AN INVESTIGATION OF THE EFFECTS WHICH USING THE WORD PROCESSOR HAS ON THE WRITING OF STANDARD SIX PUPILS

THESIS

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Abstract

In order to discover to what extent the use of the word processor affects the motivation of high school students when engaged in writing tasks, and to determine the effects of the word processing on the length and quality of their work and editing, two groups, carefully matched in terms of prior computer experience, intelligence and language ability were given eight writing tasks. The test group used word processors while the control group used pen and paper. Their behaviour was closely observed and their writing was subsequently compared. It was found that while the test group were more motivated and spent longer both writing and editing their work, the quality of the work of both groups was similar. The degree of editing was greater for the test group. The conclusion is that there is a place for the use of the word processor in the English classroom, but specific strategies need to be developed to optimise its benefits.

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Chapter 1: Introduction

1.1 A general overview of the role of the computer in the English language classroom.

1.1.1 Doubts and fears

Historically, the microcomputer has had a chequered career in the English language classroom. Teachers who remembered the hailing of the language laboratory in the late 70's as the high-tech solution to language teaching problems, and subsequently the embarrassing failure of the experiment, were understandably sceptical (Anderson, 1981 / Last, 1982). This expensive equipment, glossily advertised by respected companies like SONY, promised miracles, but did not deliver them because of, among other reasons, a lack of effective backup and training. For many, the introduction of computers into the classroom signalled the rebirth of this "dinosaur".

As the computer gained a toehold in education, a second fear arose: that of the machine "de-humanising" the humanities. It is a fear which must be taken seriously. Teachers of language have long known that education must contain "a large element of personal help and human understanding." (Hubbard, 1981) There is still no substitute for human inventiveness and interaction (Stevens, 1981 / Griffin, 1982). Some felt that the computer's ability to store scores and personal details to be an element of increased tension in the learning situation (Sedgley, 1982). Others felt that the program[1] would end up dictating the teaching situation (Griffin, 1982). Also, the pupil could come to believe in the personality of the computer which would then become an "automated authority", having "absolute power to command absolute attention" (Smith, 1982), a superior being in possession of all the relevant knowledge, the sole authority of what is right and wrong...(Skues, 1983).

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[1] I have followed the general practice of using the American spelling of "program" when referring to computer software.

Apart from this fear of creating a "dangerous" personality in the classroom, there are also moral considerations. Questions of morality have always been very much the consideration of English writing, and the violent style of computer gaming, emulated by some educational programs gave cause for concern. Several "shoot or be shot" games promised to teach, among other things, touch typing. Some programmers evidently felt that a violent element was necessary if the program was to be of interest to children (Smith, 1982).

The expense worried many. The money spent on computers must come from somewhere, and, in the case of the English budget, it would be spent at the expense of books (Lodge, 1983). In many cases, the cost of producing software has resulted in the programs being merely electronic books of limited interaction with automated text (Taylor, 1983). Even graphics are often less aesthetically attractive, convincing and useful than they would be in the medium of print.

The situation has not been improved by the type of activity lauded as educationally significant by the software houses. For a start, some of the most demonstrated and lasting educational programs are Hangman and its derivatives. D.Orme (Orme, 1983) effectively hammered the nail in its intellectual coffin, by describing his reactions as a pupil to a "dreary 'keeping them occupied' exercise used by teachers on damp afternoons when all else had failed." He vowed never to sink to that level as a teacher, only to find the same exercise vaunted as the new educational technology. Also ludicrous is the expensive translation to software of the game of forming new words from the letters of a long word. This can be far more effectively carried out in the classroom situation by using a chalkboard and dictionaries (Sands, 1983). Indeed, the view that, 'because it is electronic it is better' is a dangerous one which, despite providing entertainment, and profit for educational programmers, provides those who oppose the use of the microprocessor in the teaching of English with

much ammunition.

