGY OF PROBLEMS:

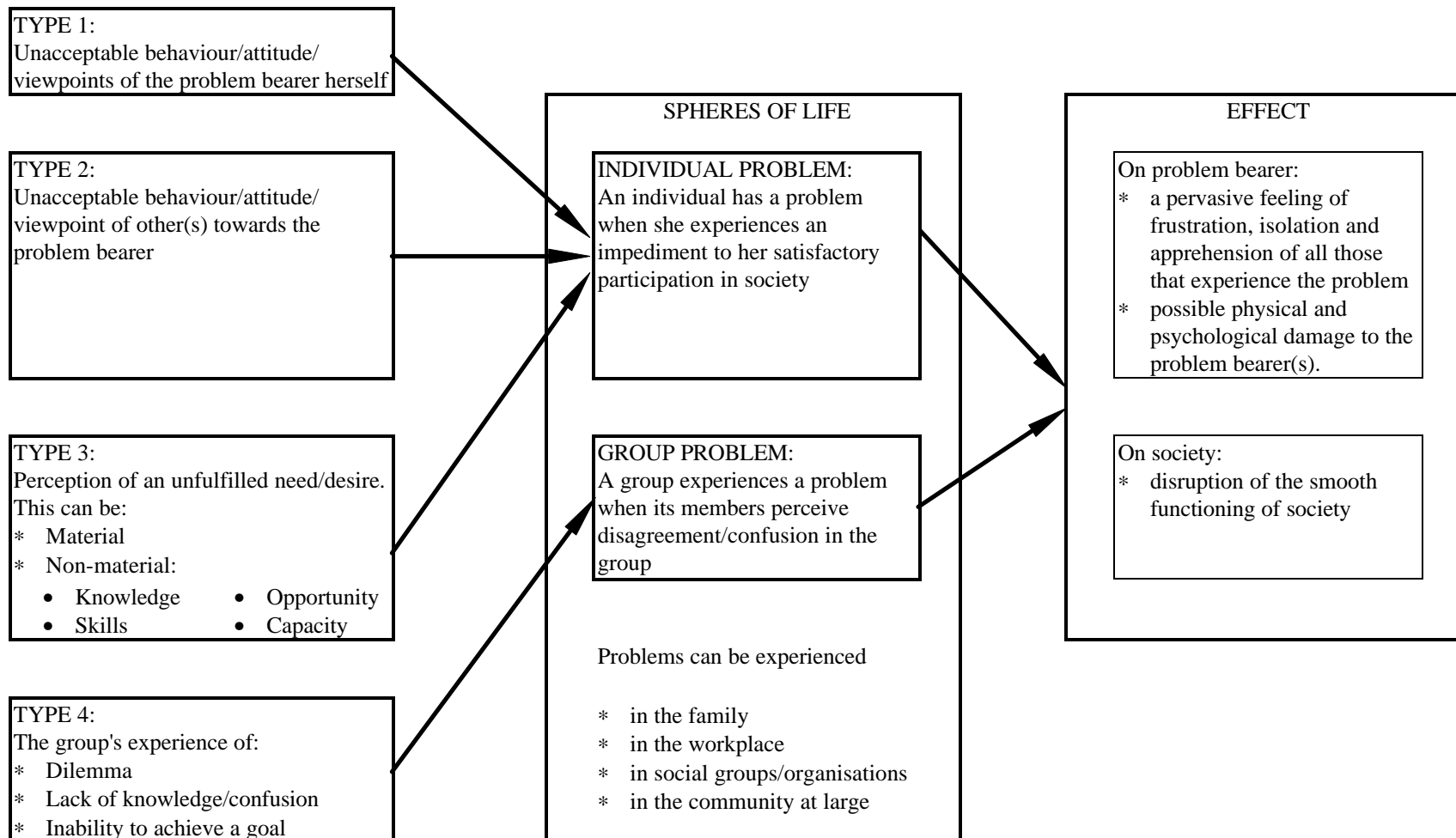


Figure 6. Integrated theoretical diagram of the conceptual knowledge of the concept problem

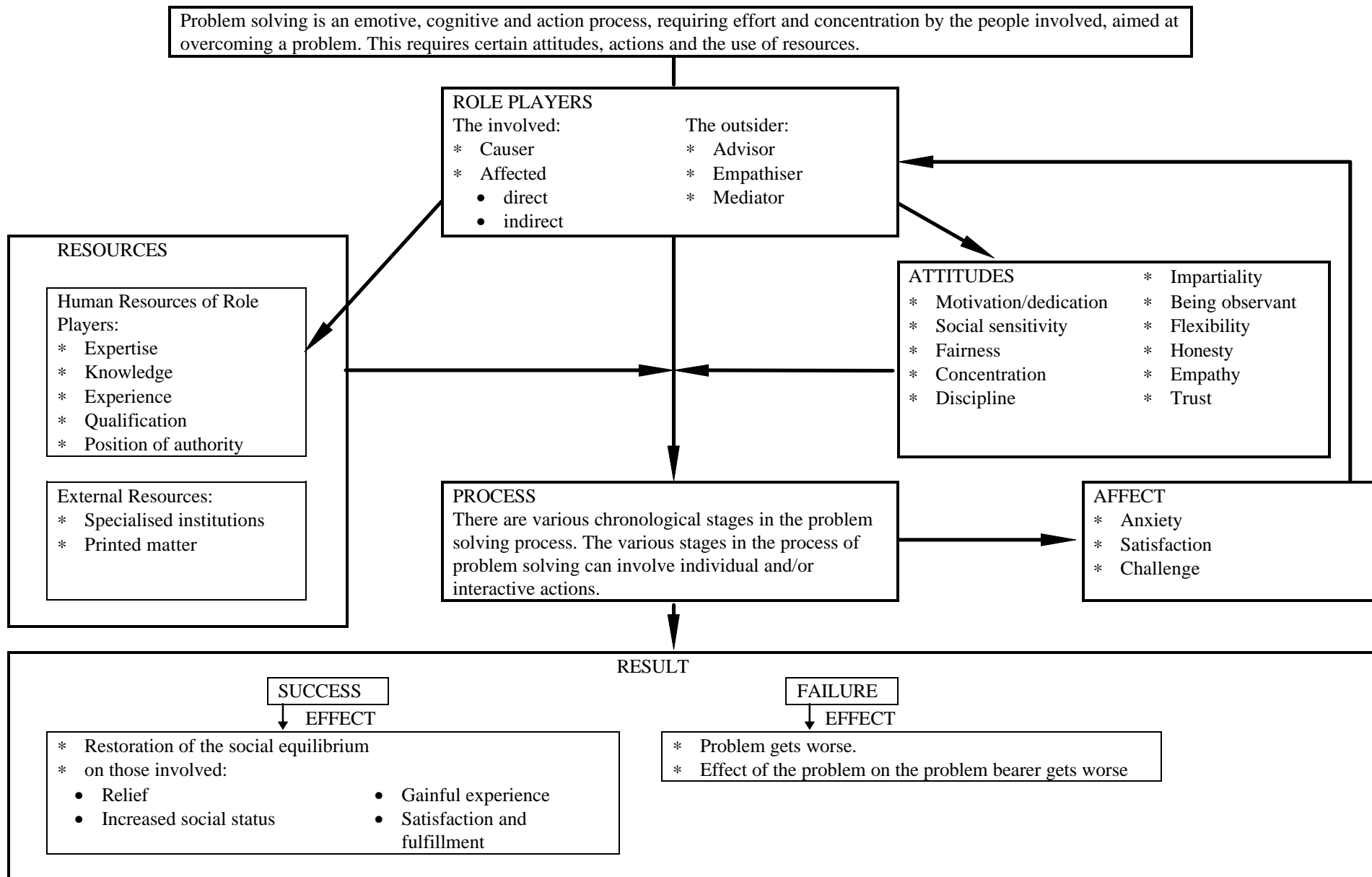


Figure 7. Integrated theoretical diagram of the conceptual knowledge of the concept problem solving

INDIVIDUAL PROBLEM

INVOLVED	
CAUSER	DIRECTLY AFFECTED
* Thinking	* Consulting books
* Listening	* Arguing
* Talking	* Compromising

OUTSIDERS		
MEDIATOR	ADVISOR	EMPATHISER
* Observing	* Observing	* Observing
* Listening	* Listening	* Listening
* Mediating	* Advising	* Empathising
	* Clarifying	
	* Referring	

**GROUP PROBLEM SOLVING AMONG COMMUNITY ACTIVISTS IN
A SOUTH AFRICAN SETTING: AN EVERYDAY COGNITION
APPROACH**

by

Hilde Rachel Maurice Van Vlaenderen

VOLUME 2: APPENDICES

LIST OF APPENDICES

APPENDIX 1. INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE	1
APPENDIX 2. INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL, PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE	2
APPENDIX 3. EXAMPLE OF A BRAINSTORMING SESSION (COMPONENT A OF THE RESEARCH DESIGN)	3
APPENDIX 4. EXAMPLE OF THE PROCESS OF CODING CATEGORIES	9
APPENDIX 5. EXAMPLE OF THE PROCESS OF IDENTIFYING PROPERTIES AND DIMENSIONS	11
APPENDIX 6. EXAMPLE OF THE PROCESS OF ESTABLISHING RELATIONSHIPS BETWEEN CATEGORIES	14
APPENDIX 7. EXAMPLE OF A THEORETICAL MEMO	15
APPENDIX 8. PROBLEM SOLVING WORKSHOPS	16
APPENDIX 9. READING GUIDE 1 FOR THE ANALYSIS OF THE GROUP PROBLEM SOLVING PROCESS	20
APPENDIX 10. EXAMPLE OF A BRAINSTORM SESSION (COMPONENT B OF THE RESEARCH DESIGN)	23
APPENDIX 11. EXAMPLE OF THE APPLICATION OF THE FIRST READING GUIDE ON THE OPERATIONS OF WORKSHOP 1B	32
APPENDIX 12. THEORETICAL DIAGRAMS	49
APPENDIX 13. QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN TERMS OF THE FREQUENCY OF: IF/C/UF	61
APPENDIX 14. QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN TERMS OF THE FREQUENCY OF THE VARIOUS COMBINATIONS OF THE DIFFERENT FORMS OF: IF/C/UF	67

APPENDIX 15. GRAPHICAL REPRESENTATION OF THE LINKS BETWEEN OPERATIONS IN TERMS OF THEIR COGNITIVE-AFFECTIVE CONTENT	79
APPENDIX 16. GRAPHICAL REPRESENTATIONS OF THE NUMBER OF OPERATIONS CONTRIBUTED BY THE PARTICIPANTS, ANALYSED IN TERMS OF: IF/C/UF	80
APPENDIX 17. GRAPHICAL REPRESENTATIONS OF THE MAJOR CONSECUTIVE LINKAGES BETWEEN OPERATIONS IN TERMS OF THEIR COGNITIVE-AFFECTIVE CONTENT	91

APPENDIX 1.
**INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL,
PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE**

This schedule was used for all initial individual interviews.

PERSONAL DATA:

1. Name
2. Date of birth
3. Gender
4. Educational level
5. Other training:
6. Working experience:

QUESTIONS:

1. What is a problem?
2. What is problem solving?
3. Why do people solve problems?
4. Who solves problems?
5. Are there different types of problems, or are all problems the same?
6. What do you do when you solve a problem?
7. Is solving a problem easy or difficult?
8. What do you like and what do you dislike about solving problems?

APPENDIX 2.
**INTERVIEW SCHEDULE FOR ELICITING CONCEPTUAL,
PROCEDURAL AND EPISTEMOLOGICAL KNOWLEDGE**

This schedule was used for the individual interviews conducted after each of the problem solving workshops.

QUESTIONS:

1. What was the problem?
2. Why was it a problem?
3. How did you try to solve it?
4. What skills were used?
5. Was it difficult?

APPENDIX 3.

EXAMPLE OF A BRAINSTORMING SESSION (COMPONENT A OF THE RESEARCH DESIGN)

This appendix contains an example of the results of Phase 3, Stage 1, Step 2 of the interpretive analysis of the pre-workshop interview with participant Matthew. The sentences in bold are the verbatim answers of the participant to the questions of the interview schedule contained in Appendix 1.

A PROBLEM IS A THING THAT I CANNOT BE ABLE TO DO

PROBLEM: thing, limitation

A THING: is identifiable, but variable

I: needs personal involvement

I CANNOT BE ABLE: condition:/ can be done in principle/ need an ability to do it/ person does not have the ability

TO DO: action/ use of method/ process

I HAVE NO OTHER WAY TO KNOW IT AND I MUST FIND OTHERS TO DO IT FOR ME OR MAKE A PLAN TO DO IT

I HAVE NO: no personally available means to solve the problem

OTHER WAY: other than interacting/ implies that problem solving always involves others

KNOW IT: it is knowable/ it can be understood in your mind before applying it/ implying that a problem is finite

NO WAY TO KNOW IT: knowledge limitation.

I MUST FIND: action/ motivation/ necessary requirement for problem solving

OTHERS: implies that others know the solution/ that they have the skills/ for them it is not a problem/ they differ from me in that they can do it

DO IT FOR ME: it implies that there is a well defined method/ they must act/ solving problems means handing them over to others/ joint action but passivity

MAKE A PLAN TO DO IT: preparation before action/ implies that being part of the plan in which the solution is presented will give me the ability to learn it and do it myself/ the plan is specific for that problem

YOU MUST SIT DOWN AND WORK AND IT IS POSSIBLE TO DEVICE ANOTHER MEANS TO DO IT

YOU MUST: intention/ requirement/ socially accepted way of doing

SIT DOWN AND WORK: activity/ focused attention/ need to prepare/ need to work together/ takes effort and motivation

ANOTHER MEANS: can find means when you sit with others there are procedures that are knowable

POSSIBLE: can happen in certain situations

YOU MUST THINK HARD IF YOU ARE NOT QUALIFIED

THINK: mental action/ brains

HARD: difficult/ a lot/ takes a lot of energy/effort

NOT QUALIFIED: implies that some people are qualified at problem solving, some are not/ it seems that you can qualify if you sit with others/experts

IT IS A CHANCE TO DO YOUR BEST

CHANCE: opportunity/ does not always happen/ one must take advantage of being with others to learn ability to solve problems

DO YOUR BEST: be motivated/ learn to become better through others/ not perfect/ what is socially acceptable.

TO WORK ON IT, TO FIND A SOLUTION

WORK: action/ process/ flow/ motivation

IT: existing issue/obstacle

FIND A SOLUTION: condition: there is a solution/set of possibilities/ consequence: find the right one

BECAUSE THEY ARE STUMBLING BLOCKS. IF YOU TAKE THE PROBLEMS AWAY, LIFE GOES SMOOTHLY. PEOPLE WANT THINGS RIGHT

STUMBLING BLOCKS: obstacles, interrupt the flow

TAKE THE PROBLEMS AWAY: undo them, take the obstruction of the flow away, take them to somebody else, remove them. You must be able to clearly identify them to be able to take them completely away. Implies that you are an actor who can do that, action/take the unhappiness away and make the smooth, collective, conventional flow be restored

PEOPLE WANT THINGS RIGHT: Desire for what society defines as right/ smooth life for all, consensus model/ assumes that there is a correct way.

SMOOTHLY: no interruptions for anybody

PEOPLE WHO SOLVE PROBLEMS ARE PEOPLE WHO HAVE COME ACROSS THE PROBLEM BEFORE, EXPERTS ON IT

HAVE COME ACROSS THE PROBLEM: experience/ have learned solution to this specific problem/have done it themselves/ the exact procedure for the particular problem.

EXPERT ON IT: expert means qualified because of having done it/ having authority/ you can be qualified on "it" specific for a particular problem

YOU YOURSELVES BY THINKING HARD ABOUT THE COURSE. BY TRYING TO WORK HARD ON THE COURSE AND TO AVOID IT

BY THINKING/WORKING HARD: energy and motivation/ brains

THINKING ABOUT THE CAUSE: implies that answer is in the problem cause/ once the cause is known the exact answer will follow/taxonomy of problems is important

AND TO AVOID IT: implies that maybe we make our own problems/ active participants/ problems are not nice because they need a lot of energy and are maybe unpleasant/ implies that we can engage or not engage in a problem/we need to be motivated to engage

DEPENDS ON WHAT KIND OF PROBLEM

DEPENDS: problem solving process is conditional

KIND OF PROBLEM: taxonomy

THERE ARE PERSONAL PROBLEMS (LIKE IN YOUR RELATIONSHIP WITH YOUR WIFE)

PERSONAL: relating to yourself/ your own life/also implies something social/ inter-actional - relationship/ domain of family relationships/maybe personal relates to not seen by society at large as compared to work which is publicly visible

THERE ARE WORK RELATED PROBLEMS:

WORK RELATED: could be bad performance/relation with other workers/also in fact personal

PROBLEM IN YOURSELF, LIKE BEHAVIOUR AND ATTITUDE

YOURSELF: one can be the cause of a problem/ fits with being able to avoid problems - active role.

BEHAVIOUR AND ATTITUDE: relational/ interactive

ALSO PROBLEMS WHEN YOU NEED A THING TO DO SOMETHING AND YOU DO NOT HAVE THAT THING

NEED: desire/motivation/ lack of

A THING TO DO SOMETHING: absence of a tool, method, means/ context implies that it is not skills because that is said later/ implies that there is always a thing in existence but you have not got it.

TO DO: action/activity/process

THAT THING: implies that a specific tool is required

ALSO LACK OF SKILLS TO DO SOMETHING

TO DO: action

LACK: not having/ limitation

SKILLS: methods/strategies/ ways of doing things

ALSO LACK OF KNOWLEDGE, IF YOU LIKE TO KNOW A LOT ABOUT A CERTAIN THING

KNOWLEDGE: experience/ intelligence/ information/ awareness/ knowledge is only a problem if you want to have it (motivation/need/like to)

KNOW A LOT ABOUT A CERTAIN THING: have a lot of experience/information

A CERTAIN THING: can be specified/concrete/delineated

WHEN I SOLVE A PROBLEM I LOOK FOR THE CAUSE OF THE PROBLEM

LOOK: identify/ can see the whole problem in once/ attention/ perception

CAUSE: the answer is in the cause/ taxonomy of problem solving according to causes

I LOOK FOR THE CAUSE ON MY OWN, I CAN TAKE ADVICE, I CAN LOOK IN THE BOOKS.

ON MY OWN: one can have solutions oneself

TAKE: action

ADVICE: others who have the solution can help/ need to listen to others

LOOK IN THE BOOKS: solutions may be written down in books and can be consulted

I THEN TRY TO AVOID THE CAUSE, E.G. I TRY TO CHANGE MY BEHAVIOUR IF I HAVE A BEHAVIOUR PROBLEM.

TRY TO AVOID THE CAUSE: the cause is an obstacle to flow/ try to avoid the obstacle/ people have the power to do that/ active in the problem posing and solution/ problems can and should be avoided

TRY: is possible but not guaranteed/ certain degree of difficulty/ motivation is needed and is important

PROBLEM SOLVING DEPENDS ON THE DEDICATION. IF I AM LAZY IT WILL BE DIFFICULT, IF I AM NOT LAZY IT WILL BE EASY.

DEDICATION: effort/ intent/ trying hard/ commitment and loyalty/ persistence

I BELIEVE I CAN DO IT MYSELF

DO: action

BELIEVE: state of mind

MYSELF: personal engagement/ self confidence

IF IT IS VERY DIFFICULT I WILL GET SUPPORT

DIFFICULT: in the context it implies lack of knowledge and know how to solve the problem

GET: action/ personal engagement

SUPPORT: assistance/ learning/ encouragement from others

I CAN GET OTHER IDEAS AND PUT THEM ALL TOGETHER

ALL TOGETHER: problem solving consists of different parts/ you may know some parts, but not all./problem solving is bringing various parts together/ involves some synthesis of collective ideas/ building on other people's ideas/ collect and compile

GET: constructive action/ collecting

OTHER IDEAS: ideas you do not have yourself

COMMUNICATION SKILLS AND NEGOTIATION SKILLS

NEGOTIATION SKILLS: argumentation rules/ consensus/ social/ interpersonal

COMMUNICATION: social/ rules of communication/ dialogue/ understanding/ interaction

YOUR BEHAVIOUR AND ATTITUDE IS IMPORTANT. YOU MUST BE FAIR AND REASONABLE AND YOU MUST INCLUDE OTHERS

This relates to acts and intent and values and interaction with others and how you are seen by others and if you fit in

MUST INCLUDE OTHERS: implies that problems are social

FAIR: respectable/ honest

REASONABLE: socially acceptable

I DO NOT LIKE TO BE LAZY WHEN THERE IS A PROBLEM

DO NOT LIKE: not good,/ not enjoyable/ not want/ try to avoid/ state of mind

LAZY: not doing much/ not trying

Implies the need to be motivated to solve the problem

NO ONE INVOLVED SHOULD BE LAZY

NO ONE: means that all need to contribute/ social accountability joint responsibility

I DO NOT LIKE IT IF PEOPLE ARE NOT REASONABLE

REASONABLE: socially acceptable

I LIKE TO TALK TO THE EXPERT FOR ADVICE

I LIKE: it will be helpful.

REASONABLE: moderate/ listen to reason (which implies others)

EXPERT and ADVICE: see above

SOMEBODY WHO KNOWS MORE TO GET THE RIGHT STUFF

WHO KNOWS MORE: more experienced person can help to assist in the problem/ has the right answer that can be transferred

RIGHT STUFF: appropriate/real/ assumes that there is a correct way

NOT AN IMITATION. SOMETHING IS REAL IF IT IS PRACTICAL, NOT THEORISING

IMITATION: implies that there are solutions that are fake/ theoretical people fake.

PRACTICAL: means that to know something you must do it in practice/ experience/ not abstract

APPENDIX 4.

EXAMPLE OF THE PROCESS OF CODING CATEGORIES

This appendix contains an example of the results of Phase 3, Stage 1, Step 3 of the interpretive analysis of the pre-workshop interview with participant Matthew.

CODES RELATING TO THE CONCEPT PROBLEM

<u>CATEGORIES</u>	<u>INDICATORS</u>
ENCUMBRANCE	... I cannot be able to do ... I have no other way to know it ... they are stumbling blocks
DESIRED STATE	... people want things right ... life goes smoothly
SOCIALLY UNACCEPTABLE BEHAVIOUR	... problem in yourself ... like behaviour and attitude
DEFICIENCY	... You need a thing to do something and you do not have that thing ... lack of skills to do something ... lack of knowledge
MATERIAL DEFICIENCY	... need a thing
NON-MATERIAL DEFICIENCY	... lack of skills

CODES RELATING TO THE CONCEPT PROBLEM SOLVING

<u>CATEGORIES</u>	<u>INDICATORS</u>
EFFORT/MOTIVATION	... sit down and work ... think hard ... to work on it ... chance to do your best ... thinking hard about the cause ... trying to work hard ... try ... problem solving depends on dedication ... if I am not lazy ... no one should be lazy

ACTION	<ul style="list-style-type: none"> ... find others ... make a plan ... work ... devise means ... to work on it ... take advice ... try to avoid ... change behaviour ... get ideas and put them together ... take problem away
CONCENTRATION	<ul style="list-style-type: none"> ... think hard ... sit down ... to work on it
STRATEGY	<ul style="list-style-type: none"> ... device another means to do it ... make a plan ... take problem away ... avoid the cause ... identify the cause ... get support ... put ideas together ... look in books ... change behaviour ... talk to experts ... get the right stuff
RESOURCES	<ul style="list-style-type: none"> ... qualification ... expertise ... experience ... books ... assistance from others ... support ... ideas ... skills (communication/negotiation)
ATTITUDE	<ul style="list-style-type: none"> ... fairness ... reasonable ... include others ... not lazy ... belief in self ... dedication

APPENDIX 5.

EXAMPLE OF THE PROCESS OF IDENTIFYING PROPERTIES AND DIMENSIONS

This appendix contains an example of the results of Phase 3, Stage 1, Step 4 of the interpretive analysis of the pre-workshop interview with participant Matthew.

1. IDENTIFICATION OF PROPERTIES

Who solves problems?

CATEGORIES

INDICATORS

EXPERTS

experienced people/ people who have come across the problem before/somebody who knows more

PERSON WHO EXPERIENCES THE PROBLEM

you must sit down and work on it/you must think hard/a chance to do your best/you yourselves

PEOPLE WHO ARE CALLED UPON TO HELP SOLVING A PROBLEM

I will get support/find others to do it for me

Where do problems occur ?

CATEGORIES

INDICATORS

There are different domains in which a problem can occur:

AT WORK

work related problems

WITHIN A PERSON

problem in yourself such as behaviour and attitude

IN THE FAMILY

between you and your wife

What causes a problem?

CATEGORIES

INDICATORS

UNACCEPTABLE BEHAVIOUR

(For indicators see Appendix 4 under categories socially unacceptable behaviour and deficiency

DEFICIENCY

What effects does a problem have?

CATEGORIES

INDICATORS

STOPS SMOOTH RUNNING OF SOCIETY

you take the problem away and life goes smoothly/ people want things right

What are the conditions necessary for a problem to occur?CATEGORIESINDICATORS

DESIRED STATE

people want things right

BLOCKAGE OF DESIRED STATE

something I cannot be able to do/ I have no other way to know it/stumbling block

PERCEPTION OF THAT BLOCKAGE I cannot

How does problem solving take place?

Problem solving can involve different strategies

CATEGORIESINDICATORS

INTERACTING WITH OTHERS

talk to experts/get the right stuff/get support

INTRA-PSYCHIC PROCESS

make a plan/identify the cause/ put ideas together/change behaviour

Problem solving has different consecutive steps

Indicators are the same as categories

CATEGORIES

LOOK FOR THE CAUSE

TRY TO SOLVE IT YOURSELF

ASK OTHERS FOR ADVICE AND SUPPORT

PLAN THE ACTION

AVOID THE PROBLEM/OR CHANGE BEHAVIOUR

Problem solving involves tapping various resourcesCATEGORIESINDICATORS

CAPACITIES/ABILITIES

negotiation and communication skills/knowledge

EXPERIENCE WITH SIMILAR SITUATION BEFORE

people who have come across the problem

SOCIAL SUPPORT

get support

MATERIAL RESOURCES

books

Problem solving involves the application of various attitudes

Indicators are the same as categories

CATEGORIES

DEDICATION

REASONABILITY

FAIRNESS

2. IDENTIFICATION OF DIMENSIONS

Only some categories could be dimensionalised

- The category EFFORT/MOTIVATION is HIGH in intensity (think hard/ work hard at it/ not lazy/ dedication)
- The category DESIRED STATE is HIGH in intensity (people want things right/ repeated use of must)
- The category ATTITUDE is HIGH in intensity (behaviour and attitude is important)
- The category ENCUMBRANCE can be high in degree of difficulty or low in degree of difficulty
- The category CAPACITY/ABILITY can be high or low.

APPENDIX 6.

EXAMPLE OF THE PROCESS OF ESTABLISHING RELATIONSHIPS BETWEEN CATEGORIES

This appendix contains an example of the results of Phase 3, Stage 1, Step 5 of the interpretive analysis of the pre-workshop interview with participant Matthew

IDENTIFICATION OF INTER-RELATIONS BETWEEN CODED CATEGORIES

Words printed in capitals are categories identified in the previous steps of the interpretive process.

- If ENCUMBRANCE is big then there is a need for INTERACTION WITH OTHERS
- If ENCUMBRANCE is small the problem solving can happen INTRA-PSYCHIC
- If CAPACITY/ABILITY is low then there is need for INTERACTION WITH OTHERS
- INTERACTION WITH OTHERS still implies the needs for INTRA-PSYCHIC ACTION
- If CAPACITY/ABILITY is high then problem solving can happen INTRA-PSYCHIC
- ENCUMBRANCE implies a DESIRED STATE and PERCEPTION OF BLOCKAGE by the one who has the problem.
- Effect of PROBLEM SOLVING is undoing the blockage and re-establishing the DESIRED STATE
- Problem solving is an ACTION that involves STRATEGIES, relies on RESOURCES and ATTITUDES and requires a lot of EFFORT
- THE PROBLEM SOLVING STRATEGY required depends on the kind of ENCUMBRANCE, be it DEFICIENCY OR SOCIALLY UNACCEPTABLE BEHAVIOUR

APPENDIX 7.

EXAMPLE OF A THEORETICAL MEMO

This appendix contains an example of a theoretical memo which is the result of Phase 3 Stage 1, Steps 3, 4 and 5 of the interpretive process of the pre-workshop interview with participant Matthew.

COMMENTS TO BE TAKEN INTO ACCOUNT IN SUBSEQUENT INTERPRETATIONS:

- The encumbered desired state seems to be socially defined.
- There are many different ways of solving a problem. Maybe there is a particular way for each particular problem.
- A problem can manifest itself in different domains: work domain/ interpersonal relations/ attitudes. It would seem that problems always have a social dimension.
- It seems as if problem solving involves a personal responsibility of the one who has a problem and help from others.
- It would seem that there are different stages in problem solving. First the thinking and planning and then the action.
- There may well be different sub-categories within the categories strategy, resource and attitudes.
- Important comment made about real solutions and imitation solutions. This implies that not all solutions are proper. It also emphasises the importance of experience with particular problems for problem solving expertise.
- There seems to be easy and difficult problems. The easy ones you solve yourself, using own brain. The difficult ones you ask others. Try and find out what is meant by using brains. Difficult problem is one for which you do not know the solution.
- A problem is something that is felt by the person who has the problem. It bothers her.
- Find out more about how advice is given and received. How is the individual's responsibility and the help of others integrated in order to solve the problem.
- Explore the problem solving attitudes.

APPENDIX 8.

PROBLEM SOLVING WORKSHOPS

Problem for Workshops 1A and 1B

You as a LODAFF committee have funds available to run one workshop with your community. Some members in the community have indicated an interest in a workshop on the function of the Reconstruction and Development Programme, others on a workshop on the function and structure of the Transitional Local Government. Neither of these workshops have been done in your community. You have to decide which workshop to run.

You have the following information.

- A women's group (50 women) in your community has asked the LODAFF to run a workshop on the RDP because they feel that it will help them to get funds for their projects.
- A youth group (60 young man) has asked the LODAFF to run a workshop on the TLG, because they feel it will prepare them for the new local government.
- Somebody from the regional government has indicated to the LODAFF that it wants to come and see the potential of your LODAFF to be involved in the RDP.
- The local municipality in town had approached the LODAFF the previous week to find out how far the community had progressed with discussing and educating the people on the TLG.
- A businessman in town has indicated that he will sponsor the catering for the workshop if the workshop is dealing with the RDP.

Problem for Workshops 2A and 2B

Several mothers in your community had approached you as members of the LODAFF to raise funds for the building of a new primary school in the township. You approached the Independent Development Trust (IDT) with a request for funds. The IDT informed you that they are prepared to provide funds to build a primary school on condition that there are currently more than 25 children in the community that are not accommodated in the existing primary schools.

The IDT indicated that they want accurate statistics on school-going children, before they will make a decision on funding.

You have the following information about your community.

- There is one primary school which can accommodate 250 children. The school is full.

- You have done a needs analysis survey in your community and you have found out that there are 100 families in your community.
 - 10 of the 100 families have five children each
 - 80 of the families have three children each
 - the rest of the 100 families have 2 children each

What will you do to convince the IDT to give you the funds?

Problem for Workshops 3A and 3B

The LODAFF has to re-elect its committee. It is decided in a community meeting that there should be eight members in the LODAFF committee (seven members, elected from the seven community organisations and a chairperson who does not represent a specific organisation).

During that community meeting the seven members are elected, however the community is unable to decide on a chair. The meeting resolves that the newly elected LODAFF committee must make the decision as to whom should be chairperson of the new LODAFF. There are six possible candidates for the chair. The LODAFF must also motivate to the community why it chooses a particular candidate. You are that newly elected LODAFF.

The following is known about the six candidates.

- Candidate one is an old man who is a good public speaker and who has accounting skills.
- Candidate two is a young woman who has been on a course on development and who is liked by the youth.
- Candidate three is an old, traditional woman who knows the community well and who can tell stories very well.
- Candidate four is an old man, who has been a member of various community organisations and knows the history of the struggle from the many books he has read.
- Candidate five is a young man, who has recently returned from the city and has experience with running workshops and managing projects.
- Candidate six is an old woman, who has initiated two projects in the community and who is very approachable.

Problem for Workshops 4A and 4B

A funding agency wants to make funds available for the construction of a building in your community. The funding agency has indicated that it will only fund one building and that this building should be the one that is most beneficial for the majority of the community. You as a LODAFF committee has to decide which kind of building will serve the community best.

There is a choice between:

- a community centre to house projects;
- a movie house;
- a sports complex;
- a clinic;
- a church;
- a shopping mall.

You have recently completed a needs analysis survey in the community and this information is available.

Note: Data of a fictitious community needs-analysis survey was provided to the groups. The survey contained 100 filled out questionnaires with biographical data as well as data on perceived needs.

Problem for Workshops 5A and 5B

You as a LODAFF committee are in charge of two community development projects, a sewing project and a brick making project. The projects started in July 1993. Now we are July 1994 and there is not much money in the bank and the projects are not making much money for the moment. One of your LODAFF members has recently been to visit another community and has seen that they have a very successful pottery project. You would like to start a pottery project yourselves. You have already approached a funder for financial assistance. The funder indicates that he would like to see what you have achieved in your sewing and brick making project before he makes a decision on providing funds for your pottery project.

What will you do to show your achievements in the brick making and sewing project to convince the funder that he should fund you?

The funder also indicates that he requires a financial statement from you for the brick making and the sewing project. He wants to know how much money you have left in the bank.

You have the following information.

- There is one bank account for all the monies of the sewing and brick making project. But the two projects have their own accounting system.
- When you started your projects you were given:
 - R3000-00 for the sewing project and R2000-00 for the brick making project;
 - During the year you spent R5000-00 in the brick making project for buying materials and tools and R4000-00 for the sewing project for buying materials and sewing machines;
 - The brick making project sold 1000 bricks and each brick cost R2;

- The sewing project sold 90 dresses and each dress costs R35.

How much money is there in the bank?

APPENDIX 9.

READING GUIDE 1 FOR THE ANALYSIS OF THE GROUP PROBLEM SOLVING PROCESS

This appendix presents, first explanatory notes on the application of the reading guide and second, a description of the content of the reading guide.

1. EXPLANATORY NOTES ON THE APPLICATION OF THE READING GUIDE

Reading guide 1 contains three questions. These relate to three elements of an operation: the Immediate Inter-active Function, the Cognitive-Affective Content and the Underlying Function.. For each of the three questions several alternative answers are provided. These relate to the different forms of each of the elements.

The reading guide uses the symbol **R** (see content of reading guide). This symbol refers to some of the forms of the Cognitive-Affective Content of the operation only. It indicates that the content of an operation can be directly linked to an earlier operation. The reference number indicating the number of the operation to which it refers, is placed behind the form of the Cognitive-Affective Content of the operation which refers to it. A reference number is usually a number of an operation. However an operation can also directly link back to the given problem (which is presented to the group on newsprint) or it can refer to the paper that the group uses to make notes on during the workshop. A reference to the given problem is represented by the number 999 and reference to the paper used by the group by the number 998.

The form of the Immediate Inter-active Function called 'Record' is different from the other forms because it does not really indicate an inter-action between different participants but is in fact an action on behalf of the group. However it was deemed appropriate to include this form in the interpretive process.

Some inter-actions could not be understood sufficiently (due to problems during the video-taping) These were indicated as 'not coded'.

Some operations did not have a Cognitive-Affective Content. This was indicated by leaving a blank space.

2. CONTENT OF THE READING GUIDE

Question 1: What is the Immediate Inter-active Function of the operation?

The Immediate Inter-active Function relates to the surface meaning of the operation The answer to this question can take different forms:

TO CLARIFY: Attempting to make the meaning of conceptual content intelligible to others

TO COMMENT: Making a statement to others about the task/group process (excluding rejection/ support/ query/ justify)

TO DICTATE: Saying out loud conceptual content to other for purpose of recording

TO INFORM:	Providing conceptual facts (contained in the given problem or of personal experience) to the group
TO INQUIRE:	Seeking clarification from others about certain conceptual data (including additional information) or about the task/ group process.
TO INVITE:	Soliciting original conceptual content from other(s) in function of solving the problem
TO JUSTIFY:	Providing arguments in favour of a position. Providing grounds for a claim/ desire to others
TO OFFER:	Suggesting to render a service to the group
TO QUERY:	Indicating to others a doubt in the worthiness/ truthfulness/ rightness of a certain conceptual content or the task/ group process.
TO REJECT:	Indicating to others that one considers certain conceptual content or aspects of the task/ group process unfavourably/ unacceptable/ untruthful.
TO REQUEST:	Asking (proposing to) others for something to be done with regards to the task/ group process.
TO SEEK:	Soliciting agreement/ confirmation of certain conceptual content or task/ group process from others (implies that a suggestion or comment has been made previously).
TO SUGGEST:	Proposing conceptual content (essential building blocks towards solving the problem) to the group for acceptance or rejection
TO SUPPORT:	Indicating to others that one considers certain conceptual content or aspects of the task/ group process favourable/ acceptable/ truthful
TO RECORD:	Making a written record of conceptual content

Question 2: What is the Cognitive-Affective Content of the operation?

The answer to this question can take different forms

EXAMPLE:	Illustration of a general rule (for clarifying purpose) (R)
FACT:	Information contained in the given problem structure and data of personal experience (R)
INFERENCE:	Conclusion drawn from premises (some premises may be implicit and from data not contained in the given problem structure) (R)
INTERPRETATION:	Specific understanding of the meaning of conceptual content (R)
OPINION:	Personal desire/ feeling/ belief

REFLECTION:	Verbalisation of an occurring cognitive - emotive or behavioural process
REPETITION:	Re-occurrence of content of previous contributions (R)
NO CONTENT:	No specific Cognitive-Affective Content

Question 3: What is the Underlying Function of the operation?

The Underlying Function relates to a deeper ,more indirect, meaning than the immediate function. It relates to the task and group process as a whole. The answer to this question can take different forms

AMPLIFYING:	Strengthening one's own conceptual ideas to enhance acceptance by the group
COMPROMISE:	Reconciliation of clashing inputs. Attempt to establish an agreement in the group with concessions of the different parties /or ideas involved.
CONSENSUS U:	Building of a common understanding of the conceptual content in the group
CONSENSUS A:	Building of agreement in the group
CONTRIBUTION:	Provision of the essential conceptual building blocks in direct function of the problem solving process.
GROUP:	Dealing with group dynamics
MEMORY:	Commitment of conceptual contents to memory. Recall of conceptual content to memory.
OWN IDEAS:	Promotion of the individual's conceptual ideas against the group consensus
OWN NEEDS:	Promotion of individual needs and feelings contrary to group needs
PARTICIPATION:	Encouragement of conceptual contributions towards the solution of the problem
TASK:	Promotion of the technical aspects of the problem solving task process

APPENDIX 10.

EXAMPLE OF A BRAINSTORM SESSION (COMPONENT B OF THE RESEARCH DESIGN)

This appendix contains an example of the results of Phase 3, Stage 1, Step 3 of the interpretive analysis of problem solving Workshop 1B. It provides the brainstorm data for all inter-actions of Workshop 1B.

(The bold face texts constitute inter-actions and are numbered as such).

1. **Theo:** **You in your community have been given money to run one workshop (Looks at the newsprint with problem that hangs on the wall). We must discuss. Can you read it again Hilde? (Looks at Hilde).**
 - Repeats the question/ brings question to the group.
 - Opens the group discussion.
 - Importance to know problem structure.
 - Sets the task for the group.
 - Stresses the group spirit.
 - Asks to make the problem clearer to authority/ person who poses the problem.

2. **Thami:** **It is not necessary (Looks down and mumbles).**
 - Negative response to previous input.
 - Group member denies others the chance of having it clarified.
 - Understands the question and therefore expects others to understand/or sees it as sufficient if one group member understands.
 - Has something to say that he is not sure about (mumbles).

3. **James:** **Which workshop shall we use the RDP or the TLC? (Looks at newsprint).**
 - Goes back to input one.
 - Goes back to the provided problem.
 - Asks the group for discussion.
 - Asks the group for a joint agreement.

4. **Theo:** **We must choose the one with the women group.**
 - Responds to previous input.
 - Implies a duty for the group to choose a particular alternative.
 - Choice based on needs of a particular group.
 - Choice based on information contained in the problem structure.
 - Authoritarian. Offers no verbal reason but perhaps a common held knowledge/ opinion.

5. **Sipho:** **We must at least choose one and we must have a reason to choose that one (Looks at the newsprint). If we choose the RDP, we have to know why we choose that one (Looks at newsprint).**
 - Repeats the task to be done.
 - Follows up on all previous inputs.
 - Emphasises need for motivation.
 - Emphasises the joint task.
 - Repeats previous input.

6. **Thami:** **Is it necessary to write down what we choose? (Response to Ayanda showing intentions to write on a provided newsprint).**
 - Changes the discussion.

- Clarificatory question on group process/ rules.
- Queries the action of a group member.

7. Theo: **We need to have a reason for our choice (Ayanda goes to the newsprint during the discussion and underlines the arguments while discussion still goes on).**

- Repeats the issue of previous inputs.
- Emphasis on motivation.
- Emphasises group task/requirement (we).
- Study of available information as resource.
- Individual action.
- Solution will be in problem structure.

8. Theodora: (Interpreter cannot hear what is said).

9. Ayanda: We must continue (Looks at the group).

- Does not directly respond to previous statements.
- Gives direction to the group about the group process.
- Does not acknowledge Theodora's problem.

10. Sipho: To put the question straight. We say we will choose, let us say we choose RDP. We must choose between RDP and TLC. We must say why we choose the one. We must say why, we choose one, one (Whole group looks at Sipho. Sipho looks at Theodora).

- Proposition to open discussion.
- Acts upon previous input.
- Clarifies the question for the group.
- Indicates the joint action to be taken.
- Emphasis the aspect of choice and of argumentation.

11. Theo: I will give a direction. In the information we have three points for the RDP: one the women, two somebody from the regional government and three the business man. TLC has got two points. I will choose TLC. We run a workshop on TLC (Looks and points at the newsprint. All laugh embarrassed after the input).

- Provides an attempt to solve the problem.
- Provides people with a direction.
- Uses arguments in favour of both choices from the problem structure.
- Indicates a personal choice.
- Chooses for option with least arguments in favour.

12. Thami: Why do you choose TLC? (Looks at Theo).

- Asks previous input for justification.

13 Theo: Let us make it as if we are in a LODAFF meeting now. We are in a meeting now and we are discussing and we are entitled to choose in that meeting (Looks at Thami).

- Does not acknowledge above input/ avoids direct justification.
- Gives an input on the group process as response.
- Makes a proposition to the group.
- Proposes a simulation.
- Simulation used in order to make problem more real presumably as method to enhance problem solving.
- 'Entitled to' is an epistemological issue.

- 14. Ayanda: We must divide ourselves into two groups for a debate and write points (Looks at Theo).**
- Input on group process.
 - Offers another method to solve the problem.
 - Debate as a problem solving method.
 - Compilation of arguments as a problem solving method.
- 15. Theo: For the RDP we write points and for the TLC we write points. We have a problem we have to choose the fruitful points. I will chose TLC. I think we can run a workshop on TLC. Firstly the TLC. If the RDP works there must be a TLC first. We know the condition (All look at Theo except Thami who looks at the newsprint).**
- Clarifies and concretises the previous input.
 - Non aggressive way of argumentation.
 - Acknowledgement that choosing is a problem.
 - Input on problem solving - choosing fruitful points.
 - Gives an argument that is not based in the problem structure.
 - Puts his point as a option.
 - Offers a personal decision.
- 16. James: Yes, the condition (Repeats/ finishes off the sentence of Theo).**
- Refutes the quick, personal decision of previous input.
 - Indicates the need to look at the context in order to make a decision.
- 17. Theo: The condition in our locals stands. The main thing is to run a workshop on the TLC.**
- Responds to previous input.
 - Provides argument from personal experience/ or gives hypothetical example.
 - Re-iterates own personal decision.
- 18. Ayanda: Your point is that the RDP cannot work without the establishment of the TLC? (Looks at Theo).**
- Interprets previous input.
 - Emphasises that it is a point made by one member, still open for contesting it.
- 19. James: Yes (Nods in agreement).**
- Supports previous input.
- 20. Theo: The first thing we say is we want the TLC. The RDP cannot run without the TLC (Ayanda writes down on paper. Thami looks at the newsprint).**
- Repeats own input.
 - Concurs with previous input.
 - Broadens own choice to it being a group choice.
- 21. Thami: Wait, wait, are you talking about the TLC ? (Looks at the newsprint).**
- Calls previous input to order.
 - Indicates that the previous speaker is taking the process too fast.
 - Asks clarificatory question.
- 22. Ayanda: What you must bear in mind there is a committee that works towards the establishment of the RDP (Looks at Theo).**
- Reminds about information important for the problem solution.
 - Relies on personal information/not contained in problem structure.
 - Indicates a flaw in previous speaker's though process.
 - Provides first positive argument for alternative RDP.

- Does not concur with choice of TLC.
- Relates posed problem to broader societal context.

23. James: Steering committee.

- Re-emphasises concept of previous input/ follows on straight from Ayanda.

24. Ayanda: As we have heard here in the Eastern Cape there is a committee that is working towards the implementation of the RDP (Looks at Theo).

- Invokes common experience/ knowledge.
- Assumes a common knowledge.
- Elaboration on own input.

25. Thami: Can I not choose the RDP. According to the information there is only money to run one workshop and the business man is going to help with money for the catering, 50 women who are also interested in a workshop on the RDP. They are going to be financed. They are going to benefit from the knowledge to run their own projects. And then after the workshop on the RDP we can again look for funds to run a workshop on the TLC. (Looks at the newsprint, then at Theo. Theodora also looks at the newsprint, others look at Thami).

- Builds on the path that has been paved by the previous speaker to choose for alternative that is different from the one already put forward.
- Requests permission from the group to make a choice.
- Asks to choose for the alternative that is different from the one that has been put forward.
- Uses information available in the problem structure to motive for choice.
- Looks at consequences of choice.
- Uses two of the three arguments in favour of his choice.
- Tries to soften the choice and move away from absolute dichotomy.
- Changes the problem structure.

26. Siphon: (All seem eager to respond after this input). We must choose the RDP because the women will gain and it will create job opportunities.

- Concurs with the choice of previous speaker.
- Puts pressure (we must) on group to concur with him.
- Provides an argument that is available in the problem structure.
- Provides an argument not available in problem structure.
- Repeats argument of previous speaker.

27. Thami: Wait, wait, if we can ...

- Tells the previous speaker to stop the process.
- Attempts to make an input.

28. Ayanda: To summarise, we choose the RDP. If we choose the RDP it will help many people in the community through employment (Interrupts Thami. Thami looks at the newsprint. Theo gets up and gets some paper to write things down. James starts writing. Silence).

- To summarise.
- Makes a statement for the group.
- Broadens the argument of 3 members of the group to a group decision.
- Tries to come to a consensus.
- Argument is based on knowledge/expectations outside of what was provided in problem structure.

- 29. Theo:** **No, I still stand on the TLC. Firstly, write down the points for RDP. Firstly job creation, the women are interested on how to get funds and regional something. (Ayanda writes down). I still stand for TLC. First because of the 69 youth who asked for a workshop on TLG because they feel it will prepare them for a new local government. As it stands now, we need to proclaim the issue on TLC and TLG because we need to know how things will go with our local government because RDP itself is the money itself that will be given to the TLG to improve the situation in our locals. In point 3 it is written that the municipality wants to know how far the community has progressed with the TLC (Theo looks at James. Theodora looks at Theo).**
- Rejects the attempt to come to common viewpoint.
 - Insists on personal choice.
 - Gives an order to the group.
 - Requests all the arguments for one alternative to be recorded.
 - Uses all the arguments given in the problem structure.
 - Argues his choice.
 - Uses two arguments from the existing problem structure.
 - Uses other arguments from personal knowledge/ community life (not contained in the problem structure) - namely that the one depends on the strength of the other.
 - Blends the two types of arguments.
 - Some joint thinking between Thami and Theo.
- 30. James:** **(Silence, group members smile and look at each other). The RDP reconstruction and development programme desk, (James has drawn diagram) which has got a committee in the locals and aside from that they have their steering committees and these steering committees are going to give back to the TLG (municipality). These committees will give back to commissions. These commission will have facilitators and co-ordinators and relate to Municipalities. The RDP is very important because it gives back to many committees like the LODAFFs. One must not look at that 50 women written there as the women of the Women's League but as the have nots from the community who can benefit from the funding by the business man (All look at James. James looks at Theo and then looks at the newsprint and points at it).**
- OK: acknowledges the input of previous speaker.
 - Counters previous argument.
 - Use of graphic representation for explanation to the group.
 - Use of graphic representation as aid for thinking.
 - Argues for one alternative.
 - Provides detailed background knowledge on one of the alternatives.
 - Describes the interconnectedness of the two alternatives.
 - Brings personal information as arguments.
 - Combines personal information with information provided (50 women).
 - Interpretation of given information build on own personal experience.
 - Calls upon the group to think like him/social duty (we must).
 - Uses newsprint for information/ as a resource to support argument.
- 31. Thami:** **Are you going for RDP? (Looks at James).**
- Response to previous input.
 - Request to state his choice clearly.
 - Question for clarification.
- 32. James:** **I go for RDP and the health desk, I do not known now (Others laugh).**
- Responds to previous input.
 - Answers in the affirmative.

- States choice.
 - Indicates uncertainty to the group about own thinking process.
33. Theo: **Ok.(All talk together and laugh).**
- Acknowledges previous input.
 - Prompt to move forward.
34. Thami: **What must we do? (Looks at newsprint. All talk together and laugh).**
- Request to the group to give direction for the group work.
 - Includes himself in the group.
 - Looks for communal agreement.
35. James: **It must just be written as it is. It will depend on what we all agree on between the TLC and the RDP. The main important thing is the RDP, the main important thing (Ayanda writes down on paper).**
- Responds to previous input.
 - Gives an advice on the group process.
 - Not sure/ maybe this means that all the pro's and con's must be written down and then decided upon.
 - Repeats his choice.
 - Provides a problem solving strategy.
36. Siphon: **(Siphon looks at the paper and puts up his hand and interrupts James). To make things easier we must follow the steps we used during the problem solving. We must discuss the RDP and put the downfalls before we can put the TLC as well.**
- Builds on and clarifies an aspect (written down as it is) of the input of the previous speaker.
 - Invokes a common experience to explain a problem solving technique (we used)
 - Provides the group with a problem solving strategy/ discuss one alternative (pro's and con's) and then discuss the other.
37. Thami: **I agree (to Theo). We have been given a choice between two workshops so we must decide, as LODAFF people we must decide for our community which should be the first one. As we are discussing here it is the RDP, the RDP should be the first workshop.**
- Procedure for problem solving.
 - Confirms the input of previous speaker.
 - Ignores the previous three inputs.
 - Goes back to beginning of discussion and restates the problem.
 - Tries to bring the discussion back on track.
 - Interprets the discussion.
 - Assumes/ proposes a common decision.
 - Repeats the decision/ emphasis on decision.
38. Theo: **We have to choose one, Theodora, choose one. We must write down the points about the RDP and then the TLC. (Shows Ayanda how to write down. All look at this).**
- Ignores suggestion of previous input.
 - Restates the problem.
 - Repeats part of previous input (we have to choose).
 - Argues that in order to solve the problem, the group should use the problem solving method suggested in previous input.
39. Thami: **We must write down about the RDP (To Ayanda).**

- Accepts previous input.
- Indicates what must be done.

40 Ayanda: We must take points for both. Even when we are presenting it we must present both points to the panel. We must say why we chose the other point. (To Siph, Thami looks at newsprint. Theodora and Siph look at Ayanda).

- Reconfirms previous inputs.
- Gives direction to the group about the group process.
- Indicates to present argument for both choices.
- Indicates importance of motivation.

41. James: Comrade chair can I be released for 5 minutes (Looks at Ayanda and Theo).

- Asks permission from spontaneous group leader to leave group discussion.
- Input on group process.

42. Theo: Comrade chair I still do not agree on choosing the RDP. Hilde, the group does not seem to be agreeing (All look at Hilde).

- Dissents from the rest of the group.
- Insists on his personal choice (see previous inputs).
- Call for outsider to assist.
- Belief that authority may have answer.

Ayanda: Do we have to choose only one point? (All look at Hilde).

- Tries to change the problem structure so that there is no need to choose.
- Assumes that Hilde has the authority to change the problem structure.
- Indirect request to adjust problem structure to problem solving culture of group.

44. Theo: Can you help in the debate. Some say RDP and others say TLC, what do we do, so that we can... (Brings hands together).

- Second request (repetition) to intervene in group process.
- Request for outsider to mediate/guidance.
- Broadens his position to that of others in the group.

45. Hilde: Can't you do that amongst yourselves, you have a group there?

- Invites the group to solve the problems between them.

46. Theo: They are all standing on the RDP (Looks at Hilde).

- Expresses his predicament (being alone in his choice).
- Looks for support from Hilde.

47. Hilde: What does that say?

- Throws it back to Theo.
- Demands analysis of group discussion.

48. Ayanda: Let's go, let's go.

- Encourages the group to solve the problem.

49. Hilde : Theodora what do you think?

- Elicits participation.

50. Theodora: I think we should choose the workshop on RDP, because in both of our locals there are projects and the people really need to know about funding. So the RDP would be useful. We only have money for one workshop and number five fills the gap. He will do the catering for the

workshop and we also have somebody from the regional government who wants to see the potential of our people of the LODAFF, only if we run a workshop on the RDP (Looks at Hilde and points to the newsprint. All look at the newsprint).

- Responds to previous call for co-operation.
- Offers a suggestion for a decision.
- Uses the three arguments provided in the problem structure.
- Repetition of arguments used in the discussion before.
- Asks for agreement of outsider (mediator).
- Looks for justification.

51. Thami: And what are you saying about the people of the TLC? (Looks at Theo a bit worried).

- Asks a question requesting justification of previous speaker.
- Addresses a shortcoming in the argumentation above (namely TLC people loose out).
- Is worried about unhappiness of Theo.

52. Theo: I want us to run a workshop on the TLC. If you do not have any skills how are you going to implement that RDP. You want to see the potential of your LODAFF to be involved in the RDP. If you can choose TLC I think we will gain more on how to prepare ourselves for the local government, the main government of our local. You understand? (All look at Theo. Thami also looks at the newsprint).