Before discussing the more positive aspects of computer assistance in the teaching of English, a final weakness must be mentioned as it is responsible for the failure of much educational software: that of the over-simplification of a vastly complex task. The computer can orchestrate fairly simple tasks of identification and discrimination (Stephens, 1982), however, when a programmer tries to go beyond drill and practice exercises he is faced with an explosion of complexity. Programs therefore encourage a convergent, passive approach to knowledge, where specific answers gain rewards and divergent thinking is often wrong. For example, the question "Do you wish to continue?" demands the answers "Yes" or "No". The pupil who types "Ok" or "Of course" etc is not understood. Subtleties of tone also are completely meaningless to the machine.

As computers become more complex and capable of faster operation using vast quantities of data, some tutoring software has proved successful in the training of punctuation skills and reading speed, particularly amongst pupils in need of remedial teaching, but it is as a tool rather than as a "teacher" that the computer has stimulated interest amongst language teachers.

1.1.2 Positive aspects: hypertext and word processing

It is perhaps a pity that the above concerns have focused attention on the computer as a very limited and literal teacher (or "tutor" in the words of Taylor (Taylor, 1980)), while there is much to be said for its use as a "tool". In the words of Daniel Chandler "...it is amongst...teachers of English in the secondary school that some hope may lie for the appropriate use of the computer as a liberating tool..." (Chandler, 1987).

1.1.2.1 Hypertext

One relatively recent use of the computer in education shows promise. This involves the organisation of textual material in the form of a multi-layered electronic "book" which can be read on the surface, or explored at any depth suitable to the reader through notes accessed by moving a cursor onto certain words and pressing a button. The notes can in turn trigger further notes, so the pupil reading, for example, the play Hamlet by William Shakespeare, has both the unspoilt original text and a vast amount of critical and explanatory material at his disposal. The benefits of this are obvious, and will become more accessible as computers and "electronic books" using compact disk storage systems become smaller and easier to handle.

1.1.2.2. The word processor

Few of the fears mentioned earlier would be raised by the introduction of typewriters into the class situation, and the word processor is little more than an extremely sophisticated electronic typewriter with instant correction and editing features.

Teachers, frustrated with the pupils' presentation of careless, illegibly-written and generally messy scripts (not all of which are the result of an uninterested approach to the set task) will appreciate the possible advantages of the use of word processors in the school situation. Word processors for pupil use range from hand-held hardware devices which send output to a television screen (an example being Microwriter, a six key device which allows primary school pupils to form letters easily through processors like Edword, specially designed to suit school children, to complex "writing environment" programs like Quill. Emily Thrush sums up well the classroom advantages of word processors, spreadsheets and databases as opposed to small, discrete drill and practice or

game programs, when she states that they have "unlimited flexibility of content, greater student involvement with the content material, and greater relevance to students' life goals" (Thrush, 1988).

The picture is, however, not as clear as the advocates of the word processor would like it to be. There are disadvantages and difficulties involved. Christensen notes lack of teacher and student access to computers, staff resistance, lack of funding, lack of good programs and the depersonalization of instruction (Christensen, 1983). The staff resistance is probably no longer the factor it was in 1983, but undoubtedly still exists. The cost remains a significant factor and needs to be justified by a substantial benefit to students. Before the word processor can be lauded as a valuable tool in the teaching of English, therefore, much research needs to be done on the deceptively simple question: does using the word processor and its derivatives cause the pupil to produce work of higher quality? The literature on this question is very ambiguous.

1.2 The purpose of this study

This study attempts to determine whether the use of the word processor in writing lessons given to a selected group of pupils affects the quality of the writing, the organization into paragraphs, the number of errors, the degree and quality of editing and the general motivation of the pupils.

1.3 Outline of investigation

Two matched groups of pupils were given a series of writing tasks, which were collected, marked, and returned for correction. The test group wrote only on word processors while the control group used pens, but other than this the teaching situation and the tasks were kept as similar as possible. Detailed records were kept of time spent and many aspects of

the work such as number of errors, paragraph organization etc. After eight lessons, the statistics were compared with results which reinforced some of the positive findings in the available literature, but which also indicated some of the limitations of word processing.

1.4 Organization of thesis

In the following chapter, some of the literature on the subject of word processing is reviewed and found to be contradictory. Chapter 3 deals in detail with the actual research techniques, and chapter 4, the research findings. The conclusions reached form chapter 5, and the references, chapter 6. Detailed tabulated results, a copy of a questionnaire used and a letter of parental consent can be found in the appendices.

Chapter 2: A Review of the Literature

Does using the word processor and its derivatives cause the pupil to produce work of higher quality? The literature on this question is very ambiguous. In his review of the literature, Hooper found that, while some researchers found that the use of computers increased students' sense of audience and feedback, others warned that computers/word processors were not enough in themselves to teach students to write better (Hooper, 1988). He stressed the need for more investigation of the negative effects of computer use. Hunter, in his review of some recent (1990) studies, concluded that they did not give unqualified support for the use of word processors in the teaching of writing (Hunter, 1990). Herrmann, in an elaborate study using videotape, audiotape, teacher and researcher journals and interviews, observed 8 high school students as they progressed in a computer-based writing course. She discovered that the students fell into three categories: those who found difficulty adapting to the word processor and who made little progress with their writing; those who learnt to use the word processor relatively easily but who made little progress with their writing; and those who were successful in both fields. She felt that socialization and social class factors played a great part in determining into which category the pupils fell, and the presence of the computers was not enough to overcome these factors (Herrmann, 1985). Appleby too, while generally positive about the role of the computer in the English classroom, warns of possible economic, social, racial, and sexual differences that might arise as part of the "computer culture"(Appleby, 1983). Sudol, after studying the responses to 16 questions asked of 20 freshman students, stresses that personality type plays a large role in determining the success of student word processing. The technology, he discovered, can magnify both strengths and weaknesses (Sudol, 1991).

Another factor which cannot be ignored is the time needed to learn to use the word processor. The learning of keyboard and word processing skills might take up valuable time which could be used more economically in the teaching of other aspects of writing. Also, the logistics of gaining access to a computer room, booting the machines and queuing for a printed copy of the work might prove daunting in a class situation.

2.1 Advantages

What then are the theoretical advantages of using the word processor? These are summed up well by Jacoby in a paper presented at the Spring Conference of the Delaware Valley Writing Council. She claimed that word processors motivate students to spend more time on tasks, encourage changes and rewriting, and eliminate concern for neatness and the tedium of correction. Word processors, she felt, made students more receptive to criticism, and teachers could correct errors on screen without spoiling the appearance of the finished product (Jacoby, 1984). Wheeler claims that the word processor can "facilitate student/teacher conferencing, peer evaluation, peer corroboration, and purposeful writing" (Wheeler, 1985). Sudol claims that the value of word processing lies in its ability to compensate for areas in which the writers are less gifted (Sudol, 1991). This is, to an extent, supported by results of The Writing Project (Morrocco et al, 1985), in which learning-disabled pupils were given the opportunity of using word processors.

Most research has concentrated on the following areas of possible writing improvement: increased motivation of the students; improved general quality of the writing; easier and therefore more frequent editing; improved spelling; greater planning and organization into paragraphs; improved capitalization and punctuation; and improved appearance of the final product. I shall discuss each of these in turn.

2.1.1 Motivation and length of written work.

There is some evidence that the pupils' motivation to write is improved (Little, 1988). The very novelty of using the word processor might be a motivating force. Generally, pupils have strongly positive feelings about computers, associating them with sophisticated games etc. Also, the professional appearance of the finished product might play a part. Even the humblest of essays assumes the appearance of a printed article, theoretically allowing the pupil to gain pride in his work, and in turn contributing to his motivation (Hope, 1983 / Wresch, 1987). Where length is not stipulated, the amount of time spent on a task gives some indication of self motivation. Pupils using word processors were found by some researchers to be prepared to spend longer on writing tasks (Chandler, 1987) (Bryan, 1983/ Ferris et al,1990). This enthusiasm might well be extended to the actual writing task, and transferred to situations where the computer is not used (Clark, 1985). Black, studying the progress of 13 fifth grade students, found that when word processors were used written output increased, classwork and homework were returned promptly and inappropriate behaviour was lessened (Black, 1989). In her review of current literature, Liechty comes to the conclusion that using the word processor causes a greater time to be spent on the task, greater length of finished product and a positive attitude (Liechty, 1989). This is supported by a study by Etchison (Etchison, 1988). Harris, however, found that word processing did not encourage more extensive writing (Harris,1985). Kurth, after studying the progress of 28 high school students enrolled in a special class for interested writers, found no difference between students who used word processors and those who did not in terms of length of work. Questionnaires however revealed that those who used word processors were more positive about the writing course than were the others (Kurth, 1986). Partridge, questioning 25 undergraduate students, found that the use of the word processor was seen as a matter of choice, and that