- Wants to know if input is clear.
- Responds to previous input.
- Provides arguments for own choice.
- Arguments based on personal context (not in the problem structure).
- Expresses personal desire.

53. Thami: This issue of the workshop on the TLC. I think we should run the workshop on the RDP. As you can see the municipality asks for the progress with educating the community. We can approach the municipality because we have no funds. The local municipality will not have funds to run a workshop, perhaps the people from the RDP will be able to help. this is the advantage of having funds for running only one workshop. At the moment we do not have funds. We run the workshop on the TLC after we run the workshop on the RDP. Does it make sense? (Looks at Theo and the newsprint. Siphon looks at Thami).

- Acknowledges input of previous speaker.
- Implicitly rejects position of previous speaker.
- Tries to do away with dichotomy.
- Uses argument in favour of the RDP choice which is contained in the problem structure.
- The argument is a repetition of earlier inputs during the discussion.
- Asks for the group's understanding/ approval.

54. Theo: It makes sense we choose RDP. the RDP includes the TLC, it can accommodate the TLG. The municipality and the youth can join the RDP workshop and what they discuss and the aim of the workshop will also include the TLC (All look at Theo except Thami. Theo looks at the newsprint).

- Confirms the previous input.
- Changes his approach/ sudden approval of the RDP where before adamant on TLC/ compromise.

- Changes the problem structure.
 - Includes the one alternative into the other/ reconciles both alternatives into one.
- 55. Thami: The workshop has two issues, RDP and TLC ? (To Theo. All look confused).**
- Asks clarificatory question.
 - Tries to assess if it suits Theo's needs.
- 56. Ayanda: We have an advantage because maybe we can get some funds.**
- Repeats an argument in favour of the decided choice.
 - Also implicit possibility of TLC workshop/ pleasing Theo.
- 57. Thami: Listen, still we are at a disadvantage. The business man will only fund us if we run a workshop on the RDP. So if we run a workshop on both we may not get the funds (Interrupts Ayanda and speaks to Theo).**
- Asks attention of the group.
 - Provides a criticism based on careful reading of the information provided.
 - Wants to cut previous speaker short.
- 58. Ayanda: I want to say there will be no problem... (Interrupts Thami).**
- Wants to be heard - tries to overrule being interrupted.
- 59. Theo: Who will be rapporteur?**
- Changes subject as result of interruption.
 - Input on group process.
 - Request for volunteer to perform a task.
- 60. Thami: We must write some points and we should be disciplined. (To Ayanda).**
- Input on group process.
 - Input on desired group behaviour.
 - Input on accepted group method (write down some points).
 - Imposes duty.
- 61. Ayanda: I want to say, there will be no problem if we take the RDP. There will be hope for the community. If we bring development to the people we will be reducing inflation for the community. (Thami nods in agreement. Siphon and Theodora smile. Ayanda writes down).**
- General positive statement.
 - development to the people implies RDP choice/ implicit confirmation of the RDP choice.
 - Argument for choice is a positive consequence.
 - Bringing final group agreement.

APPENDIX 11.

EXAMPLE OF THE APPLICATION OF THE FIRST READING GUIDE ON THE OPERATIONS OF WORKSHOP 1B

This appendix contains an example of the results of the application of the first reading guide to all operations of problem solving Workshop 1B. This is the result of Phase 3, Stage 1, Step 7 of the interpretive-analytical process of Component B. The bold face text represents the verbatim text of the participants. The number that occurs after some forms of the cognitive-affective content is the reference number.

The following abbreviations are used:

W: workshop

I: Inter-action

O: operation

P: participant

IF: Immediate Inter-active Function

C: Cognitive-Affective Content

UF: Underlying Function

W: 1B I: 1 O: 1 P: Theo.

You in your community have been given money to run one workshop (looks at the newsprint with problem that hangs on the wall).

IF: INFORM

C: FACT: 999

UF: CONSENSUS U

W:1B I:1 O:2 P: Theo

We must discuss.

IF: REQUEST

C:

UF: TASK

W:1B I:1 O:3 P: Theo

Can you read it again Hilde? (Looks at Hilde.)

IF: REQUEST

C:

UF: TASK

W:1B I:2 O:1 P: Thami

It is not necessary (looks down and mumbles).

IF: REJECT

C: OPINION

UF: OWN NEEDS

W: 1B I:3 O:1 P: James

Which workshop shall we use the RDP or the TLC? (Looks at the newsprint.)

IF: INVITE

C:

UF: PARTICIPATION

W:1B I:4 O:1 P: Theodora

We must choose the one with the women group.

IF: SUGGEST
C: OPINION
UF: CONTRIBUTION

W:1B I:5 O:1 P: Sipho

We must at least choose one and we must have a reason to choose that one (looks at the newsprint).

IF: COMMENT
C: OPINION
UF: TASK

W:1B I:5 O:2 P: Sipho

If we choose the RDP, we have to know why we choose that one (looks at the newsprint).

IF: CLARIFY
C: EXAMPLE 5 1
UF: CONSENSUS U

W:1B I:6 O:1 P: Thami

Is it necessary to write down what we choose? (Response to Ayanda showing intentions to write on a provided newsprint.)

IF: QUERY
C:
UF: TASK

W:1B I:7 O:1 P: Theo

We need to have a reason for our choice (Ayanda goes to the newsprint during the discussion and underlines the arguments while discussion still goes on).

IF: COMMENT
C: REPETITION 5 2
UF: CONSENSUS U

W:1B I:8 O:1 P: Theodora

(Interpreter cannot hear what is said.)

NOT CODED

W:1B I:9 O:1 P: Ayanda

We must continue (looks at the group).

IF: REQUEST
C:
UF: TASK

W:1B I:10 O:1 P: Sipho

To put the question straight. We say we will choose, let us say we choose RDP. We must choose between RDP and TLC. We must say why we choose the one. We must say why, we choose one, one. (Whole group looks at Sipho. Sipho looks at Theodora.)

IF: COMMENT
C: REPETITION 5 1
UF: TASK

W:1B I:11 O:1 P: Theo

I will give a direction.

IF: OFFER
C:
UF: TASK

W:1B I:11 O:2 P: Theo

In the information we have three points for the RDP: one the women, two somebody from the regional government and three the business man. TLC has got two points.

IF: INFORM
C: FACT 999
UF: CONSENSUS U

W:1B I:11 O:3 P: Theo

I will choose TLC. We run a workshop on TLC. (Looks and points at the newsprint. All laugh embarrassed after the input.)

IF: SUGGEST
C: OPINION
UF: CONTRIBUTION

W:1B I:12 O:1 P: Thami

Why do you choose TLC? (Looks at Theo.)

IF: SEEK
C:
UF: CONSENSUS U

W:1B I:13 O:1 P: Theo

Let us make it as if we are in a LODAFF meeting now. We are in a meeting now and we are discussing and we are entitled to choose in that meeting (looks at Thami).

IF: REQUEST
C: REPETITION 10 1
UF: TASK

W:1B I:14 O:1 P: Ayanda

We must divide ourselves into two groups for a debate and write points (looks at Theo).

IF: REQUEST

C: REPETITION 11 3
UF: TASK

W:1B I:15 O:1 P: Theo

For the RDP we write points and for the TLC we write points.

IF: COMMENT
C: INTERPRETATION 14 1
UF: TASK

W:1B I:15 O:2 P: Theo

We have a problem, we have to choose the fruitful points.

IF: COMMENT
C: REPETITION 15 1
UF: TASK

W:1B I:15 O:3 P: Theo

I will chose TLC. I think we can run a workshop on TLC.

IF: SUGGEST
C: REPETITION 11.3
UF: AMPLIFYING

W:1B I:15 O:4 P: Theo

Firstly the TLC. If the RDP works, there must be a TLC first. We know the condition. (All look at Theo except Thami who looks at the newsprint.)

IF: JUSTIFY
C: OPINION
UF: CONTRIBUTION

W:1B I:16 O:1 P: James

Yes, the condition (repeats/finishes off the sentence of Theo).

IF: SUPPORT
C: REPETITION 15 4
UF: CONSENSUS A

W:1B I:17 O:1 P: Theo

The condition in our locals stands. The main thing is to run a workshop on the TLC.

IF: SUPPORT
C: REPETITION 15 3
UF: AMPLIFYING

W:1B I:18 O:1 P: Ayanda

Your point is that the RDP cannot work without the establishment of the TLC? (Looks at Theo.)

IF: SEEK
C: INFERENCE 16 1

UF: CONSENSUS U

W:1B I:19 O:1 P: James

Yes (nods in agreement).

IF: SUPPORT
 C: OPINION
 UF: CONSENSUS U

W:1B I:20 O:1 P: Theo

The first thing we say is we want the TLC.

IF: SUGGEST
 C: REPETITION 17 1
 UF: AMPLIFYING

W:1B I:20 O:2 P: Theo

The RDP cannot run without the TLC.

IF: JUSTIFY
 C: REPETITION 18 1
 UF: AMPLIFYING

W:1B I:20 O:3 P: Ayanda

(Ayanda writes down Operation 20.2 on paper. Thami looks at the newsprint.)

IF: RECORD
 C: REPETITION 20 2
 UF: MEMORY

W:1B I:21 O:1 P: Thami

Wait, wait,

IF: REQUEST
 C:
 UF: OWN NEEDS

W:1B I:21 O:2 P: Thami

are you talking about the TLC? (Looks at the newsprint.)

IF: INQUIRE
 C:
 UF: CONSENSUS U

W:1B I:22 O:1 P: Ayanda

What you must bear in mind there is a committee that works towards the establishment of the RDP (looks at Theo).

IF: INFORM
 C: FACT
 UF: CONTRIBUTION

W:1B I:23 O:1 P: James

Steering committee.

IF: CLARIFY
 C: INTERPRETATION 22 1
 UF: CONSENSUS U

W:1B I:24 O:1 P: Ayanda

As we have heard here in the Eastern Cape there is a committee that is working towards the implementation of the RDP (looks at Theo).

IF: CLARIFY
 C: REPETITION 22 1
 UF: CONSENSUS U

W:1B I:25 O:1 P: Thami

Can I not choose the RDP.

IF: SUGGEST
 C: REPETITION 4 1
 UF: CONSENSUS U

W:1B I:25 O:2 P: Thami

According to the information there is only money to run one workshop and the business man is going to help with money for the catering. Fifty women who are also interested in a workshop on the RDP. They are going to be financed. They are going to benefit from the knowledge to run their own projects.

IF: JUSTIFY
 C: REPETITION 11 2
 UF: CONSENSUS A

W:1B I:25 O:3 P: Thami

And then after the workshop on the RDP we can again look for funds to run a workshop on the TLC. (Looks at the newsprint, then at Theo. Theodora also looks at the newsprint, others look at Thami.)

IF: SUGGEST
 C: OPINION
 UF: COMPROMISE

W:1B I:26 O:1 P: Siphon

(All seem eager to respond after this input.) We must choose the RDP,

IF: SUPPORT
 C: REPETITION 25 1
 UF: CONSENSUS A

W:1B I:26 O:2 P: Siphon

because the women will gain and it will create job opportunities.

IF: JUSTIFY

C: REPETITION 25 2
UF: CONSENSUS A

W:1B I:27 O:1 P: Thami

Wait, wait, if we can ..

IF: REQUEST
C:
UF: OWN NEEDS

W:1B I:28 O:1 P: Ayanda

To summarise.

IF: COMMENT
C: REFLECTION
UF: TASK

W:1B I:28 O:2 P: Ayanda

We choose the RDP. If we choose the RDP it will help many people in the community through employment. (Interrupts Thami. Thami looks at the newsprint. Theo gets up and gets some paper to write things down.)

IF: SUGGEST
C: REPETITION 26 1
UF: CONSENSUS A

W:1B I:28 O:3 P: James

(James writes down operation 28.2 on paper. the group is silent.)

IF: RECORD
C: REPETITION 28 2
UF: MEMORY

W:1B I:29 O:1 P: Theo

No, I still stand on the TLC.

IF: REJECT
C: REPETITION 20 1
UF: OWN IDEAS

W:1B I:29 O:2 P: Theo

Firstly, write down on NP the points for RDP.

IF: REQUEST
C:
UF: TASK

W:1B I:29 O:3 P: Theo

Firstly job creation, the women are interested on how to get funds and regional something.

IF: DICTATE
 C: REPETITION 28 3
 UF: MEMORY

W:1B I:29 O:4 P: Ayanda

(Ayanda writes down Operation 29.3 on paper.)

IF: RECORD
 C: REPETITION 29 3
 UF: MEMORY

W:1B I:29 O:5 P: Theo

I still stand for TLC. First because of the 69 youth who asked for a workshop on TLG because they feel it will prepare them for a new local government.

IF: JUSTIFY
 C: FACT 999
 UF: CONTRIBUTION

W:1B I:29 O:6 P: Theo

As it stands now, we need to proclaim the issue on TLC and TLG because we need to know how things will go with our local government because RDP itself is the money itself that will be given to the TLG to improve the situation in our locals.

IF: JUSTIFY
 C: INTERPRETATION 999
 UF: CONTRIBUTION

W:1B I:29 O:7 P: Theo

In point 3 written that the municipality wants to know how far the community has progressed with the TLC. (Theo looks at James. Theodora looks at Theo.)

IF: JUSTIFY
 C: FACT 999
 UF: CONTRIBUTION

W:1B I:30 O:1 P: James

(Silence, group members smile and look at each other.) The RDP reconstruction and development programme desk, (James has drawn diagram) which has got a committee in the locals and aside from that they have their steering committees and these steering committees are going to give back to commissions. These commissions will have facilitators and co-ordinators and relate to municipalities.

IF: JUSTIFY
 C: FACT
 UF: CONTRIBUTION

W:1B I:30 O:2 P: James

The RDP is very important because it gives back to many committees like the LODAFFs.

IF: JUSTIFY

C: OPINION
UF: CONTRIBUTION

W:1B I:30 O:3 P: James

One must not look at that 50 women written there as the women of the Women's League but as the have nots from the community who can benefit from the funding by the business man. (All look at James. James looks at Theo and then looks at the newsprint and points at it.)

IF: JUSTIFY
C: INTERPRETATION 999
UF: CONTRIBUTION

W:1B I:31 O:1 P: Thami

Are you going for RDP? (Looks at James.)

IF: SEEK
C:
UF: CONSENSUS A

W:1B I:32 O:1 P: James

I go for RDP and the health desk, I do not known now. (Others laugh.)

IF: SUPPORT
C: REPETITION 28 3
UF: CONSENSUS A

W:1B I:33 O:1 P: Theo

Ok....(All talk together and laugh.)

IF: COMMENT
C: REFLECTION
UF: TASK

W:1B I:34 O:1 P: Thami

What must we do? (Looks at newsprint. All talk together and laugh.)

IF: INQUIRE
C:
UF: TASK

W:1B I:35 O:1 P: James

It must just be written as it is. It will depend on what we all agree on between the TLC and the RDP.

IF: COMMENT
C: FACT
UF: TASK

W:1B I:35 O:2 P: James

The main important thing is the RDP, the main important thing.

IF: SUGGEST
 C: REPETITION 32 1
 UF: AMPLIFYING

W:1B I:35 O:3 P: Ayanda

(Ayanda writes down Operation 25.2 on paper.)

IF: RECORD
 C: REPETITION 35 2
 UF: MEMORY

W:1B I:36 O:1 P: Siphio

(Siphio looks at the paper and puts up his hand and interrupts James.) To make things easier we must follow the steps we used during the problem solving. We must discuss the RDP and put the downfalls before we can put the TLC as well.

IF: COMMENT
 C: OPINION
 UF: TASK

W:1B I:37 O:1 P: Thami

I agree (to Theo).

IF: SUPPORT
 C: OPINION
 UF: TASK

W:1B I:37 O:2 P: Thami

We have been given a choice between two workshops so we must decide, as LODAFF people we must decide for our community which should be the first one.

IF: COMMENT
 C: REPETITION 10 1
 UF: TASK

W:1B I:37 O:3 P: Thami

As we are discussing here,

IF: COMMENT
 C: REFLECTION
 UF: TASK

W:1B I:37 O:4 P: Thami

it is the RDP, the RDP should be the first workshop.

IF: SUGGEST
 C: REPETITION 35 3
 UF: CONSENSUS A

W:1B I:38 O:1 P: Theo

We have to choose one, Theodora, choose one.

IF: COMMENT
 C: REPETITION 37 2
 UF: TASK

W:1B I:38 O:2 P: Theo

We must write down the points about the RDP and the TLC. (Shows Ayanda how to write down. All look at this.)

IF: REQUEST
 C: REPETITION 36 1
 UF: TASK

W:1B I:39 O:1 P: Thami

We must write down about the RDP (to Ayanda).

IF: REQUEST
 C:
 UF: OWN NEEDS

W:1B I:40 O:1 P: Ayanda

We must make points for both.

IF: SUPPORT
 C: REPETITION 38 2
 UF: TASK

W:1B I:40 O:2 P: Ayanda

Even when we are presenting it we must present both points to the panel. We must say why we chose the other point. (To Siphon, Thami looks at newsprint. Theodora and Siphon look at Ayanda.)

IF: COMMENT
 C: OPINION
 UF: TASK

W:1B I:41 O:1 P: James

Comrade chair can I be released for 5 minutes? (Looks at Ayanda and Theo.)

IF: REQUEST
 C:
 UF: GROUP

W:1B I:42 O:1 P: Theo

Comrade chair I still do not agree on choosing the RDP.

IF: REJECT
 C: REPETITION 29 1
 UF: OWN IDEAS

W:1B I:42 O:2 P: Theo

Hilde, the group does not seem to be agreeing (all look at Hilde).

IF: COMMENT
 C: REFLECTION
 UF: GROUP

W:1B I:43 O:1 P: Ayanda

Do we have to choose only one point? (All look at Hilde.)

IF: INQUIRE
 C:
 UF: TASK

W:1B I:44 O:1 P: Theo

Can you help in the debate (to Hilde). Some say RDP and others say TLC, what do we do, so that we can .. (brings hands together).

IF: REQUEST
 C:
 UF: GROUP

W:1B I:45 O:1 P: Hilde

Can't you do that amongst yourselves, you have a group there?

IF: REQUEST
 C:
 UF: GROUP

W:1B I:46 O:1 P: Theo

They are all standing on the RDP (looks at Hilde).

IF: COMMENT
 C: INFERENCE
 UF: OWN NEEDS

W:1B I:47 O:1 P: Hilde

What does that say?

IF: INQUIRE
 C:
 UF: GROUP

W:1B I:48 O:1 P: Ayanda

Let's go, let's go.

IF: REQUEST
 C:
 UF: TASK

W:1B I:49 O:1 P: Hilde

Theodora what do you think?

IF: INVITE
 C:

UF: PARTICIPATION

W:1B I:50 O:1 P: Theodora

I think we should choose the workshop on RDP,

IF: SUGGEST
 C: REPETITION 37 4
 UF: CONSENSUS A

W:1B I:50 O:2 P: Theodora

because in both of our locals there are projects and the people really need to know about funding. So the RDP would be useful.

IF: JUSTIFY
 C: FACT 999
 UF: CONTRIBUTION

W:1B I:50 O:3 P: Theodora

We only have money for one workshop and number five fills the gap. He will do the catering for the workshop and we also have somebody from the regional government who wants to see the potential of our people of the LODAFF, only if we run a workshop on the RDP. (Looks at Hilde and points at the newsprint. All look at the newsprint.)

IF: JUSTIFY
 C: FACT 999
 UF: CONTRIBUTION

W:1B I:51 O:1 P: Thami

And what are you saying about the people of the TLC? (Looks at Theo a bit worried.)

IF: INVITE
 C:
 UF: PARTICIPATION

W:1B I:52 O:1 P: Theo

I want us to run a workshop on the TLC.

IF: SUGGEST
 C: REPETITION 42 1
 UF: OWN IDEAS

W:1B I:52 O:2 P: Theo

If you do not have any skills how are you going to implement that RDP? You want to see the potential of your LODAFF to be involved in the RDP.

IF: QUERY
 C: INFERENCE 999
 UF: OWN IDEAS

W:1B I:52 O:3 P: Theo

If you can choose TLC I think we will gain more on how to prepare ourselves for the local government, the main government of our local.

IF: JUSTIFY
 C: OPINION
 UF: CONTRIBUTION

W:1B I:52 O:4 P: Theo

You understand? (All look at Theo. Thami also looks at the newsprint.)

IF: SEEK
 C:
 UF: CONSENSUS U

W:1B I:53 O:1 P: Thami

This issue of the workshop on the TLC. I think we should run the workshop on the RDP.

IF: REJECT
 C: REPETITION 50 1
 UF: OWN IDEAS

W:1B I:53 O:2 P: Thami

As you can see the municipality asks for the progress with educating the community.

IF: INFORM
 C: REPETITION 29 7
 UF: CONSENSUS U

W:1B I:53 O:3 P: Thami

We can approach the municipality because we have no funds.

IF: SUGGEST
 C: OPINION
 UF: COMPROMISE

W:1B I:53 O:4 P: Thami

The local municipality will not have funds to run a workshop, perhaps the people from the RDP will be able to help. This is the advantage of having funds for the running only one workshop.

IF: SUGGEST
 C: OPINION
 UF: COMPROMISE

W:1B I:53 O:5 P: Thami

At the moment we do not have funds. We run the workshop on the TLC after we run the workshop on the RDP.

IF: SUGGEST
 C: REPETITION 25 3
 UF: COMPROMISE

W:1B I:53 O:6 P: Thami

Does it make sense? (Looks at Theo and the newsprint Siphon looks at Thami.)

IF: SEEK
 C:
 UF: CONSENSUS U

W:1B I:54 O:1 P: Theo

It makes sense we choose RDP.

IF: SUPPORT
 C: REPETITION 53 1
 UF: CONSENSUS A

W:1B I:54 O:2 P: Theo

The RDP includes the TLC, it can accommodate the TLG. The municipality and the youth can join the RDP workshop and what they discuss and the aim of the workshop will also include the TLC. (All look at Theo except Thami. Theo looks at the newsprint.)

IF: JUSTIFY
 C: OPINION
 UF: COMPROMISE

W:1B I:55 O:1 P: Thami

The workshop has two issues, RDP and TLC? (To Theo. All look confused.)

IF: INQUIRE
 C:
 UF: CONSENSUS U

W:1B I:56 O:1 P: Ayanda

We have an advantage because maybe we can get some funds.

IF: SUGGEST
 C: REPETITION 53 4
 UF: CONSENSUS A

W:1B I:57 O:1 P: Thami

Listen, Still we are at a disadvantaged.

IF: REJECT
 C: INTERPRETATION 999
 UF: OWN IDEAS

W:1B I:57 O:2 P: Thami

The business man will only fund us if we run a workshop on the RDP.

IF: JUSTIFY
 C: INTERPRETATION 999
 UF: CONSENSUS U

W:1B I:57 O:3 P: Thami

So if we run a workshop on both we may not get the funds (interrupts Ayanda and speaks to Theo).

IF: CLARIFY
 C: INFERENCE 999
 UF: CONSENSUS U

W:1B I:58 O:1 P: Ayanda

I want to say there will be no problem ... (interrupts Thami).

IF: SUPPORT
 C: REPETITION 54 1
 UF: CONSENSUS A

W:1B I:59 O:1 P: Theo

Who will be rapporteur?

IF: REQUEST
 C:
 UF: TASK

W:1B I:60 O:1 P: Thami

We must write some points.

IF: REQUEST
 C:
 UF: TASK

W:1B I:60 O:2 P: Thami

and we should be disciplined (to Ayanda).

IF: COMMENT
 C: OPINION
 UF: GROUP

W:1B I:61 O:1 P: Ayanda

I want to say, there will be no problem if we take the RDP.

IF: SUGGEST
 C: OPINION
 UF: CONSENSUS A

W:1B I:61 O:2 P: Ayanda

There will be hope for the community. If we bring development to the people we will be reducing inflation for the community. (Thami nods in agreement. Siphon and Theodora smile.)

IF: SUGGEST
 C: OPINION
 UF: CONSENSUS A

W:1B I:61 O:3 P: Ayanda

(Ayanda writes down operation 61.2 on paper.)

IF: RECORD
C: REPETITION 61 2
UF: MEMORY

APPENDIX 12.

THEORETICAL DIAGRAMS

This appendix consists of 12 figures, each of which contains one theoretical diagram. Three diagrams for each of the four sets of data. To assist the reader examine these diagrams, each theoretical diagram is referenced against the data set from which it is derived and the specific meta-cognitive aspect which is examined, using the following grid:

The four data sets are :

Data Set A: Pre-workshop interviews

Data Set B: Post-workshop interviews

Data Set C: Group discussions

Data set D: Additional sample interviews

The three meta-cognitive aspects are:

1. Conceptual knowledge of the concept problem
2. Conceptual knowledge of the concept problem solving
3. Procedural knowledge of problem solving

Thus for example a diagram entitled Data Set C - 1 refers to Conceptual knowledge of the concept problem derived from the Group discussions data.

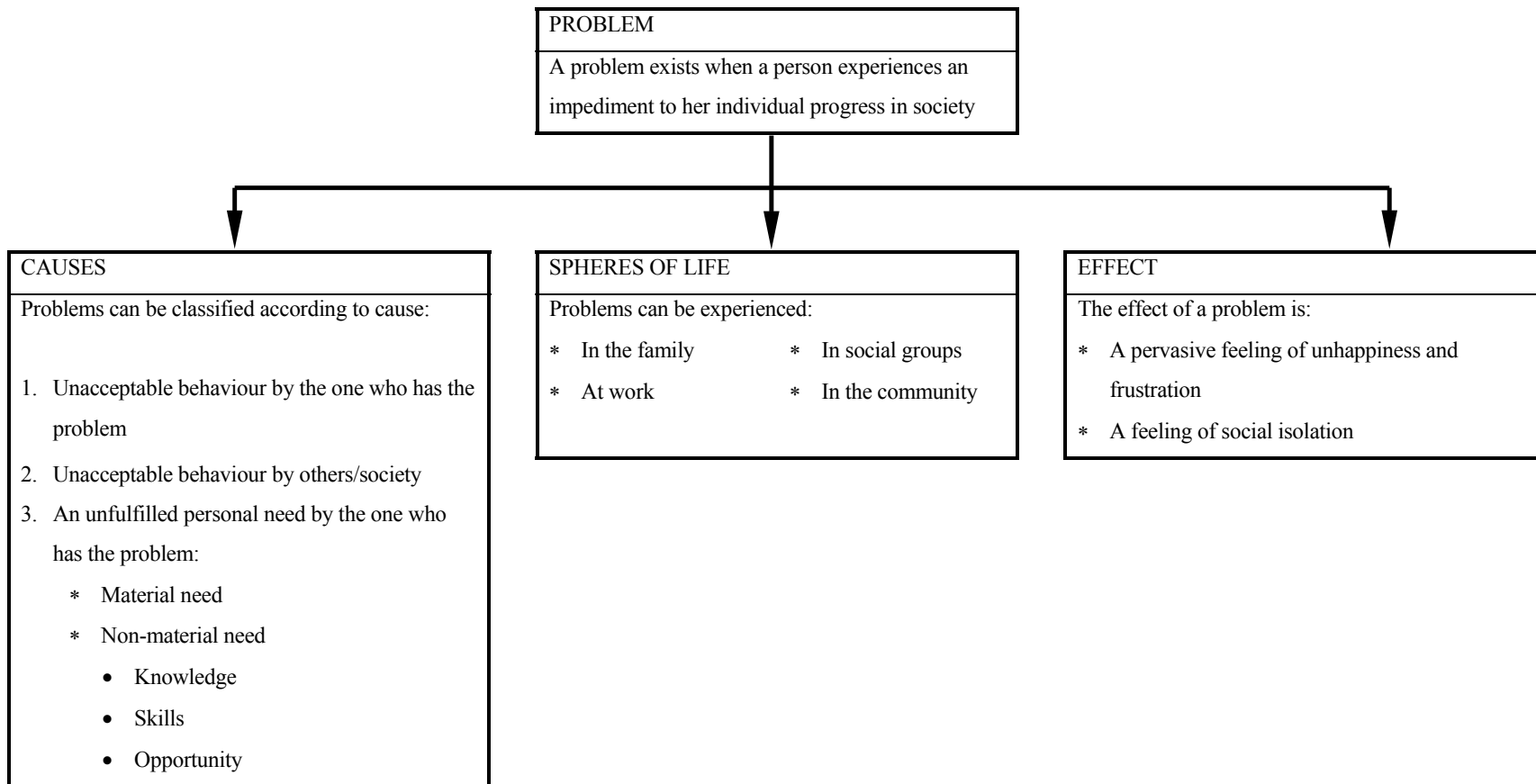


Figure 1. Theoretical diagram of the Conceptual knowledge of the concept problem / Pre-workshop interviews (Data Set A - 1)

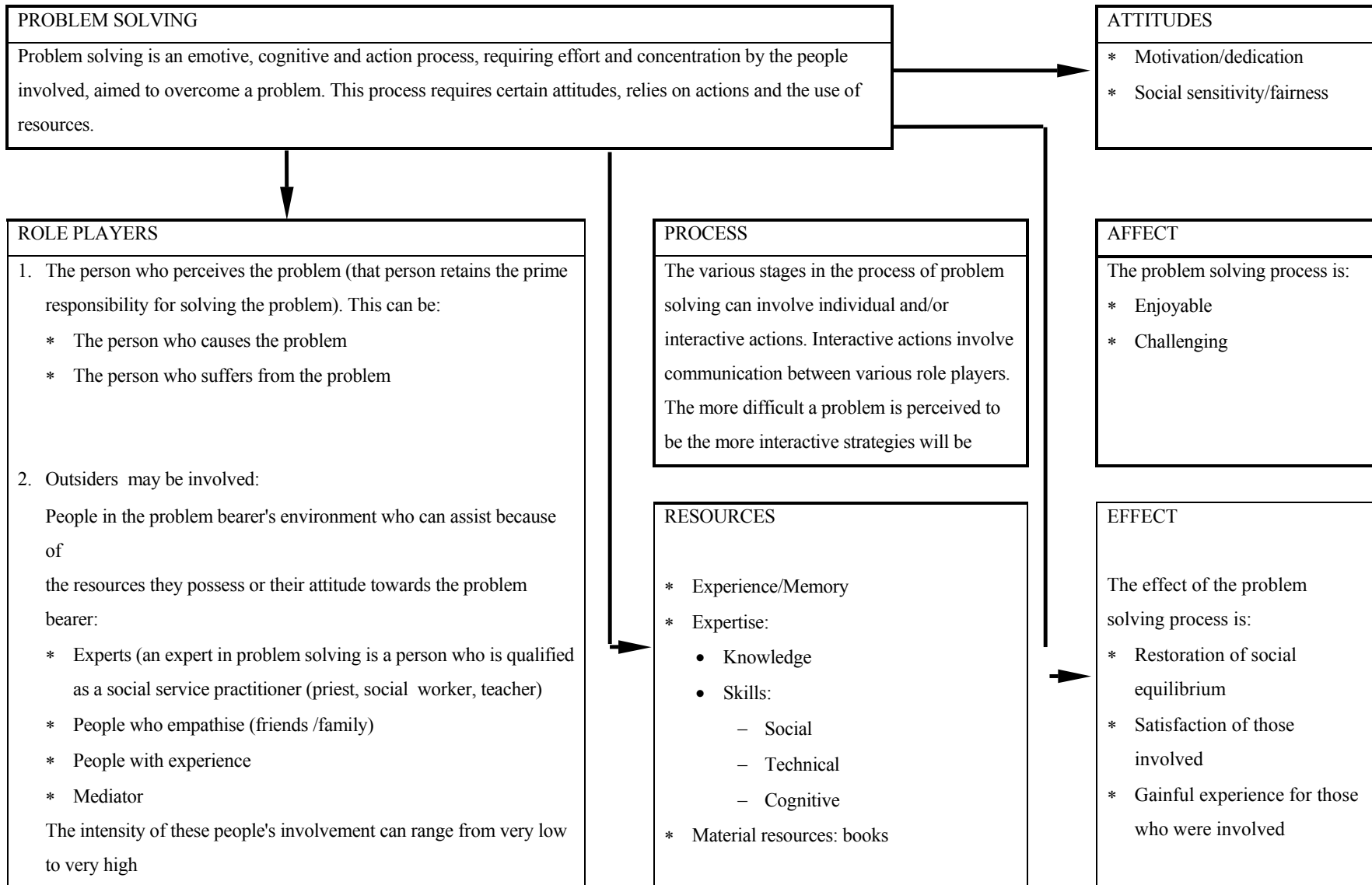


Figure 2. Theoretical diagram of the Conceptual knowledge of the concept problem solving / Pre-workshop interviews (Data Set A - 2)

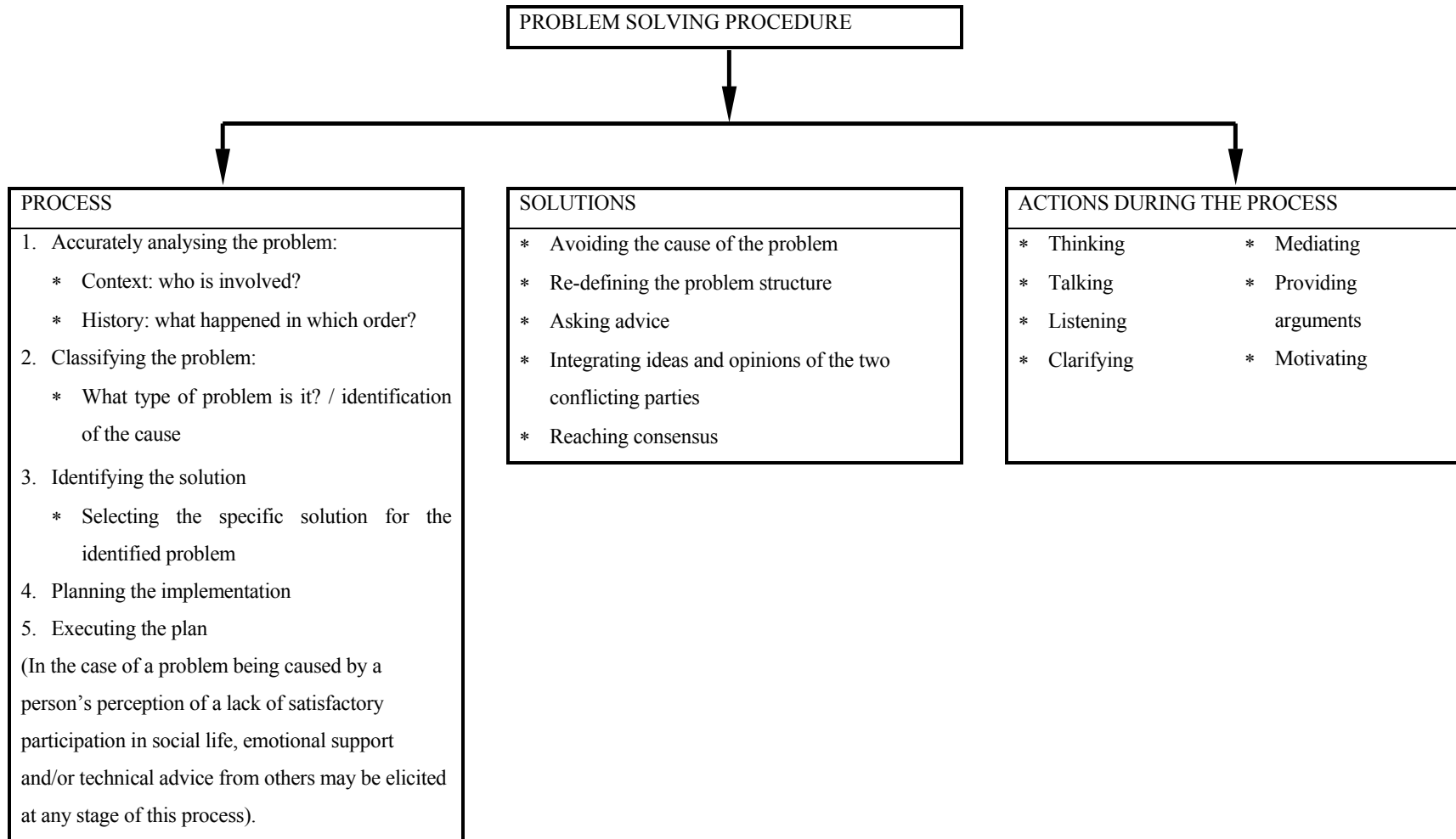


Figure 3. Theoretical diagram of the Procedural knowledge of problem solving / Pre-workshop interviews (Data Set A - 3)

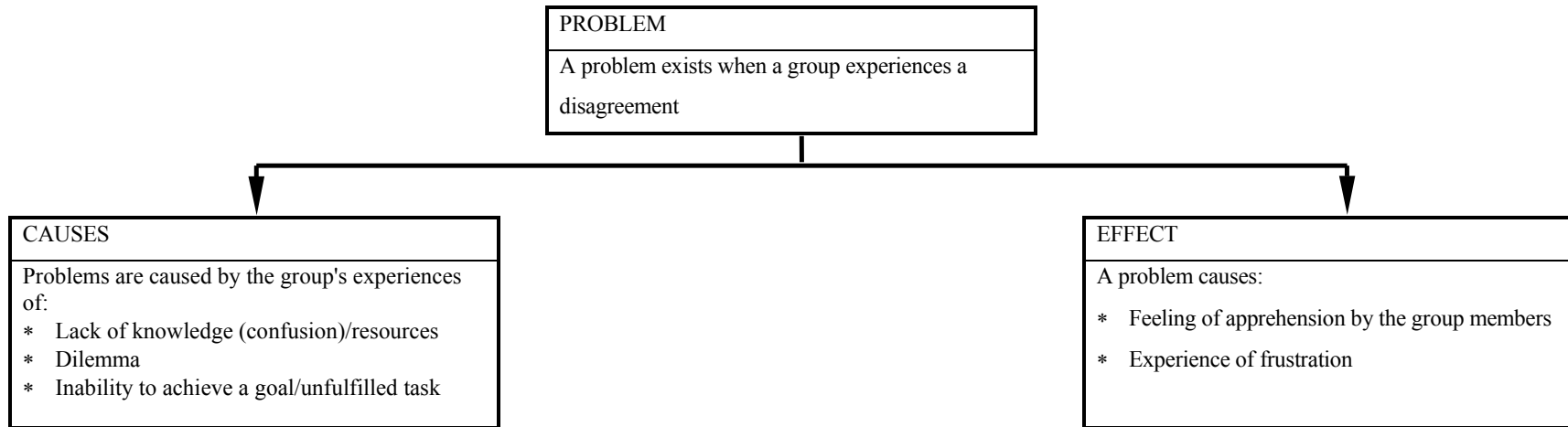


Figure 4. Theoretical diagram of the Conceptual knowledge of the concept problem / Post-Workshop interviews (Data Set B - 1)

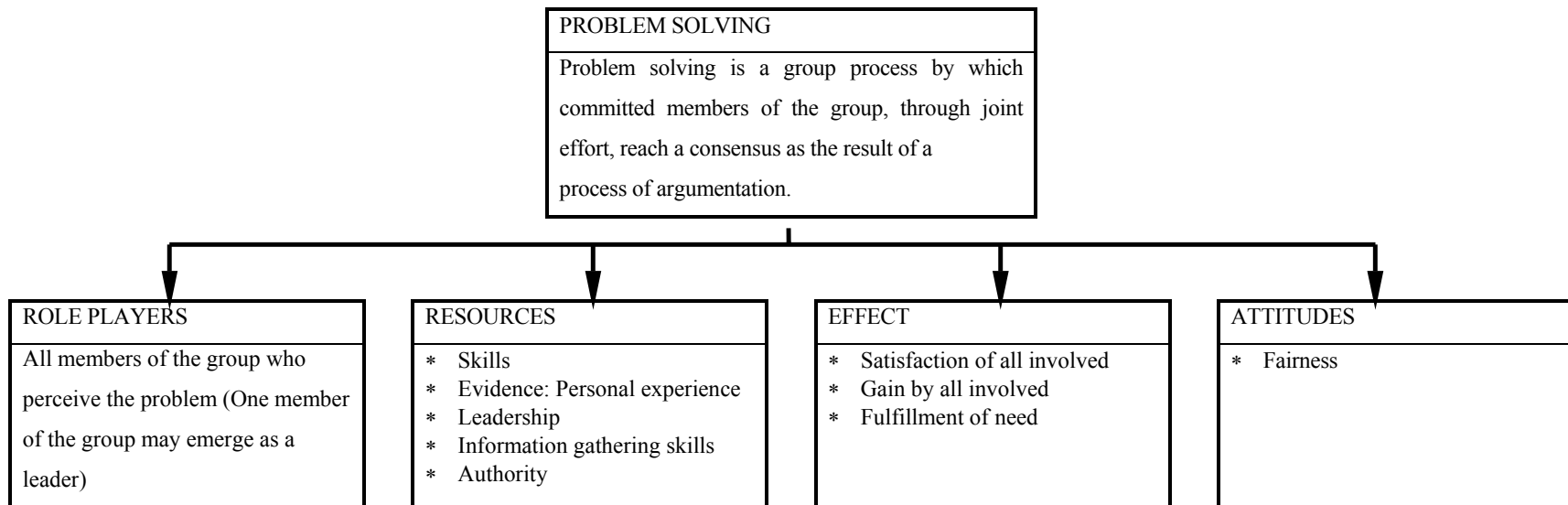


Figure 5. Theoretical diagram of the Conceptual knowledge of the concept problem solving / Post-Workshop interviews (Data Set B - 2)

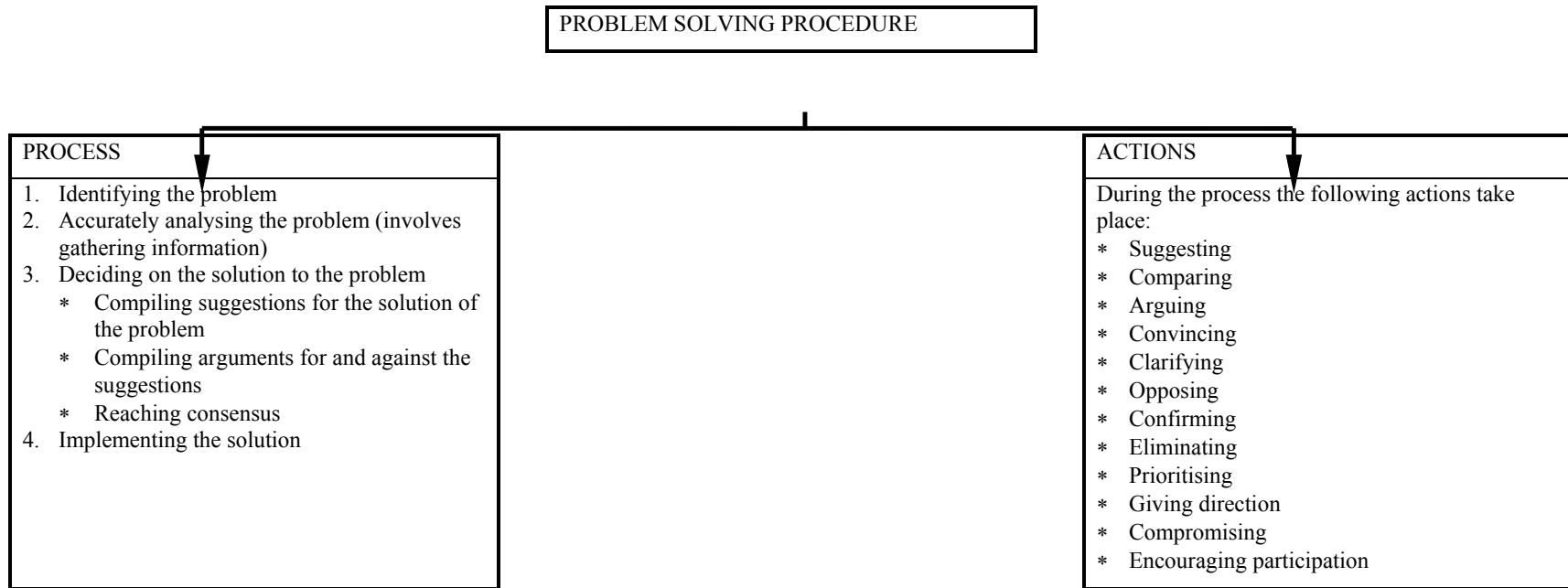


Figure 6. Theoretical diagram of the Procedural knowledge of problem solving / Post-Workshop interviews (Data Set B - 3)

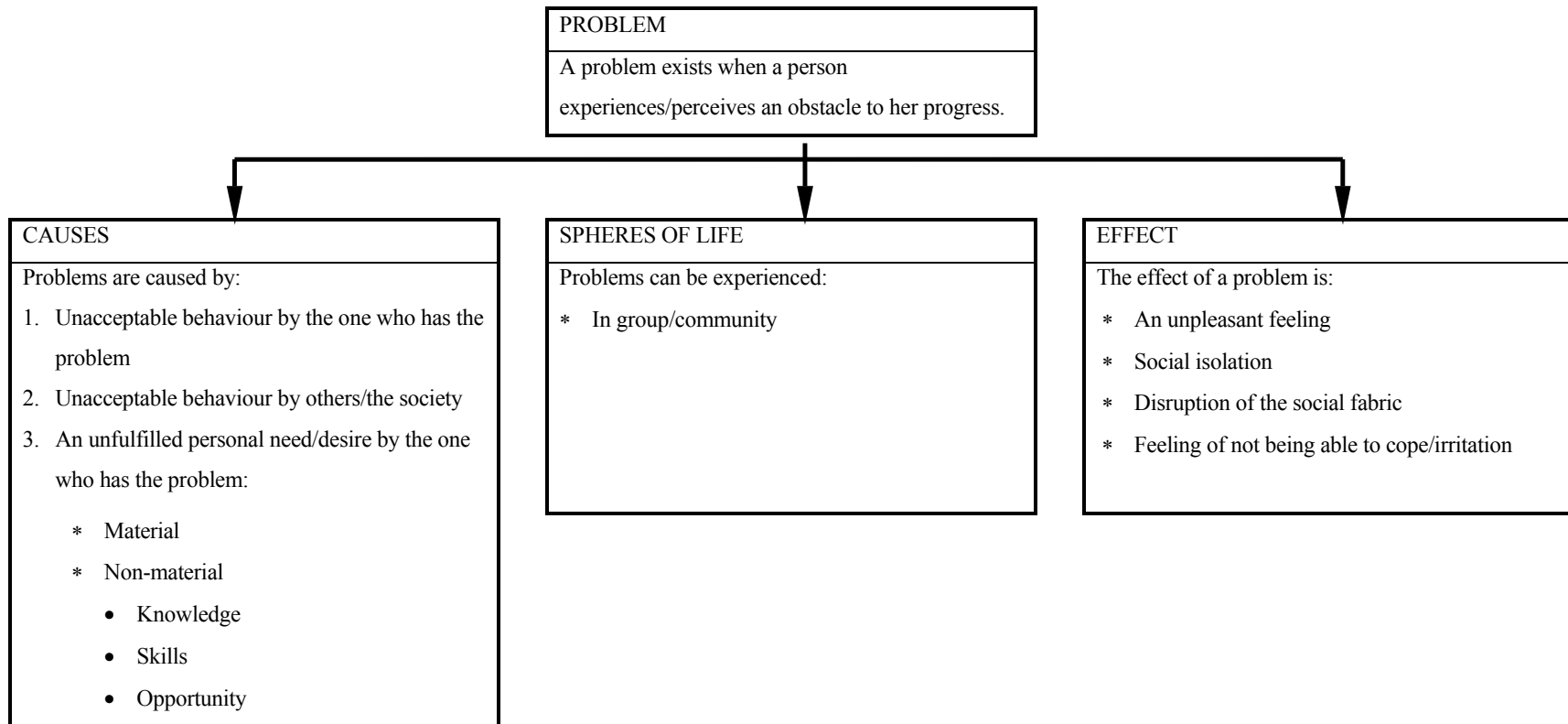


Figure 7. Theoretical diagram of the Conceptual knowledge of the concept problem / Group discussions (Data Set C - 1)

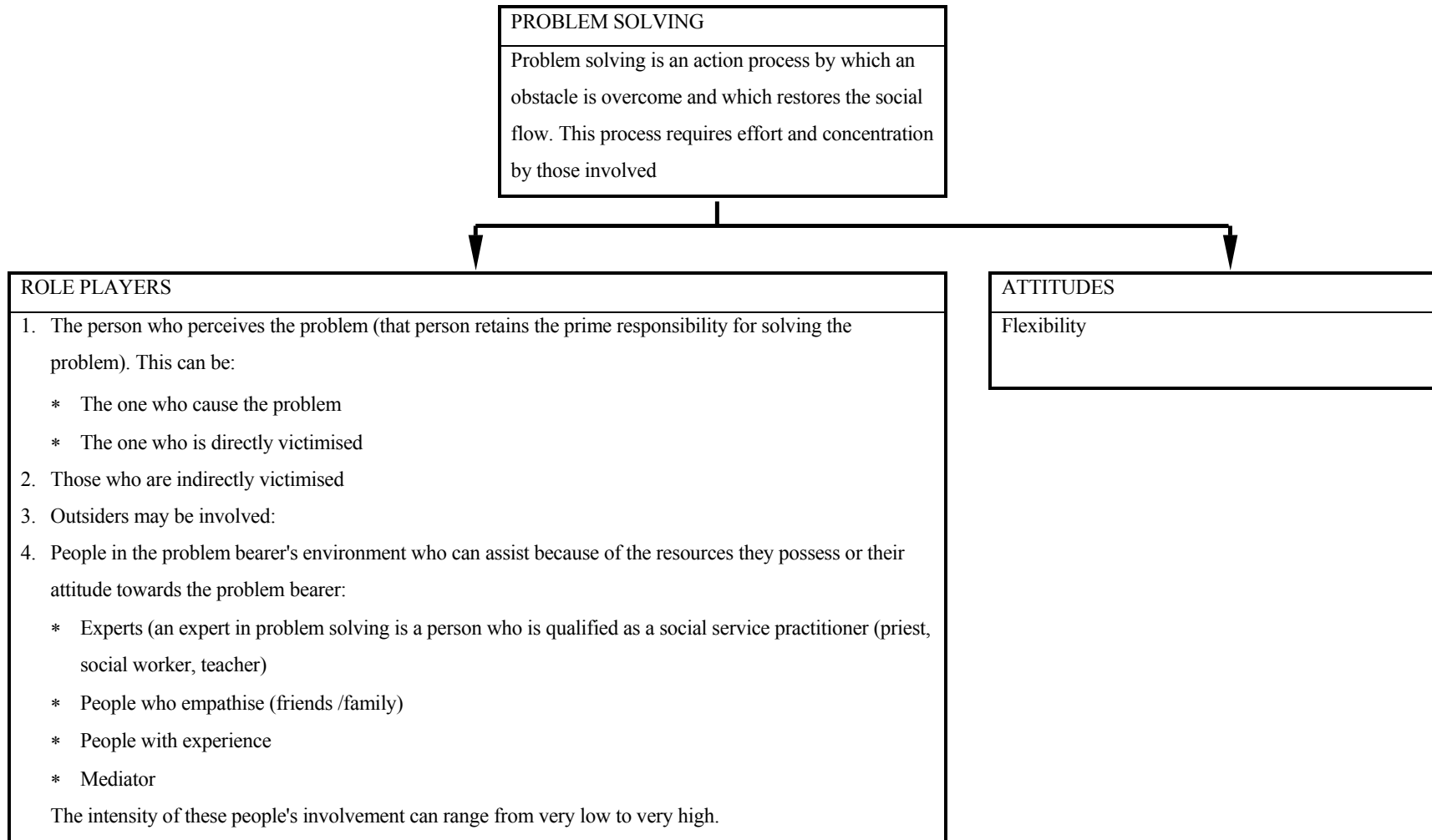


Figure 8. Theoretical diagram of the Conceptual knowledge of the concept problem solving / Group discussions (Data Set C - 2)

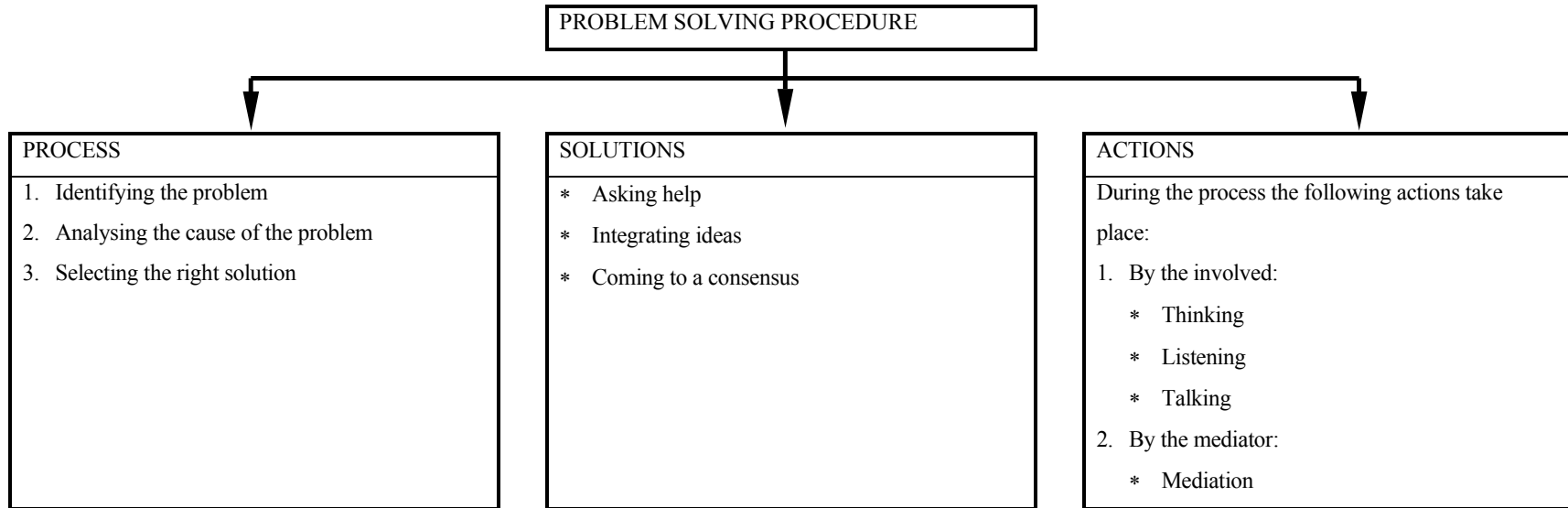


Figure 9. Theoretical diagram of the Procedural knowledge of problem solving / Group discussions (Data Set C - 3)