those who did not use it did not see themselves as at a disadvantage. All students questioned felt that the use of the word processor did not significantly improve the quality of written work (Partridge, 1987). This contradicts the study by Brown in which freshman students, responding to a questionnaire, felt that their writing abilities had been greatly increased (Brown, 1985). Kurth, after a detailed study of the writing of 18 fifth, sixth and seventh grade remedial students, concluded that, although the word processing group handed in more rough drafts than did the control group, there was little difference in the final length of work handed in by both groups (Kurth, 1984). Schramm, on the other hand, found a "small significant positive effect in length of essays" and "a large significant positive effect on student attitudes" (Schramm, 1991).

It is obvious that the evidence concerning the word processor's motivating power is by no means clear. Of course, as in any educational situation, a teacher or instructor is required, and many of the differences in motivation might well be the result of different personalities and methods of instruction. It becomes apparent that whatever merits the word processor might have, it cannot take control of the learning situation.

There is also the possibility that the novelty of the situation could account for an initial improvement in motivation, which would no doubt fade as the students grow more familiar with the concept of word processing.

There appears to be stronger evidence that the word processor can play an important role in motivating pupils who have been categorised as "learning disabled" (Graham, 1988). Outhred found that reluctant writers tended to write longer word-processed stories compared to handwritten stories, (Outhred, 1987) while Long noted a dramatic improvement in the self-image and self-motivation of twelve learning disabled students

who used word processors. She admits, however, that this could be a result of the individual attention which the students received (Long, 1988). Again the impossibility of studying the use of the word processor in a social vacuum is evident.

2.1.2 Quality of written work.

This is easily the most difficult aspect of writing to measure, inevitably requiring subjective judgement based on such ephemeral qualities as maturity, depth of thought, imagination, literary value and sincerity, as well as the more easily measured aspects of organisation and prevalence of errors. Apart from the studies which concentrate on errors of spelling, punctuation and grammar, the majority which mention quality of writing are based on the unscientific impressions of researchers and teachers. Regardless of artificial structures for assessment[a], none of which is completely all-embracing and effective, there seems no way to overcome this subjectivity.

The research in this field is, understandably, inconclusive. Several researchers claim that the use of word processors improves the quality of student work. Etchison found greater general improvement in the work of students using word processors than in the work of those who hand-wrote assignments, regardless of initial skill (Etchison, 1987). This is supported by a study of 24 students at Montclair State College, undertaken by Nash, (Nash, 1987) and a study of the writing of sociology students by Little (Little, 1988) Such improvement is also documented by McAllister and Louth (McAllister, 1988) After a study involving 204 students, Moore and Turner claimed that evaluation suggested that the word processing group improved more than did the control group

[a]One such has been used in this study and can be found in Appendix IV. It forms the basis for Natal Senior Certificate essay marking.

(Moore, 1988). Susan Black found that pupils using the word processor were able to write with greater logic and coherence than those who did not (Black, 1989). Graham and others concluded that instruction using the word processor had a positive effect on the quality of writing which generalised to other tasks (Graham, 1988).

Other studies are more guarded in their claims. Spence, after an 8 month study, claims "some improvement in basic skills" (Spence, 1986), while Schramm, after analysing the quality of 836 writing samples, found a "small but significant improvement of quality" when word processors were used (Schramm, 1991).

The above would be very encouraging, were it not for the following research. Elias claims that although the word processor is able to change writing behaviour, it cannot change the writing (Elias, 1984). Booth found that the use of word processors increased writing speed but had little effect on quality (Booth,1984). Hult found that her test group of word processing students and her control group which used pen and paper were very nearly alike in all aspects of error except spelling (as the test group had access to electronic spelling checkers)(Hult, 1985). Monaham, working with computer science students, found that they used sophisticated features of the word processing programs but the standard of their writing did not improve significantly (Monahan,1986). Holistic evaluation of the writing of 40 students by Etchison showed no significant difference in the improvement of writing quality between students using word processing and students using handwriting (Etchison, 1988). Mullins found no significant difference between the writing achievement of experimental groups using word processors and that of control groups which did not (Mullins, 1988). Pair, after studying the progress of 23 students in a freshman composition course, concluded that the students using word processors were neither more nor less successful than those who did not. The students tended to

prefer to write important in-class essays by hand (Pair, 1990).

2.1.3 Easier and more frequent editing.

It is undeniably easier to correct and change compositions created on a word processor. The arduous task of rewriting, which itself discourages editing, is eliminated and the work retains a professional appearance. The questions remain as to whether the ease of correction actually results in more corrections being made, and whether the changes made are for the better. Also, there is the possibility that corrections might be relatively minor. It is important to know whether the ease of editing encourages pupils to adopt a critical approach to their writing, for this would justify the use of the word processor in the classroom.

Again, the literature is ambiguous. Kurth found that a students working with word processors made 51% of their revisions at surface and word levels, 25% at phrase and clause levels and 24% at sentence and paragraph levels. The figures for non word processing students were 58%, 28% and 14% respectively (Kurth, 1984). This suggests a trend towards more global editing on the part of the students using word processors. Hult, however, found little difference in error between a test and control group of students except in the field of spelling where the test group, using word processors, had access to spelling checkers (Hult, 1985). Kurth, in a later study (Kurth, 1986), found that neither the amount nor the quality of revisions differed significantly between a test group of high school students which used word processors and a control group which did not.

In a study by McAllister and others (McAllister, 1987) the writing of 100 college students was studied with the goal of testing the effect of word processors on the revision of written work. It was found that the experimental groups (one

working on word processors in a class situation and the other using a writing "laboratory" outside school) showed a significantly higher quality of revision than did the control group which did not use word processors at all. Of interest in the same study is the fact that those working on word processors outside the class situation showed the highest quality of revision. Obviously factors which have little to do with computers continue to play a significant part in determining the effectiveness of editing.

Moore, studying the work of 204 students, concluded that students who used word processors made more revisions and that these revisions were more "meaningful" than those of students who used pens (Moore, 1988). Freedman, however, found that at all grade levels there were more changes in essays written by pen than in essays written using word processors. The corrections in word processed work tended to be of typographical errors which constantly interrupted the creative process (Freedman, 1988). Both Freedman and Strickland call for the teaching of revision strategies specific to the word processor, as word processing "does not, in itself, teach revision" (Strickland, 1988). Chan found that editing by computer is often of a superficial nature and any improvement merely cosmetic (Chan, 1989).

2.1.4 Spelling.

Word processing and spelling checker programs, according to Elkins (Elkins, 1986), improve spelling skills. On discovering a possible error the computer will usually supply a selection of possible words and the student is required to select the correct one. Grammar and style checkers, however, have been less successful, largely because the computer has little ability to interpret tone and understand subtlety. For example one popular American grammar checker (Grammatika 4) insists that instead of stating "He has achieved a good pass" the writer say "He has gotten a good pass" which would hardly be

acceptable in formal writing.

2.1.5 Organization

As word processors usually feature paragraph editing/ copying/deleting and moving facilities, the pupil is encouraged to organize his work at paragraph level (Golder,1982).