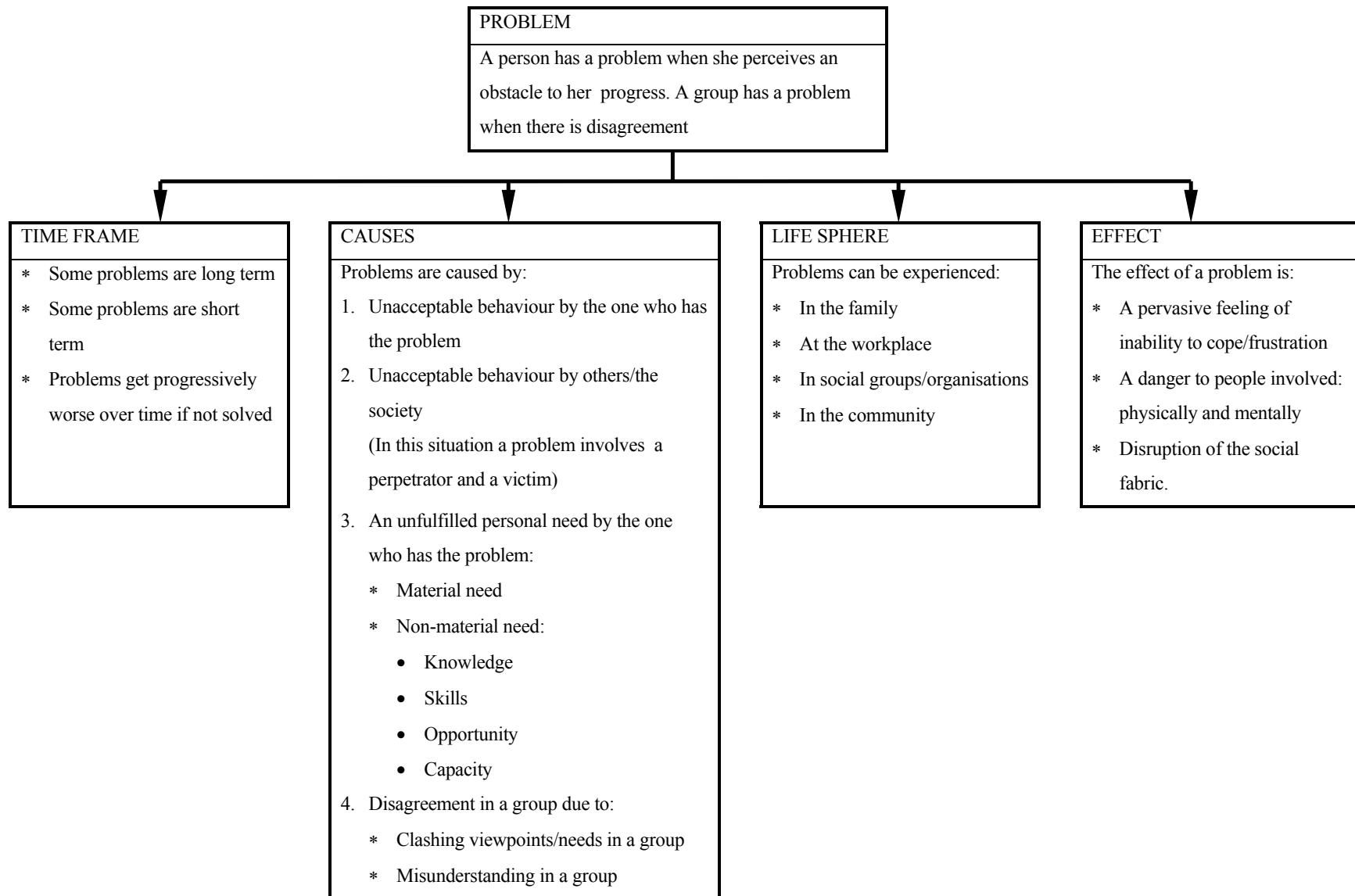


Figure 10. Theoretical diagram of the Conceptual knowledge of the concept problem / Additional sample interviews (Data Set D - 1)

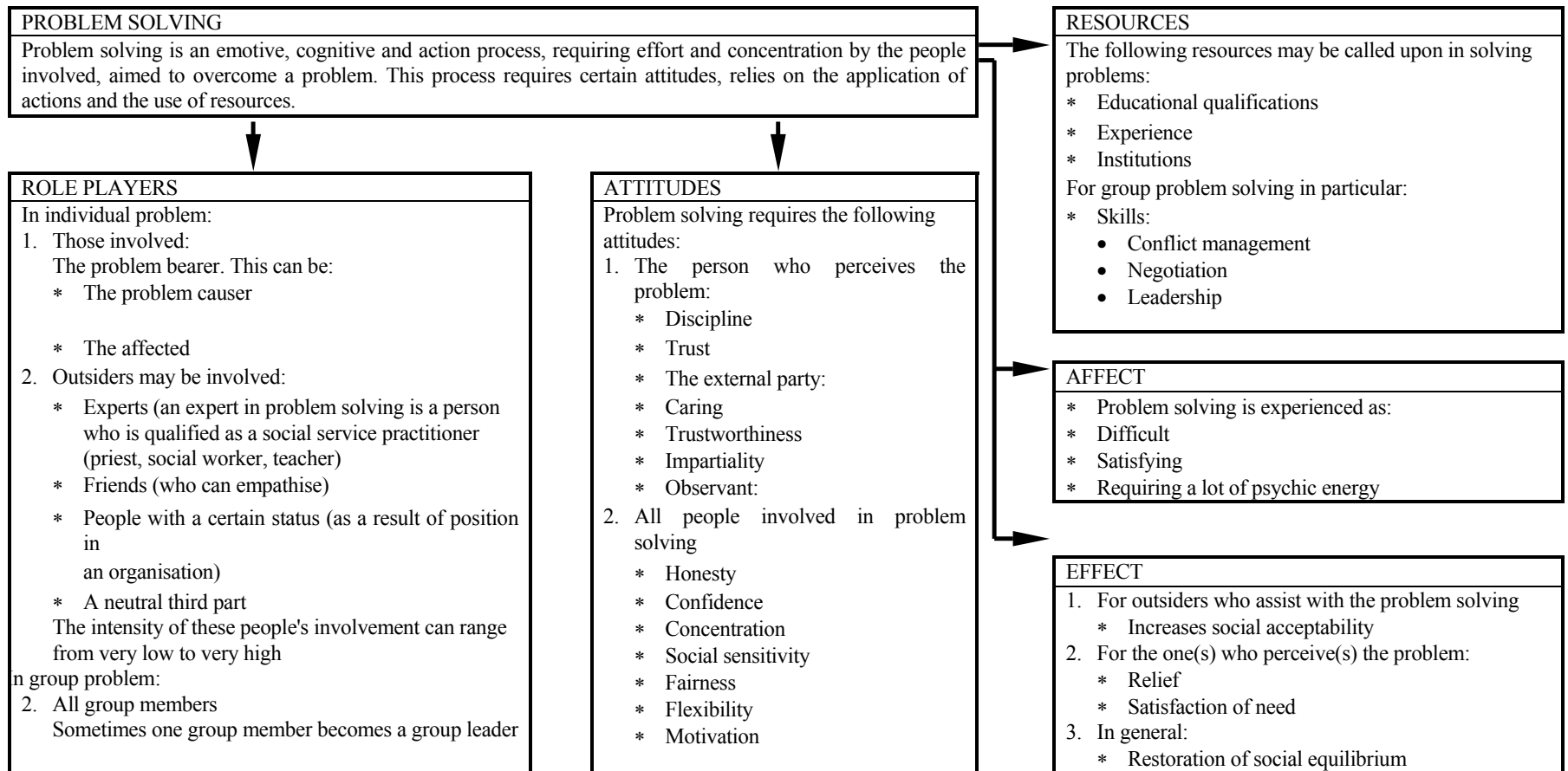


Figure 11. Theoretical diagram of the Conceptual knowledge of the concept problem solving/ Additional sample interviews (Data Set D - 2)

PROBLEM SOLVING PROCEDURE

PROCESS

1. Acknowledging/accepting that there is a problem
2. Accurately analysing the problem:
 - * Contextualisation
 - * Integrating different viewpoints/
 - * Tracing the history of the problem
 - * identifying the role players (victims and perpetrators)
3. Identifying/classifying the type of problem (what is its cause)
4. Selecting the right solution congruent with the type of problem
5. Planning the execution of the solution
6. Implementing the plan

At any stage of this process the one who perceives the problem may seek assistance. If the problem is in a group, this process is a joint effort of all involved.

SOLUTIONS

Possible solutions are:

1. By the one who perceives the problem
 - * Avoiding the problem
 - * If problem is own bad behaviour: changing own behaviour/accepting the blame
 - * Redefining the problem
 - * Asking for help
2. By the group leader
 - * Eliciting and integrating ideas
 - * Coming to a consensus

ACTIONS

Possible actions during the problem solving process:

1. By the one who perceives the problem:
 - * Intra-psychic
 - * Thinking
 - * Interactive:
 - * Sharing the frustration with others
2. By the outsiders who are approached for help:
 - * Referring to others
 - * Empathising
 - * Giving advice
3. By the neutral third party:
 - * Mediating
4. By the group:
 - * Sharing ideas
 - * Combining skills
 - * Convincing
5. By the group leader
 - * Giving direction
 - * Co-ordinating
6. By all involved in problem solving:
 - * Concretising

Figure 12. Theoretical diagram of the Procedural knowledge of problem solving/ Additional sample interviews (Data Set D - 3)

APPENDIX 13.

QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN TERMS OF THE FREQUENCY OF: IF/C/UF

This appendix contains 11 Tables. Table 1 shows the quantitative analysis for all operations (across all workshops). The next 10 Tables (Tables 2 -11) show the quantitative analyses for each of the 10 workshops respectively.

Table 1. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for all workshops combined.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	181	9.69	EXAMPLE	21	1.12	AMPLIFYING	64	3.43
COMMENT	187	10.01	FACT	146	7.82	COMPROMISE	13	0.70
DICTATE	57	3.05	INFERENCE	129	6.91	CONSENSUS A	260	13.92
INFORM	129	6.91	INTERPRETATION	141	7.55	CONSENSUS U	475	25.43
INQUIRE	121	6.48	OPINION	368	19.70	CONTRIBUTION	166	8.89
INVITE	91	4.87	REFLECTION	91	4.87	GROUP	51	2.73
JUSTIFY	186	9.96	REPETITION	575	30.67	MEMORY	156	8.35
OFFER	15	0.80	UNCODED	16	0.86	OWN IDEAS	108	5.78
QUERY	48	2.57	NO CONTENT	363	19.54	OWN NEEDS	75	4.02
RECORD	85	4.55				PARTICIPATION	91	4.87
REJECT	81	4.34				TASK	375	20.07
REQUEST	163	8.73				UNCODED	16	0.86
SEEK	48	2.57						
SUGGEST	220	11.78						
SUPPORT	222	11.88						
UNCODED	16	0.86						

Table 2. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 1A.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	6	6.82	EXAMPLE	1	1.14	AMPLIFYING	9	10.23
COMMENT	7	7.95	FACT	5	5.68	COMPROMISE	0	0.00
DICTATE	3	3.41	INFERENCE	6	6.82	CONSENSUS A	22	25.00
INFORM	4	4.55	INTERPRETATION	7	7.95	CONSENSUS U	14	15.91
INQUIRE	1	1.14	OPINION	21	23.86	CONTRIBUTION	14	15.91
INVITE	4	4.55	REFLECTION	4	4.55	GROUP	2	2.27
JUSTIFY	26	29.55	REPETITION	30	34.09	MEMORY	6	6.82
OFFER	1	1.14	UNCODED	0	0.00	OWN IDEAS	0	0.00
QUERY	0	0.00	NO CONTENT	14	15.91	OWN NEEDS	2	2.27
RECORD	4	4.55				PARTICIPATION	4	4.55
REJECT	0	0.00				TASK	15	17.05
REQUEST	7	7.95				UNCODED	0	0.00
SEEK	5	5.68						
SUGGEST	5	5.68						
SUPPORT	15	17.05						
UNCODED	0	0.00						

Table 3. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 1B.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	4	3.67	EXAMPLE	1	0.92	AMPLIFYING	5	4.59
COMMENT	16	14.68	FACT	8	7.34	COMPROMISE	5	4.59
DICTATE	1	0.92	INFERENCE	4	3.67	CONSENSUS A	14	12.84
INFORM	4	3.67	INTERPRETATION	6	5.50	CONSENSUS U	15	13.76
INQUIRE	5	4.59	OPINION	19	17.43	CONTRIBUTION	13	11.93
INVITE	3	2.75	REFLECTION	4	3.67	GROUP	6	5.50
JUSTIFY	15	13.76	REPETITION	37	35.83	MEMORY	6	5.50
OFFER	1	0.92	UNCODED	1	0.92	OWN IDEAS	6	5.50
QUERY	2	1.83	NO CONTENT	29	24.72	OWN NEEDS	5	4.59
RECORD	5	4.59				PARTICIPATION	3	2.75
REJECT	5	4.59				TASK	30	27.52
REQUEST	16	14.68				UNCODED	1	0.92
SEEK	5	4.59						
SUGGEST	17	15.60						
SUPPORT	9	8.26						
UNCODED	1	0.92						

Table 4. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 2A.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	17	7.33	EXAMPLE	2	0.86	AMPLIFYING	1	0.43
COMMENT	38	16.38	FACT	21	9.05	COMPROMISE	1	0.43
DICTATE	8	3.45	INFERENCE	14	6.03	CONSENSUS A	38	16.38
INFORM	16	6.90	INTERPRETATION	6	2.59	CONSENSUS U	65	28.02
INQUIRE	20	8.62	OPINION	49	21.12	CONTRIBUTION	10	4.31
INVITE	2	0.86	REFLECTION	12	5.17	GROUP	8	3.45
JUSTIFY	8	3.45	REPETITION	81	34.91	MEMORY	14	6.03
OFFER	3	1.29	UNCODED	0	0.00	OWN IDEAS	9	3.88
QUERY	7	3.02	NO CONTENT	47	20.26	OWN NEEDS	7	3.02
RECORD	6	2.59				PARTICIPATION	2	0.86
REJECT	10	4.31				TASK	77	33.19
REQUEST	24	10.34				UNCODED	0	0.00
SEEK	5	2.16						
SUGGEST	25	10.78						
SUPPORT	43	18.53						
UNCODED	0	0.00						

Table 5. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 2B.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	21	12.07	EXAMPLE	3	1.72	AMPLIFYING	8	4.60
COMMENT	8	4.60	FACT	11	6.32	COMPROMISE	0	0.00
DICTATE	11	6.32	INFERENCE	19	10.92	CONSENSUS A	27	15.52
INFORM	6	3.45	INTERPRETATION	13	7.47	CONSENSUS U	43	24.71
INQUIRE	12	6.90	OPINION	28	16.09	CONTRIBUTION	21	12.07
INVITE	12	6.90	REFLECTION	4	2.30	GROUP	4	2.30
JUSTIFY	11	6.32	REPETITION	53	30.46	MEMORY	18	10.34
OFFER	3	1.72	UNCODED	3	1.72	OWN IDEAS	8	4.60
QUERY	0	0.00	NO CONTENT	40	22.99	OWN NEEDS	1	0.57
RECORD	10	5.75				PARTICIPATION	12	6.90
REJECT	5	2.87				TASK	29	16.67
REQUEST	10	5.75				UNCODED	3	1.72
SEEK	5	2.87						
SUGGEST	30	17.24						
SUPPORT	27	15.52						
UNCODED	3	1.72						

Table 6. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 3A

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	6	5.08	EXAMPLE	0	0.00	AMPLIFYING	5	4.24
COMMENT	11	9.32	FACT	12	10.17	COMPROMISE	1	0.85
DICTATE	0	0.00	INFERENCE	10	8.47	CONSENSUS A	29	24.58
INFORM	3	2.54	INTERPRETATION	8	6.78	CONSENSUS U	18	15.25
INQUIRE	5	4.24	OPINION	30	25.42	CONTRIBUTION	25	21.19
INVITE	14	11.86	REFLECTION	3	2.54	GROUP	1	0.85
JUSTIFY	25	21.19	REPETITION	36	30.51	MEMORY	0	0.00
OFFER	0	0.00	UNCODED	0	0.00	OWN IDEAS	7	5.93
QUERY	4	3.39	NO CONTENT	19	16.10	OWN NEEDS	2	1.69
RECORD	0	0.00				PARTICIPATION	14	11.86
REJECT	4	3.39				TASK	16	13.56
REQUEST	2	1.69				UNCODED	0	0.00
SEEK	7	5.93						
SUGGEST	19	16.10						
SUPPORT	18	15.25						
UNCODED	0	0.00						

Table 7. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 3B

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	9	6.43	EXAMPLE	0	0.00	AMPLIFYING	10	7.14
COMMENT	8	5.71	FACT	15	10.71	COMPROMISE	3	2.14
DICTATE	0	0.00	INFERENCE	8	5.71	CONSENSUS A	25	17.86
INFORM	9	6.43	INTERPRETATION	19	13.57	CONSENSUS U	25	17.86
INQUIRE	4	2.86	OPINION	41	29.29	CONTRIBUTION	22	15.71
INVITE	12	8.57	REFLECTION	6	4.29	GROUP	2	1.43
JUSTIFY	29	20.71	REPETITION	28	20.00	MEMORY	0	0.00
OFFER	0	0.00	UNCODED	0	0.00	OWN IDEAS	24	17.14
QUERY	10	7.14	NO CONTENT	23	16.43	OWN NEEDS	2	1.43
RECORD	0	0.00				PARTICIPATION	12	8.57
REJECT	9	6.43				TASK	15	10.71
REQUEST	9	6.43				UNCODED	0	0.00
SEEK	1	0.71						
SUGGEST	24	17.14						
SUPPORT	16	11.43						
UNCODED	0	0.00						

Table 8. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 4A

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	18	10.11	EXAMPLE	7	3.93	AMPLIFYING	4	2.25
COMMENT	16	8.99	FACT	5	2.81	COMPROMISE	0	0.00
Dictate	7	3.93	INFERENCE	9	5.06	CONSENSUS A	29	16.29
INFORM	4	2.25	INTERPRETATION	19	10.67	CONSENSUS U	44	24.72
INQUIRE	18	10.11	OPINION	31	17.42	CONTRIBUTION	12	6.74
INVITE	5	2.81	REFLECTION	10	5.62	GROUP	7	3.93
JUSTIFY	24	13.48	REPETITION	57	32.02	MEMORY	18	10.11
OFFER	0	0.00	UNCODED	3	1.69	OWN IDEAS	11	6.18
QUERY	4	2.25	NO CONTENT	37	20.79	OWN NEEDS	12	6.74
RECORD	11	6.18				PARTICIPATION	5	2.81
REJECT	7	3.93				TASK	33	18.54
REQUEST	17	9.55				UNCODED	3	1.69
SEEK	2	1.12						
SUGGEST	13	7.30						
SUPPORT	29	16.29						
UNCODED	3	1.69						

Table 9. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 4B

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	34	10.24	EXAMPLE	7	2.11	AMPLIFYING	8	2.41
COMMENT	28	8.43	FACT	46	13.86	COMPROMISE	3	0.90
Dictate	7	2.11	INFERENCE	26	7.83	CONSENSUS A	40	12.05
INFORM	53	15.96	INTERPRETATION	27	8.13	CONSENSUS U	88	26.51
INQUIRE	18	5.42	OPINION	55	16.57	CONTRIBUTION	26	7.83
INVITE	23	6.93	REFLECTION	17	5.12	GROUP	8	2.41
JUSTIFY	18	5.42	REPETITION	91	27.41	MEMORY	56	16.87
OFFER	5	1.51	UNCODED	3	0.90	OWN IDEAS	3	0.90
QUERY	3	0.90	NO CONTENT	60	18.07	OWN NEEDS	7	2.11
RECORD	30	9.04				PARTICIPATION	23	6.93
REJECT	13	3.92				TASK	67	20.18
REQUEST	30	9.04				UNCODED	3	0.90
SEEK	1	0.30						
SUGGEST	40	12.05						
SUPPORT	26	7.83						
UNCODED	3	0.90						

Table 10. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 5A.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	22	9.61	EXAMPLE	0	0.00	AMPLIFYING	8	3.49
COMMENT	31	13.54	FACT	13	5.68	COMPROMISE	0	0.00
Dictate	12	5.24	INFERENCE	18	7.86	CONSENSUS A	7	3.06
INFORM	10	4.37	INTERPRETATION	14	6.11	CONSENSUS U	53	23.14
INQUIRE	19	8.30	OPINION	50	21.83	CONTRIBUTION	11	4.40
INVITE	5	2.18	REFLECTION	16	6.99	GROUP	8	3.49
JUSTIFY	13	5.68	REPETITION	60	26.20	MEMORY	24	10.48
OFFER	1	0.44	UNCODED	2	0.87	OWN IDEAS	31	13.54
QUERY	7	3.06	NO CONTENT	56	24.45	OWN NEEDS	28	12.23
RECORD	12	5.24				PARTICIPATION	5	2.18
REJECT	18	7.86				TASK	53	23.14
REQUEST	34	14.85				UNCODED	2	0.87
SEEK	3	1.31						
SUGGEST	25	10.92						
SUPPORT	15	6.55						
UNCODED	2	0.87						

Table 11. The frequency of the different forms of: the Immediate Inter-active Function (IF) (Block A); the Cognitive-Affective Content (C) (Block B); the Underlying Function (UF) (Block C) for Workshop 5B.

Block A			Block B			Block C		
Forms of IF	n.	%	Forms of C	n.	%	Forms of UF	n.	%
CLARIFY	44	17.60	EXAMPLE	0	0.00	AMPLIFYING	6	2.40
COMMENT	24	9.60	FACT	10	4.00	COMPROMISE	0	0.00
Dictate	8	3.20	INFERENCE	15	6.00	CONSENSUS A	29	11.60
INFORM	20	8.00	INTERPRETATION	22	8.80	CONSENSUS U	110	44.00
INQUIRE	19	7.60	OPINION	44	17.60	CONTRIBUTION	13	5.20
INVITE	11	4.40	REFLECTION	15	6.00	GROUP	5	2.00
JUSTIFY	17	6.80	REPETITION	98	39.20	MEMORY	14	5.60
OFFER	1	0.40	UNCODED	4	1.60	OWN IDEAS	9	3.60
QUERY	11	4.40	NO CONTENT	42	16.80	OWN NEEDS	9	3.60
RECORD	7	2.80				PARTICIPATION	11	4.40
REJECT	10	4.00				TASK	40	16.00
REQUEST	14	5.60				UNCODED	4	1.60
SEEK	14	5.60						
SUGGEST	22	8.80						
SUPPORT	24	9.60						
UNCODED	4	1.60						

APPENDIX 14.**QUANTITATIVE ANALYSES OF THE WORKSHOP OPERATIONS IN
TERMS OF THE FREQUENCY OF THE VARIOUS COMBINATIONS OF
THE DIFFERENT FORMS OF: IF/C/UF**

This appendix contains 11 Tables. Table 1 shows the quantitative analysis for all operations (across all workshops). The next 10 Tables (Tables 2 -11) show the quantitative analyses for each of the 10 workshops respectively.

Table 1. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for all workshops combined.

Block A		Block B		Block C	
Forms of IF/C	n. %	Forms of IF/UF	n. %	Forms of C/UF	n. %
CLARIFY/EXAMPLE	8 0.43	CLARIFY/AMPLIFYING	3 0.16	EXAMPLE/CONSENSUS A	8 0.43
CLARIFY/FACT	5 0.27	CLARIFY/CONSENSUS A	3 0.16	EXAMPLE/CONSENSUS U	12 0.64
CLARIFY/INFERENCE	40 2.14	CLARIFY/CONSENSUS U	163 8.73	EXAMPLE/TASK	1 0.05
CLARIFY/INTERPRETATION	55 2.94	CLARIFY/CONTRIBUTION	1 0.05	FACT/AMPLIFYING	1 0.05
CLARIFY/OPINION	8 0.43	CLARIFY/OWN IDEAS	9 0.48	FACT/CONSENSUS A	3 0.16
CLARIFY/REPETITION	65 3.48	CLARIFY/TASK	2 0.11	FACT/CONSENSUS U	79 4.23
COMMENT/FACT	21 1.12	COMMENT/GROUP	27 1.45	FACT/CONTRIBUTION	17 0.91
COMMENT/INFERENCE	1 0.05	COMMENT/OWN NEEDS	21 1.12	FACT/MEMORY	19 1.02
COMMENT/INTERPRETATION	8 0.43	COMMENT/TASK	139 7.44	FACT/OWN IDEAS	3 0.16
COMMENT/OPINION	64 3.43	DICTATE/CONSENSUS A	5 0.27	FACT/TASK	24 1.28
COMMENT/REFLECTION	79 4.23	DICTATE/MEMORY	52 2.78	INFERENCE/AMPLIFYING	1 0.05
COMMENT/REPETITION	14 0.75	INFORM/AMPLIFYING	2 0.11	INFERENCE/COMPROMISE	1 0.05
DICTATE/REPETITION	56 3.00	INFORM/CONSENSUS A	3 0.16	INFERENCE/CONSENSUS A	8 0.43
INFORM/EXAMPLE	1 0.05	INFORM/CONSENSUS U	101 5.41	INFERENCE/CONSENSUS U	59 3.16
INFORM/FACT	90 4.82	INFORM/CONTRIBUTION	2 0.11	INFERENCE/CONTRIBUTION	41 2.19
INFORM/INFERENCE	6 0.32	INFORM/MEMORY	19 1.02	INFERENCE/OWN IDEAS	14 0.75
INFORM/REFLECTION	5 0.27	INFORM/TASK	2 0.11	INFERENCE/OWN NEEDS	1 0.05
INFORM/REPETITION	27 1.45	INQUIRE/AMPLIFYING	1 0.05	INFERENCE/TASK	4 0.21
INQUIRE/INFERENCE	4 0.21	INQUIRE/CONSENSUS A	2 0.11	INTERPRETATION/AMPLIFYING	2 0.11
INQUIRE/INTERPRETATION	2 0.11	INQUIRE/CONSENSUS U	78 4.18	INTERPRETATION/CONSENSUS A	5 0.27
INQUIRE/REPETITION	16 0.86	INQUIRE/GROUP	5 0.27	INTERPRETATION/CONSENSUS U	78 4.18
INVITE/REPETITION	11 0.59	INQUIRE/OWN NEEDS	2 0.11	INTERPRETATION/CONTRIBUTIO	19 1.02
JUSTIFY/EXAMPLE	1 0.05	INQUIRE/TASK	33 1.77	INTERPRETATION/GROUP	3 0.16
JUSTIFY/FACT	24 1.28	INVITE/PARTICIPATION	91 4.87	INTERPRETATION/OWN IDEAS	19 1.02
JUSTIFY/INFERENCE	31 1.66	JUSTIFY/AMPLIFYING	21 1.12	INTERPRETATION/OWN NEEDS	2 0.11
JUSTIFY/INTERPRETATION	29 1.55	JUSTIFY/COMPROMISE	2 0.11	INTERPRETATION/TASK	13 0.70
JUSTIFY/OPINION	48 2.57	JUSTIFY/CONSENSUS A	23 1.23	OPINION/AMPLIFYING	9 0.48
JUSTIFY/REFLECTION	1 0.05	JUSTIFY/CONSENSUS U	37 1.98	OPINION/COMPROMISE	8 0.43
JUSTIFY/REPETITION	52 2.78	JUSTIFY/CONTRIBUTION	67 3.59	OPINION/CONSENSUS A	59 3.16
QUERY/FACT	3 0.16	JUSTIFY/OWN IDEAS	25 1.34	OPINION/CONSENSUS U	35 1.87
QUERY/INFERENCE	4 0.21	JUSTIFY/OWN NEEDS	4 0.21	OPINION/CONTRIBUTION	89 4.82
QUERY/INTERPRETATION	9 0.48	JUSTIFY/TASK	7 0.37	OPINION/GROUP	12 0.64
QUERY/OPINION	11 0.59	OFFER/TASK	15 0.80	OPINION/OWN IDEAS	41 2.19
QUERY/REFLECTION	1 0.05	QUERY/AMPLIFYING	2 0.11	OPINION/OWN NEEDS	34 1.82
QUERY/REPETITION	5 0.27	QUERY/CONSENSUS A	4 0.21	OPINION/TASK	81 4.34
RECORD/REPETITION	85 4.55	QUERY/CONSENSUS U	16 0.86	REFLECTION/CONSENSUS A	2 0.11
REJECT/INFERENCE	6 0.32	QUERY/GROUP	3 0.16	REFLECTION/CONSENSUS U	5 0.27
REJECT/INTERPRETATION	10 0.54	QUERY/OWN IDEAS	14 0.75	REFLECTION/GROUP	18 0.96
REJECT/OPINION	51 2.73	QUERY/OWN NEEDS	1 0.05	REFLECTION/OWN NEEDS	12 0.64
REJECT/REFLECTION	2 0.11	QUERY/TASK	8 0.43	REFLECTION/TASK	54 2.89
REJECT/REPETITION	12 0.64	RECORD/MEMORY	85 4.55	REPETITION/AMPLIFYING	50 2.68
REQUEST/INFERENCE	1 0.05	REJECT/AMPLIFYING	1 0.05	REPETITION/COMPROMISE	4 0.21
REQUEST/INTERPRETATION	2 0.11	REJECT/CONSENSUS A	2 0.11	REPETITION/CONSENSUS A	159 8.51
REQUEST/OPINION	11 0.59	REJECT/CONSENSUS U	3 0.16	REPETITION/CONSENSUS U	128 6.85
REQUEST/REPETITION	25 1.34	REJECT/CONTRIBUTION	3 0.16	REPETITION/GROUP	3 0.16
SEEK/INFERENCE	4 0.21	REJECT/GROUP	4 0.21	REPETITION/MEMORY	136 7.28
SEEK/INTERPRETATION	1 0.05	REJECT/OWN IDEAS	38 2.03	REPETITION/OWN IDEAS	30 1.61
SEEK/REPETITION	12 0.64	REJECT/OWN NEEDS	24 1.28	REPETITION/OWN NEEDS	8 0.43
SUGGEST/EXAMPLE	3 0.16	REJECT/TASK	6 0.32	REPETITION/PARTICIPATION	11 0.59
SUGGEST/INFERENCE	31 1.66	REQUEST/GROUP	11 0.59	REPETITION/TASK	44 2.36
SUGGEST/INTERPRETATION	19 1.02	REOUEST/OWN NEEDS	21 1.12		
SUGGEST/OPINION	100 5.35	REQUEST/TASK	131 7.01		
SUGGEST/REPETITION	69 3.69	SEEK/CONSENSUS A	23 1.23		
SUPPORT/EXAMPLE	8 0.43	SEEK/CONSENSUS U	22 1.18		
SUPPORT/FACT	3 0.16	SEEK/TASK	3 0.16		
SUPPORT/INFERENCE	1 0.05	SUGGEST/AMPLIFYING	21 1.12		
SUPPORT/INTERPRETATION	6 0.32	SUGGEST/COMPROMISE	10 0.54		
SUPPORT/OPINION	75 4.02	SUGGEST/CONSENSUS A	33 1.77		
SUPPORT/REFLECTION	3 0.16	SUGGEST/CONSENSUS U	44 2.36		
SUPPORT/REPETITION	126 6.75	SUGGEST/CONTRIBUTION	93 4.98		
		SUGGEST/OWN IDEAS	19 1.02		
		SUPPORT/AMPLIFYING	13 0.70		
		SUPPORT/COMPROMISE	1 0.05		
		SUPPORT/CONSENSUS A	162 8.67		
		SUPPORT/CONSENSUS U	11 0.59		
		SUPPORT/GROUP	1 0.05		
		SUPPORT/OWN IDEAS	3 0.16		
		SUPPORT/OWN NEEDS	2 0.11		

Table 2. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 1A.

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	1	1.14
CLARIFY/FACT	0	0.00	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	1	1.14	CLARIFY/CONSENSUS U	6	6.82	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	4	4.55	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	1	1.14	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	3	3.41
COMMENT/FACT	0	0.00	COMMENT/GROUP	2	2.27	FACT/CONTRIBUTION	2	2.27
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	1	1.14	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	4	4.55	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	3	3.41	DICTATE/CONSENSUS A	1	1.14	FACT/TASK	0	0.00
COMMENT/REFLECTION	4	4.55	DICTATE/MEMORY	2	2.27	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	0	0.00	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	3	3.41	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	1	1.14
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	4	4.55	INFERENCE/CONSENSUS U	2	2.27
INFORM/FACT	3	3.41	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	2	2.27
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	0	0.00
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	1	1.14	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	1	1.14
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	1	1.14	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	0	0.00	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	5	5.68
INVITE/REPETITION	0	0.00	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	1	1.14
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	0	0.00	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	2	2.27	INVITE/PARTICIPATION	4	4.55	INTERPRETATION/OWN IDEAS	0	0.00
JUSTIFY/INFERENCE	3	3.41	JUSTIFY/AMPLIFYING	9	10.23	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	2	2.27	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	1	1.14
JUSTIFY/OPINION	6	6.82	JUSTIFY/CONSENSUS A	4	4.55	OPINION/AMPLIFYING	0	0.00
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	2	2.27	OPINION/COMPROMISE	0	0.00
JUSTIFY/REPETITION	13	14.77	JUSTIFY/CONTRIBUTION	10	11.36	OPINION/CONSENSUS A	7	7.95
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	0	0.00	OPINION/CONSENSUS U	0	0.00
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	9	10.23
QUERY/INTERPRETATION	0	0.00	JUSTIFY/TASK	1	1.14	OPINION/GROUP	2	2.27
QUERY/OPINION	0	0.00	OFFER/TASK	1	1.14	OPINION/OWN IDEAS	0	0.00
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	0	0.00
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	3	3.41
RECORD/REPETITION	4	4.55	QUERY/CONSENSUS U	0	0.00	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	0	0.00	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	0	0.00	QUERY/OWN IDEAS	0	0.00	REFLECTION/GROUP	0	0.00
REJECT/OPINION	0	0.00	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	1	1.14
REJECT/REFLECTION	0	0.00	QUERY/TASK	0	0.00	REFLECTION/TASK	3	3.41
REJECT/REPETITION	0	0.00	RECORD/MEMORY	4	4.55	REPETITION/AMPLIFYING	9	10.23
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	11	12.50
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	2	2.27
REQUEST/REPETITION	2	2.27	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	1	1.14	REJECT/GROUP	0	0.00	REPETITION/MEMORY	6	6.82
SEEK/INTERPRETATION	1	1.14	REJECT/OWN IDEAS	0	0.00	REPETITION/OWN IDEAS	0	0.00
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	0	0.00	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	0	0.00
SUGGEST/INFERENCE	1	1.14	REQUEST/GROUP	0	0.00	REPETITION/TASK	2	2.27
SUGGEST/INTERPRETATION	0	0.00	REQUEST/OWN NEEDS	1	1.14			
SUGGEST/OPINION	3	3.41	REQUEST/TASK	6	6.82			
SUGGEST/REPETITION	1	1.14	SEEK/CONSENSUS A	3	3.41			
SUPPORT/EXAMPLE	1	1.14	SEEK/CONSENSUS U	1	1.14			
SUPPORT/FACT	0	0.00	SEEK/TASK	1	1.14			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	0	0.00			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	0	0.00			
SUPPORT/OPINION	9	10.23	SUGGEST/CONSENSUS A	1	1.14			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	0	0.00			
SUPPORT/REPETITION	5	5.68	SUGGEST/CONTRIBUTION	4	4.55			
			SUGGEST/OWN IDEAS	0	0.00			
			SUPPORT/AMPLIFYING	0	0.00			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	13	14.77			
			SUPPORT/CONSENSUS U	0	0.00			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			
			SUPPORT/TASK	2	2.27			

Table 3. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 1B

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	1	0.92	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	0	0.00	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	1	0.92	CLARIFY/CONSENSUS U	3	2.75	EXAMPLE/TASK	1	0.92
CLARIFY/INTERPRETATION	1	0.92	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	1	0.92	CLARIFY/TASK	1	0.92	FACT/CONSENSUS U	2	1.83
COMMENT/FACT	0	0.00	COMMENT/GROUP	2	1.83	FACT/CONTRIBUTION	6	5.50
COMMENT/INFERENCE	1	0.92	COMMENT/OWN NEEDS	1	0.92	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	1	0.92	COMMENT/TASK	13	11.93	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	5	4.59	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	0	0.00
COMMENT/REFLECTION	4	3.67	DICTATE/MEMORY	1	0.92	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	5	4.59	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	1	0.92	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	0	0.00
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	3	2.75	INFERENCE/CONSENSUS U	2	1.83
INFORM/FACT	3	2.75	INFORM/CONTRIBUTION	1	0.92	INFERENCE/CONTRIBUTION	0	0.00
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	1	0.92
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	1	0.92
INFORM/REPETITION	1	0.92	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	2	1.83	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	0	0.00	INQUIRE/GROUP	1	0.92	INTERPRETATION/CONSENSUS U	2	1.83
INVITE/REPETITION	0	0.00	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	2	1.83
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	2	1.83	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	5	4.59	INVITE/PARTICIPATION	3	2.75	INTERPRETATION/OWN IDEAS	1	0.92
JUSTIFY/INFERENCE	0	0.00	JUSTIFY/AMPLIFYING	1	0.92	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	3	2.75	JUSTIFY/COMPROMISE	1	0.92	INTERPRETATION/TASK	1	0.92
JUSTIFY/OPINION	4	3.67	JUSTIFY/CONSENSUS A	2	1.83	OPINION/AMPLIFYING	0	0.00
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	1	0.92	OPINION/COMPROMISE	4	3.67
JUSTIFY/REPETITION	3	2.75	JUSTIFY/CONTRIBUTION	10	9.17	OPINION/CONSENSUS A	2	1.83
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	0	0.00	OPINION/CONSENSUS U	1	0.92
QUERY/INFERENCE	1	0.92	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	5	4.59
QUERY/INTERPRETATION	0	0.00	JUSTIFY/TASK	0	0.00	OPINION/GROUP	1	0.92
QUERY/OPINION	0	0.00	OFFER/TASK	1	0.92	OPINION/OWN IDEAS	0	0.00
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	1	0.92
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	5	4.59
RECORD/REPETITION	5	4.59	QUERY/CONSENSUS U	0	0.00	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	0	0.00	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	1	0.92	QUERY/OWN IDEAS	1	0.92	REFLECTION/GROUP	1	0.92
REJECT/OPINION	1	0.92	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	0	0.00	QUERY/TASK	1	0.92	REFLECTION/TASK	3	2.75
REJECT/REPETITION	3	2.75	RECORD/MEMORY	5	4.59	REPETITION/AMPLIFYING	5	4.59
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	1	0.92
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	11	10.09
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	3	2.75
REQUEST/REPETITION	3	2.75	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	1	0.92	REJECT/GROUP	0	0.00	REPETITION/MEMORY	6	5.50
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	4	3.67	REPETITION/OWN IDEAS	4	3.67
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	1	0.92	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	0	0.00
SUGGEST/INFERENCE	0	0.00	REQUEST/GROUP	3	2.75	REPETITION/TASK	7	6.42
SUGGEST/INTERPRETATION	0	0.00	REOUEST/OWN NEEDS	3	2.75			
SUGGEST/OPINION	7	6.42	REQUEST/TASK	10	9.17			
SUGGEST/REPETITION	10	9.17	SEEK/CONSENSUS A	1	0.92			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	4	3.67			
SUPPORT/FACT	0	0.00	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	3	2.75			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	4	3.67			
SUPPORT/OPINION	2	1.83	SUGGEST/CONSENSUS A	6	5.50			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	1	0.92			
SUPPORT/REPETITION	7	6.42	SUGGEST/CONTRIBUTION	2	1.83			
			SUGGEST/OWN IDEAS	1	0.92			
			SUPPORT/AMPLIFYING	1	0.92			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	5	4.59			
			SUPPORT/CONSENSUS U	1	0.92			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

Table 4. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 2A.

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	1	0.43	EXAMPLE/CONSENSUS A	1	0.43
CLARIFY/FACT	0	0.00	CLARIFY/CONSENSUS A	1	0.43	EXAMPLE/CONSENSUS U	1	0.43
CLARIFY/INFERENCE	2	0.86	CLARIFY/CONSENSUS U	15	6.47	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	3	1.29	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	1	0.43
CLARIFY/REPETITION	12	5.17	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	13	5.60
COMMENT/FACT	7	3.02	COMMENT/GROUP	5	2.16	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	2	0.86	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	31	13.36	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	18	7.76	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	7	3.02
COMMENT/REFLECTION	12	5.17	DICTATE/MEMORY	8	3.45	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	1	0.43	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	8	3.45	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	1	0.43
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	16	6.90	INFERENCE/CONSENSUS U	4	1.72
INFORM/FACT	12	5.17	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	7	3.02
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	1	0.43
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	4	1.72	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	1	0.43
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	12	5.17	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	7	3.02	INQUIRE/GROUP	2	0.86	INTERPRETATION/CONSENSUS U	4	1.72
INVITE/REPETITION	0	0.00	INQUIRE/OWN NEEDS	1	0.43	INTERPRETATION/CONTRIBUTIO	0	0.00
JUSTIFY/EXAMPLE	1	0.43	INQUIRE/TASK	5	2.16	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	0	0.00	INVITE/PARTICIPATION	2	0.86	INTERPRETATION/OWN IDEAS	0	0.00
JUSTIFY/INFERENCE	2	0.86	JUSTIFY/AMPLIFYING	0	0.00	INTERPRETATION/OWN NEEDS	1	0.43
JUSTIFY/INTERPRETATION	1	0.43	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	1	0.43
JUSTIFY/OPINION	1	0.43	JUSTIFY/CONSENSUS A	0	0.00	OPINION/AMPLIFYING	0	0.00
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	4	1.72	OPINION/COMPROMISE	1	0.43
JUSTIFY/REPETITION	3	1.29	JUSTIFY/CONTRIBUTION	1	0.43	OPINION/CONSENSUS A	9	3.88
QUERY/FACT	1	0.43	JUSTIFY/OWN IDEAS	1	0.43	OPINION/CONSENSUS U	7	3.02
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	3	1.29
QUERY/INTERPRETATION	0	0.00	JUSTIFY/TASK	2	0.86	OPINION/GROUP	4	1.72
QUERY/OPINION	1	0.43	OFFER/TASK	3	1.29	OPINION/OWN IDEAS	5	2.16
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	2	0.86
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	18	7.76
RECORD/REPETITION	6	2.59	QUERY/CONSENSUS U	1	0.43	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	3	1.29	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	1	0.43	QUERY/OWN IDEAS	2	0.86	REFLECTION/GROUP	1	0.43
REJECT/OPINION	4	1.72	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	0	0.00	QUERY/TASK	4	1.72	REFLECTION/TASK	11	4.74
REJECT/REPETITION	2	0.86	RECORD/MEMORY	6	2.59	REPETITION/AMPLIFYING	1	0.43
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	2	0.86	REPETITION/CONSENSUS A	25	10.78
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	28	12.07
REQUEST/REPETITION	3	1.29	REJECT/CONTRIBUTION	1	0.43	REPETITION/GROUP	1	0.43
SEEK/INFERENCE	0	0.00	REJECT/GROUP	1	0.43	REPETITION/MEMORY	14	6.03
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	5	2.16	REPETITION/OWN IDEAS	2	0.86
SEEK/REPETITION	2	0.86	REJECT/OWN NEEDS	1	0.43	REPETITION/OWN NEEDS	3	1.29
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	0	0.00
SUGGEST/INFERENCE	7	3.02	REQUEST/GROUP	0	0.00	REPETITION/TASK	7	3.02
SUGGEST/INTERPRETATION	1	0.43	REQUEST/OWN NEEDS	2	0.86			
SUGGEST/OPINION	10	4.31	REQUEST/TASK	22	9.48			
SUGGEST/REPETITION	7	3.02	SEEK/CONSENSUS A	2	0.86			
SUPPORT/EXAMPLE	1	0.43	SEEK/CONSENSUS U	3	1.29			
SUPPORT/FACT	1	0.43	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	0	0.00			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	1	0.43			
SUPPORT/OPINION	15	6.47	SUGGEST/CONSENSUS A	3	1.29			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	12	5.17			
SUPPORT/REPETITION	26	11.21	SUGGEST/CONTRIBUTION	8	3.45			
			SUGGEST/OWN IDEAS	1	0.43			
			SUPPORT/AMPLIFYING	0	0.00			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	30	12.93			
			SUPPORT/CONSENSUS U	2	0.86			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	1	0.43			

Table 5. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 2B

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	3	1.72
CLARIFY/FACT	1	0.57	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	5	2.87	CLARIFY/CONSENSUS U	20	11.49	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	8	4.60	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	3	1.72	CLARIFY/OWN IDEAS	1	0.57	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	4	2.30	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	7	4.02
COMMENT/FACT	2	1.15	COMMENT/GROUP	3	1.72	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	0	0.00	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	5	2.87	FACT/OWN IDEAS	2	1.15
COMMENT/OPINION	1	0.57	DICTATE/CONSENSUS A	3	1.72	FACT/TASK	2	1.15
COMMENT/REFLECTION	3	1.72	DICTATE/MEMORY	8	4.60	INFERENCE/AMPLIFYING	1	0.57
COMMENT/REPETITION	2	1.15	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	11	6.32	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	0	0.00
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	6	3.45	INFERENCE/CONSENSUS U	5	2.87
INFORM/FACT	5	2.87	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	11	6.32
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	1	0.57
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	1	0.57	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	1	0.57
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	1	0.57	INQUIRE/CONSENSUS U	8	4.60	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	0	0.00	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	11	6.32
INVITE/REPETITION	1	0.57	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	1	0.57
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	4	2.30	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	3	1.72	INVITE/PARTICIPATION	12	6.90	INTERPRETATION/OWN IDEAS	1	0.57
JUSTIFY/INFERENCE	3	1.72	JUSTIFY/AMPLIFYING	3	1.72	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	0	0.00	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	0	0.00
JUSTIFY/OPINION	1	0.57	JUSTIFY/CONSENSUS A	1	0.57	OPINION/AMPLIFYING	1	0.57
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	3	1.72	OPINION/COMPROMISE	0	0.00
JUSTIFY/REPETITION	4	2.30	JUSTIFY/CONTRIBUTION	1	0.57	OPINION/CONSENSUS A	6	3.45
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	2	1.15	OPINION/CONSENSUS U	4	2.30
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	9	5.17
QUERY/INTERPRETATION	0	0.00	JUSTIFY/TASK	1	0.57	OPINION/GROUP	0	0.00
QUERY/OPINION	0	0.00	OFFER/TASK	3	1.72	OPINION/OWN IDEAS	2	1.15
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	1	0.57
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	5	2.87
RECORD/REPETITION	10	5.75	QUERY/CONSENSUS U	0	0.00	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	1	0.57	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	2	1.15	QUERY/OWN IDEAS	0	0.00	REFLECTION/GROUP	2	1.15
REJECT/OPINION	2	1.15	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	0	0.00	QUERY/TASK	0	0.00	REFLECTION/TASK	2	1.15
REJECT/REPETITION	0	0.00	RECORD/MEMORY	10	5.75	REPETITION/AMPLIFYING	6	3.45
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	16	9.20
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	1	0.57	REPETITION/CONSENSUS U	8	4.60
REQUEST/REPETITION	0	0.00	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	1	0.57
SEEK/INFERENCE	0	0.00	REJECT/GROUP	0	0.00	REPETITION/MEMORY	18	10.34
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	3	1.72	REPETITION/OWN IDEAS	2	1.15
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	1	0.57	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	1	0.57
SUGGEST/INFERENCE	10	5.75	REQUEST/GROUP	1	0.57	REPETITION/TASK	1	0.57
SUGGEST/INTERPRETATION	2	1.15	REOUEST/OWN NEEDS	0	0.00			
SUGGEST/OPINION	11	6.32	REQUEST/TASK	9	5.17			
SUGGEST/REPETITION	7	4.02	SEEK/CONSENSUS A	2	1.15			
SUPPORT/EXAMPLE	3	1.72	SEEK/CONSENSUS U	1	0.57			
SUPPORT/FACT	0	0.00	SEEK/TASK	2	1.15			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	4	2.30			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	0	0.00			
SUPPORT/OPINION	10	5.75	SUGGEST/CONSENSUS A	2	1.15			
SUPPORT/REFLECTION	1	0.57	SUGGEST/CONSENSUS U	3	1.72			
SUPPORT/REPETITION	13	7.47	SUGGEST/CONTRIBUTION	20	11.49			
			SUGGEST/OWN IDEAS	1	0.57			
			SUPPORT/AMPLIFYING	1	0.57			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	19	10.92			
			SUPPORT/CONSENSUS U	1	0.57			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	1	0.57			
			SUPPORT/OWN NEEDS	0	0.00			

Table 6. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 3A

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	1	0.85	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	3	2.54	CLARIFY/CONSENSUS U	6	5.08	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	0	0.00	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	1	0.85	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	1	0.85
CLARIFY/REPETITION	1	0.85	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	4	3.39
COMMENT/FACT	0	0.00	COMMENT/GROUP	1	0.85	FACT/CONTRIBUTION	7	5.93
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	0	0.00	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	10	8.47	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	5	4.24	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	0	0.00
COMMENT/REFLECTION	3	2.54	DICTATE/MEMORY	0	0.00	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	3	2.54	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	0	0.00	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	2	1.69
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	2	1.69	INFERENCE/CONSENSUS U	3	2.54
INFORM/FACT	3	2.54	INFORM/CONTRIBUTION	1	0.85	INFERENCE/CONTRIBUTION	4	3.39
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	1	0.85
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	0	0.00	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	1	0.85	INQUIRE/CONSENSUS U	4	3.39	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	0	0.00	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	1	0.85
INVITE/REPETITION	3	2.54	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	5	4.24
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	1	0.85	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	8	6.78	INVITE/PARTICIPATION	14	11.86	INTERPRETATION/OWN IDEAS	1	0.85
JUSTIFY/INFERENCE	4	3.39	JUSTIFY/AMPLIFYING	0	0.00	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	5	4.24	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	1	0.85
JUSTIFY/OPINION	4	3.39	JUSTIFY/CONSENSUS A	5	4.24	OPINION/AMPLIFYING	1	0.85
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	2	1.69	OPINION/COMPROMISE	1	0.85
JUSTIFY/REPETITION	4	3.39	JUSTIFY/CONTRIBUTION	17	14.41	OPINION/CONSENSUS A	4	3.39
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	1	0.85	OPINION/CONSENSUS U	3	2.54
QUERY/INFERENCE	1	0.85	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	9	7.63
QUERY/INTERPRETATION	1	0.85	JUSTIFY/TASK	0	0.00	OPINION/GROUP	1	0.85
QUERY/OPINION	2	1.69	OFFER/TASK	0	0.00	OPINION/OWN IDEAS	3	2.54
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	1	0.85
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	7	5.93
RECORD/REPETITION	0	0.00	QUERY/CONSENSUS U	2	1.69	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	0	0.00	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	1	0.85	QUERY/OWN IDEAS	2	1.69	REFLECTION/GROUP	0	0.00
REJECT/OPINION	3	2.54	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	0	0.00	QUERY/TASK	0	0.00	REFLECTION/TASK	3	2.54
REJECT/REPETITION	0	0.00	RECORD/MEMORY	0	0.00	REPETITION/AMPLIFYING	4	3.39
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	21	17.80
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	1	0.85
REQUEST/REPETITION	1	0.85	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	2	1.69	REJECT/GROUP	0	0.00	REPETITION/MEMORY	0	0.00
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	3	2.54	REPETITION/OWN IDEAS	2	1.69
SEEK/REPETITION	2	1.69	REJECT/OWN NEEDS	1	0.85	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	3	2.54
SUGGEST/INFERENCE	0	0.00	REQUEST/GROUP	0	0.00	REPETITION/TASK	5	4.24
SUGGEST/INTERPRETATION	0	0.00	REOUEST/OWN NEEDS	1	0.85			
SUGGEST/OPINION	10	8.47	REQUEST/TASK	1	0.85			
SUGGEST/REPETITION	9	7.63	SEEK/CONSENSUS A	5	4.24			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	2	1.69			
SUPPORT/FACT	0	0.00	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	2	1.69			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	1	0.85			
SUPPORT/OPINION	5	4.24	SUGGEST/CONSENSUS A	8	6.78			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	0	0.00			
SUPPORT/REPETITION	13	11.02	SUGGEST/CONTRIBUTION	7	5.93			
			SUGGEST/OWN IDEAS	1	0.85			
			SUPPORT/AMPLIFYING	3	2.54			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	11	9.32			
			SUPPORT/CONSENSUS U	0	0.00			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