2.1.6 Professional appearance

Poor handwriting, theoretically, is no longer a handicap. Pupils, are raised above the disadvantages of their own handwriting (Snyder, 1987). Poor co-ordination need no longer be a factor in the assessment of written work, although it may well be an issue when speed of typing is considered. Here too, however, there might be problems. The visual quality of the finished product might lend the authority of print to mediocre content (Wresch, 1987). In the words of Finney and Fraser:

> "There are many examples of people using the very latest equipment producing less than effective output...While the computer makes the task of manipulating the layout much easier, it will never replace the creativity that is needed to produce something that is attractive and effective...The area of creativity can easily be overlooked with the power that the technology generates" (Finney and Fraser,1990).

The evidence is thus contradictory, and given the apprehensions of teachers mentioned earlier, it is easy to understand why Pendreigh, writing about the use of the word processor in the school situation, unfortunately could claim:

> "the liberating effect of computer tools ... as regards the writing process, has been minimal to say the least" (Pendreigh 1990).

Chapter 3: Research goals and methodology

3.1 Goals of the research

The overall goal was to determine whether the use of word processors improved the writing ability of a carefully selected group of 10 standard six pupils. Specific attention was paid to the effect on motivation, the amount and type of editing engaged in, the type of error made and the inevitably subjective area of "general literary excellence" which, while being difficult to assess objectively, plays a large part in determining the result which the pupil attains in the Natal Senior Certificate essay paper.

3.2 Method of the research

The approach used in this case study was to give 10 pupils, over a period of eight weeks (excluding the Michaelmas holiday), lessons and the opportunity of writing compositions on word processors. Throughout this time both their writing and their attitudes to the work and the computer situation were observed and noted.

In order to give the research measurable parameters, another group was selected to provide a control group against which to measure the performance of the experimental group. This group received exactly the same lessons, and undertook the same tasks as the test group, but did not use word processors.

3.2.1 Selection of Pupils.

For the purpose of establishing the test and control groups it was necessary to establish two groups of 10 pupils, as alike as possible in the following important aspects:

3.2.1.1 School standard.

The pupils were selected from the 1991 standard six intake of the Durban High School, a boys' high school with a strong academic tradition (illustrated by an average matriculation exemption rate of more than 80% over the past five years). 204 pupils were available for selection, thus facilitating the selection of twenty boys of similar ability and experience. It was deemed important to conduct the research on pupils who had not yet experienced extensive computer literacy lessons, hence the decision to use boys in standard six (or "form two" as is preferred at the School). As word processing now forms part of the School's standard seven English syllabus, the standard sixes would, by half year, have used the school computers only to experiment with Logo turtle-graphics.[3]

3.2.1.2 Class group.

As the pupils would be drawn from different classes within the standard, it was necessary to balance the groups as far as possible in this respect as the English teaching environment of each class could differ, particularly as a number of different teachers were involved.

3.2.1.3 Intelligence and initial writing ability.

It was felt that any benefits to be gained through using word processors would be less noticeable when the pupils involved were highly intelligent, and skilled writers whatever the medium of expression. Thus pupils whose verbal Intelligence Quotients as measured (not earlier than 1989) on the NSAGT were greater than 125 were not considered for selection.

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[3]It transpired that, through problems associated with completing the mathematics syllabus, and because of the limited number of teachers who felt confident about this proposed inclusion, the pupils had not had even this experience when they began the writing lessons.

Similarly, pupils whose averaged first and second term essay examination marks were higher than 55% were eliminated. In each examination, for the purpose of standardisation the marking of all scripts was done by one teacher who was experienced in marking scripts from standard six to Natal Senior Certificate level, and a selection of scripts was subsequently moderated by a second teacher with many years experience.

It was also felt that pupils whose intelligence or ability was well below average fell outside the scope of this research. The use of the computer to assist learning disabled or retarded pupils is an interesting and well documented field of study in its own right. Thus pupils whose verbal Intelligence Quotients, measured as above, fell below 100 were excluded, as were pupils whose averaged examination results fell below 45%

3.2.1.4 Computer familiarity.

Ideally, for the initial effects of word processing to be clearly noticeable, the pupils should have had little prior experience in working with computers. This is clearly impossible to achieve as the influence of computer technology has pre-empted the schools' attempts to teach it. Most pupils have come into contact with calculators, video games etc and several possess their own computers.