Table 7. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 3B

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	0	0.00	CLARIFY/CONSENSUS A	1	0.71	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	4	2.86	CLARIFY/CONSENSUS U	6	4.29	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	4	2.86	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	1	0.71
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	2	1.43	FACT/CONSENSUS A	1	0.71
CLARIFY/REPETITION	1	0.71	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	11	7.86
COMMENT/FACT	0	0.00	COMMENT/GROUP	1	0.71	FACT/CONTRIBUTION	2	1.43
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	0	0.00	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	7	5.00	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	2	1.43	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	0	0.00
COMMENT/REFLECTION	6	4.29	DICTATE/MEMORY	0	0.00	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	0	0.00	INFORM/AMPLIFYING	1	0.71	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	0	0.00	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	2	1.43
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	8	5.71	INFERENCE/CONSENSUS U	3	2.14
INFORM/FACT	9	6.43	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	1	0.71
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	2	1.43
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	0	0.00	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	1	0.71	INTERPRETATION/AMPLIFYING	2	1.43
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	3	2.14	INTERPRETATION/CONSENSUS A	2	1.43
INQUIRE/REPETITION	0	0.00	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	5	3.57
INVITE/REPETITION	0	0.00	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	2	1.43
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	0	0.00	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	3	2.14	INVITE/PARTICIPATION	12	8.57	INTERPRETATION/OWN IDEAS	8	5.71
JUSTIFY/INFERENCE	3	2.14	JUSTIFY/AMPLIFYING	2	1.43	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	7	5.00	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	0	0.00
JUSTIFY/OPINION	10	7.14	JUSTIFY/CONSENSUS A	4	2.86	OPINION/AMPLIFYING	3	2.14
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	3	2.14	OPINION/COMPROMISE	1	0.71
JUSTIFY/REPETITION	6	4.29	JUSTIFY/CONTRIBUTION	11	7.86	OPINION/CONSENSUS A	8	5.71
QUERY/FACT	2	1.43	JUSTIFY/OWN IDEAS	9	6.43	OPINION/CONSENSUS U	1	0.71
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	17	12.14
QUERY/INTERPRETATION	2	1.43	JUSTIFY/TASK	0	0.00	OPINION/GROUP	0	0.00
QUERY/OPINION	4	2.86	OFFER/TASK	0	0.00	OPINION/OWN IDEAS	7	5.00
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	2	1.43	OPINION/OWN NEEDS	2	1.43
QUERY/REPETITION	2	1.43	QUERY/CONSENSUS A	2	1.43	OPINION/TASK	2	1.43
RECORD/REPETITION	0	0.00	QUERY/CONSENSUS U	2	1.43	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	0	0.00	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	0	0.00	QUERY/OWN IDEAS	4	2.86	REFLECTION/GROUP	1	0.71
REJECT/OPINION	6	4.29	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	0	0.00	QUERY/TASK	0	0.00	REFLECTION/TASK	5	3.57
REJECT/REPETITION	3	2.14	RECORD/MEMORY	0	0.00	REPETITION/AMPLIFYING	4	2.86
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	1	0.71	REPETITION/COMPROMISE	2	1.43
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	10	7.14
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	1	0.71	REPETITION/CONSENSUS U	2	1.43
REQUEST/REPETITION	3	2.14	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	0	0.00	REJECT/GROUP	0	0.00	REPETITION/MEMORY	0	0.00
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	5	3.57	REPETITION/OWN IDEAS	7	5.00
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	2	1.43	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	0	0.00	REPETITION/PARTICIPATION	0	0.00
SUGGEST/INFERENCE	0	0.00	REQUEST/GROUP	1	0.71	REPETITION/TASK	3	2.14
SUGGEST/INTERPRETATION	4	2.86	REOUEST/OWN NEEDS	0	0.00			
SUGGEST/OPINION	16	11.43	REQUEST/TASK	8	5.71			
SUGGEST/REPETITION	4	2.86	SEEK/CONSENSUS A	1	0.71			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	0	0.00			
SUPPORT/FACT	1	0.71	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	1	0.71	SUGGEST/AMPLIFYING	4	2.86			
SUPPORT/INTERPRETATION	2	1.43	SUGGEST/COMPROMISE	2	1.43			
SUPPORT/OPINION	3	2.14	SUGGEST/CONSENSUS A	1	0.71			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	2	1.43			
SUPPORT/REPETITION	9	6.43	SUGGEST/CONTRIBUTION	11	7.86			
			SUGGEST/OWN IDEAS	4	2.86			
			SUPPORT/AMPLIFYING	0	0.00			
			SUPPORT/COMPROMISE	1	0.71			
			SUPPORT/CONSENSUS A	15	10.71			
			SUPPORT/CONSENSUS U	0	0.00			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

Table 8. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 4A

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	1	0.56	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	3	1.69
CLARIFY/FACT	0	0.00	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	4	2.25
CLARIFY/INFERENCE	1	0.56	CLARIFY/CONSENSUS U	14	7.87	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	7	3.93	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	1	0.56	CLARIFY/OWN IDEAS	3	1.69	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	8	4.49	CLARIFY/TASK	1	0.56	FACT/CONSENSUS U	3	1.69
COMMENT/FACT	1	0.56	COMMENT/GROUP	5	2.81	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	2	1.12	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	2	1.12	COMMENT/TASK	9	5.06	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	4	2.25	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	2	1.12
COMMENT/REFLECTION	9	5.06	DICTATE/MEMORY	7	3.93	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	0	0.00	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	7	3.93	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	0	0.00
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	3	1.69	INFERENCE/CONSENSUS U	4	2.25
INFORM/FACT	4	2.25	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	2	1.12
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	3	1.69
INFORM/REFLECTION	0	0.00	INFORM/TASK	1	0.56	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	0	0.00	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	1	0.56	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	11	6.18	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	1	0.56	INQUIRE/GROUP	1	0.56	INTERPRETATION/CONSENSUS U	12	6.74
INVITE/REPETITION	1	0.56	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	3	1.69
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	6	3.37	INTERPRETATION/GROUP	1	0.56
JUSTIFY/FACT	0	0.00	INVITE/PARTICIPATION	5	2.81	INTERPRETATION/OWN IDEAS	1	0.56
JUSTIFY/INFERENCE	5	2.81	JUSTIFY/AMPLIFYING	2	1.12	INTERPRETATION/OWN NEEDS	1	0.56
JUSTIFY/INTERPRETATION	7	3.93	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	1	0.56
JUSTIFY/OPINION	7	3.93	JUSTIFY/CONSENSUS A	0	0.00	OPINION/AMPLIFYING	0	0.00
JUSTIFY/REFLECTION	1	0.56	JUSTIFY/CONSENSUS U	5	2.81	OPINION/COMPROMISE	0	0.00
JUSTIFY/REPETITION	4	2.25	JUSTIFY/CONTRIBUTION	10	5.62	OPINION/CONSENSUS A	7	3.93
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	4	2.25	OPINION/CONSENSUS U	3	1.69
QUERY/INFERENCE	1	0.56	JUSTIFY/OWN NEEDS	3	1.69	OPINION/CONTRIBUTION	7	3.93
QUERY/INTERPRETATION	1	0.56	JUSTIFY/TASK	0	0.00	OPINION/GROUP	0	0.00
QUERY/OPINION	0	0.00	OFFER/TASK	0	0.00	OPINION/OWN IDEAS	3	1.69
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	4	2.25
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	7	3.93
RECORD/REPETITION	11	6.18	QUERY/CONSENSUS U	2	1.12	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	0	0.00	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	0	0.00	QUERY/OWN IDEAS	0	0.00	REFLECTION/GROUP	4	2.25
REJECT/OPINION	5	2.81	QUERY/OWN NEEDS	1	0.56	REFLECTION/OWN NEEDS	3	1.69
REJECT/REFLECTION	0	0.00	QUERY/TASK	1	0.56	REFLECTION/TASK	3	1.69
REJECT/REPETITION	2	1.12	RECORD/MEMORY	11	6.18	REPETITION/AMPLIFYING	4	2.25
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	18	10.11
REQUEST/OPINION	2	1.12	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	8	4.49
REQUEST/REPETITION	2	1.12	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	0	0.00	REJECT/GROUP	0	0.00	REPETITION/MEMORY	18	10.11
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	3	1.69	REPETITION/OWN IDEAS	4	2.25
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	3	1.69	REPETITION/OWN NEEDS	1	0.56
SUGGEST/EXAMPLE	3	1.69	REJECT/TASK	1	0.56	REPETITION/PARTICIPATION	1	0.56
SUGGEST/INFERENCE	1	0.56	REQUEST/GROUP	1	0.56	REPETITION/TASK	3	1.69
SUGGEST/INTERPRETATION	2	1.12	REOUEST/OWN NEEDS	3	1.69			
SUGGEST/OPINION	4	2.25	REQUEST/TASK	13	7.30			
SUGGEST/REPETITION	3	1.69	SEEK/CONSENSUS A	1	0.56			
SUPPORT/EXAMPLE	3	1.69	SEEK/CONSENSUS U	1	0.56			
SUPPORT/FACT	0	0.00	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	1	0.56			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	0	0.00			
SUPPORT/OPINION	8	4.49	SUGGEST/CONSENSUS A	2	1.12			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	7	3.93			
SUPPORT/REPETITION	18	10.11	SUGGEST/CONTRIBUTION	2	1.12			
			SUGGEST/OWN IDEAS	1	0.56			
			SUPPORT/AMPLIFYING	1	0.56			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	26	14.61			
			SUPPORT/CONSENSUS U	1	0.56			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

Table 9. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 4B

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	6	1.81	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	1	0.30	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	7	2.11
CLARIFY/INFERENCE	13	3.92	CLARIFY/CONSENSUS U	33	9.94	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	12	3.61	CLARIFY/CONTRIBUTION	1	0.30	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	2	0.60	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	20	6.02
COMMENT/FACT	5	1.51	COMMENT/GROUP	3	0.90	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	1	0.30	FACT/MEMORY	19	5.72
COMMENT/INTERPRETATION	3	0.90	COMMENT/TASK	24	7.23	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	7	2.11	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	7	2.11
COMMENT/REFLECTION	13	3.92	DICTATE/MEMORY	7	2.11	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	0	0.00	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	1	0.30
DICTATE/REPETITION	6	1.81	INFORM/CONSENSUS A	2	0.60	INFERENCE/CONSENSUS A	1	0.30
INFORM/EXAMPLE	1	0.30	INFORM/CONSENSUS U	31	9.34	INFERENCE/CONSENSUS U	20	6.02
INFORM/FACT	39	11.75	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	4	1.20
INFORM/INFERENCE	5	1.51	INFORM/MEMORY	19	5.72	INFERENCE/OWN IDEAS	0	0.00
INFORM/REFLECTION	3	0.90	INFORM/TASK	1	0.30	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	5	1.51	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	2	0.60	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	13	3.92	INTERPRETATION/CONSENSUS A	2	0.60
INQUIRE/REPETITION	1	0.30	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	15	4.52
INVITE/REPETITION	1	0.30	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	3	0.90
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	5	1.51	INTERPRETATION/GROUP	0	0.00
JUSTIFY/FACT	1	0.30	INVITE/PARTICIPATION	23	6.93	INTERPRETATION/OWN IDEAS	1	0.30
JUSTIFY/INFERENCE	2	0.60	JUSTIFY/AMPLIFYING	1	0.30	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	0	0.00	JUSTIFY/COMPROMISE	1	0.30	INTERPRETATION/TASK	6	1.81
JUSTIFY/OPINION	8	2.41	JUSTIFY/CONSENSUS A	6	1.81	OPINION/AMPLIFYING	2	0.60
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	3	0.90	OPINION/COMPROMISE	1	0.30
JUSTIFY/REPETITION	7	2.11	JUSTIFY/CONTRIBUTION	5	1.51	OPINION/CONSENSUS A	9	2.71
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	0	0.00	OPINION/CONSENSUS U	1	0.30
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	19	5.72
QUERY/INTERPRETATION	0	0.00	JUSTIFY/TASK	2	0.60	OPINION/GROUP	3	0.90
QUERY/OPINION	1	0.30	OFFER/TASK	5	1.51	OPINION/OWN IDEAS	2	0.60
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	5	1.51
QUERY/REPETITION	1	0.30	QUERY/CONSENSUS A	2	0.60	OPINION/TASK	13	3.92
RECORD/REPETITION	30	9.04	QUERY/CONSENSUS U	1	0.30	REFLECTION/CONSENSUS A	0	0.00
REJECT/INFERENCE	1	0.30	QUERY/GROUP	0	0.00	REFLECTION/CONSENSUS U	3	0.90
REJECT/INTERPRETATION	2	0.60	QUERY/OWN IDEAS	0	0.00	REFLECTION/GROUP	3	0.90
REJECT/OPINION	8	2.41	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	0	0.00
REJECT/REFLECTION	1	0.30	QUERY/TASK	0	0.00	REFLECTION/TASK	11	3.31
REJECT/REPETITION	1	0.30	RECORD/MEMORY	30	9.04	REPETITION/AMPLIFYING	6	1.81
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	1	0.30
REQUEST/INTERPRETATION	2	0.60	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	27	8.13
REQUEST/OPINION	7	2.11	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	9	3.39
REQUEST/REPETITION	6	1.81	REJECT/CONTRIBUTION	1	0.30	REPETITION/GROUP	1	0.30
SEEK/INFERENCE	0	0.00	REJECT/GROUP	3	0.90	REPETITION/MEMORY	36	10.84
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	3	0.90	REPETITION/OWN IDEAS	0	0.00
SEEK/REPETITION	0	0.00	REJECT/OWN NEEDS	4	1.20	REPETITION/OWN NEEDS	2	0.60
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	2	0.60	REPETITION/PARTICIPATION	1	0.30
SUGGEST/INFERENCE	3	0.90	REQUEST/GROUP	2	0.60	REPETITION/TASK	6	1.81
SUGGEST/INTERPRETATION	6	1.81	REOUEST/OWN NEEDS	2	0.60			
SUGGEST/OPINION	16	4.82	REQUEST/TASK	26	7.83			
SUGGEST/REPETITION	15	4.52	SEEK/CONSENSUS A	1	0.30			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	0	0.00			
SUPPORT/FACT	0	0.00	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	4	1.20			
SUPPORT/INTERPRETATION	2	0.60	SUGGEST/COMPROMISE	2	0.60			
SUPPORT/OPINION	8	2.41	SUGGEST/CONSENSUS A	8	2.41			
SUPPORT/REFLECTION	0	0.00	SUGGEST/CONSENSUS U	7	2.11			
SUPPORT/REPETITION	16	4.82	SUGGEST/CONTRIBUTION	19	5.72			
			SUGGEST/OWN IDEAS	0	0.00			
			SUPPORT/AMPLIFYING	3	0.90			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	21	6.33			
			SUPPORT/CONSENSUS U	0	0.00			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

Table 10. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 5A

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	2	0.87	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	1	0.44	CLARIFY/CONSENSUS A	0	0.00	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	5	2.18	CLARIFY/CONSENSUS U	17	7.42	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	2	0.87	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	3	1.31	CLARIFY/OWN IDEAS	3	1.31	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	11	4.80	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	8	3.49
COMMENT/FACT	4	1.75	COMMENT/GROUP	3	1.31	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	10	4.37	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	2	0.87	COMMENT/TASK	18	7.86	FACT/OWN IDEAS	1	0.44
COMMENT/OPINION	10	4.37	DICTATE/CONSENSUS A	0	0.00	FACT/TASK	4	1.75
COMMENT/REFLECTION	14	6.11	DICTATE/MEMORY	12	5.24	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	1	0.44	INFORM/AMPLIFYING	0	0.00	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	12	5.24	INFORM/CONSENSUS A	0	0.00	INFERENCE/CONSENSUS A	0	0.00
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	10	4.37	INFERENCE/CONSENSUS U	5	2.18
INFORM/FACT	6	2.62	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	7	3.06
INFORM/INFERENCE	1	0.44	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	5	2.18
INFORM/REFLECTION	0	0.00	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	3	1.31	INQUIRE/AMPLIFYING	0	0.00	INFERENCE/TASK	1	0.44
INQUIRE/INFERENCE	0	0.00	INQUIRE/CONSENSUS A	1	0.44	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	11	4.80	INTERPRETATION/CONSENSUS A	0	0.00
INQUIRE/REPETITION	1	0.44	INQUIRE/GROUP	1	0.44	INTERPRETATION/CONSENSUS U	5	2.18
INVITE/REPETITION	0	0.00	INQUIRE/OWN NEEDS	1	0.44	INTERPRETATION/CONTRIBUTIO	1	0.44
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	5	2.18	INTERPRETATION/GROUP	1	0.44
JUSTIFY/FACT	2	0.87	INVITE/PARTICIPATION	5	2.18	INTERPRETATION/OWN IDEAS	5	2.18
JUSTIFY/INFERENCE	2	0.87	JUSTIFY/AMPLIFYING	1	0.44	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	3	1.31	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	2	0.87
JUSTIFY/OPINION	3	1.31	JUSTIFY/CONSENSUS A	0	0.00	OPINION/AMPLIFYING	1	0.44
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	5	2.18	OPINION/COMPROMISE	0	0.00
JUSTIFY/REPETITION	3	1.31	JUSTIFY/CONTRIBUTION	0	0.00	OPINION/CONSENSUS A	2	0.87
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	7	3.06	OPINION/CONSENSUS U	7	3.06
QUERY/INFERENCE	1	0.44	JUSTIFY/OWN NEEDS	0	0.00	OPINION/CONTRIBUTION	2	0.87
QUERY/INTERPRETATION	2	0.87	JUSTIFY/TASK	0	0.00	OPINION/GROUP	1	0.44
QUERY/OPINION	2	0.87	OFFER/TASK	1	0.44	OPINION/OWN IDEAS	13	5.68
QUERY/REFLECTION	1	0.44	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	15	6.55
QUERY/REPETITION	0	0.00	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	9	3.93
RECORD/REPETITION	12	5.24	QUERY/CONSENSUS U	2	0.87	REFLECTION/CONSENSUS A	1	0.44
REJECT/INFERENCE	1	0.44	QUERY/GROUP	2	0.87	REFLECTION/CONSENSUS U	0	0.00
REJECT/INTERPRETATION	3	1.31	QUERY/OWN IDEAS	2	0.87	REFLECTION/GROUP	3	1.31
REJECT/OPINION	14	6.11	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	5	2.18
REJECT/REFLECTION	0	0.00	QUERY/TASK	1	0.44	REFLECTION/TASK	7	3.06
REJECT/REPETITION	0	0.00	RECORD/MEMORY	12	5.24	REPETITION/AMPLIFYING	7	3.06
REQUEST/INFERENCE	1	0.44	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	3	1.31
REQUEST/OPINION	2	0.87	REJECT/CONSENSUS U	0	0.00	REPETITION/CONSENSUS U	16	6.99
REQUEST/REPETITION	2	0.87	REJECT/CONTRIBUTION	1	0.44	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	0	0.00	REJECT/GROUP	0	0.00	REPETITION/MEMORY	24	10.48
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	7	3.06	REPETITION/OWN IDEAS	7	3.06
SEEK/REPETITION	1	0.44	REJECT/OWN NEEDS	9	3.93	REPETITION/OWN NEEDS	0	0.00
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	1	0.44	REPETITION/PARTICIPATION	0	0.00
SUGGEST/INFERENCE	7	3.06	REQUEST/GROUP	2	0.87	REPETITION/TASK	3	1.31
SUGGEST/INTERPRETATION	2	0.87	REOUEST/OWN NEEDS	7	3.06			
SUGGEST/OPINION	9	3.93	REQUEST/TASK	25	10.92			
SUGGEST/REPETITION	7	3.06	SEEK/CONSENSUS A	1	0.44			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	2	0.87			
SUPPORT/FACT	0	0.00	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	2	0.87			
SUPPORT/INTERPRETATION	0	0.00	SUGGEST/COMPROMISE	0	0.00			
SUPPORT/OPINION	7	3.06	SUGGEST/CONSENSUS A	0	0.00			
SUPPORT/REFLECTION	1	0.44	SUGGEST/CONSENSUS U	4	1.75			
SUPPORT/REPETITION	7	3.06	SUGGEST/CONTRIBUTION	9	3.93			
			SUGGEST/OWN IDEAS	10	4.37			
			SUPPORT/AMPLIFYING	3	1.31			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	5	2.18			
			SUPPORT/CONSENSUS U	2	0.87			
			SUPPORT/GROUP	0	0.00			
			SUPPORT/OWN IDEAS	2	0.87			
			SUPPORT/OWN NEEDS	1	0.44			

Table 11. The frequency of the combinations of the different forms of: the Immediate Inter-active Function (IF) and the Cognitive-Affective Content (C) (Block A); the Immediate Inter-active Function and the Underlying Function (UF);(Block B); the Cognitive-Affective Content and the Underlying Function (Block C) for Workshop 5B.

Block A			Block B			Block C		
Forms of IF/C	n.	%	Forms of IF/UF	n.	%	Forms of C/UF	n.	%
CLARIFY/EXAMPLE	0	0.00	CLARIFY/AMPLIFYING	0	0.00	EXAMPLE/CONSENSUS A	0	0.00
CLARIFY/FACT	1	0.40	CLARIFY/CONSENSUS A	1	0.40	EXAMPLE/CONSENSUS U	0	0.00
CLARIFY/INFERENCE	5	2.00	CLARIFY/CONSENSUS U	43	17.20	EXAMPLE/TASK	0	0.00
CLARIFY/INTERPRETATION	14	5.60	CLARIFY/CONTRIBUTION	0	0.00	FACT/AMPLIFYING	0	0.00
CLARIFY/OPINION	0	0.00	CLARIFY/OWN IDEAS	0	0.00	FACT/CONSENSUS A	0	0.00
CLARIFY/REPETITION	24	9.60	CLARIFY/TASK	0	0.00	FACT/CONSENSUS U	8	3.20
COMMENT/FACT	2	0.80	COMMENT/GROUP	2	0.80	FACT/CONTRIBUTION	0	0.00
COMMENT/INFERENCE	0	0.00	COMMENT/OWN NEEDS	4	1.60	FACT/MEMORY	0	0.00
COMMENT/INTERPRETATION	0	0.00	COMMENT/TASK	18	7.20	FACT/OWN IDEAS	0	0.00
COMMENT/OPINION	9	3.60	DICTATE/CONSENSUS A	1	0.40	FACT/TASK	2	0.80
COMMENT/REFLECTION	11	4.40	DICTATE/MEMORY	7	2.80	INFERENCE/AMPLIFYING	0	0.00
COMMENT/REPETITION	2	0.80	INFORM/AMPLIFYING	1	0.40	INFERENCE/COMPROMISE	0	0.00
DICTATE/REPETITION	8	3.20	INFORM/CONSENSUS A	1	0.40	INFERENCE/CONSENSUS A	1	0.40
INFORM/EXAMPLE	0	0.00	INFORM/CONSENSUS U	18	7.20	INFERENCE/CONSENSUS U	11	4.40
INFORM/FACT	6	2.40	INFORM/CONTRIBUTION	0	0.00	INFERENCE/CONTRIBUTION	3	1.20
INFORM/INFERENCE	0	0.00	INFORM/MEMORY	0	0.00	INFERENCE/OWN IDEAS	0	0.00
INFORM/REFLECTION	2	0.80	INFORM/TASK	0	0.00	INFERENCE/OWN NEEDS	0	0.00
INFORM/REPETITION	12	4.80	INQUIRE/AMPLIFYING	1	0.40	INFERENCE/TASK	0	0.00
INQUIRE/INFERENCE	1	0.40	INQUIRE/CONSENSUS A	0	0.00	INTERPRETATION/AMPLIFYING	0	0.00
INQUIRE/INTERPRETATION	0	0.00	INQUIRE/CONSENSUS U	13	5.20	INTERPRETATION/CONSENSUS A	1	0.40
INQUIRE/REPETITION	6	2.40	INQUIRE/GROUP	0	0.00	INTERPRETATION/CONSENSUS U	18	7.20
INVITE/REPETITION	5	2.00	INQUIRE/OWN NEEDS	0	0.00	INTERPRETATION/CONTRIBUTIO	1	0.40
JUSTIFY/EXAMPLE	0	0.00	INQUIRE/TASK	5	2.00	INTERPRETATION/GROUP	1	0.40
JUSTIFY/FACT	0	0.00	INVITE/PARTICIPATION	11	4.40	INTERPRETATION/OWN IDEAS	1	0.40
JUSTIFY/INFERENCE	7	2.80	JUSTIFY/AMPLIFYING	2	0.80	INTERPRETATION/OWN NEEDS	0	0.00
JUSTIFY/INTERPRETATION	1	0.40	JUSTIFY/COMPROMISE	0	0.00	INTERPRETATION/TASK	0	0.00
JUSTIFY/OPINION	4	1.60	JUSTIFY/CONSENSUS A	1	0.40	OPINION/AMPLIFYING	1	0.40
JUSTIFY/REFLECTION	0	0.00	JUSTIFY/CONSENSUS U	9	3.60	OPINION/COMPROMISE	0	0.00
JUSTIFY/REPETITION	5	2.00	JUSTIFY/CONTRIBUTION	2	0.80	OPINION/CONSENSUS A	5	2.00
QUERY/FACT	0	0.00	JUSTIFY/OWN IDEAS	1	0.40	OPINION/CONSENSUS U	8	3.20
QUERY/INFERENCE	0	0.00	JUSTIFY/OWN NEEDS	1	0.40	OPINION/CONTRIBUTION	9	3.60
QUERY/INTERPRETATION	3	1.20	JUSTIFY/TASK	1	0.40	OPINION/GROUP	0	0.00
QUERY/OPINION	1	0.40	OFFER/TASK	1	0.40	OPINION/OWN IDEAS	6	2.40
QUERY/REFLECTION	0	0.00	QUERY/AMPLIFYING	0	0.00	OPINION/OWN NEEDS	3	1.20
QUERY/REPETITION	2	0.80	QUERY/CONSENSUS A	0	0.00	OPINION/TASK	12	4.80
RECORD/REPETITION	7	2.80	QUERY/CONSENSUS U	6	2.40	REFLECTION/CONSENSUS A	1	0.40
REJECT/INFERENCE	0	0.00	QUERY/GROUP	1	0.40	REFLECTION/CONSENSUS U	2	0.80
REJECT/INTERPRETATION	0	0.00	QUERY/OWN IDEAS	3	1.20	REFLECTION/GROUP	3	1.20
REJECT/OPINION	8	3.20	QUERY/OWN NEEDS	0	0.00	REFLECTION/OWN NEEDS	3	1.20
REJECT/REFLECTION	1	0.40	QUERY/TASK	1	0.40	REFLECTION/TASK	6	2.40
REJECT/REPETITION	1	0.40	RECORD/MEMORY	7	2.80	REPETITION/AMPLIFYING	4	1.60
REQUEST/INFERENCE	0	0.00	REJECT/AMPLIFYING	0	0.00	REPETITION/COMPROMISE	0	0.00
REQUEST/INTERPRETATION	0	0.00	REJECT/CONSENSUS A	0	0.00	REPETITION/CONSENSUS A	17	6.80
REQUEST/OPINION	0	0.00	REJECT/CONSENSUS U	1	0.40	REPETITION/CONSENSUS U	49	19.60
REQUEST/REPETITION	3	1.20	REJECT/CONTRIBUTION	0	0.00	REPETITION/GROUP	0	0.00
SEEK/INFERENCE	0	0.00	REJECT/GROUP	0	0.00	REPETITION/MEMORY	14	5.60
SEEK/INTERPRETATION	0	0.00	REJECT/OWN IDEAS	5	2.00	REPETITION/OWN IDEAS	2	0.80
SEEK/REPETITION	7	2.80	REJECT/OWN NEEDS	2	0.80	REPETITION/OWN NEEDS	2	0.80
SUGGEST/EXAMPLE	0	0.00	REJECT/TASK	2	0.80	REPETITION/PARTICIPATION	5	2.00
SUGGEST/INFERENCE	2	0.80	REQUEST/GROUP	1	0.40	REPETITION/TASK	5	2.00
SUGGEST/INTERPRETATION	2	0.80	REQUEST/OWN NEEDS	2	0.80			
SUGGEST/OPINION	14	5.60	REQUEST/TASK	11	4.40			
SUGGEST/REPETITION	4	1.60	SEEK/CONSENSUS A	6	2.40			
SUPPORT/EXAMPLE	0	0.00	SEEK/CONSENSUS U	8	3.20			
SUPPORT/FACT	1	0.40	SEEK/TASK	0	0.00			
SUPPORT/INFERENCE	0	0.00	SUGGEST/AMPLIFYING	1	0.40			
SUPPORT/INTERPRETATION	2	0.80	SUGGEST/COMPROMISE	0	0.00			
SUPPORT/OPINION	8	3.20	SUGGEST/CONSENSUS A	2	0.80			
SUPPORT/REFLECTION	1	0.40	SUGGEST/CONSENSUS U	8	3.20			
SUPPORT/REPETITION	12	4.80	SUGGEST/CONTRIBUTION	11	4.40			
			SUGGEST/OWN IDEAS	0	0.00			
			SUPPORT/AMPLIFYING	1	0.40			
			SUPPORT/COMPROMISE	0	0.00			
			SUPPORT/CONSENSUS A	17	6.80			
			SUPPORT/CONSENSUS U	4	1.60			
			SUPPORT/GROUP	1	0.40			
			SUPPORT/OWN IDEAS	0	0.00			
			SUPPORT/OWN NEEDS	0	0.00			

APPENDIX 15.**GRAPHICAL REPRESENTATION OF THE LINKS BETWEEN
OPERATIONS IN TERMS OF THEIR COGNITIVE-AFFECTIVE
CONTENT**

This appendix contains an example of a graphical representation of the links between the operations in a workshop in terms of their Cognitive-Affective Content. The example refers to Workshop 1A.

**Figure 1. Graphical representation of the links between operations in terms of their
Cognitive-Affective Content for Workshop 1A**

APPENDIX 16.
GRAPHICAL REPRESENTATIONS OF THE NUMBER OF
OPERATIONS CONTRIBUTED BY THE PARTICIPANTS, ANALYSED
IN TERMS OF: IF/C/UF

This appendix contains 10 figures. Figures 1-10 show the graphical representations for each of the 10 workshops respectively.

Figure 1. Bar Charts of the number of operations contributed by each participant of Workshop 1A, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C)

Figure 2. Bar Charts of the number of operations contributed by each participant of Workshop 1B, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 3. Bar Charts of the number of operations contributed by each participant of Workshop 2A, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 4. Bar Charts of the number of operations contributed by each participant of Workshop 2B, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 5. Bar Charts of the number of operations contributed by each participant of Workshop 3A, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 6. Bar Charts of the number of operations contributed by each participant of Workshop 3B, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 7. Bar Charts of the number of operations contributed by each participant of Workshop 4A, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 8. Bar Charts of the number of operations contributed by each participant of Workshop 4B, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 9. Bar Charts of the number of operations contributed by each participant of Workshop 5A, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

Figure 10. Bar Charts of the number of operations contributed by each participant of Workshop 5B, analysed in terms of: their Immediate Inter-active Function (IF) (Chart A); their Cognitive-Affective Content (C) (Chart B); their Underlying Function (UF) (Chart C).

APPENDIX 17.**GRAPHICAL REPRESENTATIONS OF THE MAJOR CONSECUTIVE
LINKAGES BETWEEN OPERATIONS IN TERMS OF THEIR
COGNITIVE-AFFECTIVE CONTENT**

This appendix contains 10 figures. Figures 1-10 each consist of a number of diagrams, representing the major consecutive linkages for each of the 10 workshops respectively, with explanatory notes. These figures are based on interpretation of the linkage diagrams (see Appendix 14 for an example). Each diagram consists of a sequence or linked sequences of operations, analysed in terms of the participant who provided the operation and in terms of the Cognitive-Affective Content of the operation.

A single legend that applies to all 10 figures is provided below.

Figure 1. Major consecutive linkages of Workshop 1A**Notes**

- Consecutive linkage (a) refers to the choice of Option 1 as a solution to the problem.
- Consecutive linkage (b) refers to the establishment and reinforcement of the final agreement on the solution to the problem.
- Consecutive linkage (d) refers to a motivation for Option 1 based on Fact 5 contained in the problem structure.
- Consecutive linkages (c), (e), (f) and (h) refer to motivations for Option 1, based on personal background knowledge of the participants.
- Consecutive linkage (g) refers to a motivation for Option 1, based on Fact 3 contained in the problem structure.
- Consecutive linkage (i) refers to a motivation for Option 1, based on an inference of Fact 5 contained in the problem structure.

Figure 2. Major consecutive linkages of Workshop 1B**Notes**

- Consecutive linkage (a) refers to the choice of Option 1 as a solution to the problem.
- Consecutive linkage (b) refers to a motivation for Option 1, which is based on Fact 1 of the problem structure.
- Consecutive linkage (c) refers to the choice of Option 2 as a solution to the problem.
- Consecutive linkage (d) relates to a motivation for Option 2, which is based on personal background knowledge.
- Consecutive linkage (e) refers to two interrelated aspects of the problem solving task. Each of these is represented by one leg of the link.
- Consecutive linkage (f) refers to the issue of recording.

Figure 3. Major consecutive linkages of Workshop 2A**Notes**

- Consecutive linkage (a) refers to the solution to Aspect 1 of the problem and consists of various legs. These depict the different inferences made in order to solve Aspect 1. The newsprint is made use of in this process.
- Consecutive linkage (b) refers to the amendment of the solution to Aspect 1 of the problem.
- Consecutive linkages (c), (d) and (e) refer to building a common understanding of the content of the problem structure. They refer to three different aspects of the same issue.
- Consecutive linkage (f) refers to a suggestion to solve Aspect 2 of the problem. The newsprint was consulted in this linkage.

- Consecutive linkages (g) and (h) refer to task related issues. They both serve to build agreement about ending a particular part of the problem solving process and starting a new one.

Figure 4. Major consecutive linkages of Workshop 2B**Notes**

- Consecutive linkage (a) refers to Aspect 1 of the problem and consists of various legs. These represent the inferential process leading to the solution to Aspect 1. The linkages starting respectively with Operation 7.1. and Operation 6.1. represent conflicting inferences.
- Consecutive linkage (b) refers to the building of a common understanding of the information provided in the problem structure. The four different directions of the links represent four different aspects of the interpretation.
- The linkages (c), (d), (e) and (f) refer to different suggestions to solve Aspect 2 of the problem.

Figure 5. Major consecutive linkages of Workshop 3A**Notes**

- Consecutive linkage (a) refers to the choice of Option 5.
- Consecutive linkage (b) refers to a motivation for Option 5, which is based on the information provided in the problem structure.
- Consecutive linkage (c) refers to the choice of Option 1.

Figure 6. Major consecutive linkages of Workshop 3B**Notes**

- Consecutive linkages (a), (b) and(c) refer to Option 2 of the problem structure. Linkage (a) relates to the choice of Option 2 as the solution to the problem. Linkage (b) refers to a motivation in favour of Option 2, based on a fact contained in the problem structure. Linkage (c) refers to a motivation against the choice of Option 2, based on an interpretation of the data contained in the problem structure .
- Consecutive linkage (d) refers to Option 5 of the problem structure. It refers to the choice of Option 5 as the problem solution and a motivation in favour of Option 5, which is based on facts contained in the problem structure.
- Consecutive linkage (e) represents a motivation against Option 5. It is based on an opinion not contained in the problem structure.
- Consecutive linkage (f) refers to a motivation for Option 6 as a solution to the problem.
- Consecutive linkage (g) refers to the compromise reached in the group.

Figure 7. Major consecutive linkages of Workshop 4A**Notes**

- Consecutive linkages (a) refers to the choice of Option 4 as a solution to the problem.
- Consecutive linkage (b) refers to different aspects of Motivations 1 and 3 for Option 4. It consists of several legs, which represent different interpretations of the problem structure.
- Consecutive linkage (c) refers to Motivation 2 for Option 4. It consists of opinions, inferences and interpretation, some of which are incompatible.
- Consecutive linkage (d) refers to Motivation 4 for Option 4. It is based on a fact contained in the problem structure.
- Consecutive linkage (e) refers to Motivation 5 for Option 4. It represents two incompatible interpretations of Sizwe's opinion.
- Linkage (f) refers to the building of a common understanding of the problem and the way to deal with it.

Figure 8. Major consecutive linkages of Workshop 4B**Notes**

- Consecutive linkage (a) refers to the method used in the problem solving process.
- Consecutive linkage (b) refers to an explanation of the problem structure.
- Consecutive linkage (c) refers to the results of the process based on the method explained in linkage (a).
- Consecutive linkages (d), (e), (f), (g) and (h) refer to motivations made in favour of Option 1 and to the building of a common understanding of those.
- Consecutive linkage (i) refers to building a common understanding of Option 4.
- Consecutive linkage (j) refers to the development of a compromise to the problem solution .

Figure 9. Major consecutive linkages of Workshop 5A**Notes**

- Consecutive linkage (a) is a complex network of different legs, which represent inferences and interpretations made in the process of solving Aspect 2 of the problem. It simultaneously introduces a suggestion to solve Aspect 1 of the problem.
- Consecutive linkage (b) refers to an explanation of the problem structure.
- Consecutive linkage (c) refers to a discussion on the format of recording.

Figure 10. Major consecutive linkages of Workshop 5B**Notes**

- Consecutive linkage (a) consists of various legs. These include repetitions and inferences of the problem structure in order to clarify the problem structure.
- Consecutive linkage (b) refers to Suggestion 1 to solve Aspect 1 of the problem.
- Consecutive linkage (c) refers to the solution to Aspect 2 of the problem. This solution is also used as a suggestion to solve Aspect 1. The various legs represent repetitions of different elements that are contained in Operation 18.1 and Operation 18.1 and which are derived from the problem structure.
- Consecutive linkage (d) represents a suggestion to solve the lack of understanding of an aspect of the problem structure.
- Consecutive linkage (e) refers to Suggestion 3 for Aspect 1 of the problem.
- Consecutive linkages (f) and (g) refer to task related issues. Linkage (f) relates to the need to find the real problem, linkage (g) refers to the explanation of Aspect 1 of the problem.

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
41.1	Sindiswa	SUPPORT	EXAMPLE	CONSENSUS A	11 ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE CHOICE OF OPTION 1
40.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
39.2	Sizwe	SUPPORT	OPINION	CONSENSUS A	
39.1	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
38.2	Thozie	SEEK		CONSENSUS A	
38.1	Thozie	CLARIFY	INFERENCE	CONSENSUS U	
37.1	Sizwe	SUGGEST	OPINION	CONTRIBUTION	
36.2	Matthew	JUSTIFY	REPETITION	CONSENSUS A	
36.1	Matthew	SUPPORT	OPINION	CONSENSUS A	
35.1	Thozie	SEEK	INFERENCE	CONSENSUS A	
34.2	Sizwe	INVITE		PARTICIPATION	
34.1	Sizwe	DICTATE	REPETITION	CONSENSUS A	
33.1	Thozie	OFFER		TASK	10 BUILDING OF A COMMON UNDERSTANDING OF WHAT AND HOW TO RECORD
32.3	Sizwe	COMMENT	OPINION	GROUP	
32.2	Sizwe	COMMENT	OPINION	TASK	
32.1	Sizwe	REQUEST		TASK	
31.2	Linda	REQUEST		TASK	
31.1	Linda	JUSTIFY	REPETITION	CONSENSUS A	9 MOTIVATIONS FOR OPTION 1 GROUP SUPPORT FOR OPTION 1
30.4	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
30.3	Sizwe	SUGGEST	OPINION	CONTRIBUTION	
30.2	Sizwe	JUSTIFY	REPETITION	CONSENSUS A	
30.1	Sizwe	RECORD	REPETITION	MEMORY	
29.1	Linda	SUPPORT	OPINION	CONSENSUS A	
28.1	Matthew	JUSTIFY	REPETITION	AMPLIFYING	
27.3	Sizwe	RECORD	REPETITION	MEMORY	
27.2	Linda	DICTATE	REPETITION	MEMORY	
27.1	Linda	REQUEST	REPETITION	TASK	
26.2	Matthew	CLARIFY	REPETITION	CONSENSUS U	
26.1	Matthew	JUSTIFY	REPETITION	CONSENSUS A	
25.2	Sizwe	RECORD	REPETITION	MEMORY	
25.1	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
24.2	Linda	INVITE		PARTICIPATION	
24.1	Linda	INFORM	REPETITION	CONSENSUS U	
23.1	Sizwe	SEEK		CONSENSUS U	
22.1	Linda	INVITE		PARTICIPATION	
21.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
20.2	Matthew	JUSTIFY	INFERENCE	CONSENSUS U	
20.1	Matthew	JUSTIFY	INFERENCE	CONTRIBUTION	
19.2	Linda	REQUEST		TASK	8 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM STRUCTURE
19.1	Linda	COMMENT	OPINION	GROUP	
18.3	Sizwe	JUSTIFY	INTERPRETATION	CONSENSUS U	
18.2	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
18.1	Sizwe	INQUIRE		CONSENSUS U	
17.3	Sizwe	RECORD	REPETITION	MEMORY	7 MOTIVATIONS FOR OPTION 1
17.2	Linda	DICTATE	REPETITION	MEMORY	
17.1	Linda	SUPPORT	REPETITION	CONSENSUS A	
16.3	Matthew	CLARIFY	INTERPRETATION	CONSENSUS U	
16.2	Matthew	JUSTIFY	INTERPRETATION	AMPLIFYING	
16.1	Matthew	JUSTIFY	REPETITION	AMPLIFYING	
15.2	Thozie	COMMENT	REFLECTION	TASK	
15.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
14.2	Linda	SEEK		CONSENSUS A	
14.1	Linda	INVITE		PARTICIPATION	
13.2	Sizwe	REQUEST		OWN NEEDS	6 BUILDING OF A COMMON UNDERSTANDING OF WHAT AND HOW TO RECORD.
13.1	Sizwe	COMMENT	REFLECTION	OWN NEEDS	
12.3	Linda	REQUEST	REPETITION	TASK	
12.2	Linda	SUPPORT	REPETITION	CONSENSUS A	
12.1	Linda	COMMENT	REFLECTION	TASK	
11.4	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	5 MOTIVATIONS FOR OPTION 1
11.3	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
11.2	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	
11.1	Sizwe	SUPPORT	OPINION	TASK	
10.2	Linda	JUSTIFY	INFERENCE	TASK	
10.1	Linda	REQUEST		TASK	
9.4	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	3 MOTIVATIONS FOR OPTION 1 GROUP SUPPORT FOR OPTION 1
9.3	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
9.2	Sizwe	INFORM	FACT	CONSENSUS U	
9.1	Sizwe	SUPPORT	OPINION	CONSENSUS A	
8.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
7.2	Matthew	JUSTIFY	FACT	CONTRIBUTION	
7.1	Matthew	JUSTIFY	OPINION	CONTRIBUTION	
6.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
5.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
4.2	Matthew	JUSTIFY	REPETITION	AMPLIFYING	
4.1	Matthew	SUGGEST	REPETITION	CONSENSUS A	
3.5	Sizwe	JUSTIFY	FACT	CONTRIBUTION	
3.4	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
3.3	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	
3.2	Sizwe	COMMENT	REFLECTION	TASK	2 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING PROCESS
3.1	Sizwe	SUPPORT	OPINION	TASK	
2.1	Funeka	SEEK	INTERPRETATION	TASK	
1.7	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	1 SUGGESTION TO CHOOSE OPTION 1 MOTIVATIONS FOR OPTION 1
1.6	Sizwe	JUSTIFY	INTERPRETATION	CONTRIBUTION	
1.5	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
1.4	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	
1.3	Sizwe	SUGGEST	OPINION	CONTRIBUTION	
1.2	Sizwe	INFORM	FACT	CONSENSUS U	
1.1	Sizwe	INFORM	FACT	CONSENSUS U	

61.3	Ayanda	RECORD	REPETITION	MEMORY	14 ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE CHOICE OF OPTION 1
61.2	Ayanda	SUGGEST	OPINION	CONSENSUS A	
61.1	Ayanda	SUGGEST	OPINION	CONSENSUS A	
60.2	Thami	COMMENT	OPINION	GROUP	
60.1	Thami	REQUEST		TASK	
59.1	Theo	REQUEST		TASK	
58.1	Ayanda	SUPPORT	REPETITION	CONSENSUS A	13 RE-STATEMENT AND ACCEPTANCE OF A COMPROMISE
57.3	Thami	CLARIFY	INFERENCE	CONSENSUS U	
57.2	Thami	JUSTIFY	INTERPRETATION	CONSENSUS U	
57.1	Thami	REJECT	INTERPRETATION	OWN IDEAS	
56.1	Ayanda	SUGGEST	REPETITION	CONSENSUS A	
55.1	Thami	INQUIRE		CONSENSUS U	
54.2	Theo	JUSTIFY	OPINION	COMPROMISE	
54.1	Theo	SUPPORT	REPETITION	CONSENSUS A	
53.6	Thami	SEEK		CONSENSUS U	
53.5	Thami	SUGGEST	REPETITION	COMPROMISE	
53.4	Thami	SUGGEST	OPINION	COMPROMISE	
53.3	Thami	SUGGEST	OPINION	COMPROMISE	
53.2	Thami	INFORM	REPETITION	CONSENSUS U	
53.1	Thami	REJECT	REPETITION	OWN IDEAS	
52.4	Theo	SEEK		CONSENSUS U	12 RE-STATEMENT OF OPTIONS 1 AND 2 MOTIVATIONS FOR OPTIONS 1 AND 2
52.3	Theo	JUSTIFY	OPINION	CONTRIBUTION	
52.2	Theo	QUERY	INFERENCE	OWN IDEAS	
52.1	Theo	SUGGEST	REPETITION	OWN IDEAS	
51.1	Thami	INVITE		PARTICIPATION	
50.3	Theodora	JUSTIFY	FACT	CONTRIBUTION	
50.2	Theodora	JUSTIFY	FACT	CONTRIBUTION	
50.1	Theodora	SUGGEST	REPETITION	CONSENSUS A	
49.1	Hilde	INVITE		PARTICIPATION	
48.1	Ayanda	REQUEST		TASK	

47.1	Hilde	INQUIRE		GROUP	11	GROUP CONFLICT OVER TWO OPPOSING VIEWS
46.1	Theo	COMMENT	INFERENCE	OWN NEEDS		
45.1	Hilde	REQUEST		GROUP	11	ELICITING OF OUTSIDE MEDIATION
44.1	Theo	REQUEST		GROUP		
43.1	Ayanda	INQUIRE		TASK	11	ELICITING OF OUTSIDE MEDIATION
42.2	Theo	COMMENT	REFLECTION	GROUP		
42.1	Theo	REJECT	REPETITION	OWN IDEAS	10	BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING PROCESS
41.1	James	REQUEST		GROUP		
40.2	Ayanda	COMMENT	OPINION	TASK		
40.1	Ayanda	SUPPORT	REPETITION	TASK		
39.1	Thami	REQUEST		OWN NEEDS		
38.2	Theo	REQUEST	REPETITION	TASK		
38.1	Theo	COMMENT	REPETITION	TASK		
37.4	Thami	SUGGEST	REPETITION	CONSENSUS A		
37.3	Thami	COMMENT	REFLECTION	TASK		
37.2	Thami	COMMENT	REPETITION	TASK		
37.1	Thami	SUPPORT	OPINION	TASK		
36.1	Sipho	COMMENT	OPINION	TASK		
35.3	Ayanda	RECORD	REPETITION	MEMORY	9	MOTIVATIONS FOR OPTION 1
35.2	James	SUGGEST	REPETITION	AMPLIFYING		
35.1	James	COMMENT	OPINION	TASK		
34.1	Thami	INQUIRE		TASK		
33.1	Theo	COMMENT	REFLECTION	TASK		
32.1	James	SUPPORT	REPETITION	CONSENSUS A		
31.1	Thami	SEEK		CONSENSUS A		
30.3	James	JUSTIFY	INTERPRETATION	CONTRIBUTION		
30.2	James	JUSTIFY	OPINION	CONTRIBUTION		
30.1	James	JUSTIFY	FACT	CONTRIBUTION		
29.7	Theo	JUSTIFY	FACT	CONTRIBUTION		
29.6	Theo	JUSTIFY	INTERPRETATION	CONTRIBUTION		
29.5	Theo	JUSTIFY	FACT	CONTRIBUTION		
29.4	Ayanda	RECORD	REPETITION	MEMORY		
29.3	Theo	DICTATE	REPETITION	MEMORY		
29.2	Theo	REQUEST		TASK		
29.1	Theo	REJECT	REPETITION	OWN IDEAS		
28.3	James	RECORD	REPETITION	MEMORY	7	MOTIVATIONS FOR OPTION 1
28.2	Ayanda	SUGGEST	REPETITION	CONSENSUS A		
28.1	Ayanda	COMMENT	REFLECTION	TASK		
27.1	Thami	REQUEST		OWN NEEDS		
26.2	Sipho	JUSTIFY	REPETITION	CONSENSUS A		
26.1	Sipho	SUPPORT	REPETITION	CONSENSUS A		
25.3	Thami	SUGGEST	OPINION	COMPROMISE		
25.2	Thami	JUSTIFY	REPETITION	CONSENSUS A		
25.1	Thami	SUGGEST	REPETITION	CONSENSUS U		
24.1	Ayanda	CLARIFY	REPETITION	CONSENSUS U		
23.1	James	CLARIFY	INTERPRETATION	CONSENSUS U		
22.1	Ayanda	INFORM	FACT	CONTRIBUTION		
21.2	Thami	INQUIRE		CONSENSUS U		
21.1	Thami	REQUEST		OWN NEEDS		
20.3	Ayanda	RECORD	REPETITION	MEMORY	6	MOTIVATIONS FOR OPTION 2
20.2	Theo	JUSTIFY	REPETITION	AMPLIFYING		
20.1	Theo	SUGGEST	REPETITION	AMPLIFYING		
19.1	James	SUPPORT	OPINION	CONSENSUS U		
18.1	Ayanda	SEEK	INFERENCE	CONSENSUS U		
17.1	Theo	SUPPORT	REPETITION	AMPLIFYING		
16.1	James	SUPPORT	REPETITION	CONSENSUS A		
15.4	Theo	JUSTIFY	OPINION	CONTRIBUTION		
15.3	Theo	SUGGEST	REPETITION	AMPLIFYING		
15.2	Theo	COMMENT	REPETITION	TASK		
15.1	Theo	COMMENT	INTERPRETATION	TASK		
14.1	Ayanda	REQUEST	REPETITION	TASK		
13.1	Theo	REQUEST	REPETITION	TASK		
12.1	Thami	SEEK		CONSENSUS U		
11.3	Theo	SUGGEST	OPINION	CONTRIBUTION	4	SUGGESTION TO CHOOSE OPTION 2
11.2	Theo	INFORM	FACT	CONSENSUS U		
11.1	Theo	OFFER		TASK	3	BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM STRUCTURE
10.1	Sipho	COMMENT	REPETITION	TASK		
9.1	Ayanda	REQUEST		TASK		
8.1	Theodora	uncoded	uncoded	uncoded		
7.1	Theo	COMMENT	REPETITION	TASK		
6.1	Thami	QUERY		TASK		
5.2	Sipho	CLARIFY	EXAMPLE	TASK		
5.1	Sipho	COMMENT	OPINION	TASK		
4.1	Theodora	SUGGEST	OPINION	CONTRIBUTION		
3.1	James	INVITE		PARTICIPATION		
2.1	Thami	REJECT	OPINION	OWN NEEDS		
1.3	Theo	REQUEST		TASK		
1.2	Theo	REQUEST		TASK		
1.1	Theo	INFORM	FACT	CONSENSUS U		

OPERATION NO.

PARTICIPANT

IMMEDIATE INTER-ACTIVE FUNCTION

COGNITIVE-AFFECTIVE CONTENT

UNDERLYING FUNCTION

STAGE: NUMBER & DESCRIPTION

181.1	Sipho	SUPPORT	EXAMPLE	CONSENSUS A	15 ESTABLISHMENT OF CONSENSUS ON SUGGESTION 1 TO SOLVE ASPECT 2 OF THE PROBLEM STRUCTURE.
180.1	Funeka	SUGGEST	OPINION	COMPROMISE	
179.1	Sindiswa	JUSTIFY	OPINION	OWN IDEAS	
178.1	James	JUSTIFY	EXAMPLE	CONSENSUS U	14 DEBATE ON SUGGESTION 1 TO SOLVE ASPECT 2 OF THE PROBLEM
177.1	Sindiswa	REJECT	OPINION	OWN IDEAS	
176.1	Thozie	QUERY	OPINION	OWN IDEAS	
175.1	Thami	REJECT	OPINION	OWN IDEAS	13 BUILDING OF SUPPORT FOR THE SOLUTION TO ASPECT 1 OF THE PROBLEM.
174.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
173.1	Thami	SEEK		CONSENSUS A	
172.1	James	COMMENT	OPINION	GROUP	12 DEBATE ON GROUP INTERACTION DEBATE ON RECORDING PROCESS
171.1	Thozie	REQUEST	REPETITION	OWN NEEDS	
170.1	Funeka	REQUEST		OWN NEEDS	
169.1	Thami	COMMENT	OPINION	TASK	
168.1	Thozie	COMMENT	OPINION	TASK	
167.1	Thami	COMMENT	OPINION	TASK	
166.1	James	REQUEST		TASK	
165.1	Funeka	REQUEST		TASK	
164.1	Thozie	COMMENT	REFLECTION	TASK	
163.1	Funeka	COMMENT	FACT	TASK	
162.1	Thami	REQUEST		TASK	
161.1	Sindiswa	REQUEST		TASK	
160.1	Sipho	COMMENT	REFLECTION	TASK	
159.1	Funeka	COMMENT	FACT	TASK	
158.1	Thami	REQUEST		TASK	
157.1	James	COMMENT	REPETITION	GROUP	
156.3	Sindiswa	INQUIRE		TASK	
156.2	Sindiswa	COMMENT	REFLECTION	GROUP	
156.1	Sindiswa	SUPPORT	REPETITION	TASK	
155.1	James	SUPPORT	OPINION	TASK	
154.2	Thozie	COMMENT	FACT	TASK	
154.1	Thozie	COMMENT	OPINION	TASK	
153.1	Thami	COMMENT	REFLECTION	TASK	
152.1	Sindiswa	COMMENT	OPINION	GROUP	
151.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	11 AMENDMENTS TO THE SOLUTION TO ASPECT 1 OF THE PROBLEM STRUCTURE BUILDING OF A COMMON UNDERSTANDING OF THE AMENDED SOLUTION
150.1	Sindiswa	COMMENT	OPINION	GROUP	
149.1	Funeka	INQUIRE		GROUP	
148.1	Thozie	SUGGEST	REPETITION	CONSENSUS A	
147.2	Thami	SEEK		CONSENSUS U	
147.1	Thami	CLARIFY	REPETITION	CONSENSUS U	
146.1	Funeka	CLARIFY	REPETITION	CONSENSUS U	
145.3	Thami	CLARIFY	REPETITION	CONSENSUS U	
145.2	Thami	CLARIFY	REPETITION	CONSENSUS U	
145.1	Thami	SUPPORT	REPETITION	CONSENSUS A	
144.1	Sindiswa	CLARIFY	REPETITION	CONSENSUS U	
143.1	Thami	CLARIFY	REPETITION	CONSENSUS U	
142.1	Sindiswa	REJECT	REPETITION	CONSENSUS A	
141.1	Thami	SUGGEST	REPETITION	OWN IDEAS	
140.1	Thozie	QUERY		OWN IDEAS	
139.1	Funeka	REJECT	INFERENCE	CONTRIBUTION	
138.1	Thozie	REQUEST		TASK	
137.1	Thami	SUGGEST	REPETITION	CONSENSUS U	
136.2	Thozie	REQUEST		TASK	

136.1	Thozie	REJECT	OPINION	OWN IDEAS	
135.1	Sindiswa	SUPPORT	OPINION	CONSENSUS A	
134.2	Sipho	INFORM	FACT	CONSENSUS U	
134.1	Sipho	SUGGEST	OPINION	CONSENSUS U	
133.1	Thami	SUGGEST	INFERENCE	CONSENSUS U	
132.1	Sipho	COMMENT	OPINION	OWN NEEDS	
131.2	Thami	JUSTIFY	INFERENCE	TASK	
131.1	Thami	REQUEST		TASK	
130.1	Sindiswa	INVITE		PARTICIPATION	
129.1	Thozie	Dictate	REPETITION	MEMORY	
128.1	Sindiswa	Dictate	REPETITION	MEMORY	
127.1	Funeka	SUPPORT	REPETITION	OWN NEEDS	
126.1	Thami	RECORD	REPETITION	MEMORY	
125.1	Sindiswa	REQUEST	REPETITION	TASK	
124.1	Thozie	REQUEST		TASK	
123.1	Sipho	INQUIRE	REPETITION	CONSENSUS U	
122.1	Thozie	SUPPORT	OPINION	TASK	
121.3	Funeka	COMMENT	REFLECTION	TASK	
121.2	Funeka	COMMENT	REFLECTION	TASK	
121.1	Funeka	COMMENT	OPINION	TASK	
120.1	Thami	SUPPORT	OPINION	TASK	
119.1	Thozie	REQUEST		TASK	
118.1	Sindiswa	SUPPORT	REPETITION	CONSENSUS A	
117.1	Thozie	SUPPORT	FACT	CONSENSUS A	
116.1	Funeka	COMMENT	OPINION	TASK	
115.1	Sindiswa	QUERY		TASK	
114.1	Funeka	QUERY		TASK	
113.1	Sindiswa	SUPPORT	OPINION	TASK	
112.2	Thami	OFFER		TASK	
112.1	Thami	SUPPORT	OPINION	CONSENSUS U	
111.1	Sindiswa	SUPPORT	REPETITION	CONSENSUS A	
110.2	Thozie	SUGGEST	REPETITION	CONSENSUS U	
110.1	Thozie	REJECT	INFERENCE	CONSENSUS A	
109.1	Sindiswa	SUGGEST	OPINION	CONSENSUS U	
108.1	Thami	SUGGEST	OPINION	CONSENSUS U	
107.1	Thozie	REQUEST		TASK	
106.1	Sipho	INFORM	FACT	CONSENSUS U	
105.2	Sindiswa	INFORM	FACT	CONSENSUS U	
105.1	Sindiswa	SEEK	REPETITION	CONSENSUS A	
104.1	Thozie	REJECT	REPETITION	OWN IDEAS	
103.1	Thami	SEEK	REPETITION	CONSENSUS U	
101.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
100.1	Sindiswa	SUPPORT	REPETITION	CONSENSUS A	
99.1	Thozie	COMMENT	OPINION	TASK	
98.1	Funeka	INQUIRE		GROUP	
97.1	James	REJECT	OPINION	GROUP	
96.1	Thami	INQUIRE	REPETITION	CONSENSUS U	
95.1	Thozie	INFORM	REPETITION	CONSENSUS U	
94.1	Thami	INQUIRE		CONSENSUS U	
93.3	Thozie	SUGGEST	OPINION	CONSENSUS U	
93.2	Thozie	INFORM	FACT	CONSENSUS U	
93.1	Thozie	INFORM	REPETITION	CONSENSUS U	
92.1	Sindiswa	INQUIRE	REPETITION	OWN NEEDS	
91.1	Funeka	COMMENT	OPINION	TASK	
90.1	Thami	SUPPORT	OPINION	CONSENSUS A	
89.1	Thozie	QUERY	FACT	CONSENSUS U	
88.1	Sipho	CLARIFY	REPETITION	CONSENSUS A	
87.1	Thozie	REQUEST	REPETITION	TASK	
86.2	Sindiswa	REQUEST		TASK	
86.1	Sindiswa	INQUIRE		CONSENSUS U	
85.3	Sipho	SUGGEST	OPINION	CONSENSUS U	
85.2	Sipho	SUGGEST	INFERENCE	CONSENSUS U	
85.1	Sipho	SUGGEST	OPINION	CONSENSUS U	
84.1	Funeka	INQUIRE	REPETITION	CONSENSUS U	
83.1	Sindiswa	INQUIRE	REPETITION	CONSENSUS U	
82.1	Thozie	INQUIRE	REPETITION	CONSENSUS U	
81.1	Sipho	INQUIRE		CONSENSUS U	
80.1	James	SUGGEST	INTERPRETATION	CONSENSUS U	
79.1	Thami	INQUIRE		CONSENSUS U	
78.2	Sindiswa	COMMENT	OPINION	TASK	
78.1	Sindiswa	COMMENT	FACT	TASK	
77.1	Thozie	COMMENT	FACT	TASK	
76.1	Sindiswa	SUGGEST	REPETITION	CONSENSUS A	
75.1	Thami	COMMENT	OPINION	TASK	
74.1	Sindiswa	COMMENT	FACT	TASK	
73.1	Funeka	INQUIRE		TASK	
72.1	Sindiswa	COMMENT	OPINION	TASK	
71.2	Thami	RECORD	REPETITION	MEMORY	
71.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
70.1	Funeka	SUGGEST	OPINION	CONTRIBUTION	
69.2	Thozie	INVITE		PARTICIPATION	
69.1	Thozie	COMMENT	OPINION	TASK	
68.1	Funeka	CLARIFY	REPETITION	CONSENSUS U	
67.3	Thami	RECORD	REPETITION	MEMORY	
67.2	Thozie	Dictate	REPETITION	MEMORY	
67.1	Thozie	REQUEST		TASK	
66.2	Sindiswa	Dictate	REPETITION	MEMORY	
66.1	Sindiswa	REQUEST		TASK	
65.1	Funeka	COMMENT	OPINION	TASK	
64.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
63.4	Funeka	CLARIFY	REPETITION	CONSENSUS U	
63.3	Funeka	CLARIFY	REPETITION	CONSENSUS U	
63.2	Funeka	JUSTIFY	INFERENCE	CONTRIBUTION	
63.1	Funeka	Dictate	REPETITION	MEMORY	
					10 BUILDING OF A COMMON UNDERSTANDING OF THE CONTENT OF THE PROBLEM STRUCTURE
					BUILDING OF A COMMON UNDERSTANDING ON WHAT TO RECORD
					9 BUILDING OF A COMMON UNDERSTANDING ON HOW TO PROCEED WITH THE PROBLEM SOLVING TASK
					8 SUGGESTION 3 TO SOLVE ASPECT 2 OF THE PROBLEM STRUCTURE
					7 SUGGESTION 2 TO SOLVE ASPECT 2 OF THE PROBLEM

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
62.1	Thami	INQUIRE		TASK	STRUCTURE
61.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
60.2	Sipho	SUPPORT	REPETITION	CONSENSUS A	
60.1	Sipho	INFORM	FACT	CONSENSUS U	
59.1	James	SUPPORT	OPINION	CONSENSUS A	
58.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
57.1	Sindiswa	SUPPORT	OPINION	CONSENSUS A	
56.2	Thozie	JUSTIFY	REPETITION	CONSENSUS U	
56.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
55.3	Sipho	SUPPORT	REPETITION	CONSENSUS A	
55.2	Sipho	SUGGEST	REPETITION	CONSENSUS A	
55.1	Sipho	INFORM	FACT	CONSENSUS U	
54.3	James	INFORM	FACT	CONSENSUS U	
54.2	James	SUGGEST	OPINION	CONTRIBUTION	
54.1	James	CLARIFY	INFERENCE	CONSENSUS U	
53.1	Thozie	REQUEST		TASK	
52.2	Sindiswa	INQUIRE		TASK	
52.1	Sindiswa	OFFER		TASK	
51.1	Thami	OFFER		TASK	
50.1	James	SUPPORT	REPETITION	TASK	
49.1	Thami	REQUEST		TASK	
48.1	Sindiswa	CLARIFY	INTERPRETATION	CONSENSUS U	
47.1	James	COMMENT	REFLECTION	TASK	
46.1	Thozie	COMMENT	REFLECTION	TASK	
45.2	James	REQUEST		TASK	
45.1	James	SUPPORT	REPETITION	TASK	
44.1	Thozie	COMMENT	REFLECTION	TASK	
43.1	Hilde	INFORM	FACT	CONSENSUS U	
42.2	Thozie	SUGGEST	OPINION	CONTRIBUTION	
42.1	Thozie	SUPPORT	REPETITION	TASK	
41.2	Sindiswa	JUSTIFY	INTERPRETATION	TASK	
41.1	Sindiswa	SUPPORT	OPINION	TASK	
40.1	Thami	QUERY		TASK	
39.1	Thozie	COMMENT	OPINION	OWN NEEDS	
38.2	Thami	REQUEST		TASK	
38.1	Thami	COMMENT	REFLECTION	TASK	
37.1	Thozie	INQUIRE		TASK	
36.1	Funeka	SUPPORT	OPINION	CONSENSUS A	
35.2	Thozie	CLARIFY	INFERENCE	CONSENSUS U	
35.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
34.1	Thami	SUPPORT	REPETITION	CONSENSUS A	
33.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
32.1	Sipho	DICTATE	REPETITION	MEMORY	
31.2	Thami	RECORD	REPETITION	MEMORY	
31.1	Thami	DICTATE	REPETITION	MEMORY	
30.1	Funeka	DICTATE	REPETITION	MEMORY	
29.1	Thozie	INFORM	FACT	CONSENSUS U	
28.2	Thami	RECORD	REPETITION	MEMORY	
28.1	Funeka	SUGGEST	REPETITION	CONSENSUS U	
27.1	Sindiswa	REJECT	INTERPRETATION	OWN NEEDS	
26.1	Thozie	SUPPORT	REPETITION	TASK	
25.1	Thami	REQUEST		TASK	
24.2	Funeka	JUSTIFY	REPETITION	CONSENSUS U	
24.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
23.1	Sindiswa	SUPPORT	REPETITION	CONSENSUS A	
22.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
21.1	Sindiswa	CLARIFY	REPETITION	CONSENSUS U	
20.2	Thami	JUSTIFY	REPETITION	CONSENSUS U	
20.1	Thami	SUGGEST	INFERENCE	CONTRIBUTION	
19.1	James	REJECT	INFERENCE	OWN IDEAS	
18.1	Thozie	SUGGEST	INFERENCE	CONTRIBUTION	
17.1	Sindiswa	CLARIFY	INTERPRETATION	CONSENSUS U	
16.1	Thozie	SUPPORT	REPETITION	CONSENSUS U	
15.1	James	COMMENT	FACT	TASK	
14.1	Thami	CLARIFY	REPETITION	AMPLIFYING	
13.2	Thozie	INQUIRE	REPETITION	CONSENSUS U	
13.1	Thozie	QUERY		TASK	
12.3	Thami	COMMENT	REFLECTION	TASK	
12.2	Thami	RECORD	REPETITION	MEMORY	
12.1	Thami	SUGGEST	INFERENCE	CONTRIBUTION	
11.1	Thozie	INQUIRE		CONSENSUS U	
10.1	Thami	SUGGEST	INFERENCE	CONTRIBUTION	
9.3	Thozie	SEEK		CONSENSUS U	
9.2	Thozie	REQUEST		TASK	
9.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
8.1	Sindiswa	SUPPORT	OPINION	CONSENSUS A	
7.1	Funeka	INFORM	REPETITION	CONSENSUS U	
6.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
5.1	James	INFORM	FACT	CONSENSUS U	
4.2	Funeka	INFORM	FACT	CONSENSUS U	
4.1	Funeka	INFORM	REPETITION	CONSENSUS U	
3.1	Thozie	INQUIRE		CONSENSUS U	
2.2	Sindiswa	SUGGEST	INFERENCE	CONTRIBUTION	
2.1	Sindiswa	COMMENT	REFLECTION	TASK	
1.2	Thozie	CLARIFY	INTERPRETATION	CONSENSUS U	
1.1	Thozie	INFORM	FACT	CONSENSUS U	

124.2	Matthew	OFFER			TASK	20 ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE SOLUTION OF ASPECT 1 AND 2 OF THE PROBLEM
124.1	Matthew	REQUEST			TASK	
123.1	Theodora	REQUEST			TASK	
122.1	Theo	DICTATE		REPETITION	CONSENSUS A	
121.1	Theodora	SUPPORT		EXAMPLE	CONSENSUS A	
120.3	Theo	DICTATE		REPETITION	CONSENSUS A	
120.2	Theo	OFFER			TASK	
120.1	Theo	SUPPORT		OPINION	TASK	
119.3	Matthew	REQUEST			TASK	
119.2	Matthew	SUGGEST		OPINION	CONSENSUS U	
119.1	Matthew	SUPPORT		OPINION	CONSENSUS A	
118.1	Theodora	SUGGEST		INTERPRETATION	CONSENSUS U	
117.1	Matthew	INVITE			PARTICIPATION	
116.1	Theodora	CLARIFY		OPINION	CONSENSUS U	
115.1	Matthew	INVITE			PARTICIPATION	
114.1	Matthew	SUGGEST		OPINION	CONTRIBUTION	
113.1	Theodora	SUGGEST		OPINION	CONTRIBUTION	
112.1	Matthew	INVITE			PARTICIPATION	
111.1	Theodora	INVITE			PARTICIPATION	
110.1	Theo	COMMENT		OPINION	TASK	
109.1	Theodora	INVITE			PARTICIPATION	
108.2	Matthew	SEEK			CONSENSUS A	
108.1	Matthew	SUPPORT		EXAMPLE	CONSENSUS A	
107.1	Theodora	SUPPORT		EXAMPLE	CONSENSUS A	
106.1	Theo	SUPPORT		REPETITION	AMPLIFYING	
105.1	Theodora	SUPPORT		OPINION	CONSENSUS A	
104.2	Theo	RECORD		REPETITION	MEMORY	
104.1	Theo	SUGGEST		INFERENCE	CONTRIBUTION	
103.2	Matthew	JUSTIFY		FACT	CONSENSUS U	
103.1	Matthew	CLARIFY		INFERENCE	CONSENSUS U	
102.2	Theodora	SEEK			CONSENSUS U	
102.1	Theodora	SUPPORT		REPETITION	CONSENSUS A	
101.2	Matthew	SUPPORT		REPETITION	OWN IDEAS	
101.1	Matthew	SUPPORT		OPINION	CONSENSUS A	
100.1	Theodora	JUSTIFY		REPETITION	CONSENSUS U	
99.2	Matthew	INVITE			PARTICIPATION	
99.1	Matthew	INFORM		REPETITION	CONSENSUS U	
98.1	Khaya	INQUIRE			CONSENSUS U	
97.1	Theodora	SUPPORT		OPINION	CONSENSUS A	
96.3	Matthew	SUGGEST		OPINION	CONTRIBUTION	
96.2	Matthew	CLARIFY		INFERENCE	CONSENSUS U	
96.1	Matthew	INFORM		FACT	CONSENSUS U	
95.1	Ayanda	SUPPORT		REPETITION	CONSENSUS A	
94.2	Theodora	SEEK			CONSENSUS A	
94.1	Theodora	SUGGEST		INTERPRETATION	CONTRIBUTION	
93.1	Matthew	INVITE			PARTICIPATION	
92.1	Theo	DICTATE		REPETITION	CONSENSUS A	
91.1	Ayanda	RECORD		REPETITION	MEMORY	
90.2	Theo	RECORD		REPETITION	MEMORY	
90.1	Theo	DICTATE		REPETITION	MEMORY	
89.3	Matthew	JUSTIFY		REPETITION	AMPLIFYING	
89.2	Matthew	JUSTIFY		INFERENCE	CONTRIBUTION	
89.1	Matthew	SUGGEST		REPETITION	CONSENSUS A	
88.1	Khaya	CLARIFY		OPINION	OWN IDEAS	
87.1	Theodora	SUPPORT		REPETITION	CONSENSUS A	
86.1	Matthew	CLARIFY		INTERPRETATION	CONSENSUS U	
85.1	Theodora	CLARIFY		INTERPRETATION	CONSENSUS U	
84.1	Ayanda	SUPPORT		OPINION	CONSENSUS A	
83.1	Matthew	CLARIFY		FACT	CONSENSUS U	
82.1	Khaya	INQUIRE			CONSENSUS U	
81.2	Matthew	CLARIFY		INTERPRETATION	CONSENSUS U	
81.1	Matthew	REJECT		INTERPRETATION	CONSENSUS U	
80.1	Khaya	CLARIFY		INTERPRETATION	CONSENSUS U	
79.1	Theo	INFORM		FACT	CONSENSUS U	
78.1	Theodora	INQUIRE			CONSENSUS U	
77.1	Matthew	INFORM		FACT	CONSENSUS U	
76.1	Theo	uncoded		uncoded	uncoded	
75.1	Khaya	uncoded		uncoded	uncoded	
74.2	Matthew	JUSTIFY		INFERENCE	AMPLIFYING	
74.1	Matthew	SUGGEST		OPINION	CONTRIBUTION	
73.1	Theo	CLARIFY		REPETITION	CONSENSUS U	
72.1	Khaya	CLARIFY		REPETITION	CONSENSUS U	
71.1	Hilde	INQUIRE			CONSENSUS U	
70.1	Theodora	CLARIFY		INFERENCE	CONSENSUS U	
69.1	Khaya	SUPPORT		REPETITION	CONSENSUS U	
68.1	Theodora	SUPPORT		REPETITION	CONSENSUS A	
67.2	Theo	RECORD		REPETITION	MEMORY	
67.1	Ayanda	DICTATE		REPETITION	MEMORY	
66.2	Theo	RECORD		REPETITION	MEMORY	
66.1	Theodora	DICTATE		REPETITION	MEMORY	
65.1	Ayanda	SUPPORT		REPETITION	CONSENSUS A	
64.2	Matthew	RECORD		REPETITION	MEMORY	
64.1	Khaya	DICTATE		REPETITION	MEMORY	
63.1	Theodora	JUSTIFY		REPETITION	CONSENSUS U	
62.1	Khaya	uncoded		uncoded	uncoded	
61.1	Theodora	INVITE			PARTICIPATION	
60.1	Matthew	SUGGEST		REPETITION	AMPLIFYING	
59.3	Khaya	INVITE		REPETITION	PARTICIPATION	
59.2	Khaya	JUSTIFY		OPINION	AMPLIFYING	

O P E R A T I O N S	59.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	10	SUGGESTION 2 TO SOLVE ASPECT 2 OF THE PROBLEM
	58.2	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U		
	58.1	Ayanda	REJECT	INTERPRETATION	OWN IDEAS		
	57.1	Theo	INQUIRE	INTERPRETATION	CONSENSUS U		
	56.3	Ayanda	SUGGEST	REPETITION	AMPLIFYING		
	56.2	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U		
	56.1	Ayanda	SUGGEST	OPINION	CONTRIBUTION		
	55.2	Theo	RECORD	REPETITION	MEMORY		
	55.1	Khaya	CLARIFY	REPETITION	CONSENSUS U		
	54.1	Theo	INQUIRE		CONSENSUS U		
	53.1	Matthew	SUGGEST	REPETITION	CONSENSUS A	9	BUILDING OF A COMMON UNDERSTANDING OF SUGGESTION 1 TO SOLVE ASPECT 2 OF THE PROBLEM
	52.2	Theo	RECORD	REPETITION	MEMORY		
	52.1	Ayanda	DICTATE	REPETITION	MEMORY		
	51.1	Theo	DICTATE	REPETITION	MEMORY		
	50.1	Matthew	SUPPORT	OPINION	TASK		
	49.2	Theo	RECORD	REPETITION	MEMORY		
	49.1	Khaya	DICTATE	REPETITION	MEMORY		
	48.2	Theodora	JUSTIFY	INFERENCE	TASK		
	47.2	Theodora	REQUEST		TASK	8	BUILDING OF A COMMON UNDERSTANDING OF HOW TO PROCEED WITH THE PROBLEM SOLVING TASK
	47.1	Theodora	SUPPORT	OPINION	TASK		
	46.1	Buyiswa	SEEK		TASK		
	45.1	Matthew	SUPPORT	OPINION	TASK		
	44.1	Khaya	REQUEST		TASK		
	43.1	Theodora	REQUEST		TASK		
	42.1	Matthew	SUGGEST	REPETITION	AMPLIFYING		
	41.1	Khaya	SUGGEST	OPINION	CONTRIBUTION		
	40.1	Matthew	INVITE		PARTICIPATION		
	39.1	Ayanda	SUPPORT	REFLECTION	TASK		
	38.1	Theodora	INQUIRE		TASK		
	37.1	Theo	COMMENT	REFLECTION	TASK		
	36.3	Matthew	INQUIRE		TASK		
	36.2	Matthew	SUGGEST	OPINION	CONTRIBUTION		
36.1	Matthew	CLARIFY	INTERPRETATION	CONSENSUS U			
35.1	Khaya	CLARIFY	INTERPRETATION	CONSENSUS U			
34.1	Theo	INQUIRE		CONSENSUS U			
33.1	Khaya	CLARIFY	OPINION	CONSENSUS U	6	PROVISION OF ADDITIONAL INFORMATION ON THE CONTENT OF THE PROBLEM STRUCTURE	
32.1	Theo	INVITE		PARTICIPATION			
31.1	Theodora	REQUEST		TASK			
30.1	Matthew	INQUIRE		TASK			
29.1	Hilde	INFORM	FACT	CONSENSUS U			
28.1	Theodora	JUSTIFY	REPETITION	CONSENSUS A			
27.3	Matthew	SUGGEST	REPETITION	OWN IDEAS			
27.2	Matthew	JUSTIFY	FACT	OWN IDEAS			
27.1	Matthew	REJECT	OPINION	OWN IDEAS			
26.1	Theodora	SUGGEST	OPINION	CONTRIBUTION			
25.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	5	DEBATE ON THE PROCESS OF ACCESSING ELEMENTS OF THE PROBLEM STRUCTURE	
24.1	Theodora	SUGGEST	OPINION	CONSENSUS U			
23.2	Matthew	COMMENT	REPETITION	TASK			
23.1	Matthew	COMMENT	FACT	TASK			
22.1	Theodora	INQUIRE		TASK			
21.1	Theo	OFFER		TASK			
20.1	Khaya	COMMENT	FACT	TASK			
19.4	Theo	RECORD	REPETITION	MEMORY			
19.3	Theo	INVITE		PARTICIPATION			
19.2	Theo	REQUEST		TASK			4
19.1	Theo	DICTATE	REPETITION	MEMORY			
18.2	Khaya	JUSTIFY	FACT	OWN IDEAS			
18.1	Khaya	REJECT	OPINION	OWN NEEDS			
17.1	Ayanda	SEEK		TASK			
16.3	Matthew	REQUEST		TASK			
16.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
16.1	Matthew	SUPPORT	OPINION	CONSENSUS A			
15.1	Ayanda	SUPPORT	REPETITION	CONSENSUS A			
14.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
14.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	3	BUILDING OF A COMMON UNDERSTANDING OF THE SOLUTION	
13.1	Ayanda	SUGGEST	INFERENCE	CONTRIBUTION			
12.1	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
11.1	Theo	SUPPORT	REPETITION	CONSENSUS A			
10.1	Ayanda	SUPPORT	REPETITION	CONSENSUS A			
9.3	Matthew	CLARIFY	INFERENCE	CONSENSUS U			
9.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
9.1	Matthew	CLARIFY	REPETITION	CONSENSUS U			
8.1	Theodora	INQUIRE		CONSENSUS U			
7.2	Khaya	SUGGEST	INFERENCE	CONTRIBUTION			
7.1	Khaya	REJECT	INFERENCE	OWN IDEAS	2	ATTEMPTING TO SOLVE ASPECT 1	
6.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
6.1	Matthew	SUGGEST	REPETITION	AMPLIFYING			
5.1	Theo	COMMENT	REPETITION	GROUP			
4.2	Matthew	COMMENT	REFLECTION	GROUP			
4.1	Matthew	COMMENT	REFLECTION	GROUP			
3.1	Theodora	REQUEST		GROUP			
2.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
2.1	Matthew	SUGGEST	INFERENCE	CONTRIBUTION			
1.2	Khaya	CLARIFY	INFERENCE	CONSENSUS U			1
1.1	Khaya	INFORM	FACT	CONSENSUS U			
		PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION		STAGE: NUMBER & DESCRIPTION

74.1	Sipho	SUPPORT	REPETITION	CONSENSUS A	16 ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE CHOICE OF OPTION 5
73.2	Ayanda	COMMENT	OPINION	TASK	
73.1	Ayanda	CLARIFY	INFERENCE	CONSENSUS U	
72.1	Buyiswa	SUGGEST	REPETITION	CONSENSUS A	
71.1	Thozie/Theo	SUGGEST	REPETITION	CONSENSUS A	
70.2	Sipho	SUGGEST	REPETITION	CONSENSUS A	
70.1	Sipho	INQUIRE	INTERPRETATION	TASK	
69.2	Ayanda	INVITE	REPETITION	PARTICIPATION	
69.1	Ayanda	INVITE	REPETITION	PARTICIPATION	
68.1	Sipho	SEEK	REPETITION	CONSENSUS A	
67.1	Theo	SEEK	REPETITION	CONSENSUS A	
66.1	Thozie	QUERY	OPINION	OWN IDEAS	
65.1	Theo	SEEK	INFERENCE	CONSENSUS A	
64.3	Funeka	JUSTIFY	OPINION	CONSENSUS U	
64.2	Funeka	JUSTIFY	OPINION	CONSENSUS A	
64.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
63.1	Buyiswa	SUGGEST	OPINION	CONSENSUS A	
62.1	Sipho	SUPPORT	REPETITION	AMPLIFYING	
61.1	Thozie	SUPPORT	REPETITION	AMPLIFYING	
60.1	Sipho	SUPPORT	REPETITION	AMPLIFYING	
59.2	Thozie	SEEK		CONSENSUS U	
59.1	Thozie	INFORM	FACT	CONTRIBUTION	
58.3	Sipho	SUGGEST	OPINION	CONTRIBUTION	
58.2	Sipho	CLARIFY	FACT	CONSENSUS U	
58.1	Sipho	QUERY	OPINION	CONSENSUS U	
57.2	Thozie	INFORM	FACT	CONSENSUS U	
57.1	Thozie	INVITE		PARTICIPATION	
56.3	Theo	JUSTIFY	REPETITION	CONSENSUS A	
56.2	Theo	SUPPORT	REPETITION	CONSENSUS A	
56.1	Theo	COMMENT	REFLECTION	TASK	
55.4	Sipho	SUPPORT	REPETITION	CONSENSUS A	
55.3	Sipho	SUGGEST	OPINION	COMPROMISE	
					15 SUGGESTION TO CHOOSE OPTION 3
					MOTIVATIONS FOR AND AGAINST OPTION 3

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION	
55.2	Sipho	JUSTIFY	OPINION	CONTRIBUTION	14 MOTIVATION FOR OPTION 5 SUGGESTION OF A COMPROMISE	
55.1	Sipho	SUPPORT	REPETITION	CONSENSUS A		
54.1	Theo	SUPPORT	OPINION	TASK		
53.1	Funeka	COMMENT	OPINION	GROUP		
52.3	Theo	JUSTIFY	REPETITION	CONSENSUS A		
52.2	Theo	SUPPORT	REPETITION	CONSENSUS A		
52.1	Theo	COMMENT	REFLECTION	TASK		
51.2	Thozie	JUSTIFY	INTERPRETATION	CONTRIBUTION		
51.1	Thozie	SUGGEST	REPETITION	CONSENSUS A		
50.4	Funeka	JUSTIFY	OPINION	CONTRIBUTION		
50.3	Funeka	JUSTIFY	INFERENCE	CONTRIBUTION		
50.2	Funeka	JUSTIFY	FACT	CONSENSUS A		
50.1	Funeka	SUGGEST	REPETITION	CONSENSUS A		
49.1	Theo	SUGGEST	REPETITION	OWN IDEAS		
48.2	Ayanda	INVITE		PARTICIPATION		
48.1	Ayanda	CLARIFY	INFERENCE	CONSENSUS U	13 MOTIVATION FOR OPTION 1 REJECTION OF MOTIVATIONS IN FAVOUR OF OPTION 1	
47.2	Theo	JUSTIFY	FACT	CONSENSUS U		
47.1	Theo	REJECT	OPINION	OWN IDEAS		
46.1	Ayanda	QUERY	INFERENCE	OWN IDEAS		
45.1	Thozie	SUPPORT	OPINION	CONSENSUS A		
44.3	Buyiswa	JUSTIFY	REPETITION	CONSENSUS A		
44.2	Buyiswa	JUSTIFY	FACT	CONTRIBUTION		
44.1	Buyiswa	SUGGEST	REPETITION	CONSENSUS A		
43.4	Theo	JUSTIFY	INTERPRETATION	CONTRIBUTION	12 SUGGESTION TO CHOOSE OPTION 4	
43.3	Theo	JUSTIFY	REPETITION	OWN IDEAS		
43.2	Theo	SUGGEST	OPINION	AMPLIFYING	11 INVITATION TO REACH GROUP CONSENSUS ON THE CHOICE OF AN OPTION	
43.1	Theo	REJECT	OPINION	OWN IDEAS		
42.2	Thozie	SEEK	INFERENCE	CONSENSUS A	10 SUGGESTION TO CHOOSE OPTION 6 MOTIVATION AGAINST OPTION 6	
42.1	Thozie	INVITE		PARTICIPATION		
41.1	Ayanda	SUPPORT	REPETITION	CONSENSUS A		
40.1	Thozie	SUPPORT	REPETITION	CONSENSUS A		
39.3	Sipho	JUSTIFY	INFERENCE	CONTRIBUTION		
39.2	Sipho	SUGGEST	OPINION	CONTRIBUTION		
39.1	Sipho	INFORM	FACT	CONSENSUS U		
38.1	Ayanda	INVITE		PARTICIPATION	9 BUILDING OF A COMMON UNDERSTANDING OF THE CONTENT OF THE PROBLEM SOLVING STRUCTURE	
37.1	Funeka	REJECT	INTERPRETATION	OWN IDEAS		
36.1	Buyiswa	QUERY	INTERPRETATION	CONSENSUS U		
35.1	Funeka	SEEK		CONSENSUS A		
34.1	Thozie	CLARIFY	REPETITION	CONSENSUS U		
33.1	Ayanda	SEEK		CONSENSUS U		
32.1	Funeka	CLARIFY	INFERENCE	CONSENSUS U		
31.1	Ayanda	INQUIRE		CONSENSUS U		
30.1	Theo/Thozie	COMMENT	REFLECTION	TASK	8 SUGGESTION TO CHOOSE OPTION 2 MOTIVATION FOR OPTION 6	
29.6	Sipho	JUSTIFY	INFERENCE	CONTRIBUTION		
29.5	Sipho	JUSTIFY	INTERPRETATION	CONTRIBUTION		
29.4	Sipho	JUSTIFY	INTERPRETATION	CONTRIBUTION		
29.3	Sipho	JUSTIFY	FACT	CONTRIBUTION		
29.2	Sipho	JUSTIFY	INTERPRETATION	CONTRIBUTION		
29.1	Sipho	SUGGEST	OPINION	CONTRIBUTION		
28.1	Thozie	INVITE		PARTICIPATION		
27.1	Theo	JUSTIFY	FACT	CONTRIBUTION	7 BUILDING OF A COMMON UNDERSTANDING OF THE NEXT STEP IN THE PROBLEM SOLVING PROCESS	
26.1	Thozie	INVITE		PARTICIPATION		
25.1	Funeka	SUPPORT	REPETITION	TASK		
24.2	Thozie	REQUEST	REPETITION	TASK		
24.1	Thozie	REJECT	OPINION	OWN NEEDS		
23.1	Ayanda	INVITE		PARTICIPATION		
22.1	Theo	INVITE		PARTICIPATION		
21.1	Ayanda	SUPPORT	OPINION	TASK		
20.3	Thozie	COMMENT	OPINION	TASK	6 BUILDING OF SUPPORT FOR OPTION 1	
20.2	Thozie	JUSTIFY	FACT	CONTRIBUTION		
20.1	Thozie	SUGGEST	REPETITION	CONSENSUS A		
19.1	Theo	INVITE	REPETITION	PARTICIPATION		5 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING TASK MOTIVATION AGAINST OPTION 5
18.1	Ayanda	INVITE		PARTICIPATION		
17.1	Thozie	COMMENT	REPETITION	TASK		
16.1	Funeka	COMMENT	OPINION	TASK		
15.1	Thozie	SUPPORT	OPINION	TASK		
14.3	Ayanda	COMMENT	REPETITION	TASK		
14.2	Ayanda	JUSTIFY	INFERENCE	CONTRIBUTION		
14.1	Ayanda	SUGGEST	OPINION	CONTRIBUTION		
13.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	4 BUILDING OF SUPPORT FOR OPTION 1	
12.1	Buyiswa	SUGGEST	OPINION	CONTRIBUTION		
11.3	Funeka	COMMENT	REPETITION	TASK		
11.2	Funeka	JUSTIFY	FACT	CONTRIBUTION		
11.1	Funeka	SUGGEST	REPETITION	AMPLIFYING		
10.1	Thozie	COMMENT	OPINION	TASK		3 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM STRUCTURE AND THE PROBLEM SOLVING TASK
9.1	Funeka	CLARIFY	OPINION	CONSENSUS U		
8.1	Sipho	INQUIRE		CONSENSUS U		
7.1	Funeka	INVITE		PARTICIPATION		
6.1	Buyiswa	INQUIRE		CONSENSUS U	2 SUGGESTION TO CHOOSE OPTION 1	
5.2	Funeka	INQUIRE		CONSENSUS U		
5.1	Funeka	REQUEST		OWN NEEDS		
4.1	Ayanda	INVITE		PARTICIPATION		
3.1	Funeka	SUGGEST	OPINION	CONTRIBUTION	1 SUGGESTION TO CHOOSE OPTION 5	
2.2	Sipho	JUSTIFY	FACT	CONTRIBUTION		
2.1	Sipho	SUPPORT	OPINION	CONSENSUS A		
1.1	Buyiswa	SUGGEST	OPINION	CONTRIBUTION	MOTIVATION FOR OPTION 5	

85.2	Matthew		COMMENT		OPINION		TASK		18	ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE CHOICE OF OPTION 5
85.1	Matthew		CLARIFY		INFERENCE		CONSENSUS A			
84.1	James/Thami		SUGGEST		OPINION		CONSENSUS A		17	REJECTION OF THE COMPROMISE
83.2	Thami		JUSTIFY		FACT		CONSENSUS U			
83.1	Thami		REJECT		OPINION		CONSENSUS U			
82.1	Matthew		SUPPORT		OPINION		CONSENSUS A			
81.1	James		SUGGEST		REPETITION		COMPROMISE			
80.2	Matthew		JUSTIFY		OPINION		OWN IDEAS		16	DISSATISFACTION WITH GROUP INTERACTIONS
80.1	Matthew		REJECT		OPINION		OWN NEEDS			
79.1	Theodora		REJECT		OPINION		OWN NEEDS		15	BUILDING OF SUPPORT FOR OPTION 2
78.1	Matthew		CLARIFY		INFERENCE		CONSENSUS U			
77.1	Khaya/Thami		SUPPORT		REPETITION		CONSENSUS A			
76.1	James		SUGGEST		REPETITION		CONSENSUS U			
75.2	Matthew		INVITE				PARTICIPATION			
75.1	Matthew		REQUEST				GROUP			
74.1	Theodora		SUGGEST		REPETITION		OWN IDEAS		14	BUILDING OF SUPPORT FOR OPTION 5
73.1	Matthew		COMMENT		REFLECTION		GROUP			
72.2	Khaya		CLARIFY		INTERPRETATION		CONSENSUS U		13	QUERY AND DEFENSE OF THE COMPROMISE
72.1	Khaya		SUPPORT		REPETITION		COMPROMISE			
71.2	Matthew		SUGGEST		INTERPRETATION		OWN IDEAS			
71.1	Matthew		REJECT		OPINION		OWN IDEAS			
70.1	Theodora		QUERY		INTERPRETATION		OWN IDEAS			
69.1	Matthew		SUPPORT		OPINION		CONSENSUS A		14	SUGGESTION OF A COMPROMISE
68.2	Khaya		SUPPORT		INTERPRETATION		CONSENSUS A			
68.1	Khaya		SUPPORT		REPETITION		CONSENSUS A			
67.3	James		SUGGEST		OPINION		COMPROMISE			
67.2	James		JUSTIFY		REPETITION		CONSENSUS A		13	MOTIVATIONS IN FAVOUR AND AGAINST OPTIONS 2 AND 5
67.1	James		SUPPORT		REPETITION		CONSENSUS A			
66.4	Matthew		JUSTIFY		REPETITION		OWN IDEAS			
66.3	Matthew		SUGGEST		REPETITION		OWN IDEAS			
66.2	Matthew		CLARIFY		INTERPRETATION		OWN IDEAS			
66.1	Matthew		QUERY		REPETITION		OWN IDEAS			
65.2	Lulama		JUSTIFY		REPETITION		AMPLIFYING			
65.1	Lulama		SUGGEST		OPINION		CONTRIBUTION			
64.1	Matthew		COMMENT		REFLECTION		TASK			
63.2	Lulama		JUSTIFY		INTERPRETATION		CONSENSUS U			
63.1	Lulama		SUGGEST		OPINION		OWN IDEAS			
62.1	Matthew		INVITE				PARTICIPATION			
61.1	Thami		SUGGEST		OPINION		CONTRIBUTION		12	LIMITING CHOICE BETWEEN OPTION 2 AND 5
60.3	Matthew		INQUIRE				CONSENSUS A			
60.2	Matthew		SUGGEST		INTERPRETATION		CONSENSUS U			
60.1	Matthew		COMMENT		REFLECTION		TASK		11	SUPPORT FOR OPTION 2 AND FURTHER REJECTION OF OPTION 5
59.3	Khaya		JUSTIFY		REPETITION		OWN IDEAS			
59.2	Khaya		JUSTIFY		INTERPRETATION		OWN IDEAS			
59.1	Khaya		QUERY		OPINION		OWN IDEAS			
58.3	Matthew		INVITE				PARTICIPATION			
58.2	Matthew		COMMENT		REFLECTION		TASK			
58.1	Matthew		CLARIFY		INTERPRETATION		CONSENSUS U		10	REJECTION AND DEFENSE OF OPTION 6 INCLUDING MOTIVATIONS FOR BOTH POSITIONS
57.1	James		QUERY		REPETITION		AMPLIFYING			
56.1	Matthew		INFORM		FACT		CONSENSUS U			
55.1	Thami		SUGGEST		OPINION		CONTRIBUTION			
54.1	James		INVITE				PARTICIPATION			
53.1	Matthew		INQUIRE				CONSENSUS U			
52.2	James		JUSTIFY		OPINION		CONTRIBUTION			
52.1	James		SUGGEST		OPINION		CONTRIBUTION			
51.3	Matthew		INFORM		FACT		CONSENSUS U			
51.2	Matthew		INVITE				PARTICIPATION			
51.1	Matthew		REQUEST		REPETITION		TASK		9	REQUEST TO MOVE ON WITH
50.1	Khaya		REQUEST		REPETITION		TASK			

49.1	Thami	REQUEST	REPETITION	TASK	
48.2	Khaya	REQUEST		TASK	
48.1	Khaya	REJECT	OPINION	OWN IDEAS	
47.3	Matthew	JUSTIFY	REPETITION	CONSENSUS A	
47.2	Matthew	JUSTIFY	OPINION	CONSENSUS A	
47.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
46.3	Thami	JUSTIFY	INTERPRETATION	CONSENSUS U	
46.2	Thami	SUGGEST	OPINION	CONTRIBUTION	
46.1	Thami	CLARIFY	INFERENCE	CONSENSUS U	
45.1	Lulama	SUPPORT	INFERENCE	CONSENSUS A	
44.1	Theodora	SUPPORT	INTERPRETATION	CONSENSUS A	
43.2	Khaya	JUSTIFY	INTERPRETATION	CONTRIBUTION	
43.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	
42.3	Matthew	INFORM	FACT	CONSENSUS U	
42.2	Matthew	INVITE		PARTICIPATION	
42.1	Matthew	REQUEST		TASK	
41.1	James	SUGGEST	INTERPRETATION	AMPLIFYING	
40.1	Theodora	SUPPORT	FACT	CONSENSUS A	
39.1	James	INFORM	FACT	AMPLIFYING	
38.1	Matthew	JUSTIFY	INFERENCE	OWN IDEAS	
37.1	Khaya	QUERY	FACT	CONSENSUS U	
36.1	Matthew	JUSTIFY	INFERENCE	OWN IDEAS	
35.1	Lulama	JUSTIFY	REPETITION	AMPLIFYING	
34.3	Matthew	SUGGEST	OPINION	AMPLIFYING	
34.2	Matthew	JUSTIFY	FACT	CONTRIBUTION	
34.1	Matthew	QUERY	OPINION	CONSENSUS A	
33.1	Lulama	SUPPORT	REPETITION	CONSENSUS A	
32.2	James	JUSTIFY	OPINION	CONTRIBUTION	
32.1	James	SUGGEST	OPINION	CONTRIBUTION	
31.4	Matthew	INFORM	FACT	CONSENSUS U	
31.3	Matthew	INVITE		PARTICIPATION	
31.2	Matthew	REQUEST		TASK	
31.1	Matthew	COMMENT	OPINION	TASK	
30.1	Theodora	QUERY	OPINION	AMPLIFYING	
29.1	Matthew	REJECT	REPETITION	OWN IDEAS	
28.2	Theodora	SUGGEST	OPINION	AMPLIFYING	
28.1	Theodora	REJECT	REPETITION	AMPLIFYING	
27.2	Matthew	CLARIFY	INTERPRETATION	OWN IDEAS	
27.1	Matthew	QUERY	FACT	CONSENSUS U	
26.2	Khaya	JUSTIFY	OPINION	CONTRIBUTION	
26.1	Khaya	SUPPORT	REPETITION	CONSENSUS A	
25.1	James	JUSTIFY	OPINION	CONSENSUS A	
24.1	Khaya	SUPPORT	REPETITION	CONSENSUS A	
23.1	Theodora	JUSTIFY	OPINION	CONTRIBUTION	
22.1	James	SUGGEST	OPINION	CONTRIBUTION	
21.6	Matthew	INFORM	FACT	CONSENSUS U	
21.5	Matthew	INVITE		PARTICIPATION	
21.4	Matthew	REQUEST		TASK	
21.3	Matthew	REQUEST		TASK	
21.2	Matthew	JUSTIFY	INTERPRETATION	OWN IDEAS	
21.1	Matthew	REJECT	REPETITION	OWN IDEAS	
20.2	Khaya	JUSTIFY	INTERPRETATION	OWN IDEAS	
20.1	Khaya	REJECT	OPINION	OWN IDEAS	
19.1	Matthew	COMMENT	REFLECTION	TASK	
18.2	Thami	JUSTIFY	OPINION	CONTRIBUTION	
18.1	Thami	CLARIFY	REPETITION	CONSENSUS U	
17.1	Matthew	INQUIRE		CONSENSUS U	
16.2	Thami	JUSTIFY	INTERPRETATION	CONTRIBUTION	
16.1	Thami	JUSTIFY	OPINION	OWN IDEAS	
15.1	Matthew	INVITE		PARTICIPATION	
14.1	Thami	SUGGEST	OPINION	CONTRIBUTION	
13.1	Matthew	SEEK		CONSENSUS A	
12.1	Lulama	SUPPORT	REPETITION	CONSENSUS A	
11.1	Matthew	INVITE		PARTICIPATION	
10.1	Khaya	CLARIFY	INFERENCE	CONSENSUS U	
9.1	Matthew	INQUIRE		CONSENSUS U	
8.1	Khaya	SUGGEST	INTERPRETATION	AMPLIFYING	
7.1	Matthew	QUERY	INTERPRETATION	OWN IDEAS	
6.3	Khaya	JUSTIFY	INFERENCE	CONTRIBUTION	
6.2	Khaya	JUSTIFY	FACT	CONTRIBUTION	
6.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	
5.3	Matthew	INFORM	FACT	CONSENSUS U	
5.2	Matthew	INVITE		PARTICIPATION	
5.1	Matthew	COMMENT	REFLECTION	TASK	
4.1	Khaya	SUPPORT	OPINION	CONSENSUS A	
3.1	Matthew	QUERY	OPINION	CONSENSUS A	
2.2	Theodora	JUSTIFY	OPINION	CONTRIBUTION	
2.1	Theodora	SUGGEST	OPINION	CONTRIBUTION	
1.3	Matthew	INFORM	FACT	CONSENSUS U	
1.2	Matthew	INVITE		PARTICIPATION	
1.1	Matthew	INFORM	FACT	CONSENSUS U	
	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION

OPERATION NO.

8 REJECTION AND DEFENSE OF OPTION 5 INCLUDING MOTIVATIONS FOR BOTH POSITIONS

7 REJECTION AND DEFENSE OF OPTION 4 INCLUDING MOTIVATIONS FOR BOTH POSITIONS

6 REJECTION AND DEFENSE OF OPTION 3 INCLUDING MOTIVATIONS FOR BOTH POSITIONS

5 REQUEST TO MOVE ON WITH THE PROBLEM SOLVING TASK

4 INVITATION TO CONSIDER OPTION 5
REJECTION AND DEFENSE OF OPTION 2

3 MOTIVATION FOR AND AGAINST OPTION 2

2 MOTIVATION FOR AND AGAINST OPTION 1

BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM STRUCTURE

1 PROBLEM STRUCTURE

136.3	Theodora	RECORD	REPETITION	MEMORY	16 ESTABLISHMENT OF GROUP CONSENSUS ON THE ACCEPTANCE OF MOTIVATION 5
136.2	Thami	REQUEST		TASK	
136.1	Thami	SUPPORT	OPINION	CONSENSUS A	
135.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
134.1	Lulama	SUPPORT	REPETITION	CONSENSUS A	
133.1	Sizwe	CLARIFY	REPETITION	OWN IDEAS	15 DEBATE ON MOTIVATION 5 FOR OPTION 4
132.2	Thami	JUSTIFY	INFERENCE	OWN IDEAS	
132.1	Thami	SUGGEST	OPINION	OWN IDEAS	
131.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
130.2	Sizwe	JUSTIFY	INTERPRETATION	OWN IDEAS	
130.1	Sizwe	REJECT	REPETITION	OWN IDEAS	
129.1	Thami	CLARIFY	REPETITION	OWN IDEAS	
128.2	Theodora	RECORD	REPETITION	MEMORY	
128.1	Sizwe	Dictate	REPETITION	MEMORY	
127.1	Theodora	COMMENT	REFLECTION	OWN NEEDS	
126.1	Sizwe	REJECT	OPINION	OWN NEEDS	
125.1	Lulama	SUPPORT	REPETITION	CONSENSUS A	14 BUILDING OF A COMMON UNDERSTANDING OF THE CHOICE OF OPTION 4
124.1	Theodora	COMMENT	OPINION	TASK	
123.1	Sizwe	INQUIRE		CONSENSUS U	
122.1	Lulama	CLARIFY	INTERPRETATION	CONSENSUS U	
121.1	Sizwe	INQUIRE		CONSENSUS U	
120.1	Lulama	SUPPORT	REPETITION	CONSENSUS A	
119.2	Theodora	RECORD	REPETITION	MEMORY	
119.1	Sizwe	SUPPORT	REPETITION	AMPLIFYING	
118.1	Sipho	uncoded	uncoded	uncoded	13 MOTIVATION 5 FOR OPTION 4
117.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
116.1	Thami	QUERY	INFERENCE	CONSENSUS U	
115.1	Sizwe	SUGGEST	OPINION	CONTRIBUTION	
114.1	Lulama	CLARIFY	OPINION	CONSENSUS U	12 BUILDING OF A COMMON UNDERSTANDING OF MOTIVATION 1 FOR OPTION 4
113.1	Theodora	QUERY	INTERPRETATION	CONSENSUS U	
112.2	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
112.1	Sizwe	SUGGEST	REPETITION	AMPLIFYING	
111.1	Lulama	CLARIFY	REPETITION	CONSENSUS U	11 INQUIRY ABOUT THE PROBLEM SOLVING TASK
110.1	Sizwe	COMMENT	REFLECTION	TASK	
109.1	Hilde	INQUIRE		TASK	
108.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	10 BUILDING OF A COMMON UNDERSTANDING OF OPTION 4
107.1	Lulama	INFORM	FACT	CONSENSUS U	
106.1	Sizwe	INQUIRE		CONSENSUS U	
105.1	Thami	uncoded	uncoded	uncoded	
104.1	Lulama	SUGGEST	INFERENCE	CONSENSUS U	
103.1	Lulama	SUGGEST	OPINION	CONSENSUS U	
102.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
101.1	Thami	SUPPORT	EXAMPLE	CONSENSUS A	9 MOTIVATION 4 FOR OPTION 4
100.2	Theodora	RECORD	REPETITION	MEMORY	
100.1	Sizwe	Dictate	REPETITION	MEMORY	
99.1	Thami	REQUEST	REPETITION	TASK	
98.1	Lulama	SUPPORT	OPINION	CONSENSUS A	
97.1	Thami	SUGGEST	INTERPRETATION	CONSENSUS U	
96.1	Sizwe	JUSTIFY	OPINION	CONSENSUS U	
95.1	Sipho	COMMENT	OPINION	TASK	
94.2	Theodora	RECORD	REPETITION	MEMORY	
94.1	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	
93.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
92.2	Thami	JUSTIFY	INFERENCE	CONTRIBUTION	
92.1	Thami	REQUEST		TASK	8 MOTIVATION 3 FOR OPTION 4
91.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
90.1	Sipho	SUGGEST	EXAMPLE	CONSENSUS U	
89.1	Thami	SUGGEST	EXAMPLE	CONSENSUS U	
88.1	Lulama	SUGGEST	EXAMPLE	CONSENSUS U	
87.1	Sizwe	INVITE		PARTICIPATION	
86.1	Buyiswa	INQUIRE		CONSENSUS U	
85.1	Thami	SUPPORT	OPINION	CONSENSUS A	
84.2	Sizwe	CLARIFY	REPETITION	CONSENSUS U	
84.1	Sizwe	COMMENT	REFLECTION	GROUP	
83.2	Theodora	JUSTIFY	REFLECTION	OWN NEEDS	
83.1	Theodora	REQUEST		OWN NEEDS	
82.1	Thami	COMMENT	OPINION	TASK	
81.1	Lulama	INQUIRE		TASK	
80.1	Sipho	Dictate	REPETITION	MEMORY	
79.1	Thozie	INVITE		PARTICIPATION	7 DEBATE ON HOW TO RECORD DEBATE ON THE MEANING OF MOTIVATION 2
78.1	Thami	COMMENT	OPINION	TASK	
77.1	Thozie	INQUIRE		CONSENSUS U	
76.1	Thami	Dictate	REPETITION	MEMORY	
75.1	Sizwe	INQUIRE		TASK	
74.1	Theodora	COMMENT	REFLECTION	TASK	
73.2	Sizwe	Dictate	REPETITION	MEMORY	
73.1	Sizwe	REQUEST		TASK	
72.1	Theodora	INQUIRE		GROUP	
71.1	Sizwe	COMMENT	REFLECTION	OWN NEEDS	
70.1	Theodora	REQUEST		OWN NEEDS	
69.1	Thozie	COMMENT	REFLECTION	TASK	
68.3	Sizwe	JUSTIFY	REPETITION	CONSENSUS U	
68.2	Sizwe	JUSTIFY	INTERPRETATION	CONSENSUS U	
68.1	Sizwe	REJECT	OPINION	OWN IDEAS	
67.1	Sipho	COMMENT	INTERPRETATION	GROUP	
66.2	Theodora	RECORD	REPETITION	MEMORY	
66.1	Sizwe	Dictate	REPETITION	MEMORY	
65.1	Thozie	REQUEST		TASK	
64.1	Sizwe	COMMENT	REFLECTION	GROUP	
63.1	Thami	COMMENT	REFLECTION	GROUP	
62.1	Thozie	REQUEST		TASK	
61.2	Sizwe	JUSTIFY	INFERENCE	OWN IDEAS	