To gain an indication of computer familiarity, a questionnaire (Appendix III) was given to all standard sixes. Four aspects were considered:
a) the pupil's ease of access to a computer in the home environment.
b) the family attitudes towards computers.
c) the pupil's own attitude towards computers.
d) the pupil's knowledge of keyboards and computer terms.
Although not directly quantitatively comparable, in general, a higher score in each section indicated greater positive

orientation towards or greater knowledge of computers. The key category, however, was (a). Any pupil scoring more than four points here either owned a computer or had immediate access to one in the home. Such pupils were excluded from selection.

The remaining categories were useful in matching pupils when the final 20 pupils were divided into two groups.

At this stage, of the original 204 pupils 29 remained eligible. It was ascertained from their personal files whether they had been involved in recent remedial programmes in English. Those that had were removed from the list, and finally the 20 pupils with the highest Intelligence Quotient of those remaining were selected. The pupils were organized into two homogenous groups as follows:

Control group

No.	Form	T1	T2	Avg.	a	b	c	d	IQv
M1	C	53	50	52	1	1	3	1	111
M2	MN	47	45	46	3	2	9	2	106
M3	D	57	50	54	1	0	1	0	112
M4	E	53	53	53	2	1	3	4	104
M5	ML	47	48	48	1	0	6	3	122
M6	MT	47	53	50	4	3	9	4	111
M7	ML	47	53	50	1	1	5	0	108
M8	MN	53	55	54	3	3	6	3	117
M9	MN	47	55	51	3	3	5	3	104
M10	MT	47	40	44	2	1	4	0	102
Avg.		50	50	50	2	2	5	2	110

Test group

M11	E	53	53	53	2	3	4	3	115
M12	MT	50	45	48	2	1	7	3	115
M13	MN	47	48	48	0	0	6	3	103
M14	MN	50	53	52	3	1	9	3	108
M15	C	53	55	54	4	4	4	3	113
M16	D	53	55	54	1	3	4	2	106
M17	B	53	40	47	1	1	6	0	116
M18	MN	53	50	52	0	0	3	3	104
M19	ML	50	58	54	2	2	6	3	121
M20	MT	50	53	52	2	4	6	2	117
Avg.		51	51	51	2	2	6	3	112

3.2.2 Hardware

The word processing package used was Appleworks running on Apple 2+ and 2E computers. No spelling or grammar checking devices were available, and the effects of these therefore fell outside the scope of this research.

3.2.3 The Lessons - progress and problems encountered

The parents/guardians of the twenty pupils were all sent letters with return slips attached. (Example: Appendix II) These were returned in due course and a meeting of the pupils was called to establish attendance days and times. Owing to the varied sporting and cultural commitments of the boys, this proved difficult, and it was decided that there would be a lesson on Tuesday, repeated on Wednesday, Thursday and Friday of each week. Although the pupils were not informed of this at this stage, the Tuesday and Friday sessions were to be the word processing lessons.

The pupils were divided into 4 groups of 5. This gave some flexibility as a pupil missing a Tuesday lesson could be asked to attend the Friday session etc. This, however, turned out not to be flexible enough, and the occasional lesson had to be repeated when two or three pupils fell behind.

After every task the following statistics were noted:

1. Attendance: did the pupil voluntarily attend the lesson after school when he was supposed to, or was he absent despite attending school. (Absentees had to attend later "catch up" classes.)
2. The number of words in the composition.
3. The number of syllables in the composition.
4. The average number of syllables per word.
5. The number of paragraphs.
6. The time taken.
7. The speed of writing in terms of words per minute.
8. The mark awarded. This very subjective aspect is always suspect and therefore little will be made of it. It is the writer's experience that pupils expect some form of quantitative feedback about the quality of their work, without which they tend to feel that the task is unimportant. Whether this mark orientation is desirable or not is not at issue here, but care was taken that the mark, in the opinion of an experienced teacher, reflected general maturity and quality, rather than length or other qualities measured here.
9. The number of simple sentences.
10. The number of non-simple sentences (complex and compound).
11. The number of erroneous non-sentences (including comma splice and sentence fragment errors).
12. The number of spelling errors.
13. The number of upper and lower case errors.