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
61.1	Sizwe	CLARIFY	REPETITION	OWN IDEAS	6 DISAGREEMENT ON THE MEANING OF MOTIVATION 2
60.3	Thami	JUSTIFY	INFERENCE	CONTRIBUTION	
60.2	Thami	JUSTIFY	INFERENCE	OWN IDEAS	
60.1	Thami	REJECT	OPINION	OWN IDEAS	
59.3	Sizwe	SEEK		CONSENSUS U	5 MOTIVATION 2 FOR OPTION 4
59.2	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
59.1	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	
58.1	Buyiswa	SUGGEST	REPETITION	CONSENSUS A	
57.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
56.2	Sizwe	CLARIFY	INFERENCE	CONSENSUS U	
56.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
55.1	Thami	INQUIRE	INFERENCE	CONSENSUS U	
54.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
53.1	Thami	INQUIRE		CONSENSUS U	
52.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
51.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	
50.1	Thozie	INQUIRE	REPETITION	CONSENSUS U	
49.1	Lulama	INQUIRE		CONSENSUS U	
48.1	Thozie	INQUIRE		CONSENSUS U	
47.1	Sizwe	JUSTIFY	OPINION	CONTRIBUTION	4 BUILDING OF A COMMON UNDERSTANDING ON HOW TO PROCEED WITH THE PROBLEM SOLVING TASK
46.1	Thami	COMMENT	FACT	TASK	
45.2	Sizwe	QUERY		TASK	
45.1	Sizwe	DICTATE	REPETITION	MEMORY	
44.1	Sipho	REQUEST		TASK	
43.1	Thozie	SUPPORT	REPETITION	CONSENSUS U	
42.1	Thami	CLARIFY	REPETITION	CONSENSUS U	
41.1	Thozie	INQUIRE		TASK	
40.1	Sipho	CLARIFY	REPETITION	TASK	
39.1	Thami	SUPPORT	OPINION	TASK	
38.1	Sipho	COMMENT	INTERPRETATION	TASK	
37.1	Theodora	REQUEST		TASK	
36.1	Sipho	uncoded	uncoded	uncoded	
35.1	Sizwe	INQUIRE		TASK	
34.2	Theodora	RECORD	REPETITION	MEMORY	
34.1	Sipho	JUSTIFY	INTERPRETATION	CONTRIBUTION	
33.2	Theodora	RECORD	REPETITION	MEMORY	
33.1	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
32.1	Thami	INVITE	REPETITION	PARTICIPATION	
31.1	Lulama	SUGGEST	REPETITION	CONSENSUS A	
30.2	Sizwe	INVITE		PARTICIPATION	
30.1	Sizwe	REQUEST		GROUP	
29.1	Thozie	REQUEST		TASK	
28.2	Theodora	RECORD	REPETITION	MEMORY	
28.1	Sizwe	JUSTIFY	INTERPRETATION	CONTRIBUTION	
27.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
26.1	Thozie	JUSTIFY	OPINION	CONTRIBUTION	
25.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
24.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
23.2	Sizwe	JUSTIFY	INTERPRETATION	CONTRIBUTION	
23.1	Sizwe	SUGGEST	INTERPRETATION	CONSENSUS U	
22.2	Theodora	RECORD	REPETITION	MEMORY	
22.1	Sipho	JUSTIFY	REPETITION	CONSENSUS U	
21.3	Theodora	RECORD	REPETITION	MEMORY	
21.2	Sizwe	INVITE		PARTICIPATION	
21.1	Sizwe	REQUEST		TASK	2 SUGGESTION TO CHOOSE OPTION 4 GROUP SUPPORT FOR OPTION 4
20.1	Sipho	SUPPORT	REPETITION	CONSENSUS A	
19.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
18.2	Sizwe	SEEK		CONSENSUS A	
18.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
17.1	Thami	JUSTIFY	OPINION	CONTRIBUTION	
16.1	Lulama	INQUIRE		CONSENSUS U	
15.1	Thami	SUGGEST	OPINION	CONTRIBUTION	
14.3	Sizwe	CLARIFY	REPETITION	CONSENSUS U	1 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING STRUCTURE DEBATE ON THE PROBLEM SOLVING TASK
14.2	Sizwe	REQUEST		TASK	
14.1	Sizwe	SUPPORT	OPINION	CONSENSUS A	
13.1	Sipho	INFORM	FACT	TASK	
12.1	Lulama	SUPPORT	EXAMPLE	CONSENSUS A	
11.1	Thozie	SUPPORT	EXAMPLE	CONSENSUS A	
10.1	Theodora	JUSTIFY	INTERPRETATION	CONSENSUS U	
9.1	Lulama	REQUEST	REPETITION	TASK	
8.1	Thozie	SUPPORT	OPINION	CONSENSUS A	
7.1	Theodora	INFORM	FACT	CONSENSUS U	
6.1	Lulama	INQUIRE		TASK	
5.5	Sizwe	REJECT	REPETITION	OWN NEEDS	
5.4	Sizwe	CLARIFY	EXAMPLE	CONSENSUS U	
5.3	Sizwe	QUERY		OWN NEEDS	
5.2	Sizwe	JUSTIFY	INTERPRETATION	OWN NEEDS	
5.1	Sizwe	REJECT	OPINION	OWN NEEDS	
4.1	Sipho	COMMENT	REFLECTION	GROUP	
3.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
2.2	Lulama	REQUEST	OPINION	TASK	
2.1	Lulama	REJECT	OPINION	TASK	
1.4	Sizwe	INFORM	FACT	CONSENSUS U	
1.3	Sizwe	JUSTIFY	OPINION	OWN NEEDS	
1.2	Sizwe	REQUEST	OPINION	OWN NEEDS	
1.1	Sizwe	CLARIFY	INTERPRETATION	CONSENSUS U	

224.1	Matthew	OFFER			TASK	20 ESTABLISHMENT OF FINAL GROUP CONSENSUS ON THE COMPROMISE
223.1	James	CLARIFY	REPETITION	CONSENSUS U		
222.1	Matthew	COMMENT	OPINION	TASK		
221.2	James	SUGGEST	OPINION	CONTRIBUTION		
221.1	James	SUPPORT	REPETITION	CONSENSUS A		
220.1	Funeka	DICTATE	REPETITION	MEMORY		
219.1	Theo	DICTATE		MEMORY		
218.3	Ayanda	JUSTIFY	REPETITION	CONSENSUS A		
218.2	Matthew	SUGGEST	REPETITION	CONSENSUS A		
218.1	Matthew	SUPPORT	OPINION	AMPLIFYING		
217.1	Theo	uncoded	uncoded	uncoded		
216.1	Matthew	COMMENT	FACT	TASK		
215.1	Funeka	SUPPORT	REPETITION	CONSENSUS A		
214.1	Matthew	SUGGEST	OPINION	CONSENSUS A		
213.2	Theo	COMMENT	OPINION	TASK		
213.1	Theo	COMMENT	OPINION	TASK		
212.1	James	INFORM	FACT	CONSENSUS U		
211.1	Funeka	INFORM	FACT	CONSENSUS U		
210.1	Khaya	INFORM	FACT	CONSENSUS U		
209.1	Funeka	INQUIRE	INFERENCE	CONSENSUS U		
208.1	Theo	CLARIFY	INTERPRETATION	CONSENSUS U		
207.1	Funeka	INFORM	REFLECTION	CONSENSUS U		
206.1	Khaya	CLARIFY	INTERPRETATION	CONSENSUS U		
205.1	James	INQUIRE		CONSENSUS U		
204.1	Theo	SUPPORT	REPETITION	CONSENSUS A		
203.1	Matthew	SUGGEST	OPINION	CONTRIBUTION		
202.1	Theo	SUGGEST	INFERENCE	CONSENSUS U		
201.2	Matthew	RECORD	REPETITION	MEMORY		
201.1	Matthew	CLARIFY	INFERENCE	CONSENSUS U		
200.1	Theo	CLARIFY	INTERPRETATION	CONSENSUS U		
199.1	Funeka	INQUIRE		CONSENSUS U		
198.1	Khaya	SUGGEST	INTERPRETATION	CONSENSUS U		
197.1	Theo	SUGGEST	REPETITION	CONSENSUS A		
196.3	Matthew	RECORD	REPETITION	MEMORY		
196.2	Matthew	JUSTIFY	OPINION	CONSENSUS A		
196.1	Matthew	SUGGEST	OPINION	CONTRIBUTION		
195.1	Khaya	QUERY	REPETITION	CONSENSUS A		
194.1	Ayanda	INFORM	REFLECTION	CONSENSUS U		
193.1	James	QUERY	OPINION	CONSENSUS A		
192.1	Funeka	INFORM	REFLECTION	CONSENSUS U		
191.1	Theo	CLARIFY	EXAMPLE	CONSENSUS U		
190.1	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U		
189.1	Matthew	CLARIFY	INTERPRETATION	CONSENSUS U		
188.1	Khaya	CLARIFY	EXAMPLE	CONSENSUS U		
187.1	Theo	INQUIRE		CONSENSUS U		
186.2	Matthew	RECORD	REPETITION	MEMORY		
186.1	Matthew	CLARIFY	INFERENCE	CONSENSUS U		
185.1	Funeka	SUPPORT	REPETITION	CONSENSUS A		
184.1	Matthew	REJECT	OPINION	OWN IDEAS		
183.1	Theo	CLARIFY	INTERPRETATION	CONSENSUS U		
182.1	Ayanda	INQUIRE		CONSENSUS U		
181.1	Matthew	COMMENT	REFLECTION	TASK		
180.3	Theo	SUGGEST	INTERPRETATION	CONTRIBUTION		
180.2	Matthew	RECORD	REPETITION	MEMORY		
180.1	Theo	SUGGEST	REPETITION	CONSENSUS A		
179.1	Ayanda	SUGGEST	REPETITION	AMPLIFYING		
178.1	Theo	SUGGEST	OPINION	CONTRIBUTION		
177.2	Matthew	INVITE		PARTICIPATION		
177.1	Matthew	INQUIRE		TASK		
					19 MOTIVATION 5 FOR OPTION 1	
					18 MOTIVATION 4 FOR OPTION 1	

176.1	James	RECORD	REPETITION	MEMORY	17 MOTIVATION 3 FOR OPTION 1
175.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	
174.2	James	SUGGEST	OPINION	CONTRIBUTION	
174.1	James	SUPPORT	REPETITION	CONSENSUS A	
173.1	Matthew	SUGGEST	OPINION	CONTRIBUTION	
172.1	Theo	SUGGEST	REPETITION	CONSENSUS A	
171.1	Matthew	DICTATE	REPETITION	MEMORY	
170.1	Funeka	REQUEST		TASK	
169.1	Theo	DICTATE	REPETITION	MEMORY	
168.2	Matthew	RECORD	REPETITION	MEMORY	
168.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
167.2	Funeka	SUGGEST	REPETITION	CONSENSUS U	
167.1	Funeka	CLARIFY	INFERENCE	CONSENSUS U	
166.1	Matthew	QUERY		CONSENSUS U	
165.1	Theo	SUGGEST	OPINION	CONTRIBUTION	
164.1	Matthew	INVITE		PARTICIPATION	
163.1	Ayanda	SUGGEST	REPETITION	CONSENSUS U	
162.2	Khaya	COMMENT	OPINION	OWN NEEDS	
162.1	Khaya	REJECT	OPINION	OWN NEEDS	
161.1	Theo	REQUEST		TASK	
160.2	Matthew	RECORD	REPETITION	MEMORY	
160.1	Matthew	SUGGEST	OPINION	CONTRIBUTION	
159.1	Khaya	SUPPORT	OPINION	CONSENSUS A	
158.3	Matthew	SUGGEST	OPINION	CONTRIBUTION	
158.2	Matthew	INVITE		PARTICIPATION	
158.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
157.1	James	SUPPORT	INTERPRETATION	CONSENSUS A	
156.1	Theo	SUGGEST	INTERPRETATION	CONTRIBUTION	
155.2	Matthew	INVITE		PARTICIPATION	
155.1	Matthew	SUPPORT	INTERPRETATION	CONSENSUS A	
154.1	Theo	SUGGEST	REPETITION	AMPLIFYING	
153.3	Matthew	INVITE		PARTICIPATION	
153.2	Matthew	SUGGEST	INTERPRETATION	CONTRIBUTION	
153.1	Matthew	INVITE		PARTICIPATION	
152.1	Khaya	INFORM	FACT	CONSENSUS U	
151.1	Funeka	INFORM	FACT	CONSENSUS U	
150.1	James	INFORM	FACT	CONSENSUS U	
149.1	Khaya	INFORM	FACT	CONSENSUS U	
148.1	Theo	INFORM	FACT	CONSENSUS U	
147.1	Funeka	INFORM	FACT	CONSENSUS U	
146.1	Khaya	INQUIRE		CONSENSUS U	
145.1	Theo	SUGGEST	OPINION	CONTRIBUTION	
144.2	Matthew	INVITE		PARTICIPATION	
144.1	Matthew	REQUEST		GROUP	
143.2	Theo	RECORD	REPETITION	MEMORY	
143.1	Theo	DICTATE	REPETITION	MEMORY	
142.1	Khaya	REJECT	OPINION	OWN NEEDS	
141.1	James	COMMENT	REFLECTION	GROUP	
140.3	Matthew	RECORD	REPETITION	MEMORY	
140.2	Matthew	INVITE		PARTICIPATION	
140.1	Matthew	DICTATE	REPETITION	MEMORY	
139.1	Khaya	REQUEST	OPINION	TASK	
138.1	Ayanda	SUGGEST	REPETITION	CONSENSUS A	
137.2	Matthew	RECORD	REPETITION	MEMORY	
137.1	Theo	DICTATE	REPETITION	MEMORY	
136.2	Matthew	REQUEST		TASK	
136.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
135.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
134.1	James	REQUEST	REPETITION	TASK	
133.2	Theo	CLARIFY	EXAMPLE	CONSENSUS U	
133.1	Theo	JUSTIFY	REPETITION	CONSENSUS A	
132.1	Ayanda	SUGGEST	REPETITION	AMPLIFYING	
131.1	Theo	INVITE		PARTICIPATION	
130.2	Ayanda	JUSTIFY	REPETITION	CONSENSUS U	
130.1	Ayanda	INFORM	FACT	TASK	
129.1	Theo	SUPPORT	OPINION	CONSENSUS A	
128.2	Khaya	SUGGEST	REPETITION	COMPROMISE	
128.1	Khaya	REJECT	REPETITION	GROUP	
127.1	Theo	INQUIRE		TASK	
126.1	James	REJECT	OPINION	GROUP	
125.1	Funeka	REQUEST	OPINION	GROUP	
124.2	Matthew	COMMENT	REFLECTION	TASK	
124.1	Matthew	REJECT	OPINION	OWN NEEDS	
123.1	Ayanda	COMMENT	INTERPRETATION	TASK	
122.1	Matthew	REJECT	INFERENCE	CONTRIBUTION	
121.1	Ayanda	CLARIFY	INFERENCE	CONSENSUS U	
120.1	Matthew	REQUEST	OPINION	TASK	
119.1	Theo	CLARIFY	INFERENCE	CONSENSUS U	
118.3	Ayanda	RECORD	REPETITION	MEMORY	
118.2	Matthew	INFORM	FACT	MEMORY	
118.1	Matthew	OFFER		TASK	
117.1	Theo	REJECT	INTERPRETATION	TASK	
116.3	Matthew	COMMENT	INTERPRETATION	TASK	
116.2	Ayanda	RECORD	REPETITION	MEMORY	
116.1	Matthew	INFORM	FACT	MEMORY	
115.2	Ayanda	RECORD	REPETITION	MEMORY	
115.1	Khaya	INFORM	FACT	MEMORY	
114.2	Ayanda	RECORD	REPETITION	MEMORY	
114.1	Funeka	INFORM	FACT	MEMORY	
113.2	James	COMMENT	REFLECTION	TASK	
113.1	Ayanda	INQUIRE		TASK	
112.2	Ayanda	RECORD	REPETITION	MEMORY	
112.1	Matthew	INFORM	FACT	MEMORY	
111.1	Ayanda	INQUIRE		TASK	
					16 MOTIVATION 2 FOR OPTION 1
					15 SUGGESTION TO CHOOSE OPTION 1 MOTIVATION 1 FOR OPTION 1 BUILDING A COMMON UNDERSTANDING ON WHAT TO RECORD
					14 DEBATE ON THE PROBLEM SOLVING TASK
					13 REPETITION OF COMPROMISE
					12 DEBATE ON THE PROBLEM SOLVING TASK

110.2	Ayanda	RECORD	REPETITION	MEMORY	11 BUILDING OF A COMMON UNDERSTANDING OF THE CONTENT OF THE PROBLEM STRUCTURE AND THE PROBLEM SOLVING PROCESS
110.1	Khaya	INFORM	FACT	MEMORY	
109.2	Ayanda	RECORD	REPETITION	MEMORY	
109.1	Funeka	INFORM	FACT	MEMORY	
108.2	Ayanda	RECORD	REPETITION	MEMORY	
108.1	Theo	REQUEST		TASK	
107.2	Ayanda	RECORD	REPETITION	MEMORY	
107.1	James	INFORM	FACT	MEMORY	
106.2	Ayanda	RECORD	REPETITION	MEMORY	
106.1	Theo	INFORM	FACT	MEMORY	
105.2	Ayanda	RECORD	REPETITION	MEMORY	
105.1	Matthew	INFORM	FACT	MEMORY	
104.2	Ayanda	RECORD	REPETITION	MEMORY	
104.1	Khaya	INFORM	FACT	MEMORY	
103.2	Ayanda	RECORD	REPETITION	MEMORY	
103.1	Funeka	INFORM	FACT	MEMORY	
102.1	Ayanda	INQUIRE		TASK	
101.2	Ayanda	RECORD	REPETITION	MEMORY	
101.1	Theo	INFORM	FACT	MEMORY	
100.1	Ayanda	REQUEST		TASK	
99.1	Theo	COMMENT	REFLECTION	TASK	
98.1	James	SUPPORT	REPETITION	TASK	
97.1	Khaya	REJECT	REFLECTION	TASK	
96.1	Funeka	COMMENT	FACT	TASK	
95.1	Matthew	REQUEST		TASK	
94.1	Theo	REQUEST		TASK	
93.1	Matthew	SUPPORT	OPINION	TASK	
92.2	Ayanda	RECORD	REPETITION	MEMORY	
92.1	Theo	INFORM	FACT	MEMORY	
91.2	Ayanda	RECORD	REPETITION	MEMORY	
91.1	Khaya	INFORM	FACT	MEMORY	
90.3	Matthew	INFORM	FACT	MEMORY	
90.2	Matthew	CLARIFY	INFERENCE	CONSENSUS U	
90.1	Matthew	INFORM	FACT	CONSENSUS U	
89.1	Funeka	CLARIFY	INTERPRETATION	CONSENSUS U	
88.1	Theo	uncoded	uncoded	uncoded	
87.2	Matthew	JUSTIFY	FACT	TASK	
87.1	Matthew	REQUEST	OPINION	TASK	
86.2	Ayanda	RECORD	REPETITION	MEMORY	
86.1	James	INFORM	FACT	MEMORY	
85.1	Funeka	REQUEST		TASK	
84.1	Matthew	REQUEST	REPETITION	TASK	
83.2	Ayanda	RECORD	REPETITION	MEMORY	
83.1	Theo	INFORM	FACT	MEMORY	
82.2	Ayanda	RECORD	REPETITION	MEMORY	
82.1	James	INFORM	FACT	MEMORY	
81.2	Matthew	CLARIFY	INFERENCE	CONSENSUS U	
81.1	Matthew	REQUEST	INTERPRETATION	TASK	
80.1	Funeka	uncoded	uncoded	uncoded	
79.4	Matthew	REQUEST		TASK	
79.3	Matthew	COMMENT	REFLECTION	TASK	
79.2	Matthew	JUSTIFY	INFERENCE	CONSENSUS A	
79.1	Matthew	SUPPORT	OPINION	CONSENSUS A	
78.3	Ayanda	JUSTIFY	REPETITION	CONSENSUS U	
78.2	Ayanda	REQUEST	OPINION	TASK	
78.1	Ayanda	SUPPORT	OPINION	CONSENSUS A	
77.1	Matthew	SEEK		CONSENSUS A	
76.1	Theo	SUGGEST	OPINION	CONTRIBUTION	
75.2	Funeka	SUGGEST	INFERENCE	COMPROMISE	
75.1	Funeka	CLARIFY	INFERENCE	CONTRIBUTION	
74.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
73.1	Theo	SUGGEST	REPETITION	CONSENSUS A	
72.3	Funeka	SUGGEST	OPINION	CONTRIBUTION	
72.2	Funeka	INVITE		PARTICIPATION	
72.1	Funeka	CLARIFY	INFERENCE	CONSENSUS U	
71.1	Theo	INFORM	INFERENCE	CONSENSUS U	
70.1	Khaya	INFORM	INFERENCE	CONSENSUS U	
69.1	Funeka	INFORM	INFERENCE	CONSENSUS U	
68.1	Khaya	INFORM	INFERENCE	CONSENSUS U	
67.1	Funeka	COMMENT	REFLECTION	TASK	
66.2	Matthew	CLARIFY	INFERENCE	CONSENSUS U	
66.1	Matthew	REQUEST	REPETITION	TASK	
65.2	Theo	INFORM	INFERENCE	CONSENSUS U	
65.1	Theo	OFFER		TASK	
64.2	Matthew	OFFER		TASK	
64.1	Matthew	REQUEST	INTERPRETATION	TASK	
63.1	Funeka	COMMENT	REFLECTION	TASK	
62.2	Matthew	REQUEST		TASK	
62.1	Matthew	SUPPORT	OPINION	CONSENSUS A	
61.1	Ayanda	REQUEST	REPETITION	OWN NEEDS	
60.1	James	COMMENT	FACT	TASK	
59.1	Ayanda	REQUEST	REPETITION	OWN NEEDS	
58.1	Matthew	REJECT	INTERPRETATION	OWN IDEAS	
57.3	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U	
57.2	Ayanda	JUSTIFY	REPETITION	TASK	
57.1	Ayanda	COMMENT	OPINION	TASK	
56.2	Matthew	COMMENT	FACT	TASK	
56.1	Matthew	INFORM	FACT	CONSENSUS U	
55.1	Funeka	INVITE		PARTICIPATION	
54.1	Khaya	SUGGEST	REPETITION	CONSENSUS U	
53.3	Matthew	INVITE		PARTICIPATION	
53.2	Matthew	INVITE		PARTICIPATION	
53.1	Matthew	COMMENT	REFLECTION	GROUP	
52.1	Funeka	INVITE		PARTICIPATION	

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
51.1	Theo	SUGGEST	REPETITION	AMPLIFYING	7 SUGGESTION OF A COMPROMISE BUILDING OF A COMMON UNDERSTANDING OF THE COMPROMISE
50.1	Matthew	INVITE		PARTICIPATION	
49.2	Theo	CLARIFY	INTERPRETATION	CONSENSUS U	
49.1	Theo	SUPPORT	REPETITION	CONSENSUS A	
48.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
47.3	Theo	CLARIFY	EXAMPLE	CONSENSUS U	
47.2	Theo	JUSTIFY	REPETITION	CONSENSUS A	
47.1	Theo	JUSTIFY	OPINION	AMPLIFYING	
46.5	Matthew	RECORD	REPETITION	MEMORY	
46.4	Theo	JUSTIFY	OPINION	COMPROMISE	
46.3	Theo	JUSTIFY	REPETITION	CONSENSUS A	
46.2	Theo	JUSTIFY	OPINION	CONTRIBUTION	
46.1	Theo	SUGGEST	OPINION	CONTRIBUTION	
45.3	Matthew	INVITE		PARTICIPATION	
45.2	Matthew	INFORM	REPETITION	CONSENSUS A	
45.1	Matthew	COMMENT	REFLECTION	TASK	6 BUILDING OF A COMMON UNDERSTANDING OF OPTION 4 OF THE PROBLEM STRUCTURE
44.2	Funeka	INFORM	EXAMPLE	CONSENSUS U	
44.1	Funeka	INFORM	FACT	CONSENSUS U	
43.1	Matthew	INQUIRE	REPETITION	CONSENSUS U	
42.1	Funeka	INFORM	REPETITION	CONSENSUS U	
41.1	Matthew	INQUIRE		CONSENSUS U	
40.1	Funeka	CLARIFY	INTERPRETATION	CONSENSUS U	
39.1	Khaya	CLARIFY	INTERPRETATION	CONSENSUS U	
38.1	Funeka	INFORM	REPETITION	CONSENSUS U	
37.1	Matthew	INQUIRE		CONSENSUS U	
36.1	Funeka	INFORM	FACT	CONSENSUS U	
35.1	Matthew	INQUIRE	INFERENCE	CONSENSUS U	
34.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
33.1	Matthew	CLARIFY	INFERENCE	CONSENSUS U	
32.2	Funeka	CLARIFY	FACT	CONSENSUS U	
32.1	Funeka	INFORM	FACT	CONSENSUS U	
31.2	Matthew	REQUEST		TASK	
31.1	Matthew	SUPPORT	OPINION	CONSENSUS A	
30.4	Funeka	SUPPORT	REPETITION	AMPLIFYING	
30.3	Funeka	INFORM	FACT	CONSENSUS U	
30.2	Funeka	CLARIFY	INFERENCE	CONSENSUS U	
30.1	Funeka	INFORM	FACT	CONSENSUS U	
29.2	Matthew	INVITE	REPETITION	PARTICIPATION	
29.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
28.1	Funeka	INQUIRE		CONSENSUS U	
27.2	Matthew	INVITE		PARTICIPATION	
27.1	Matthew	COMMENT	INTERPRETATION	TASK	5 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING TASK
26.2	Funeka	COMMENT	OPINION	TASK	
26.1	Funeka	COMMENT	OPINION	TASK	
25.1	Matthew	COMMENT	REFLECTION	TASK	
24.1	Funeka	SUGGEST	REPETITION	CONSENSUS A	
23.2	Matthew	INVITE		PARTICIPATION	4 SUGGESTION TO CHOOSE OPTION 4 MOTIVATION 1 FOR OPTION 4
23.1	Matthew	COMMENT	REFLECTION	TASK	
22.3	James	SUPPORT	REPETITION	AMPLIFYING	
22.2	James	CLARIFY	INTERPRETATION	CONSENSUS U	
22.1	James	JUSTIFY	OPINION	CONTRIBUTION	
21.2	Matthew	INVITE		PARTICIPATION	
21.1	Matthew	INFORM	REPETITION	CONSENSUS U	
20.2	James	SUGGEST	OPINION	CONTRIBUTION	3 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM SOLVING TASK
20.1	James	OFFER		TASK	
19.2	Matthew	SUGGEST	INFERENCE	CONTRIBUTION	
19.1	Matthew	REQUEST	OPINION	TASK	2 BUILDING OF A COMMON UNDERSTANDING OF OPTION 1 OF THE PROBLEM STRUCTURE
18.1	Funeka	INVITE		PARTICIPATION	
17.6	Matthew	JUSTIFY	OPINION	CONTRIBUTION	
17.5	Matthew	JUSTIFY	INFERENCE	CONTRIBUTION	
17.4	Matthew	JUSTIFY	OPINION	CONTRIBUTION	
17.3	Matthew	INFORM	FACT	CONSENSUS U	
17.2	Matthew	SUGGEST	INTERPRETATION	CONSENSUS U	
17.1	Matthew	INFORM	FACT	CONSENSUS U	
16.1	James	SUGGEST	INTERPRETATION	CONSENSUS U	
15.4	Matthew	INVITE		PARTICIPATION	
15.3	Matthew	CLARIFY	EXAMPLE	CONSENSUS U	
15.2	Matthew	REQUEST	REPETITION	TASK	
15.1	Matthew	REQUEST	OPINION	TASK	
14.1	Funeka	JUSTIFY	OPINION	CONSENSUS U	
13.3	Matthew	REJECT	OPINION	OWN IDEAS	
13.2	Matthew	COMMENT	REFLECTION	GROUP	
13.1	Matthew	REJECT	OPINION	OWN NEEDS	
12.1	Theo	REQUEST		TASK	
11.1	Ayanda	INFORM	REPETITION	CONSENSUS A	
10.1	Theo	CLARIFY	EXAMPLE	CONSENSUS U	
9.1	James	INQUIRE		CONSENSUS U	
8.1	Funeka	COMMENT	FACT	TASK	
7.1	Matthew	REJECT	OPINION	GROUP	
6.1	James	REQUEST		TASK	
5.1	Theo	REQUEST		TASK	
4.1	Khaya	CLARIFY	INFERENCE	CONSENSUS U	
3.1	Theo	INFORM	FACT	CONSENSUS U	
2.1	Matthew	INQUIRE		CONSENSUS U	
1.1	Theo	INVITE		PARTICIPATION	

147.1	Thozie	COMMENT	OPINION	TASK	13 BUILDING OF A COMMON UNDERSTANDING OF WHAT AND HOW TO RECORD
146.2	Thami	RECORD	REPETITION	MEMORY	
146.1	Sipho	SUGGEST	OPINION	CONTRIBUTION	
145.2	Sizwe	INVITE		PARTICIPATION	
145.1	Sizwe	CLARIFY	REPETITION	OWN IDEAS	
144.1	Lulama	JUSTIFY	FACT	OWN IDEAS	
143.2	Sizwe	JUSTIFY	INTERPRETATION	OWN IDEAS	
143.1	Sizwe	INFORM	FACT	CONSENSUS U	
142.1	Lulama	REJECT	INTERPRETATION	OWN IDEAS	
141.5	Thami	RECORD	REPETITION	MEMORY	
141.4	Sizwe	REQUEST		TASK	
141.3	Sizwe	REJECT	OPINION	TASK	
141.2	Sizwe	INFORM	REPETITION	CONSENSUS U	
141.1	Sizwe	REQUEST		TASK	
140.2	Thami	RECORD	REPETITION	MEMORY	
140.1	Thozie	REQUEST		TASK	
139.2	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
139.1	Sizwe	REQUEST		TASK	
138.2	Thami	OFFER		TASK	
138.1	Thami	COMMENT	FACT	TASK	
137.2	Sizwe	REQUEST		TASK	
137.1	Sizwe	REJECT	OPINION	OWN NEEDS	
136.1	Lulama	INQUIRE		TASK	
135.1	Sizwe	SUPPORT	REPETITION	OWN IDEAS	
134.2	James	QUERY	INFERENCE	OWN IDEAS	
134.1	James	COMMENT	OPINION	TASK	
133.2	Sizwe	DICTATE	REPETITION	MEMORY	
133.1	Sizwe	COMMENT	OPINION	TASK	
132.1	Thozie	DICTATE	REPETITION	MEMORY	
131.6	Thami	RECORD	REPETITION	MEMORY	
131.5	Sizwe	REQUEST		TASK	
131.4	Sizwe	REQUEST		TASK	
131.3	Sizwe	INQUIRE		CONSENSUS U	
131.2	Sizwe	COMMENT	REFLECTION	OWN NEEDS	
131.1	Sizwe	REQUEST	INFERENCE	TASK	
130.1	Thozie	SUPPORT	REPETITION	CONSENSUS A	
129.1	Sizwe	SUPPORT	OPINION	CONSENSUS A	
128.1	Thozie	SUGGEST	OPINION	CONSENSUS U	
127.1	Sizwe	SUPPORT	REPETITION	CONSENSUS A	
126.1	Thozie	CLARIFY	INTERPRETATION	CONSENSUS U	
125.1	Sizwe	SUGGEST	OPINION	OWN IDEAS	
124.1	Lulama	REJECT	OPINION	OWN IDEAS	
123.2	sizwe	REQUEST		TASK	
123.1	Sizwe	CLARIFY	OPINION	CONSENSUS U	
122.3	Lulama	SUGGEST	OPINION	CONSENSUS U	
122.2	Lulama	INVITE		PARTICIPATION	
122.1	Lulama	INFORM	FACT	CONSENSUS U	
121.1	Sizwe	uncoded	uncoded	uncoded	
120.2	Thozie	JUSTIFY	OPINION	OWN IDEAS	
120.1	Thozie	REJECT	OPINION	OWN IDEAS	

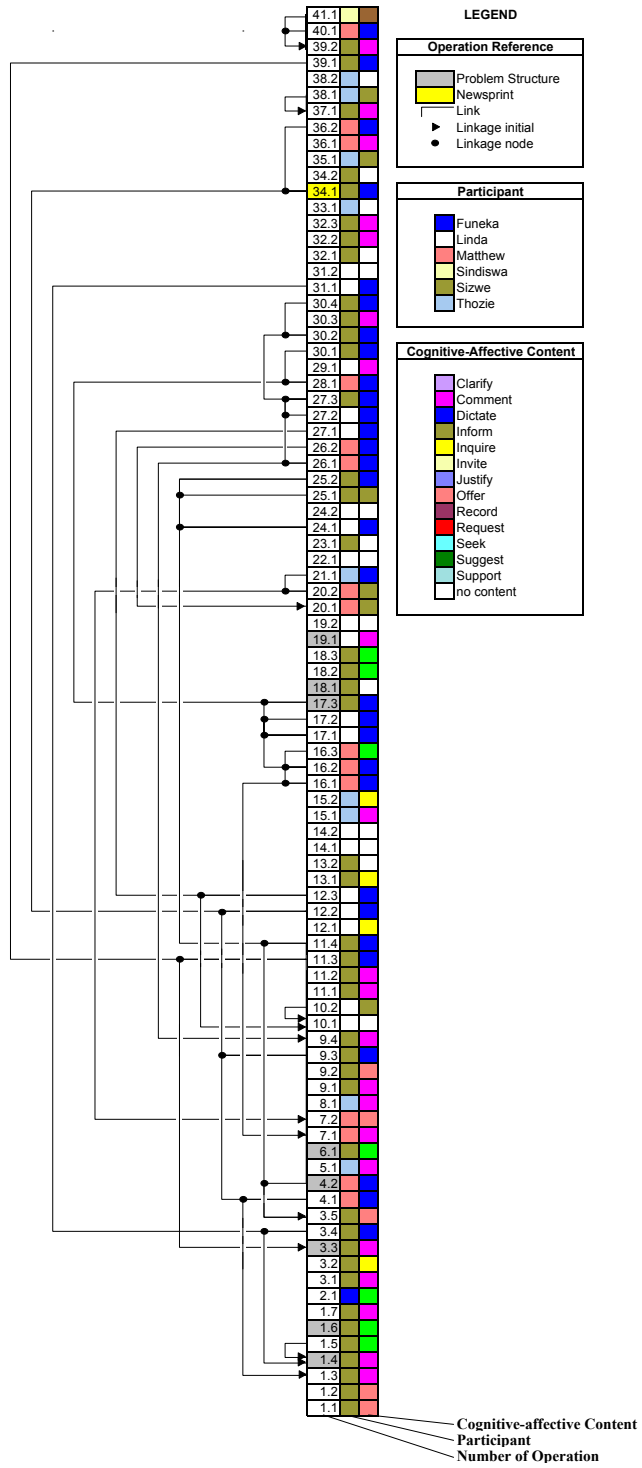
119.1	James	QUERY	OPINION	CONSENSUS U	11 DEBATE ON THE PROGRESS OF THE PROBLEM SOLVING PROCESS	
118.1	Sizwe	COMMENT	REFLECTION	TASK		
117.1	Lulama	REJECT	OPINION	OWN NEEDS		
116.1	Thozie	SUPPORT	OPINION	TASK		
115.1	James	REJECT	OPINION	OWN NEEDS		
114.1	Thami	COMMENT	REFLECTION	OWN NEEDS		
113.1	Sizwe	INQUIRE		GROUP		
112.2	Thami	COMMENT	OPINION	OWN NEEDS		
112.1	Thami	COMMENT	OPINION	OWN NEEDS		
111.1	Sipho	INQUIRE		TASK		
110.1	Thami	CLARIFY	REPETITION	OWN IDEAS		10 DEBATE ON THE MEANING OF SUGGESTION 2
109.4	Sipho	QUERY	OPINION	OWN IDEAS		
109.3	Sipho	SUGGEST	REPETITION	OWN IDEAS		
109.2	Sipho	REJECT	OPINION	OWN IDEAS		
109.1	Sipho	CLARIFY	INTERPRETATION	CONSENSUS U		
108.3	Thami	SUGGEST	REPETITION	OWN IDEAS		
108.2	Thami	SUGGEST	OPINION	OWN IDEAS		
108.1	Thami	JUSTIFY	OPINION	OWN IDEAS		
107.3	Sipho	CLARIFY	OPINION	CONSENSUS U		
107.2	Sipho	SUGGEST	INTERPRETATION	OWN IDEAS		
107.1	Sipho	REJECT	INTERPRETATION	OWN IDEAS		
106.1	Thami	SUGGEST	OPINION	OWN IDEAS		
105.1	Sipho	INQUIRE		CONSENSUS U		
104.1	Thami	COMMENT	OPINION	OWN NEEDS		
103.2	Sipho	JUSTIFY	INTERPRETATION	CONSENSUS U		
103.1	Sipho	QUERY	INTERPRETATION	CONSENSUS U		
102.1	Thami	COMMENT	REFLECTION	TASK	9 DEBATE ON WHAT TO RECORD	
101.1	Thozie	INQUIRE		TASK		
100.1	Thami	COMMENT	FACT	TASK		
99.1	Lulama	DICTATE	REPETITION	MEMORY		
98.2	Sizwe	DICTATE	REPETITION	MEMORY		
98.1	Sizwe	REQUEST		TASK		
97.1	Thami	INQUIRE		OWN NEEDS		
96.1	Sizwe	COMMENT	REFLECTION	GROUP		
95.1	Thami	COMMENT	REFLECTION	OWN NEEDS		
94.1	Sipho	QUERY	INTERPRETATION	GROUP		
93.1	Thozie	REQUEST		GROUP		
92.2	Thami	COMMENT	REFLECTION	OWN NEEDS		
92.1	Thami	COMMENT	REFLECTION	OWN NEEDS		
91.1	Sizwe	REQUEST		TASK		
90.1	Thami	SUPPORT	OPINION	CONSENSUS U		8 SUGGESTION 2 TO SOLVE ASPECT 1 OF THE PROBLEM
89.1	Lulama	SEEK		CONSENSUS U		
88.2	Sizwe	CLARIFY	REPETITION	CONSENSUS U		
88.1	Sizwe	CLARIFY	REPETITION	CONSENSUS U		
87.3	Lulama	CLARIFY	INFERENCE	CONSENSUS U		
87.2	Lulama	CLARIFY	INFERENCE	CONSENSUS U		
87.1	Lulama	CLARIFY	REPETITION	CONSENSUS U		
86.1	Sipho	SEEK	REPETITION	CONSENSUS A		
85.1	Sizwe	CLARIFY	REPETITION	AMPLIFYING		
84.1	Thami	INQUIRE		CONSENSUS U		
83.2	Thami	RECORD	REPETITION	MEMORY		
83.1	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION		
82.1	Sipho	SUGGEST	OPINION	CONTRIBUTION		
81.1	Thami	REJECT	OPINION	OWN NEEDS		
80.1	Thozie	INVITE		PARTICIPATION	7 BUILDING OF A COMMON UNDERSTANDING OF THE PROBLEM STRUCTURE AND THE PROBLEM SOLVING TASK	
79.1	James	REQUEST		TASK		
78.1	Sizwe	COMMENT	OPINION	GROUP		
77.1	Thozie	INQUIRE		TASK		
76.2	Thami	COMMENT	REFLECTION	TASK		
76.1	Thami	REQUEST		TASK		
75.2	Sipho	JUSTIFY	INTERPRETATION	CONSENSUS U		
75.1	Sipho	SUPPORT	OPINION	CONSENSUS A		
74.1	Thozie	SUPPORT	REFLECTION	CONSENSUS A		
73.2	Thami	JUSTIFY	FACT	CONSENSUS U		
73.1	Thami	INFORM	INFERENCE	CONSENSUS U		
72.1	Thozie	INQUIRE		CONSENSUS U		
71.3	Thami	RECORD	REPETITION	MEMORY		
71.2	Lulama	COMMENT	INTERPRETATION	TASK		6 DEBATE ON WHAT TO RECORD
71.1	Lulama	SUPPORT	OPINION	TASK		
70.1	Sizwe	COMMENT	REFLECTION	TASK		
69.1	Thami	INQUIRE		TASK		
68.1	Sizwe	SUGGEST	REPETITION	AMPLIFYING		
67.1	Thami	INQUIRE		CONSENSUS U		
66.1	Thozie	REQUEST		TASK		
65.1	Thami	uncoded	uncoded	uncoded		
64.3	Sizwe	COMMENT	REFLECTION	GROUP		
64.2	Thami	RECORD	REPETITION	MEMORY		
64.1	Sizwe	DICTATE	REPETITION	MEMORY		
63.1	Thami	INQUIRE		CONSENSUS U		
62.2	Sizwe	REQUEST		OWN NEEDS		
62.1	Sizwe	DICTATE	REPETITION	MEMORY		
61.3	Thami	RECORD	REPETITION	MEMORY		
61.2	Thozie	DICTATE	REPETITION	MEMORY		
61.1	Thozie	REQUEST	REPETITION	TASK		
60.2	Thami	COMMENT	REFLECTION	TASK		
60.1	Thami	REQUEST		OWN NEEDS		
59.2	Thozie	DICTATE	REPETITION	MEMORY		
59.1	Thozie	REQUEST		TASK		
58.5	Sizwe	SUGGEST	INTERPRETATION	CONTRIBUTION		
58.4	Sizwe	SUGGEST	REPETITION	OWN IDEAS		
58.3	Sizwe	SUGGEST	REPETITION	OWN IDEAS		
58.2	Sizwe	CLARIFY	INFERENCE	OWN IDEAS		
58.1	Sizwe	REJECT	OPINION	OWN NEEDS		
57.2	Thami	COMMENT	FACT	TASK		

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
57.1	Thami	COMMENT	INTERPRETATION	TASK	
56.2	Thami	RECORD	REPETITION	MEMORY	
56.1	Sizwe	DICTATE	REPETITION	MEMORY	
55.1	Sipho	REQUEST		TASK	
54.1	Thami	REQUEST	OPINION	TASK	
53.1	Sipho	QUERY	REFLECTION	GROUP	
52.3	Thami	RECORD	REPETITION	MEMORY	
52.2	Thami	REQUEST		OWN NEEDS	
52.1	Thami	REQUEST		GROUP	
51.1	Thozie	DICTATE	REPETITION	MEMORY	
50.2	Thami	RECORD	REPETITION	MEMORY	
50.1	Sizwe	DICTATE	REPETITION	MEMORY	
49.1	Thozie	COMMENT	REPETITION	TASK	
48.1	Thami	REJECT	OPINION	OWN NEEDS	
47.2	Sizwe	COMMENT	OPINION	OWN NEEDS	
47.1	Sizwe	REJECT	OPINION	OWN NEEDS	
46.1	Thozie	REQUEST		TASK	
45.1	James	INVITE		PARTICIPATION	
44.2	Thami	REQUEST		OWN NEEDS	
44.1	Thami	REJECT	OPINION	OWN NEEDS	
43.1	Sizwe	REQUEST		OWN NEEDS	
42.1	Thozie	COMMENT	REFLECTION	TASK	
41.1	Thami	COMMENT	OPINION	OWN NEEDS	
40.1	Sizwe	COMMENT	REFLECTION	TASK	
39.1	Thami	REQUEST		TASK	
38.2	Sizwe	JUSTIFY	INFERENCE	OWN IDEAS	
38.1	Sizwe	SUGGEST	INFERENCE	OWN IDEAS	
37.3	Thami	JUSTIFY	INFERENCE	OWN IDEAS	
37.2	Thami	SEEK		CONSENSUS U	
37.1	Thami	CLARIFY	REPETITION	CONSENSUS U	
36.1	Sizwe	INQUIRE		CONSENSUS U	
35.1	Thami	SUGGEST	REPETITION	CONSENSUS U	
34.1	Lulama	CLARIFY	REPETITION	CONSENSUS U	
33.1	Thami	INQUIRE		CONSENSUS U	
32.1	Lulama	CLARIFY	REPETITION	CONSENSUS U	
31.1	Thami	INQUIRE		CONSENSUS U	
30.1	Lulama	CLARIFY	REPETITION	CONSENSUS U	
29.1	Thami	INQUIRE	REPETITION	CONSENSUS U	
28.1	Sizwe	CLARIFY	OPINION	AMPLIFYING	
27.1	Thami	INQUIRE		CONSENSUS A	
26.1	Lulama	SUGGEST	REPETITION	AMPLIFYING	
25.2	Sizwe	SUPPORT	REPETITION	AMPLIFYING	
25.1	Sizwe	CLARIFY	FACT	CONSENSUS U	
24.1	Lulama	REQUEST	REPETITION	TASK	
23.1	Thami	REQUEST		TASK	
22.4	Sizwe	CLARIFY	REPETITION	CONSENSUS U	
22.3	Sizwe	JUSTIFY	REPETITION	CONSENSUS U	
22.2	Sizwe	JUSTIFY	REPETITION	CONSENSUS U	
22.1	Sizwe	SUGGEST	OPINION	CONSENSUS U	
21.1	Lulama	REJECT	INTERPRETATION	OWN IDEAS	
20.1	Sizwe	INFORM	FACT	CONSENSUS U	
19.2	Lulama	INFORM	REPETITION	CONSENSUS U	
19.1	Lulama	REJECT	OPINION	OWN IDEAS	
18.4	Sizwe	JUSTIFY	REPETITION	AMPLIFYING	
18.3	Sizwe	SUPPORT	REPETITION	AMPLIFYING	
18.2	Sizwe	JUSTIFY	OPINION	OWN IDEAS	
18.1	Sizwe	SUPPORT	OPINION	OWN IDEAS	
17.1	Thami	QUERY		TASK	
16.1	Sizwe	SUPPORT	OPINION	OWN NEEDS	
15.1	Thami	COMMENT	FACT	TASK	
14.2	Sizwe	REQUEST		OWN NEEDS	
14.1	Sizwe	REQUEST		OWN NEEDS	
13.1	James	REJECT	INFERENCE	CONTRIBUTION	
12.1	Sizwe	DICTATE	REPETITION	MEMORY	
11.2	Thami	RECORD	REPETITION	MEMORY	
11.1	Thami	REQUEST		TASK	
10.1	Lulama	CLARIFY	INFERENCE	CONSENSUS U	
9.1	Sizwe	SUPPORT	REPETITION	AMPLIFYING	
8.1	Lulama	SUPPORT	REPETITION	CONSENSUS U	
7.2	Sizwe	INFORM	FACT	CONSENSUS U	
7.1	Sizwe	INFORM	REPETITION	CONSENSUS U	
6.1	Thami	INQUIRE		CONSENSUS U	
5.4	Sizwe	INVITE		PARTICIPATION	
5.3	Sizwe	CLARIFY	INFERENCE	CONSENSUS U	
5.2	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
5.1	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
4.1	Thami	COMMENT	OPINION	TASK	
3.5	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
3.4	Sizwe	INFORM	FACT	CONSENSUS U	
3.3	Sizwe	INFORM	FACT	CONSENSUS U	
3.2	Sizwe	SUGGEST	INFERENCE	CONTRIBUTION	
3.1	Sizwe	SUGGEST	OPINION	OWN IDEAS	
2.2	Thami	REQUEST		TASK	
2.1	Thami	REJECT	OPINION	OWN NEEDS	
1.1	Sizwe	REQUEST	OPINION	TASK	
					5 SUGGESTION 1 TO SOLVE ASPECT 1 OF THE PROBLEM
					4 QUERY OF ATTEMPT 1 BUILDING OF A COMMON UNDERSTANDING OF THE CONTENT OF THE PROBLEM STRUCTURE DEFENSE OF ATTEMPT 1
					3 DEBATE ON THE ACCEPTANCE OF ATTEMPTS 1 AND 2 TO SOLVE ASPECT 2
					2 ATTEMPTS 1 AND 2 TO SOLVE ASPECT 2 OF THE PROBLEM
					1 INVITATION TO START THE PROBLEM SOLVING PROCESS

173.3	Theodora	COMMENT	OPINION	TASK	
173.2	Theodora	REQUEST		TASK	
173.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
172.1	Funeka	SEEK		CONSENSUS U	
171.1	Matthew	SEEK		CONSENSUS A	
170.1	Khaya	SUPPORT	OPINION	CONSENSUS A	
169.2	Funeka	OFFER		TASK	
169.1	Funeka	REJECT	OPINION	OWN IDEAS	
168.2	Matthew	SEEK	REPETITION	CONSENSUS A	
168.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
167.1	Theodora	CLARIFY	REPETITION	CONSENSUS U	
166.1	Khaya	CLARIFY	REPETITION	CONSENSUS U	
165.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
164.2	Matthew	CLARIFY	REPETITION	CONSENSUS U	
164.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
163.1	Khaya	CLARIFY	INTERPRETATION	CONSENSUS U	
162.1	Theodora	INQUIRE		CONSENSUS U	
161.1	Matthew	SUGGEST	INTERPRETATION	CONSENSUS U	12 BUILDING OF A COMMON UNDERSTANDING OF THE PROCESS OF SOLVING ASPECT 2 OF THE PROBLEM
160.1	Theodora	CLARIFY	REPETITION	CONSENSUS U	
159.1	Khaya	QUERY	INTERPRETATION	CONSENSUS U	
158.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
157.1	Khaya	CLARIFY	REPETITION	CONSENSUS U	
156.1	Theodora	uncoded	uncoded	uncoded	BUILDING OF A COMMON UNDERSTANDING OF THE CONTENT OF THE PROBLEM STRUCTURE
155.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
154.1	Khaya	REJECT	OPINION	TASK	
153.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
152.1	Funeka	REQUEST	REPETITION	OWN NEEDS	
151.1	Ayanda	CLARIFY	REPETITION	CONSENSUS U	NEGATIVE GROUP DYNAMICS
150.1	Funeka	REQUEST		TASK	
149.1	Khaya	SUPPORT	REFLECTION	GROUP	
148.1	Funeka	QUERY	INTERPRETATION	GROUP	
147.1	Matthew	COMMENT	REFLECTION	GROUP	
146.2	Khaya	COMMENT	OPINION	TASK	
146.1	Khaya	SUPPORT	OPINION	CONSENSUS A	
145.2	Matthew	SEEK		CONSENSUS A	
145.1	Matthew	INFORM	REPETITION	CONSENSUS U	
144.1	Khaya	QUERY	OPINION	OWN IDEAS	
143.1	Funeka	QUERY	REPETITION	OWN IDEAS	
142.1	Ayanda	SUPPORT	OPINION	CONSENSUS A	
141.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
140.1	Funeka	QUERY		CONSENSUS U	
139.1	Ayanda	SEEK	REPETITION	CONSENSUS U	
138.1	Ayanda	INQUIRE		AMPLIFYING	
137.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
136.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
135.1	Khaya	SUPPORT	REPETITION	CONSENSUS A	
134.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
133.2	Ayanda	COMMENT	OPINION	TASK	
133.1	Ayanda	SUGGEST	OPINION	CONSENSUS U	
132.1	Khaya	CLARIFY	FACT	CONSENSUS U	
131.1	Matthew	COMMENT	OPINION	TASK	11 BUILDING OF A COMMON UNDERSTANDING OF HOW TO RECORD
130.1	Khaya	COMMENT	OPINION	TASK	
129.1	Matthew	REQUEST		TASK	
128.1	Funeka	COMMENT	FACT	TASK	
127.1	Matthew	INQUIRE		TASK	
126.1	Funeka	COMMENT	FACT	TASK	
125.2	Matthew	RECORD	REPETITION	MEMORY	
125.1	Matthew	INQUIRE		TASK	
124.1	Ayanda	JUSTIFY	INTERPRETATION	CONSENSUS U	
123.1	Buyiswa	INQUIRE		CONSENSUS U	
122.1	Ayanda	COMMENT	REFLECTION	TASK	10 SUGGESTION 4 TO SOLVE ASPECT 1 OF THE PROBLEM
121.1	Buyiswa	INQUIRE		CONSENSUS U	
120.3	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U	
120.2	Ayanda	JUSTIFY	OPINION	AMPLIFYING	
120.1	Ayanda	SUGGEST	OPINION	CONTRIBUTION	
119.3	Matthew	RECORD	REPETITION	MEMORY	
119.2	Matthew	SUGGEST	OPINION	CONSENSUS U	
119.1	Matthew	DICTATE	REPETITION	MEMORY	
118.1	Ayanda	SUPPORT	OPINION	TASK	

117.1	Khaya	QUERY		TASK	9 BUILDING OF A COMMON UNDERSTANDING OF HOW TO RECORD
116.1	Ayanda	REQUEST	REPETITION	TASK	
115.1	Matthew	COMMENT	REFLECTION	GROUP	
114.1	Theodora	INFORM	REFLECTION	CONSENSUS A	
113.1	Matthew	uncoded	uncoded	uncoded	
112.1	Ayanda	REQUEST	REPETITION	TASK	
111.1	Funeka	DICTATE	REPETITION	MEMORY	
110.1	Matthew	RECORD	REPETITION	MEMORY	
109.1	Funeka	DICTATE	REPETITION	MEMORY	
108.1	Khaya	DICTATE	REPETITION	MEMORY	
107.1	Funeka	DICTATE	REPETITION	CONSENSUS A	
106.1	Matthew	REQUEST		TASK	
105.3	Funeka	JUSTIFY	INFERENCE	CONTRIBUTION	8 SUGGESTION 3 TO SOLVE ASPECT 1 OF THE PROBLEM
105.2	Funeka	JUSTIFY	REPETITION	AMPLIFYING	
105.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
104.1	Khaya	JUSTIFY	INFERENCE	CONSENSUS A	
103.1	Funeka	JUSTIFY	INFERENCE	CONTRIBUTION	
102.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	
101.3	Matthew	INVITE		PARTICIPATION	7 BUILDING OF A COMMON UNDERSTANDING OF HOW TO PROCEED WITH THE PROBLEM SOLVING PROCESS
101.2	Matthew	INVITE		PARTICIPATION	
101.1	Matthew	COMMENT	REPETITION	TASK	
100.1	Theodora	INQUIRE	REPETITION	TASK	
99.1	Matthew	COMMENT	OPINION	TASK	
98.2	Khaya	INQUIRE	REPETITION	CONSENSUS U	
98.1	Khaya	COMMENT	REFLECTION	OWN NEEDS	
97.1	Matthew	COMMENT	OPINION	TASK	
96.1	Hilde	INQUIRE		TASK	
95.1	Ayanda	REQUEST		TASK	
94.1	Khaya	REJECT	REPETITION	OWN IDEAS	6 SUGGESTION 2 TO SOLVE ASPECT 1 OF THE PROBLEM
93.1	Funeka	INFORM	REPETITION	CONSENSUS U	
92.1	Matthew	SUPPORT	INTERPRETATION	CONSENSUS A	
91.1	Khaya	QUERY	INTERPRETATION	OWN IDEAS	
90.2	Matthew	INFORM	REPETITION	CONSENSUS U	
90.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
89.1	Khaya	SEEK	REPETITION	CONSENSUS U	
88.1	Hilde	CLARIFY	INTERPRETATION	CONSENSUS U	
87.1	Khaya	CLARIFY	INTERPRETATION	CONSENSUS U	
86.1	Matthew	INQUIRE		CONSENSUS U	
85.1	Hilde	INFORM	REPETITION	CONSENSUS U	
84.1	Ayanda	INQUIRE	REPETITION	CONSENSUS U	
83.1	Khaya	COMMENT	REFLECTION	TASK	
82.1	Ayanda	INQUIRE	REPETITION	CONSENSUS U	
81.2	Khaya	JUSTIFY	OPINION	CONSENSUS U	
81.1	Khaya	REJECT	OPINION	OWN IDEAS	
80.1	Ayanda	SUPPORT	FACT	CONSENSUS U	
79.2	Matthew	SUGGEST	OPINION	CONSENSUS U	
79.1	Matthew	COMMENT	REPETITION	TASK	
78.1	Khaya	CLARIFY	INFERENCE	CONSENSUS U	
77.1	Funeka	CLARIFY	INTERPRETATION	CONSENSUS U	
76.3	Matthew	CLARIFY	INTERPRETATION	CONSENSUS U	
76.2	Matthew	SUGGEST	OPINION	CONSENSUS U	
76.1	Matthew	COMMENT	REFLECTION	OWN NEEDS	
75.1	Khaya	REJECT	OPINION	TASK	
74.1	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U	
73.2	Matthew	QUERY		CONSENSUS U	
73.1	Matthew	CLARIFY	REPETITION	CONSENSUS U	
72.1	Khaya	CLARIFY	REPETITION	CONSENSUS U	
71.1	Matthew	INQUIRE		CONSENSUS U	
70.1	Theodora	CLARIFY	REPETITION	CONSENSUS A	
69.1	Ayanda	CLARIFY	INTERPRETATION	CONSENSUS U	
68.1	Matthew	INQUIRE	REPETITION	CONSENSUS U	
67.1	Theodora	CLARIFY	REPETITION	CONSENSUS U	
66.1	Khaya	INQUIRE		CONSENSUS U	
65.3	Linda	INFORM	REPETITION	CONSENSUS U	
65.2	Linda	COMMENT	REFLECTION	TASK	
65.1	Linda	CLARIFY	INTERPRETATION	CONSENSUS U	
64.3	Matthew	QUERY	REPETITION	CONSENSUS U	
64.2	Matthew	JUSTIFY	REPETITION	CONSENSUS U	
64.1	Matthew	REJECT	OPINION	OWN IDEAS	
63.4	Khaya	CLARIFY	REPETITION	CONSENSUS U	
63.3	Khaya	JUSTIFY	REPETITION	OWN NEEDS	
63.2	Khaya	JUSTIFY	OPINION	OWN IDEAS	
63.1	Khaya	REJECT	OPINION	OWN NEEDS	
62.1	Matthew	REQUEST		GROUP	
61.1	Khaya	CLARIFY	INFERENCE	CONSENSUS U	
60.2	Theodora	SUGGEST	OPINION	CONSENSUS U	
60.1	Theodora	CLARIFY	REPETITION	CONSENSUS U	
59.1	Ayanda	COMMENT	REFLECTION	OWN NEEDS	
58.1	Matthew	QUERY		CONSENSUS U	
57.1	Khaya	CLARIFY	REPETITION	CONSENSUS U	
56.3	Theodora	INQUIRE		CONSENSUS U	
56.2	Theodora	INFORM	REPETITION	CONSENSUS U	
56.1	Theodora	SUPPORT	REPETITION	CONSENSUS A	
55.1	Matthew	SEEK		CONSENSUS U	
54.2	Theodora	CLARIFY	REPETITION	CONSENSUS U	
54.1	Theodora	CLARIFY	INTERPRETATION	CONSENSUS U	
53.1	Funeka	SUPPORT	OPINION	CONSENSUS U	
52.1	Matthew	INQUIRE	REPETITION	CONSENSUS U	
51.2	Theodora	INFORM	REPETITION	CONSENSUS U	
51.1	Theodora	CLARIFY	REPETITION	CONSENSUS U	
50.2	Matthew	INVITE	REPETITION	PARTICIPATION	
50.1	Matthew	SUPPORT	OPINION	CONSENSUS A	
49.1	Khaya	CLARIFY	REPETITION	CONSENSUS U	
48.2	Buyiswa	SUGGEST	REPETITION	CONSENSUS A	

OPERATION NO.	PARTICIPANT	IMMEDIATE INTER-ACTIVE FUNCTION	COGNITIVE-AFFECTIVE CONTENT	UNDERLYING FUNCTION	STAGE: NUMBER & DESCRIPTION
48.1	Buyiswa	SUPPORT	OPINION	CONSENSUS U	5 SUGGESTION 1 TO SOLVE ASPECT 1 OF THE PROBLEM
47.1	Funeka	SEEK	REPETITION	CONSENSUS U	
46.1	Khaya	SEEK	REPETITION	CONSENSUS U	
45.1	Theodora	QUERY		CONSENSUS U	
44.1	Khaya	SEEK	REPETITION	CONSENSUS U	
43.3	Matthew	SEEK		CONSENSUS A	
43.2	Matthew	SUGGEST	REPETITION	AMPLIFYING	
43.1	Matthew	INVITE		PARTICIPATION	
42.1	Theodora	uncoded	uncoded	uncoded	
41.1	Ayanda	SUGGEST	OPINION	CONTRIBUTION	
40.2	Matthew	INVITE		PARTICIPATION	
40.1	Matthew	RECORD	REPETITION	MEMORY	
39.1	Ayanda	DICTATE	REPETITION	MEMORY	
38.1	Funeka	DICTATE	REPETITION	MEMORY	
37.2	Matthew	RECORD	REPETITION	MEMORY	
37.1	Matthew	DICTATE	REPETITION	MEMORY	
36.1	Khaya	COMMENT	REFLECTION	TASK	
35.1	Matthew	REQUEST		TASK	
34.2	Matthew	RECORD	REPETITION	MEMORY	
34.1	Ayanda	SEEK	REPETITION	CONSENSUS A	
33.1	Matthew	SUPPORT	INTERPRETATION	CONSENSUS U	
32.2	Khaya	SUGGEST	OPINION	CONTRIBUTION	
32.1	Khaya	SUPPORT	OPINION	CONSENSUS A	
31.7	Matthew	SEEK		CONSENSUS A	
31.6	Matthew	SUPPORT	REPETITION	AMPLIFYING	
31.5	Matthew	JUSTIFY	REPETITION	CONSENSUS U	
31.4	Matthew	SUGGEST	INTERPRETATION	CONTRIBUTION	
31.3	Matthew	SUGGEST	OPINION	CONTRIBUTION	
31.2	Matthew	INFORM	REPETITION	AMPLIFYING	
31.1	Matthew	REJECT	OPINION	OWN IDEAS	
30.1	Buyiswa	SUGGEST	OPINION	CONTRIBUTION	
29.3	Khaya	JUSTIFY	INFERENCE	CONSENSUS U	
29.2	Khaya	JUSTIFY	INFERENCE	CONSENSUS U	
29.1	Khaya	SUGGEST	OPINION	CONTRIBUTION	
28.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
27.1	Theodora	CLARIFY	INTERPRETATION	CONSENSUS U	
26.3	Matthew	INFORM	REPETITION	CONSENSUS U	
26.2	Matthew	SUGGEST	REPETITION	CONSENSUS U	
26.1	Matthew	INFORM	REFLECTION	CONSENSUS U	
25.1	Funeka	INVITE	REPETITION	PARTICIPATION	
24.1	Matthew	INVITE		PARTICIPATION	
23.1	Ayanda	INVITE	REPETITION	PARTICIPATION	
22.1	Theodora	CLARIFY	INTERPRETATION	CONSENSUS U	
21.1	Ayanda	SUGGEST	REPETITION	CONSENSUS A	
20.2	Matthew	JUSTIFY	OPINION	TASK	
20.1	Matthew	COMMENT	REFLECTION	TASK	
19.1	Theodora	INQUIRE		TASK	
18.5	Matthew	INVITE	REPETITION	PARTICIPATION	
18.4	Matthew	RECORD	REPETITION	MEMORY	
18.3	Matthew	REQUEST		TASK	
18.2	Matthew	JUSTIFY	INFERENCE	CONSENSUS U	
18.1	Matthew	SUGGEST	INFERENCE	CONSENSUS U	
17.1	Theodora	CLARIFY	INFERENCE	CONSENSUS U	
16.4	Matthew	INFORM	REPETITION	CONSENSUS U	
16.3	Matthew	INFORM	FACT	CONSENSUS U	
16.2	Matthew	CLARIFY	INFERENCE	CONSENSUS U	
16.1	Matthew	INFORM	FACT	CONSENSUS U	
15.1	Theodora	JUSTIFY	REPETITION	CONSENSUS U	
14.1	Matthew	REJECT	REFLECTION	CONSENSUS U	
13.3	Theodora	SEEK		CONSENSUS U	
13.2	Theodora	CLARIFY	REPETITION	CONSENSUS U	
13.1	Theodora	SUGGEST	INFERENCE	CONTRIBUTION	
12.1	Ayanda	COMMENT	OPINION	TASK	
11.1	Funeka	SUPPORT	REPETITION	CONSENSUS A	
10.7	Matthew	CLARIFY	INTERPRETATION	CONSENSUS U	
10.6	Matthew	INQUIRE	INFERENCE	CONSENSUS U	
10.5	Matthew	INFORM	REPETITION	CONSENSUS U	
10.4	Matthew	JUSTIFY	INFERENCE	CONSENSUS U	
10.3	Matthew	SUGGEST	OPINION	CONTRIBUTION	
10.2	Matthew	INFORM	FACT	CONSENSUS U	
10.1	Matthew	SUPPORT	REPETITION	CONSENSUS A	
9.1	Theodora	INFORM	REPETITION	CONSENSUS U	
8.1	Matthew	INFORM	FACT	CONSENSUS U	
7.5	Theodora	SUGGEST	OPINION	CONTRIBUTION	
7.4	Theodora	CLARIFY	INTERPRETATION	CONSENSUS U	
7.3	Theodora	CLARIFY	INFERENCE	CONSENSUS U	
7.2	Theodora	INFORM	FACT	CONSENSUS U	
7.1	Theodora	REQUEST		TASK	
6.2	Matthew	INVITE		PARTICIPATION	
6.1	Matthew	COMMENT	REFLECTION	TASK	
5.1	Ayanda	uncoded	uncoded	uncoded	
4.1	Theodora	REQUEST		OWN NEEDS	
3.1	Matthew	COMMENT	OPINION	OWN NEEDS	
2.1	Buyiswa	REJECT	OPINION	OWN NEEDS	
1.3	Matthew	REQUEST		TASK	
1.2	Matthew	INVITE		PARTICIPATION	
1.1	Matthew	INFORM	FACT	CONSENSUS U	

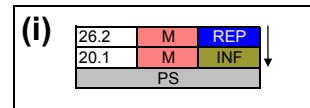
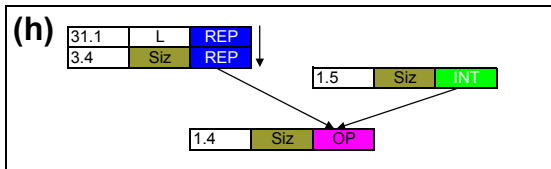
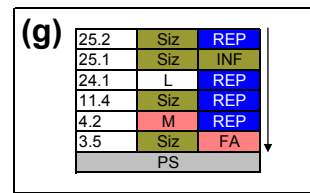
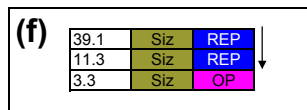
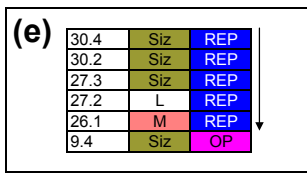
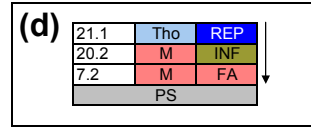
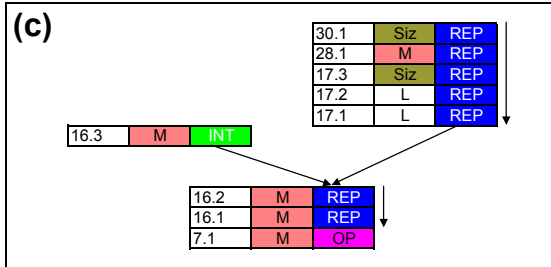
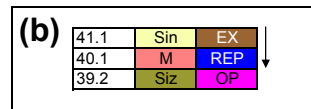
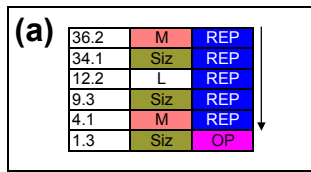


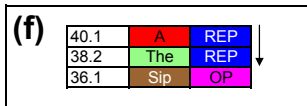
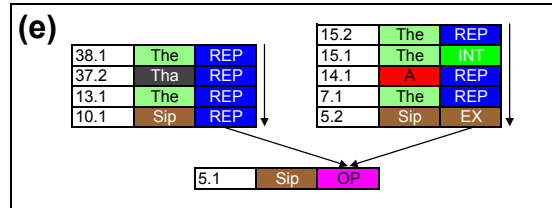
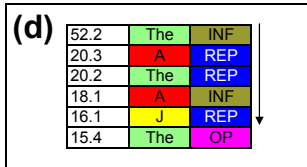
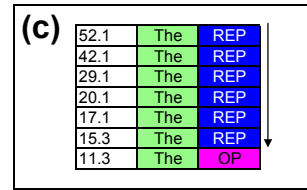
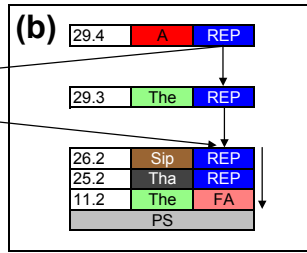
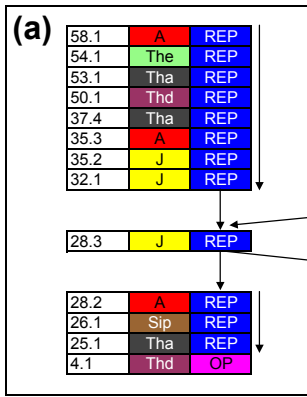
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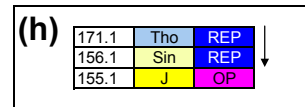
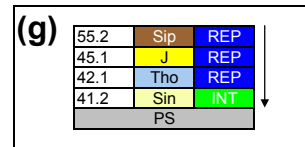
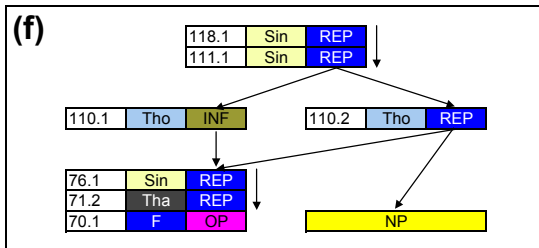
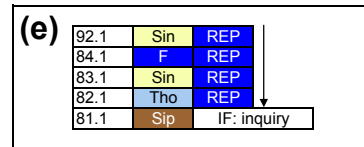
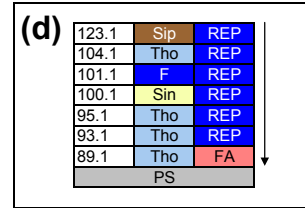
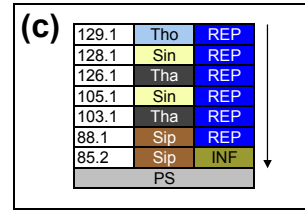
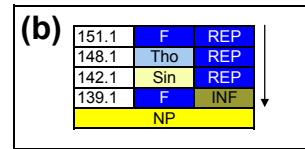
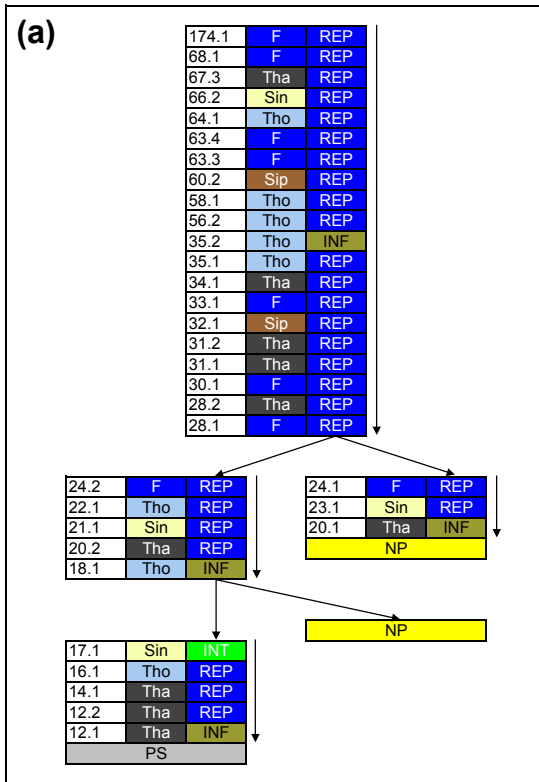
Operation Reference: Cognitive-Affective Content	
EX	Example
FA	Fact
INF	Inference
INT	Interpretation
OP	Opinion
REP	Repetition

Participants			
A	Ayanda	M	Matthew
B	Buyiswa	Sin	Sindiswa
F	Funeka	Sip	Sipho
H	Hilde	Siz	Sizwe
J	James	Tha	Thami
K	Khaya	The	Theo
L	Linda	Thd	Theodora
Lu	Lulama	Tho	Thozie

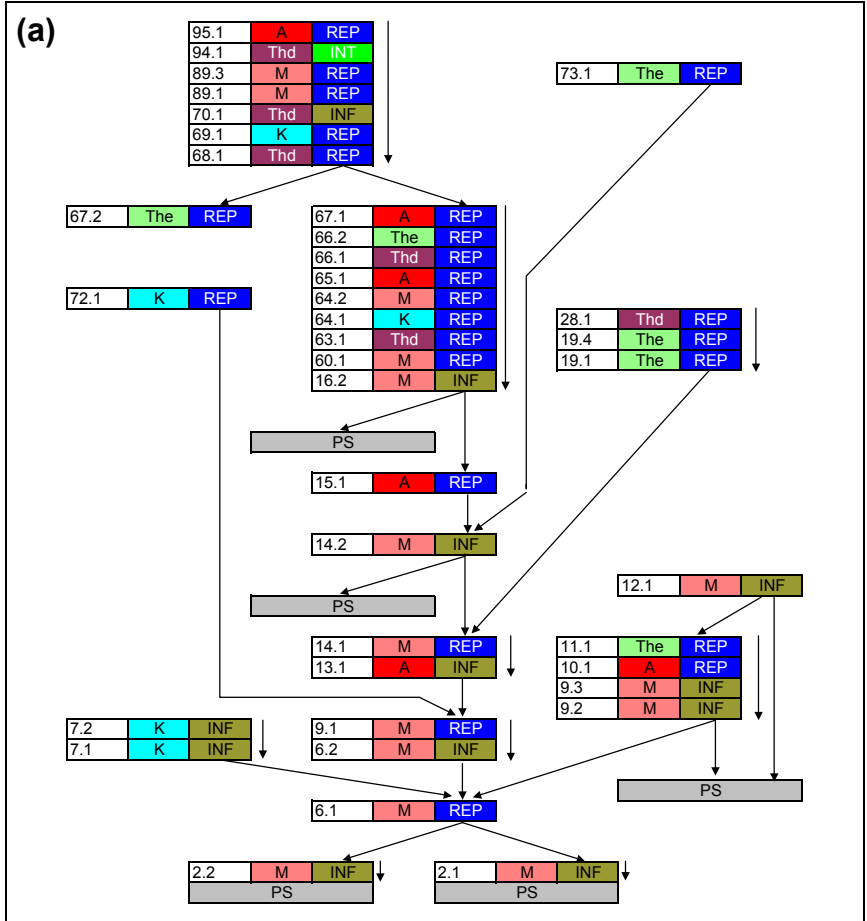
Other Operation References	
PS	Problem structure
NP	Newsprint
IF: inquiry	Form of IF

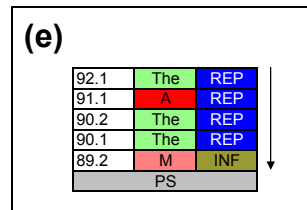
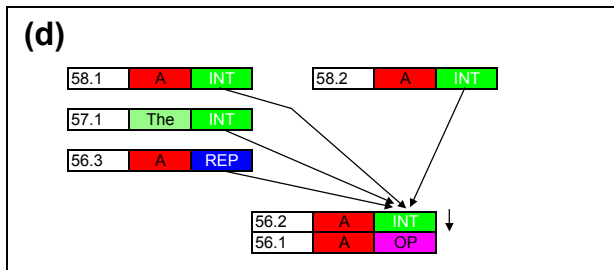
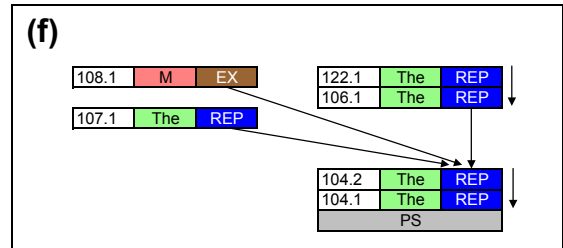
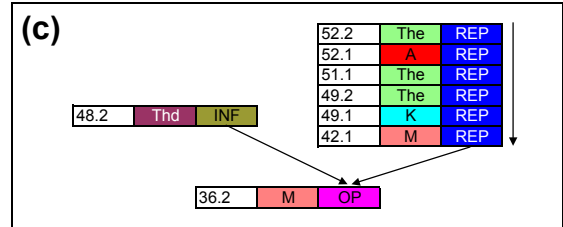
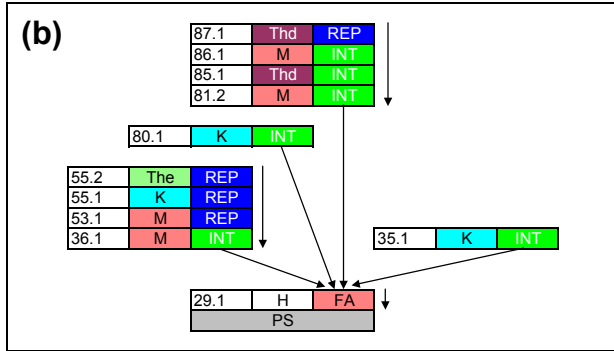






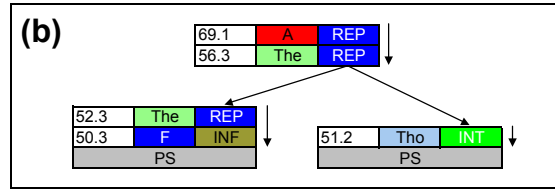
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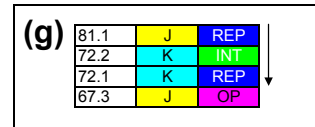
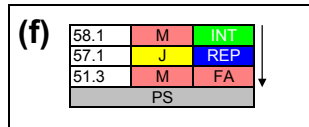
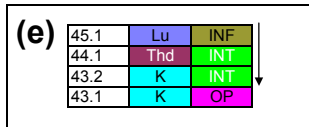
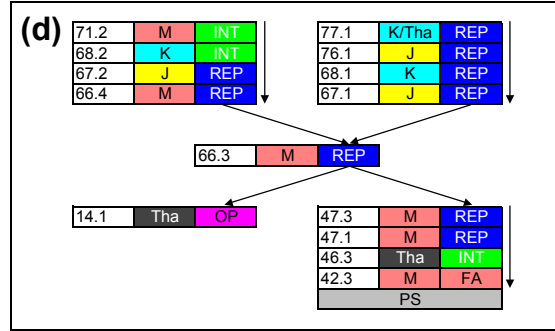
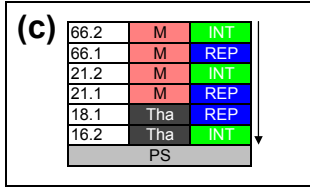
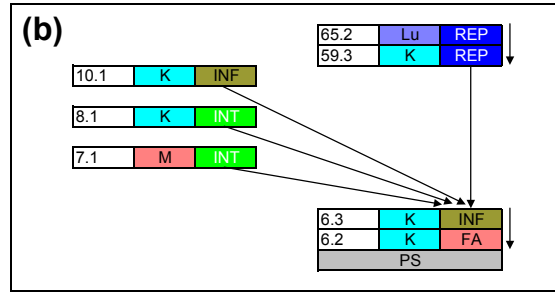
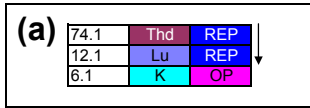
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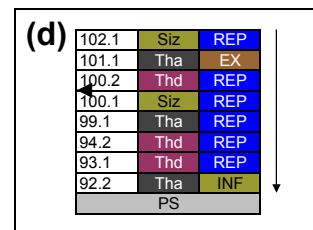
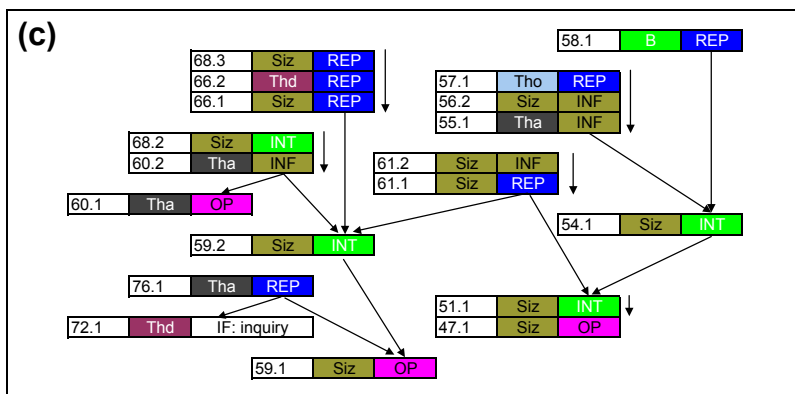
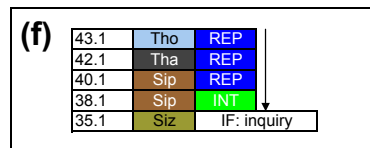
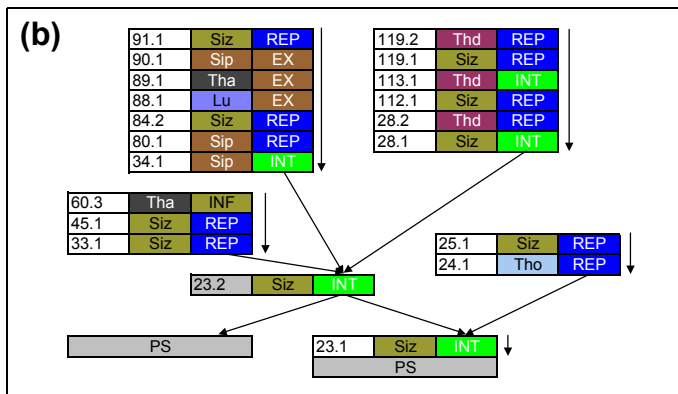
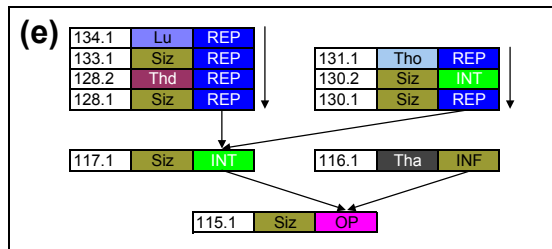
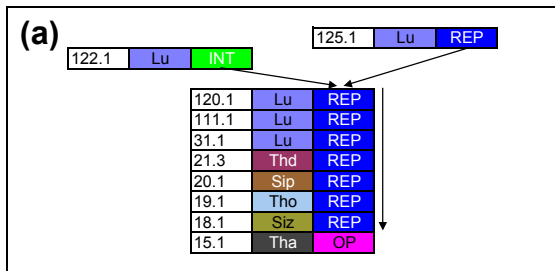
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72.1	B	REP
71.1	Tho/The	REP
70.2	Sip	REP
68.1	Sip	REP
67.1	The	REP
65.1	The	INF
56.2	The	REP
55.1	Sip	REP
52.2	The	REP
51.1	Tho	REP
50.1	F	REP
1.1	B	OP

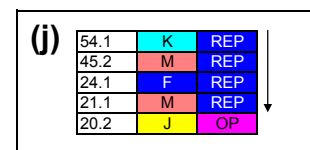
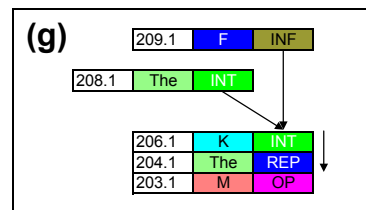
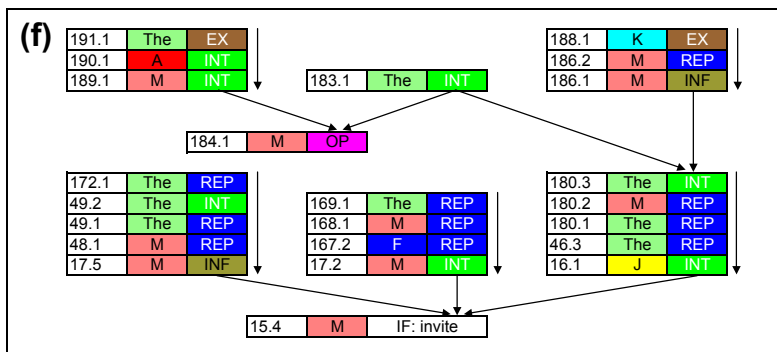
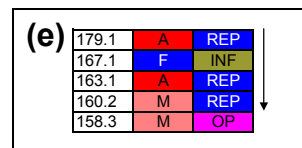
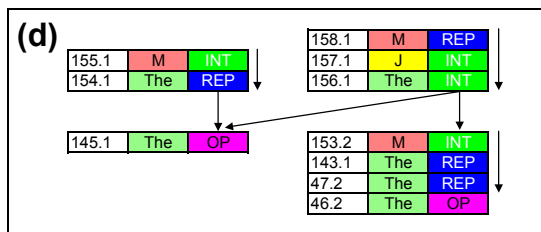
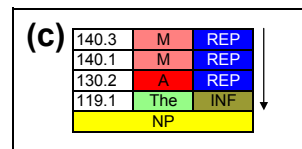
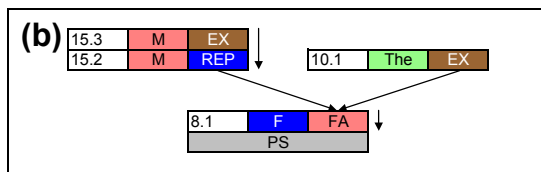
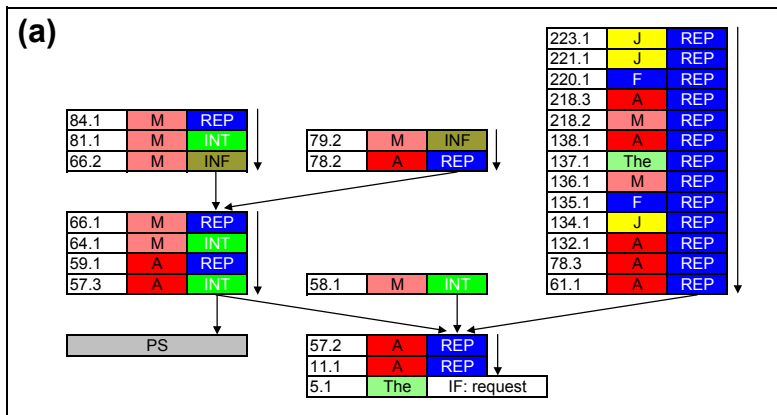


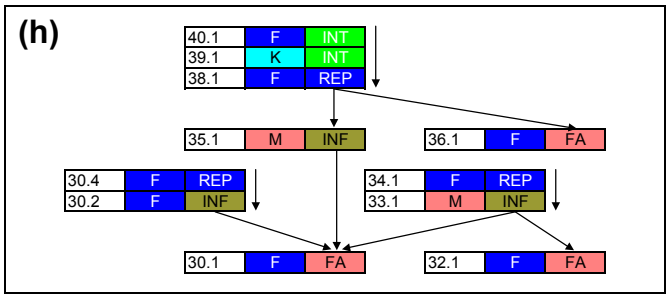
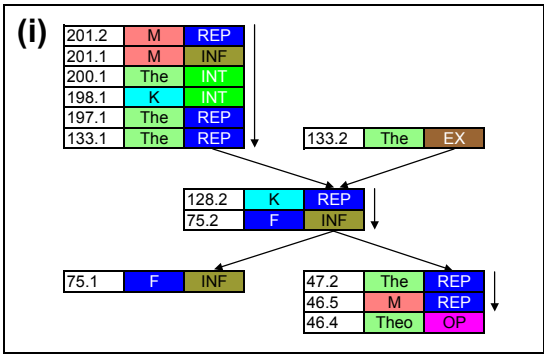
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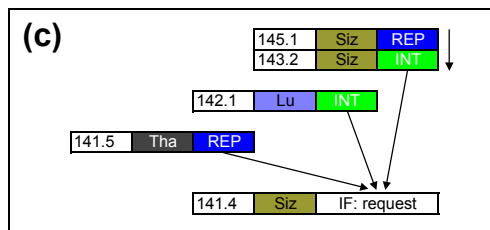
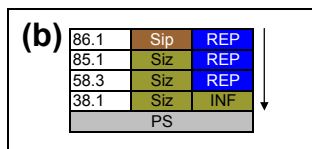
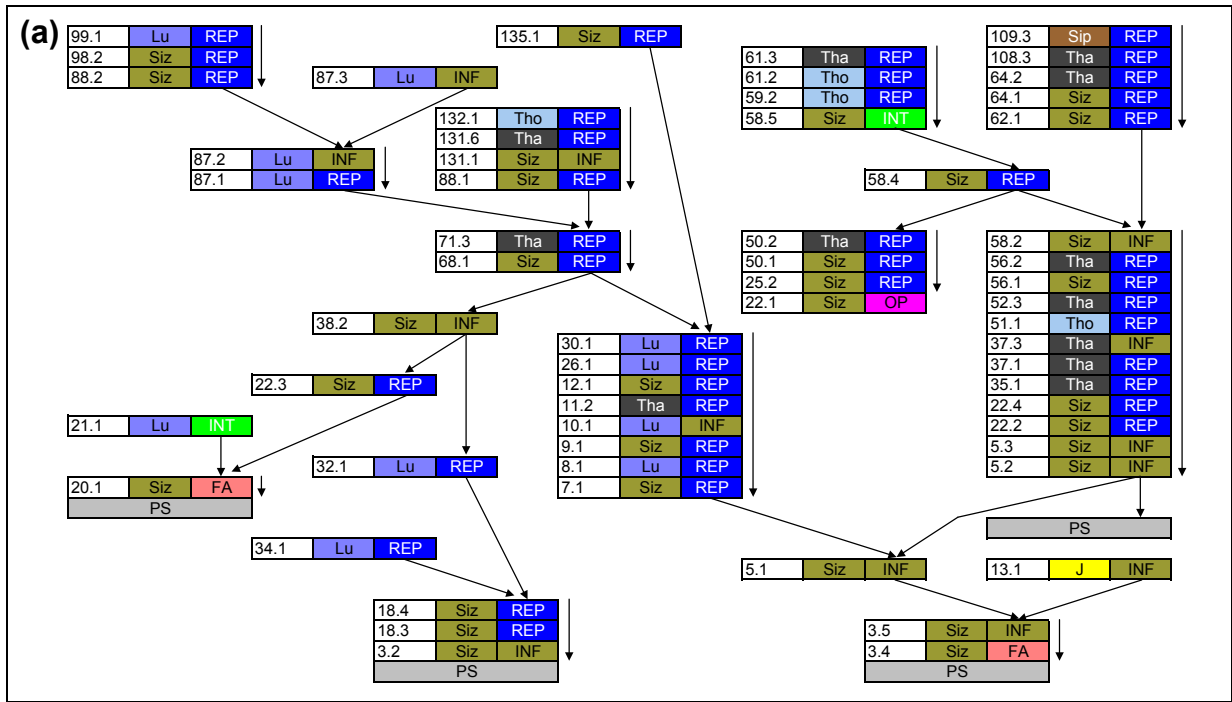
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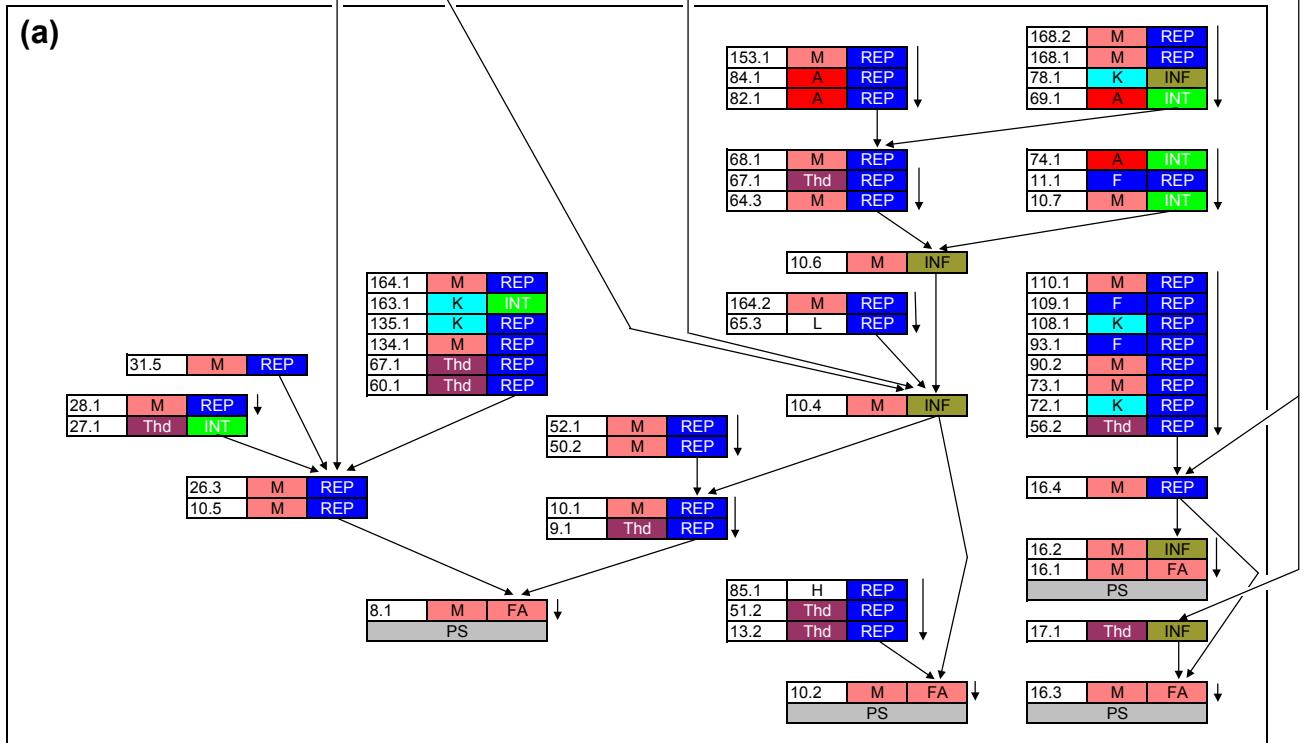
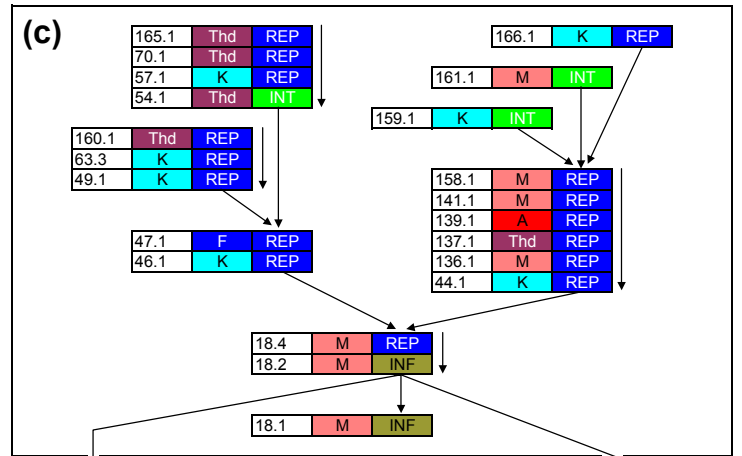
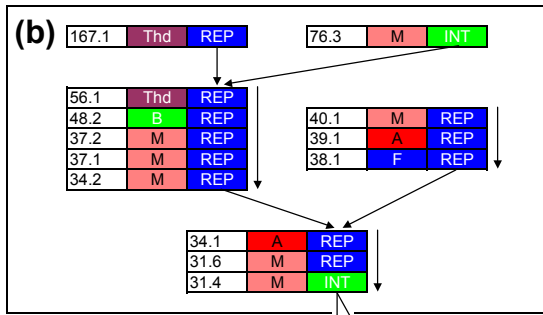


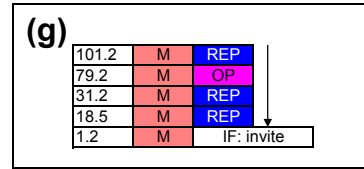
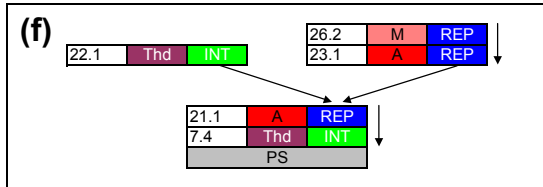
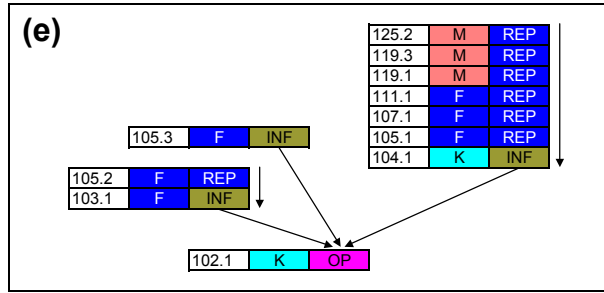
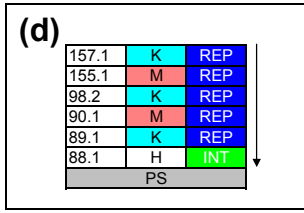


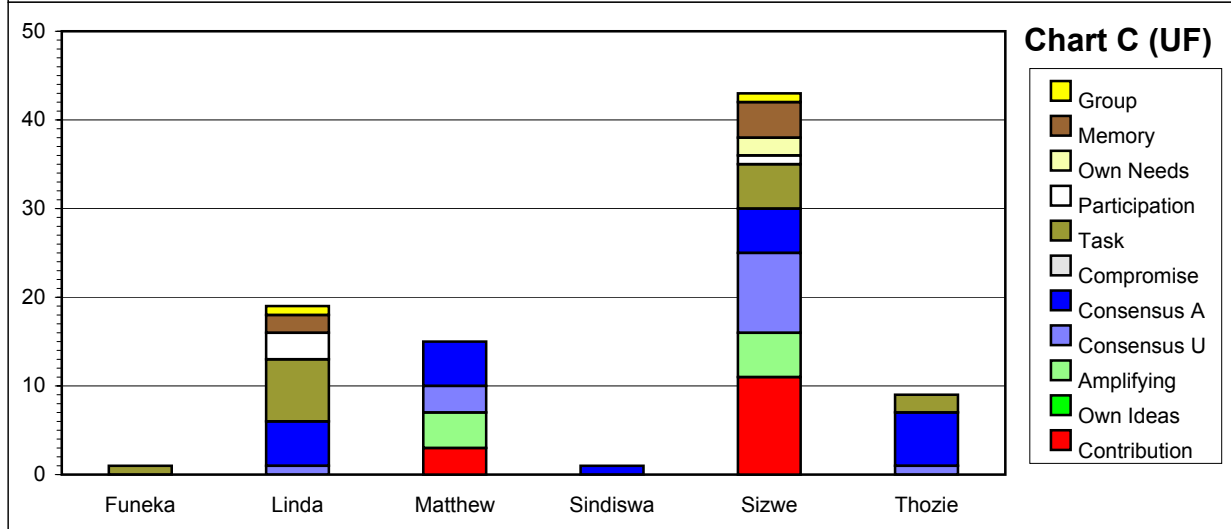
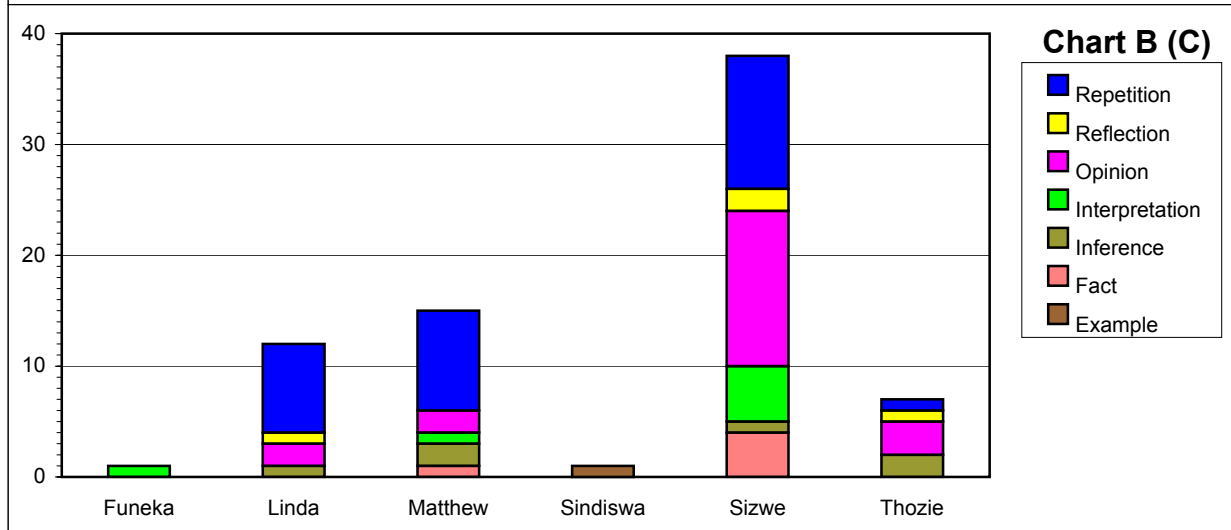
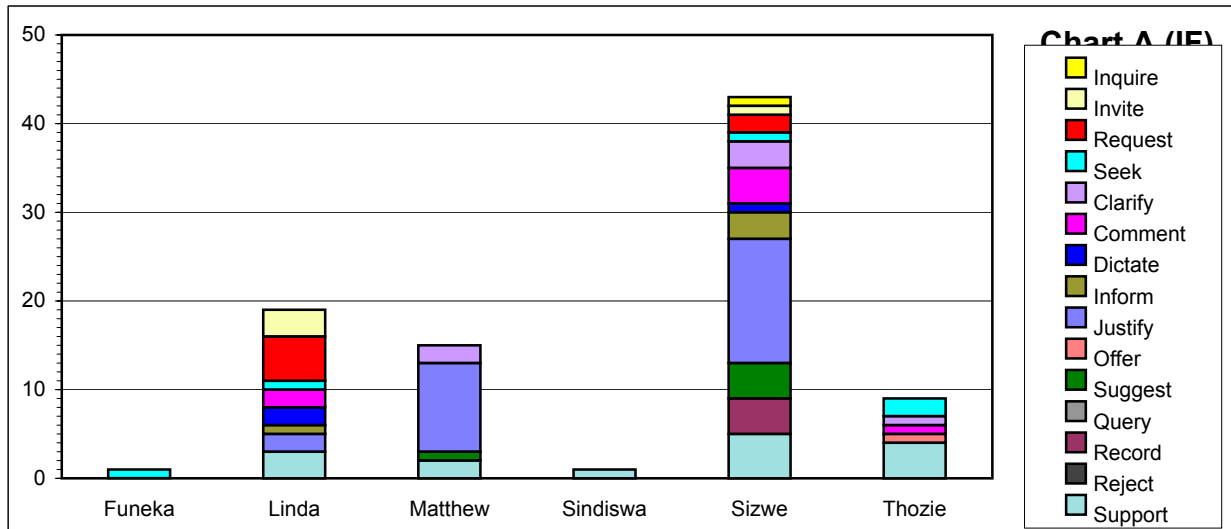


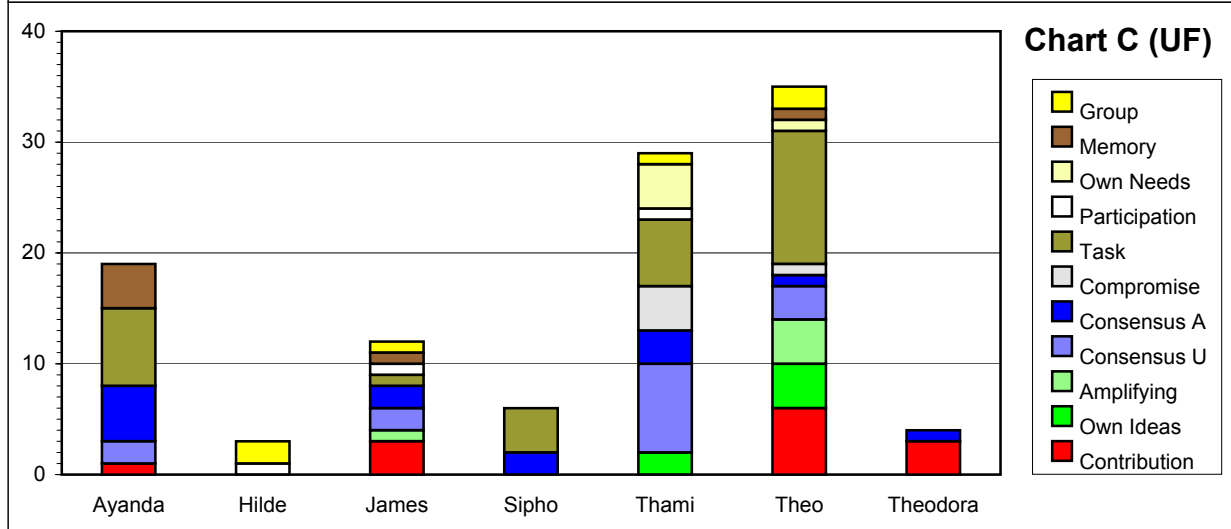
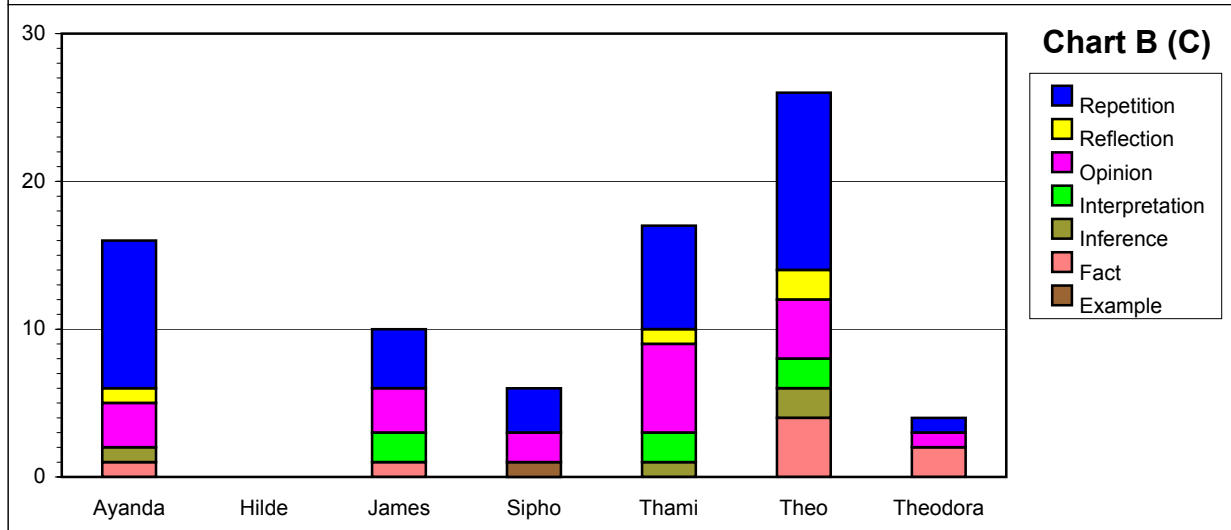
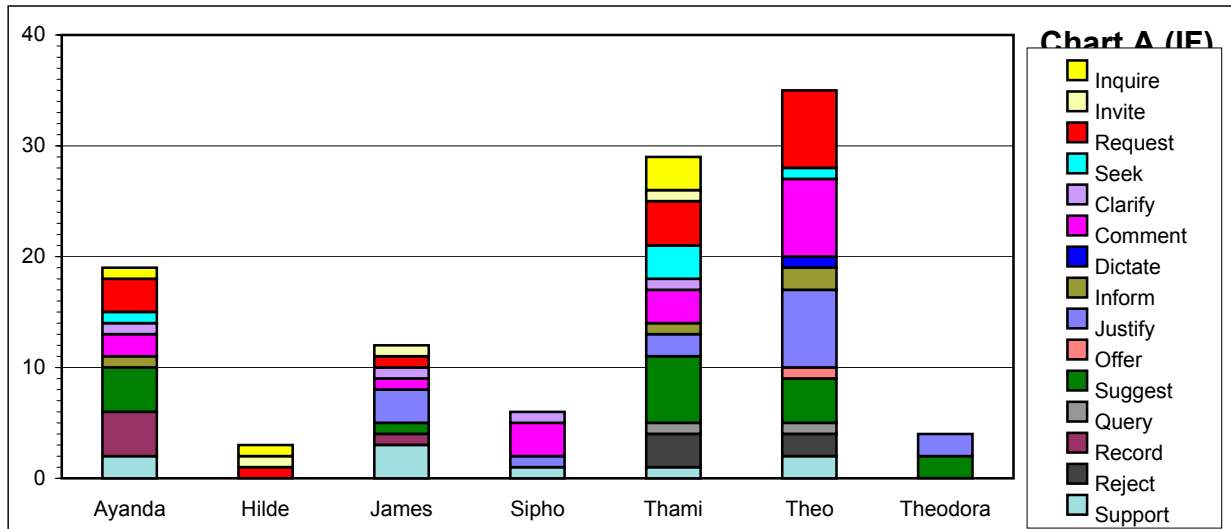


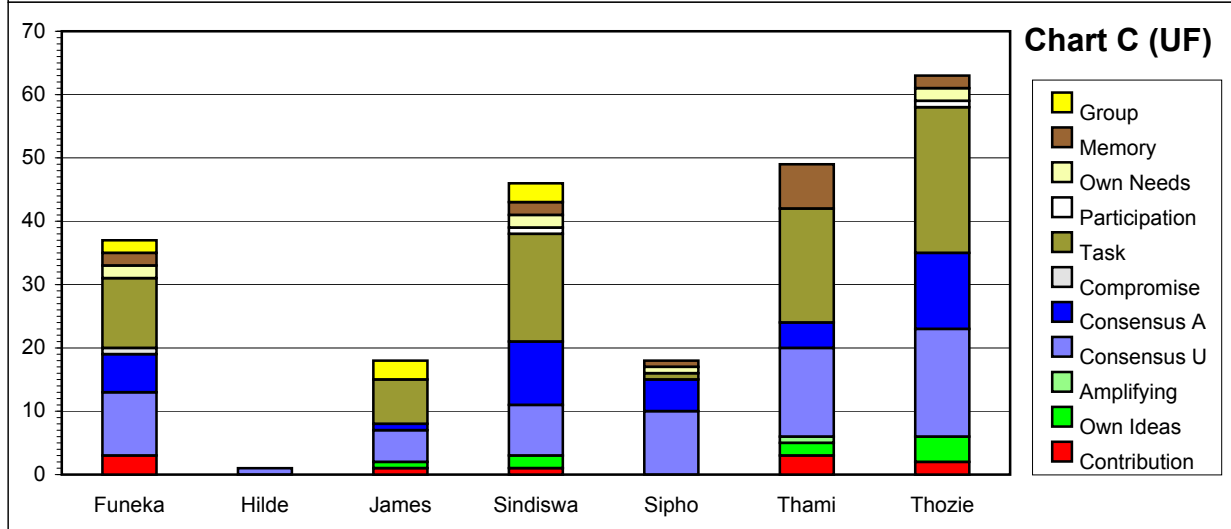
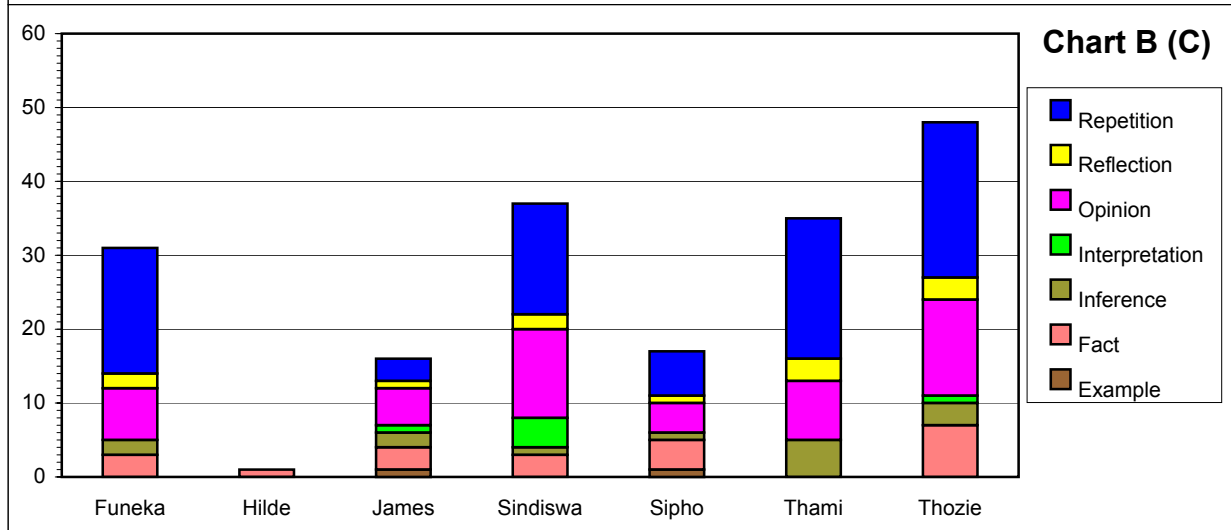
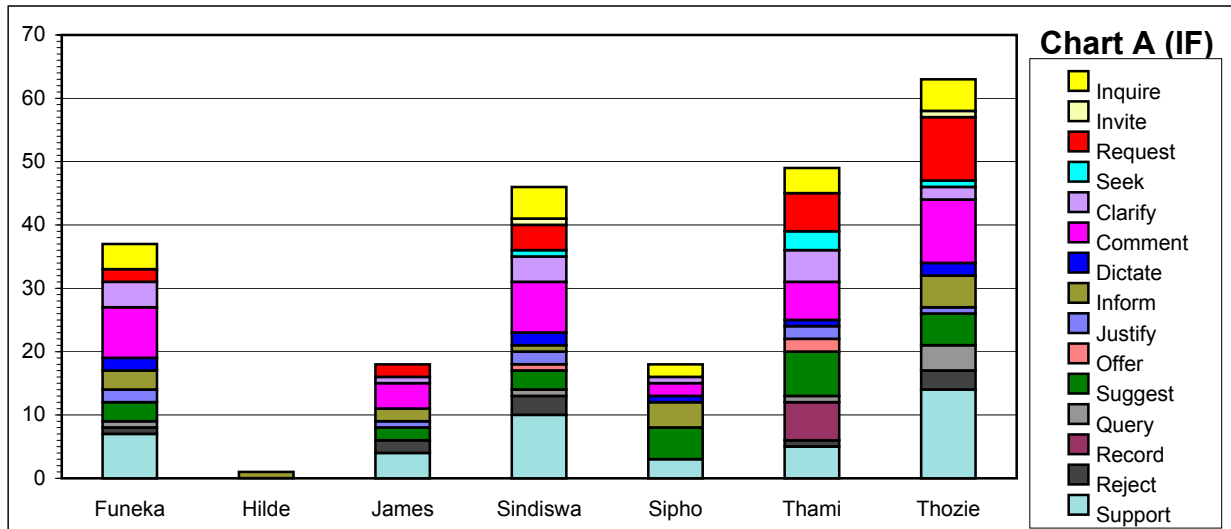


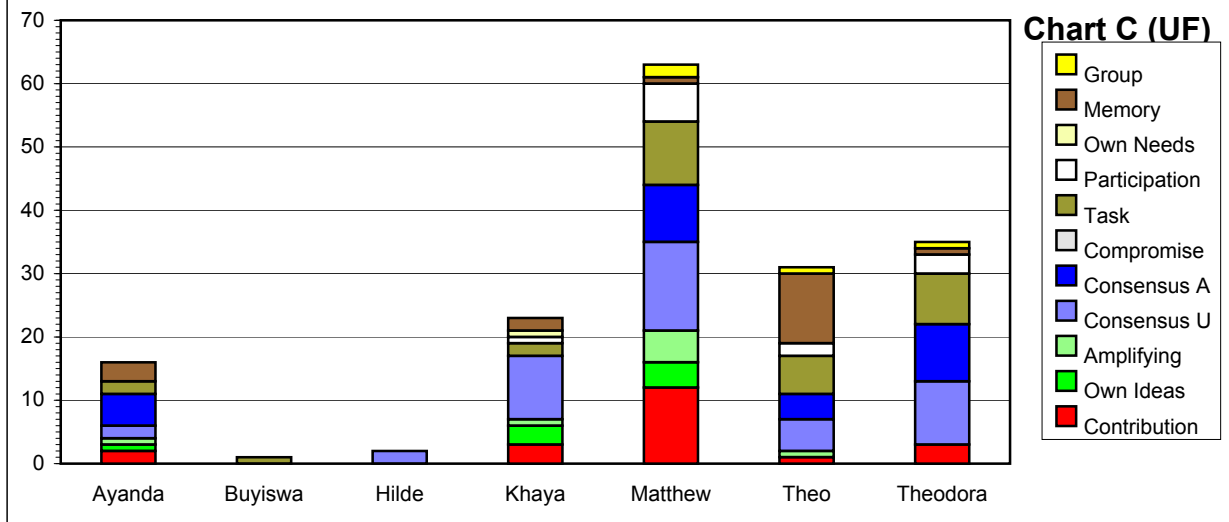
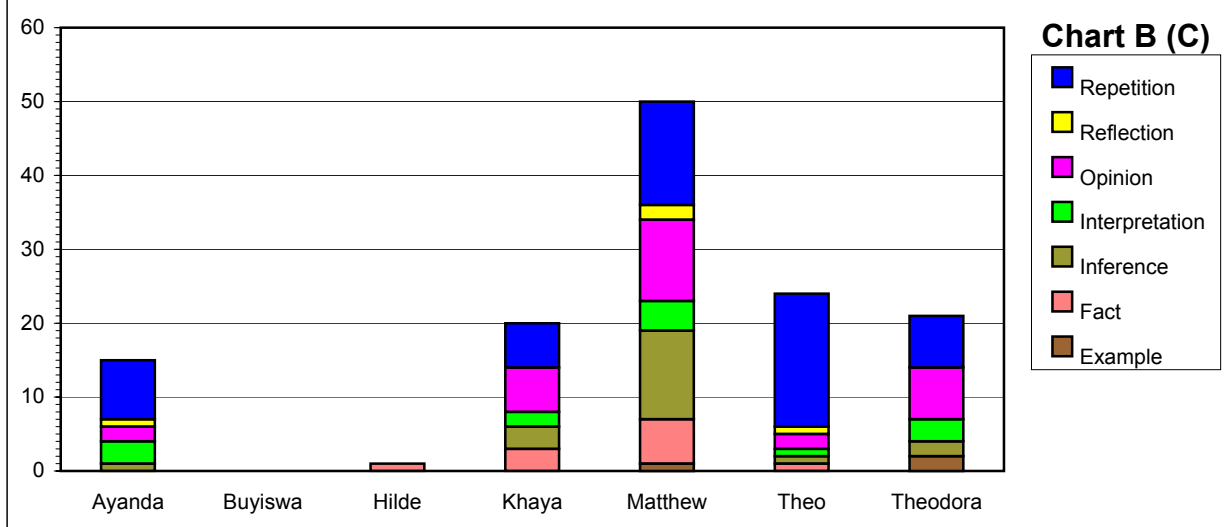
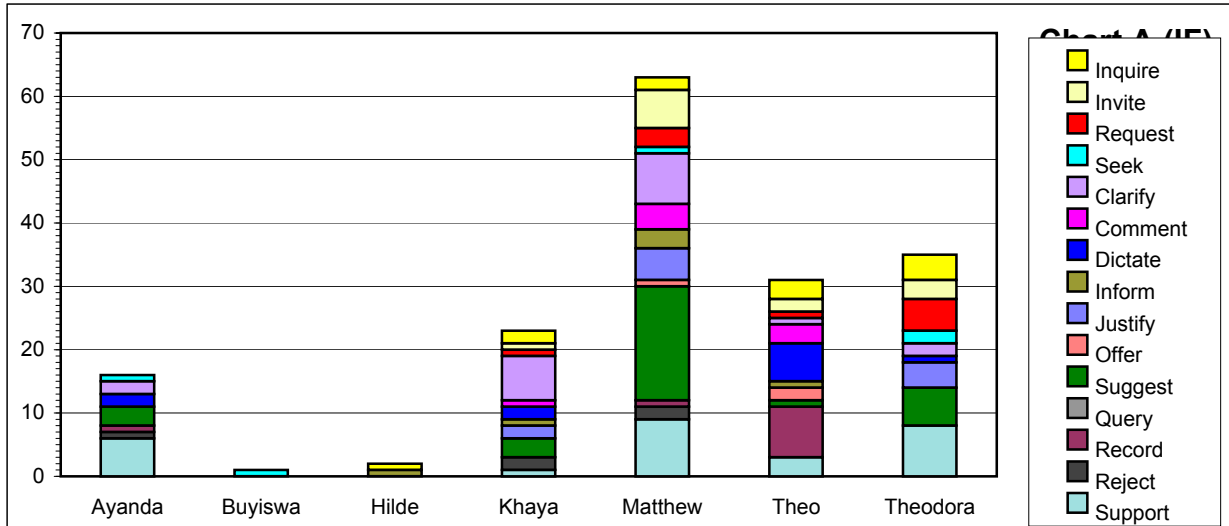


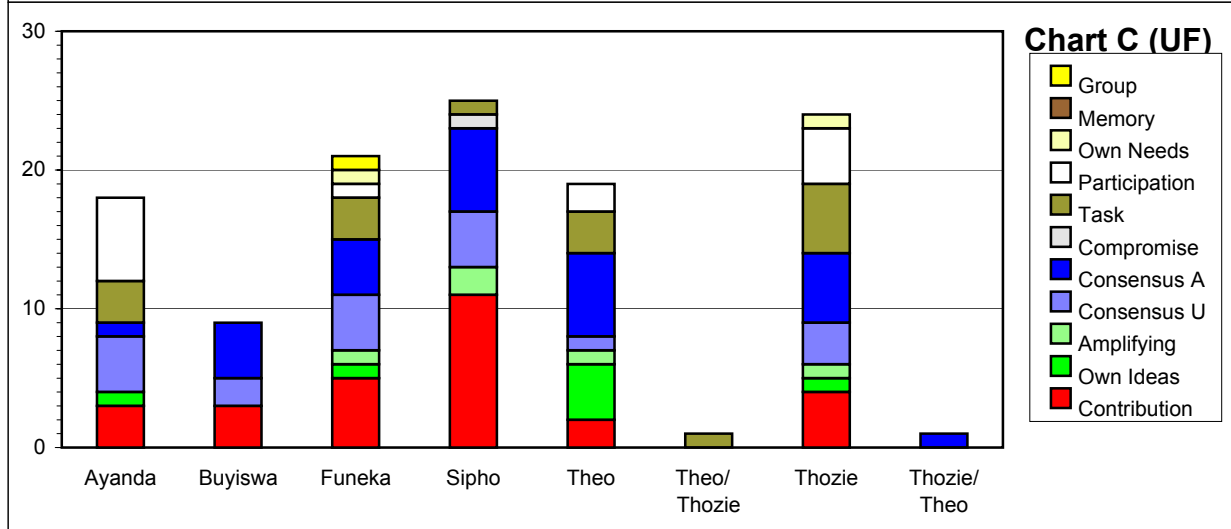
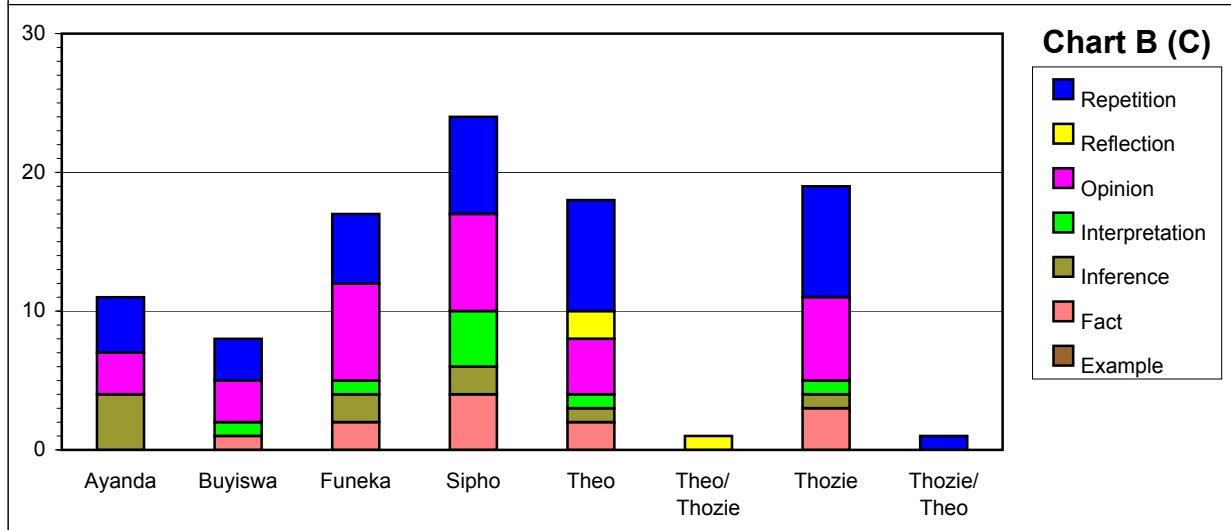
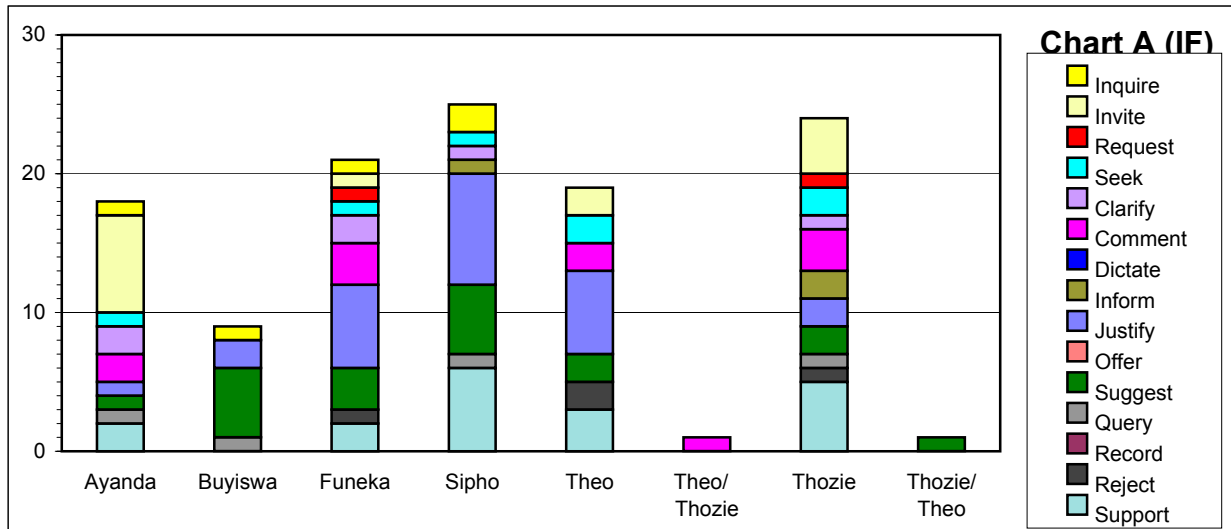


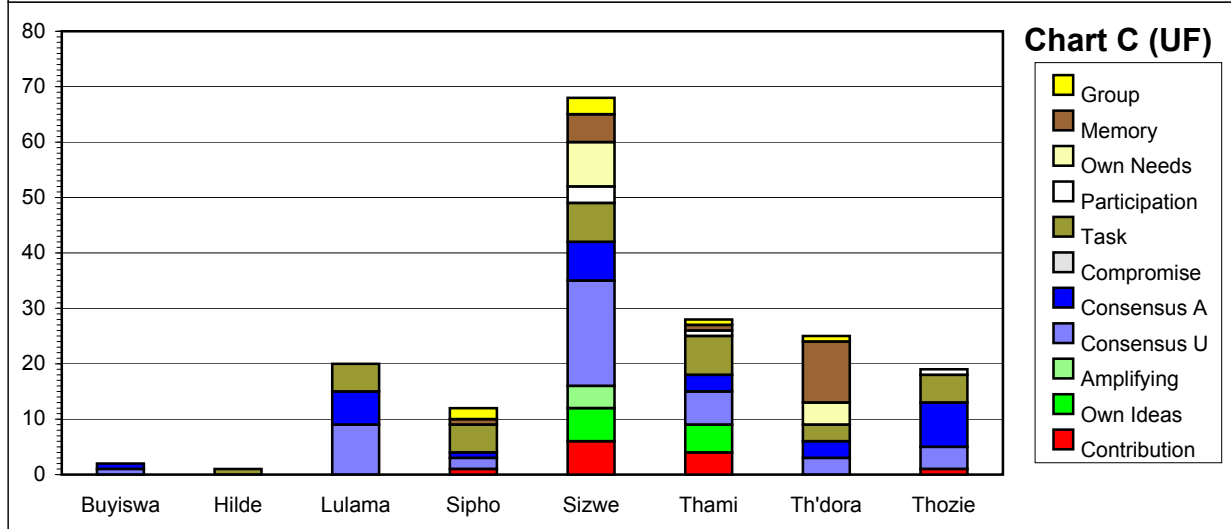
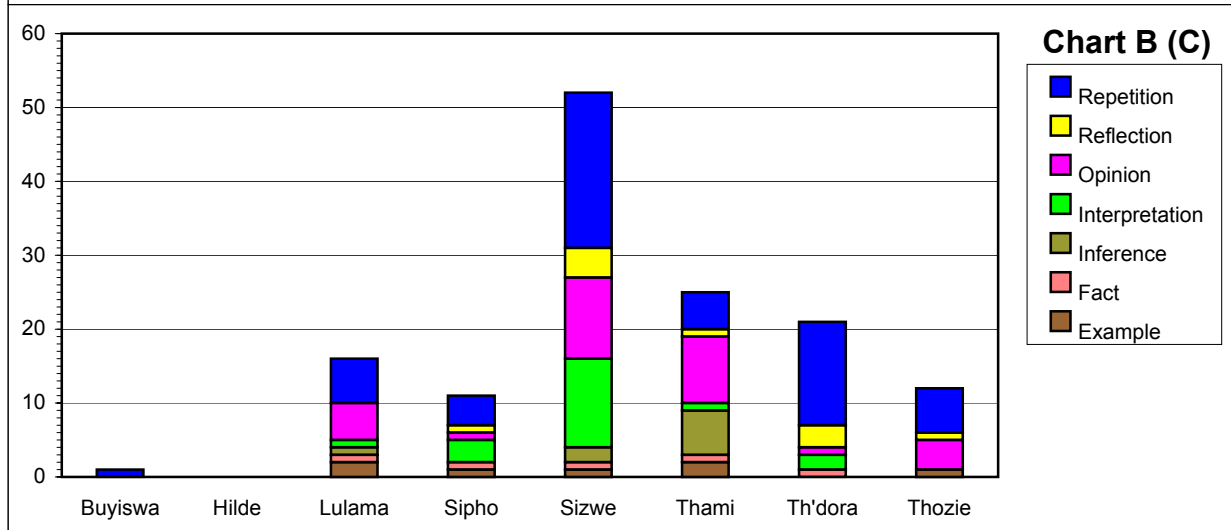
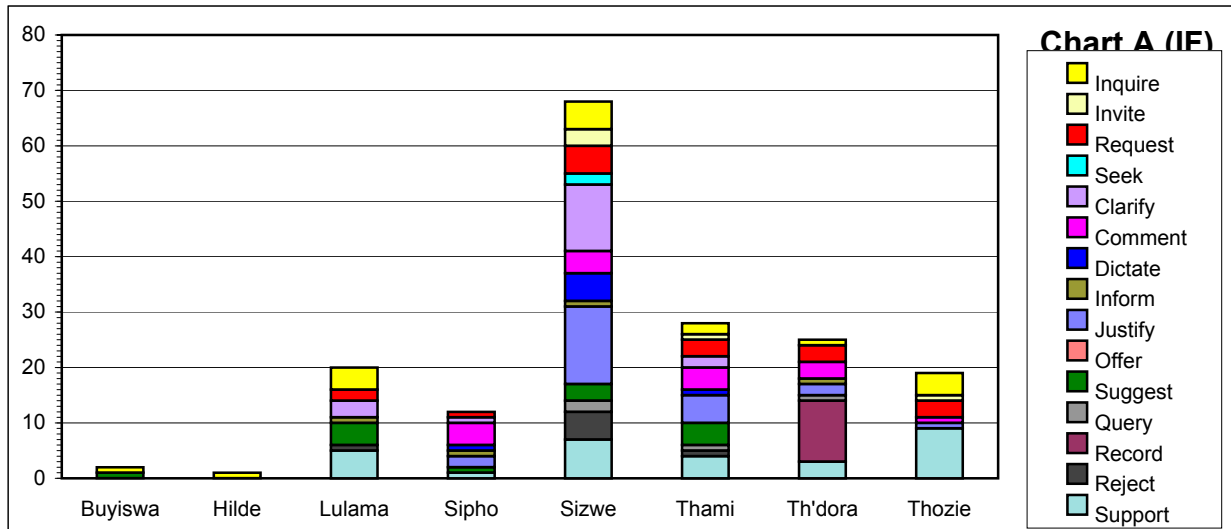


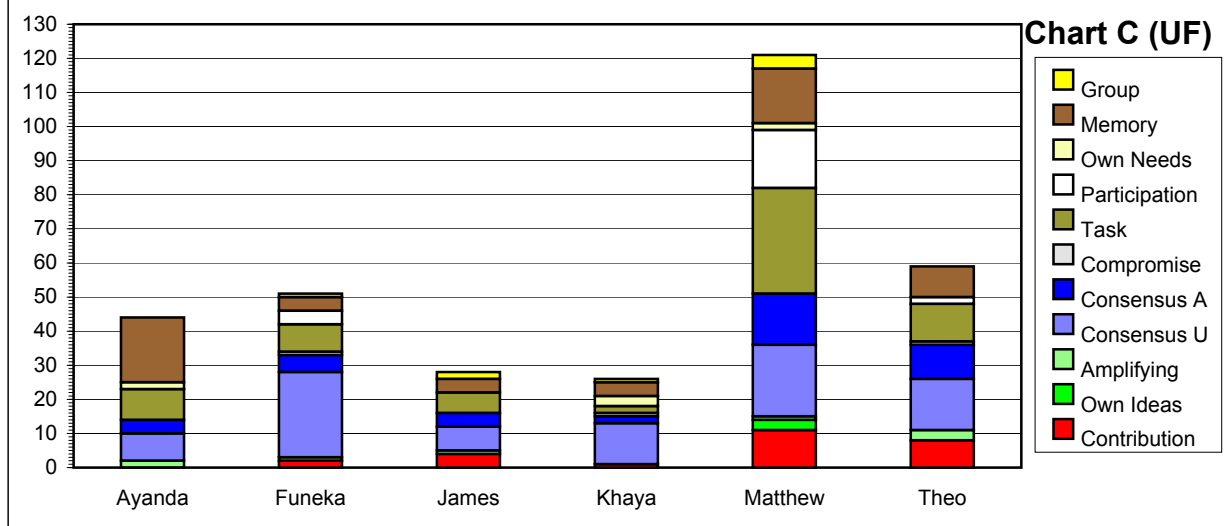
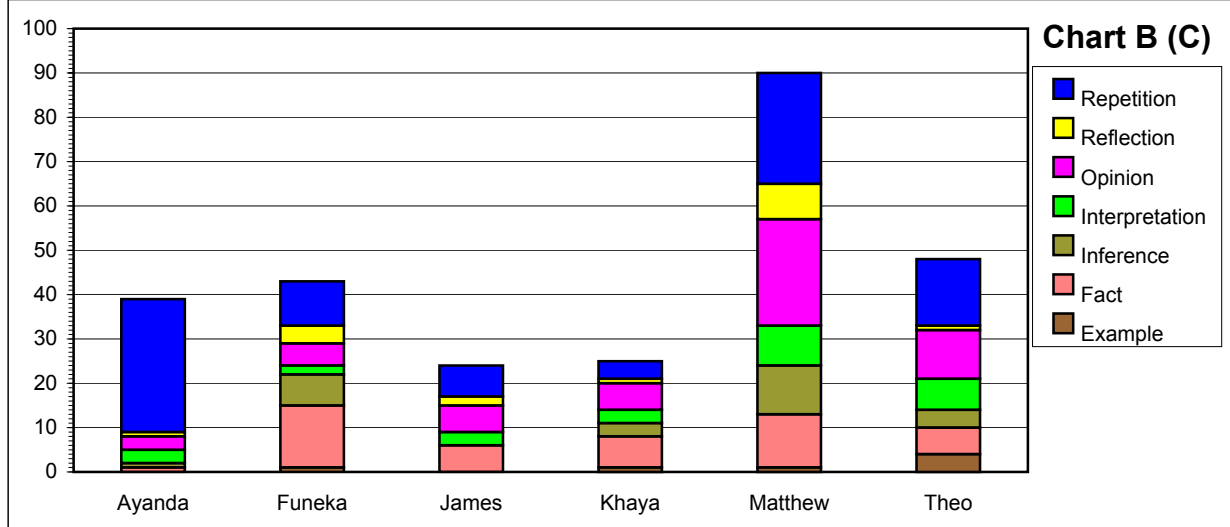
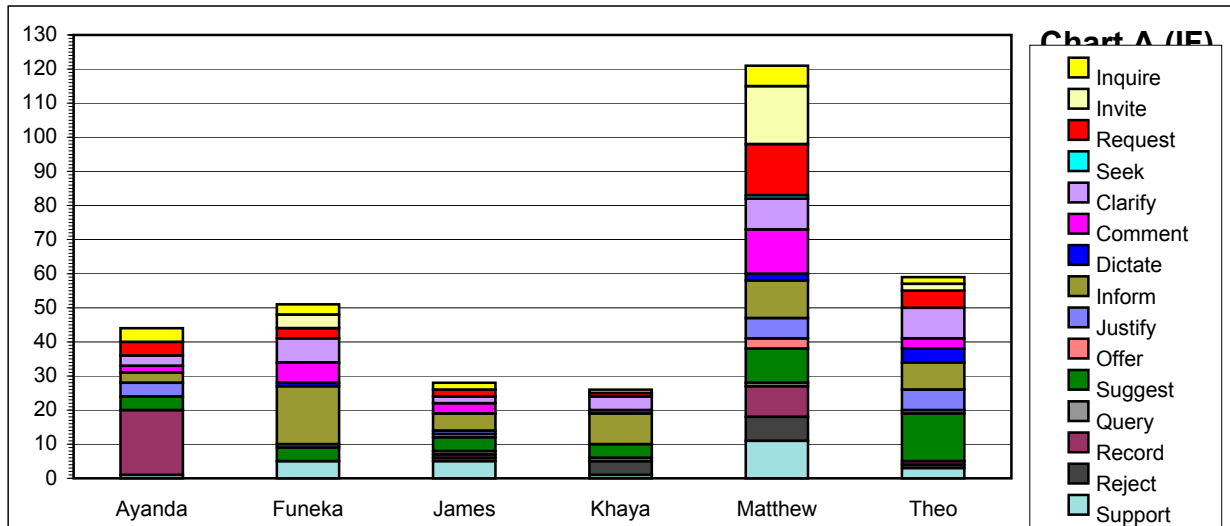












Data 1

Funeka	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Linda	3	0	2	2	1	0	3	2	0	0	0	0	5	1	0	3	0	0	1	0	2	1	8	0	0	5	1
Matthew	3	2	0	0	0	0	0	10	0	0	0	0	0	0	1	2	0	1	2	1	2	0	9	4	0	5	3
Sindiswa	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0
Sizwe	3	3	4	1	3	1	1	14	0	0	4	0	2	1	4	5	0	4	1	5	14	2	12	5	0	5	9
Thozie	3	1	1	0	0	0	0	0	1	0	0	0	0	2	0	4	0	0	2	0	3	1	1	0	0	6	1
Ayanda	4	1	2	0	1	1	0	0	0	0	4	0	3	1	4	2	0	1	1	0	3	1	10	0	0	5	2
Hilde	4	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
James	4	1	1	0	0	0	1	3	0	0	1	0	1	0	1	3	0	1	0	2	3	0	4	1	0	2	2
Sipho	4	1	3	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	2	0	3	0	0	2	0
Thami	4	1	3	0	1	3	1	2	0	1	0	3	4	3	6	1	0	0	1	2	6	1	7	0	4	3	8
Theo	4	0	7	1	2	0	0	7	1	1	0	2	7	1	4	2	0	4	2	2	5	2	13	4	1	1	3
Theodora	4	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	1	0
Funeka	5	4	8	2	3	4	0	2	0	1	0	1	2	0	3	7	0	3	2	0	7	2	17	0	1	6	10
Hilde	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
James	5	1	4	0	2	0	0	1	0	0	0	2	2	0	2	4	1	3	2	1	5	1	3	0	0	1	5
Sindiswa	5	4	8	2	1	5	1	2	1	1	0	3	4	1	3	10	0	3	1	4	12	2	15	0	0	10	8
Sipho	5	1	2	1	4	2	0	0	0	0	0	0	0	0	5	3	1	4	1	0	4	1	6	0	0	5	10
Thami	5	5	6	1	0	4	0	2	2	1	6	1	6	3	7	5	0	0	5	0	8	3	19	1	0	4	14
Thozie	5	2	10	2	5	5	1	1	0	4	0	3	10	1	5	14	0	7	3	1	13	3	21	0	0	12	17
Ayanda	6	2	0	2	0	0	0	0	0	0	1	1	0	1	3	6	0	0	1	3	2	1	8	1	0	5	2
Buyiswa	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Hilde	6	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Khaya	6	7	1	2	1	2	1	2	0	0	0	2	1	0	3	1	0	3	3	2	6	0	6	1	0	0	10
Matthew	6	8	4	0	3	2	6	5	1	0	1	2	3	1	18	9	1	6	12	4	11	2	14	5	0	9	14
Theo	6	1	3	6	1	3	2	0	2	0	8	0	1	0	1	3	0	1	1	1	2	1	18	1	0	4	5
Theodora	6	3	0	1	0	4	3	4	0	0	0	0	5	2	5	8	2	0	2	3	7	0	7	0	0	9	10
Ayanda	7	2	2	0	0	1	7	1	0	1	0	0	0	1	1	2	0	0	4	0	3	0	4	0	0	1	4
Buyiswa	7	0	0	0	0	1	0	2	0	1	0	0	0	0	5	0	0	1	0	1	3	0	3	0	0	4	2
Funeka	7	2	3	0	0	1	1	6	0	0	0	1	1	1	3	2	0	2	2	1	7	0	5	1	0	5	4
Sipho	7	1	0	0	1	2	0	8	0	1	0	0	0	1	5	6	0	4	2	4	7	0	7	2	1	6	4
Theo	7	0	2	0	0	0	2	6	0	0	0	2	0	2	2	3	0	2	1	1	4	2	8	1	0	6	1
Theo/Thozie	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Thozie	7	1	3	0	2	0	4	2	0	1	0	1	1	2	2	5	0	3	1	1	6	0	8	1	0	6	3
Thozie/Theo	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0
James	8	0	0	0	1	0	1	4	0	1	0	0	0	0	7	1	0	1	0	1	7	0	5	3	2	3	1
James/Thami	8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0
Khaya	8	2	0	0	0	0	0	7	0	2	0	2	2	0	3	6	0	2	2	6	7	0	6	1	1	5	3
Khaya/Thami	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0
Lulama	8	0	0	0	0	0	0	3	0	0	0	0	0	0	2	3	0	0	1	1	2	0	4	2	0	3	1
Matthew	8	5	8	0	8	4	11	8	0	5	0	4	6	1	4	3	0	10	4	7	11	6	8	1	0	10	15
Thami	8	2	0	0	0	0	0	5	0	0	0	1	1	0	4	0	0	1	1	2	7	0	2	0	0	0	5
Theodora	8	0	0	0	0	0	0	2	0	2	0	2	0	0	3	2	0	1	0	2	6	0	2	3	0	2	0
Buyiswa	9	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1
Hilde	9	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lulama	9	3	0	0	1	4	0	0	0	0	0	1	2	0	4	5	2	1	1	1	5	0	6	0	0	6	9
Sipho	9	1	4	1	1	0	0	2	0	0	0	0	1	0	1	1	1	1	0	3	1	1	4	0	0	1	2
Sizwe	9	12	4	5	1	5	3	14	0	2	0	5	5	2	3	7	1	1	2	12	11	4	21	4	0	7	19
Thami	9	2	4	1	0	2	1	5	0	1	0	1	3	0	4	4	2	1	6	1	9	1	5	0	0	3	6
Theodora	9	0	3	0	1	1	0	2	0	1	11	0	3	0	0	3	0	1	0	2	1	3	14	0	0	3	3
Thozie	9	0	1	0	0	4	1	1	0	0	0	0	3	0	0	9	1	0	0	0	4	1	6	0	0	8	4
Ayanda	10	3	2	0	3	4	0	4	0	0	19	0	4	0	4	1	0	1	1	3	3	1	30	2	0	4	8
Funeka	10	7	6	1	17	3	4	1	0	0	0	0	3	0	4	5	1	14	7	2	5	4	10	1	1	5	25
James	10	2	3	0	5	2	0	1	1	1	1	1	2	0	4	5	0	6	0	3	6	2	7	1	0	4	7
Khaya	10	4	1	0	9	1	0	0	0	1	0	4	1	0	4	1	1	7	3	3	6	1	4	0	1	2	11

Data 1

Matthew	10	9	13	2	11	6	17	6	3	1	9	7	15	1	10	11	1	12	11	9	24	8	25	1	0	15	21
Theo	10	9	3	4	8	2	2	6	1	0	1	1	5	0	14	3	4	6	4	7	11	1	15	3	1	10	15
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
James	11	0	1	0	0	0	1	0	0	2	0	2	1	0	0	0	0	0	2	0	3	0	0	0	0	0	1
Lulama	11	7	1	1	2	1	1	1	0	0	0	5	1	1	2	2	0	2	3	3	5	0	9	1	0	0	12
Sipho	11	2	0	0	0	2	0	2	0	4	0	2	1	1	4	1	0	0	0	7	6	1	2	0	0	2	6
Sizwe	11	10	9	7	7	3	2	6	0	0	0	4	15	0	14	8	0	6	12	2	16	6	25	7	0	2	17
Thami	11	2	17	0	1	10	0	3	1	1	12	4	10	1	4	1	0	5	2	1	14	7	17	0	0	1	13
Thozie	11	1	3	4	0	3	1	1	0	0	0	1	6	0	1	3	0	0	0	1	5	2	7	0	0	2	3
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ayanda	12	4	4	1	0	3	1	2	0	0	0	0	3	2	4	3	0	1	0	4	8	2	10	2	0	3	10
Buyiswa	12	0	0	0	0	2	0	0	0	0	0	1	0	0	2	1	0	0	0	0	3	0	1	0	0	1	3
Funeka	12	1	2	4	1	0	1	3	1	3	0	1	2	2	0	3	0	2	2	2	2	0	12	1	0	3	6
Hilde	12	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
Khaya	12	11	5	1	0	2	0	6	0	4	0	5	0	3	3	5	0	1	5	4	15	4	15	0	0	5	20
Linda	12	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	2
Matthew	12	12	11	2	12	7	9	5	0	3	7	3	6	6	10	8	0	5	5	6	14	7	41	3	0	11	43
Theodora	12	14	1	0	5	4	0	1	0	1	0	0	3	1	3	4	0	1	3	4	3	1	17	0	0	6	23

Data 1

```
0 0 0 0 0 0 1
0 1 2 0 0 3 7
3 0 0 0 0 0 0
0 0 0 0 0 0 0
11 1 4 0 2 1 5
0 0 0 0 0 0 2
1 0 4 0 0 0 7
0 2 0 0 0 1 0
3 1 1 0 0 1 1
0 0 0 0 0 0 4
0 1 0 2 4 1 6
6 2 1 4 1 0 12
3 0 0 0 0 0 0
3 2 2 0 2 0 11
0 0 0 0 0 0 0
1 3 0 1 0 0 7
1 3 2 2 2 1 17
0 0 1 0 1 0 1
3 0 7 2 0 0 18
2 0 2 4 2 1 23
2 0 3 1 0 0 2
0 0 0 0 0 0 1
0 0 0 0 0 0 0
3 0 2 3 1 1 2
12 2 1 4 0 6 10
1 1 11 0 0 2 6
3 1 1 0 0 3 8
2 0 0 1 0 7 3
3 0 0 0 0 0 0
4 1 0 1 1 1 3
11 0 0 0 0 0 1
2 0 0 4 0 2 3
0 0 0 0 0 0 1
3 0 0 1 1 4 5
0 0 0 0 0 0 0
5 0 0 0 0 1 0
0 0 0 0 0 0 0
6 0 0 6 0 0 2
0 0 0 0 0 0 0
1 0 0 1 0 0 0
1 2 0 14 1 11 12
6 0 0 1 0 0 1
3 0 0 2 1 0 0
0 0 0 0 0 0 0
0 0 0 0 0 0 1
0 0 0 0 0 0 5
1 2 1 0 0 0 5
6 3 5 6 8 3 7
4 1 1 5 0 1 7
0 1 11 0 4 0 3
1 0 0 0 0 1 5
0 0 19 0 2 0 9
2 1 4 0 0 4 8
4 2 4 0 0 0 6
2 1 4 0 3 0 2
```

Data 1

11	4	16	3	2	17	31
8	0	9	0	0	2	11
0	0	0	0	0	0	0
1	0	0	1	1	1	2
0	0	1	5	1	1	4
2	2	0	5	0	0	2
8	4	7	12	10	2	16
0	1	12	6	16	0	18
0	1	4	2	0	1	11
0	0	0	0	0	0	0
2	0	1	0	1	1	7
1	0	0	0	1	0	0
2	1	3	2	1	1	4
0	0	0	0	0	0	1
3	1	1	5	3	0	7
0	0	0	0	0	0	1
4	3	9	2	2	9	15
2	0	0	0	1	0	5

W/Shop	Person	Clarify	Comment	Dictate	Inform	Inquire	Invite	Justify	Offer	Query	Record	Reject	Request	Seek	Suggest	Support	%	Example	Fact	Inference	Interpretation	Opinion	Reflection	Repetition	%	Amplifying	Compromise	Consensus A	Consensus U	Contribution	Group	Memory	Own Ideas	Own Needs	Participation	Task	%	
1A	Funeka	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1.14%	0	0	0	1	0	0	0	1.35%	0	0	0	0	0	0	0	0	0	0	1	3	1.20
1A	Linda	0	2	2	1	0	3	2	0	0	0	0	5	1	0	3	21.59%	0	0	1	0	2	1	8	16.22%	0	0	5	1	0	1	2	0	0	3	7	50	20.00
1A	Matthew	2	0	0	0	0	0	10	0	0	0	0	0	0	1	2	17.05%	0	1	2	1	2	0	9	20.27%	4	0	5	3	3	0	0	0	0	0	0	45	18.00
1A	Sindiswa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.14%	1	0	0	0	0	0	0	1.35%	0	0	1	0	0	0	0	0	0	0	0	3	1.20
1A	Sizwe	3	4	1	3	1	1	14	0	0	4	0	2	1	4	5	48.86%	0	4	1	5	14	2	12	51.35%	5	0	5	9	11	1	4	0	2	1	5	124	49.60
1A	Thozie	1	1	0	0	0	0	0	1	0	0	0	0	2	0	4	10.23%	0	0	2	0	3	1	1	9.46%	0	0	6	1	0	0	0	0	0	0	2	25	10.00
1B	Ayanda	1	2	0	1	1	0	0	0	0	4	0	3	1	4	2	17.59%	0	1	1	0	3	1	10	20.25%	0	0	5	2	1	0	4	0	0	0	7	54	18.31
1B	Hilde	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	2.78%	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	2	0	0	0	1	0	6	2.03
1B	James	1	1	0	0	0	1	3	0	0	1	0	1	0	1	3	11.11%	0	1	0	2	3	0	4	12.66%	1	0	2	2	3	1	1	0	0	1	1	34	11.53
1B	Sipho	1	3	0	0	0	0	1	0	0	0	0	0	0	0	1	5.56%	1	0	0	0	2	0	3	7.59%	0	0	2	0	0	0	0	0	0	0	4	18	6.10
1B	Thami	1	3	0	1	3	1	2	0	1	0	3	4	3	6	1	26.85%	0	0	1	2	6	1	7	21.52%	0	4	3	8	0	1	0	2	4	1	6	75	25.42
1B	Theo	0	7	1	2	0	0	7	1	1	0	2	7	1	4	2	32.41%	0	4	2	2	4	2	12	32.91%	4	1	1	3	6	2	1	4	1	0	12	96	32.54
1B	Theodora	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	3.70%	0	2	0	0	1	0	1	5.06%	0	0	1	0	3	0	0	0	0	0	0	12	4.07
2A	Funeka	4	8	2	3	4	0	2	0	1	0	1	2	0	3	7	15.95%	0	3	2	0	7	2	17	16.76%	0	1	6	10	3	2	2	0	2	0	11	105	16.18
2A	Hilde	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.43%	0	1	0	0	0	0	0	0.54%	0	0	0	1	0	0	0	0	0	0	0	3	0.46
2A	James	1	4	0	2	0	0	1	0	0	0	2	2	0	2	4	7.76%	1	3	2	1	5	1	3	8.65%	0	0	1	5	1	3	0	1	0	0	7	52	8.01
2A	Sindiswa	4	8	2	1	5	1	2	1	1	0	3	4	1	3	10	19.83%	0	3	1	4	12	2	15	20.00%	0	0	10	8	1	3	2	2	2	1	17	129	19.88
2A	Sipho	1	2	1	4	2	0	0	0	0	0	0	0	0	5	3	7.76%	1	4	1	0	4	1	6	9.19%	0	0	5	10	0	0	1	0	1	0	1	53	8.17
2A	Thami	5	6	1	0	4	0	2	2	1	6	1	6	3	7	5	21.12%	0	0	5	0	8	3	19	18.92%	1	0	4	14	3	0	7	2	0	0	18	133	20.49
2A	Thozie	2	10	2	5	5	1	1	0	4	0	3	10	1	5	14	27.16%	0	7	3	1	13	3	21	25.95%	0	0	12	17	2	0	2	4	2	1	23	174	26.81
2B	Ayanda	2	0	2	0	0	0	0	0	1	1	0	1	3	6	9.36%	0	0	1	3	2	1	8	11.45%	1	0	5	2	2	0	3	1	0	0	2	47	9.94	
2B	Buyiswa	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.58%	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0	1	2	0.42
2B	Hilde	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1.17%	0	1	0	0	0	0	0	0.76%	0	0	0	2	0	0	0	0	0	0	0	5	1.06
2B	Khaya	7	1	2	1	2	1	2	0	0	0	2	1	0	3	1	13.45%	0	3	3	2	6	0	6	15.27%	1	0	0	10	3	0	2	3	1	1	2	66	13.95
2B	Matthew	8	4	0	3	2	6	5	1	0	1	2	3	1	18	9	36.84%	1	6	12	4	11	2	14	38.17%	5	0	9	14	12	2	1	4	0	6	10	176	37.21
2B	Theo	1	3	6	1	3	2	0	2	0	8	0	1	0	1	3	18.13%	0	1	1	1	2	1	18	18.32%	1	0	4	5	1	1	11	0	0	2	6	86	18.18
2B	Theodora	2	0	1	0	4	3	4	0	0	0	0	5	2	6	8	20.47%	2	0	2	3	7	0	7	16.03%	0	0	9	10	3	1	1	0	0	3	8	91	19.24
3A	Ayanda	2	2	0	0	1	7	1	0	1	0	0	0	1	1	2	15.25%	0	0	4	0	3	0	4	11.11%	0	0	1	4	3	0	0	1	0	6	3	47	14.03
3A	Buyiswa	0	0	0	0	1	0	2	0	1	0	0	0	0	5	0	7.63%	0	1	0	1	3	0	3	8.08%	0	0	4	2	3	0	0	0	0	0	0	26	7.76
3A	Funeka	2	3	0	0	1	1	6	0	0	0	1	1	1	3	2	17.80%	0	2	2	1	7	0	5	17.17%	1	0	4	4	5	1	0	1	1	1	3	59	17.61
3A	Sipho	1	0	0	1	2	0	8	0	1	0	0	0	1	5	6	21.19%	0	4	2	4	7	0	7	24.24%	2	1	6	4	11	0	0	0	0	0	1	74	22.09
3A	Theo	0	2	0	0	0	2	6	0	0	0	2	0	2	2	3	16.10%	0	2	1	1	4	2	8	18.18%	1	0	6	1	2	0	0	4	0	2	3	56	16.72
3A	Theo/ Thozie	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.85%	0	0	0	0	0	1	0	1.01%	0	0	0	0	0	0	0	0	0	0	1	3	0.90
3A	Thozie	1	3	0	2	0	4	2	0	1	0	1	1	2	2	5	20.34%	0	3	1	1	6	0	8	19.19%	1	0	5	3	4	0	0	1	1	4	5	67	20.00
3A	Thozie/ Theo	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.85%	0	0	0	0	0	0	1	1.01%	0	0	1	0	0	0	0	0	0	0	0	3	0.90
3B	James	0	0	0	1	0	1	4	0	1	0	0	0	0	7	1	10.71%	0	1	0	1	7	0	5	11.97%	3	2	3	1	5	0	0	0	0	1	0	44	11.08
3B	James/ Thami	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.71%	0	0	0	0	1	0	0	0.85%	0	0	1	0	0	0	0	0	0	0	0	3	0.76
3B	Khaya	2	0	0	0	0	0	7	0	2	0	2	2	0	3	6	17.14%	0	2	2	6	7	0	6	19.66%	1	1	5	3	6	0	0	6	0	0	2	71	17.88
3B	Khaya/ Thami	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.71%	0	0	0	0	0	0	1	0.85%	0	0	1	0	0	0	0	0	0	0	0	3	0.76
3B	Lulama	0	0	0	0	0	0	3	0	0	0	0	0	0	2	3	5.71%	0	0	1	1	2	0	4	6.84%	2	0	3	1	1	0	0	1	0	0	0	24	6.05
3B	Matthew	5	8	0	8	4	11	8	0	5	0	4	6	1	4	3	47.86%	0	10	4	7	11	6	8	39.32%	1	0	10	15	1	2	0	14	1	11	12	180	45.34
3B	Thami	2	0	0	0	0	0	5	0	0	0	1	1	0	4	0	9.29%	0	1	1	2	7	0	2	11.11%	0	0	0	5	6	0	0	1	0	0	1	39	9.82
3B	T'dora	0	0	0	0	0	0	2	0	2	0	2	0	0	3	2	7.86%	0	1	0	2	6	0	2	9.40%	3	0	2	0	3	0	0	2	1	0	0	33	8.31

4A	Buyiswa	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1.14%	0	0	0	0	0	0	0	1	0.72%	0	0	1	1	0	0	0	0	0	0	0	0	0	5	1.02
4A	Hilde	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.57%	0	0	0	0	0	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0.41
4A	Lulama	3	0	0	1	4	0	0	0	0	0	1	2	0	4	5	11.43%	2	1	1	1	5	0	6	11.59%	0	0	6	9	0	0	0	0	0	0	0	0	5	56	11.48		
4A	Sipho	1	4	1	1	0	0	2	0	0	0	0	1	0	1	1	6.86%	1	1	0	3	1	1	4	7.97%	0	0	1	2	1	2	1	0	0	0	0	5	35	7.17			
4A	Sizwe	12	4	5	1	5	3	14	0	2	0	5	5	2	3	7	38.86%	1	1	2	12	11	4	21	37.68%	4	0	7	19	6	3	5	6	8	3	7	188	38.52				
4A	Thami	2	4	1	0	2	1	5	0	1	0	1	3	0	4	4	16.00%	2	1	6	1	9	1	5	18.12%	0	0	3	6	4	1	1	5	0	1	7	81	16.60				
4A	Th'dora	0	3	0	1	1	0	2	0	1	11	0	3	0	0	3	14.29%	0	1	0	2	1	3	14	15.22%	0	0	3	3	0	1	11	0	4	0	3	71	14.55				
4A	Thozie	0	1	0	0	4	1	1	0	0	0	0	3	0	0	9	10.86%	1	0	0	0	4	1	6	8.70%	0	0	8	4	1	0	0	0	0	1	5	50	10.25				
4B	Ayanda	3	2	0	3	4	0	4	0	0	19	0	4	0	4	1	13.37%	0	1	1	3	3	1	30	14.50%	2	0	4	8	0	0	19	0	2	0	9	127	13.70				
4B	Funeka	7	6	1	17	3	4	1	0	0	0	0	3	0	4	5	15.50%	1	14	7	2	5	4	10	15.99%	1	1	5	25	2	1	4	0	0	4	8	145	15.64				
4B	James	2	3	0	5	2	0	1	1	1	1	1	2	0	4	5	8.51%	0	6	0	3	6	2	7	8.92%	1	0	4	7	4	2	4	0	0	0	6	80	8.63				
4B	Khaya	4	1	0	9	1	0	0	0	1	0	4	1	0	4	1	7.90%	1	7	3	3	6	1	4	9.29%	0	1	2	12	1	1	4	0	3	0	2	77	8.31				
4B	Matthew	9	13	2	11	6	17	6	3	1	9	7	15	1	10	11	36.78%	1	12	11	9	24	8	25	33.46%	1	0	15	21	11	4	16	3	2	17	31	332	35.81				
4B	Theo	9	3	4	8	2	2	6	1	0	1	1	5	0	14	3	17.93%	4	6	4	7	11	1	15	17.84%	3	1	10	15	8	0	9	0	0	2	11	166	17.91				
5A	James	0	1	0	0	0	1	0	0	2	0	2	1	0	0	0	3.08%	0	0	2	0	3	0	0	2.96%	0	0	0	1	1	0	0	1	1	1	2	19	3.05				
5A	Lulama	7	1	1	2	1	1	1	0	0	0	5	1	1	2	2	11.01%	0	2	3	3	5	0	9	13.02%	1	0	0	12	0	0	1	5	1	1	4	72	11.56				
5A	Sipho	2	0	0	0	2	0	2	0	4	0	2	1	1	4	1	8.37%	0	0	0	7	6	1	2	9.47%	0	0	2	6	2	2	0	5	0	0	2	54	8.67				
5A	Sizwe	10	9	7	7	3	2	6	0	0	0	4	15	0	14	8	37.44%	0	6	11	2	16	6	24	38.46%	7	0	2	18	7	4	7	12	10	2	16	235	37.72				
5A	Thami	2	17	0	1	10	0	3	1	1	12	4	10	1	4	1	29.52%	0	5	2	1	14	7	17	27.22%	0	0	1	13	0	1	12	6	16	0	18	180	28.89				
5A	Thozie	1	3	4	0	3	1	1	0	0	0	1	6	0	1	3	10.57%	0	0	0	1	5	2	7	8.88%	0	0	2	3	0	1	4	2	0	1	11	63	10.11				
5B	Ayanda	4	4	1	0	3	1	2	0	0	0	0	3	2	4	3	10.98%	0	1	0	4	8	2	10	12.25%	2	0	3	10	2	0	1	0	1	1	7	79	11.35				
5B	Buyiswa	0	0	0	0	2	0	0	0	0	0	1	0	0	2	1	2.44%	0	0	0	0	3	0	1	1.96%	0	0	1	3	1	0	0	1	0	0	16	2.30					
5B	Funeka	1	2	4	1	0	1	3	1	3	0	1	2	2	0	3	9.76%	0	2	2	2	2	0	12	9.80%	1	0	3	6	2	1	3	2	1	1	4	68	9.77				
5B	Hilde	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1.22%	0	0	0	1	0	0	1	0.98%	0	0	0	2	0	0	0	0	0	0	1	8	1.15				
5B	Khaya	11	5	1	0	2	0	6	0	4	0	5	0	3	3	5	18.29%	0	1	5	4	15	4	14	21.08%	0	0	5	20	3	1	1	5	3	0	7	133	19.11				
5B	Linda	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1.22%	0	0	0	1	0	1	1	1.47%	0	0	0	2	0	0	0	0	0	0	1	9	1.29				
5B	Matthew	12	11	2	12	7	9	5	0	3	7	3	6	6	10	8	41.06%	0	5	5	7	12	7	42	38.24%	3	0	11	44	3	3	9	2	2	9	15	280	40.23				
5B	Th'dora	14	1	0	5	4	0	1	0	1	0	0	3	1	3	4	15.04%	0	1	3	4	3	1	17	14.22%	0	0	6	23	2	0	0	0	1	0	5	103	14.80				
all		5133	180	187	57	129	121	91	186	15	48	85	81	163	48	221	222		21	146	129	142	366	91	570		64	13	258	475	169	51	156	108	75	90	375	5133				