14. The number of punctuation errors not included above.
15. The time taken when the pupil was given the opportunity to edit and correct his work a week later.
16. The number of corrected spelling errors.
17. The number of other minor corrections (single word changes, cosmetic centring of titles etc).
18. The number of major changes (involving re-organization of paragraphs, deletions of more than one word etc).

Lesson 1

Task

The course of lessons was introduced to both groups with these words:

> "You are here because, as explained in the letter sent to your parents, I feel that you have the ability to write far better essays than you have so far in the controlled tests.
> For the next ten weeks, you will have the opportunity to practise writing and I'll discuss your progress with you, either in group discussion with the class or by giving you a written assessment of your work.
> [Pause for questions]
> "I am not going to set time or length limits for any of the tasks, other than occasionally giving a vague suggestion. When you have completed any task to your satisfaction you may leave.
>
> "The first task is a story. I would like you to write an essay titled A Moment of Danger. (The title was then written on the chalkboard.) The only thing I ask is that you make it REAL. It need not be true, but your writing must be so convincing that I think that it is. [Pause for questions and hand out blank paper to the control group.] Remember, writing is a way of communicating your view of

the world, and your experiences, to others. Right, begin writing the story."

The starting time, and the individual finishing times were noted without the pupils being made aware of the fact that they were being timed.

The test group: computer familiarisation.

What follows is a summary of both introductory computer sessions, held on Friday 16/8/91 and Tuesday 20/8/91. As the focus of the research is on the test group, all descriptions will be of the test group lessons. Only if there are unusual occurrences which might affect comparison will the control group be mentioned.

20 minutes had been allocated for familiarising the pupils with the program to be used. This was the integrated word processing/database/spreadsheet program Appleworks, issued by the Natal Education Department for use on its Apple 2+ computers. Although it is, considering the 64K RAM limit of the computers, a surprisingly powerful program, the lack of hard drives makes the booting procedure more clumsy than would be the case on an IBM compatible PC (a machine with which the pupils are far more likely to come into contact). The operating system (PRODOS) has to be loaded into the machine from a floppy disk. Thereafter, the program must be loaded in the same manner, and the word processor accessed via several menu screens.

The pupils were issued with the appropriate disks and allowed to choose their computers.[4] They were instructed on how to insert the PRODOS disks, then, once this was done to the teacher's satisfaction, they were told to switch on the

[4]The Tuesday and Friday lessons took place in the school's computer room which is equipped with 27 Apple computers. There is only one printer, attached to the teacher's machine.

machines. At once a major problem was evident. Although the pupils acted impeccably, the computers did not. Some of the disks were faulty, while some of the monitors scrolled hopelessly regardless of adjustment. One keyboard did not work and one machine did not show any signs of life at all. [5]

With the small number of pupils, it was possible to try several machines and disks until everyone was sitting at a functioning work station, but the problems of extending the teaching to a full class situation are obvious. It is true that the Apple computers are, in computer terms, elderly, being at least 5 years old, but it is doubtful whether any educational institution could upgrade enough equipment to serve the needs of the average class more frequently.

After the first fiasco, it was decided to place 6 functioning machines and sets of functioning disks together for the remainder of the lessons.

Once the machines were functioning, the pupils were taken step by step through the start-up procedure, then the computers were switched off and the pupils were told to repeat the procedure on their own. It is interesting to note that despite being amongst the least computer literate of the standard sixes all managed to repeat the mechanical booting procedure without having to ask for aid, and of the 10 pupils, only three requested aid in their progress through the menus.

At this stage, the procedure outlined earlier on page 22 was followed. In the interests of providing all groups with as similar a stimulus as possible, the instructions were recited

[5] If pupils are to be given easy access to the computers, and the educational aspect suggests that they should be, the school environment is extremely hard on the machines. The school's computer club was recently closed indefinitely after the continued playing, despite prohibition, of arcade-style games, notoriously hard on certain keys.

verbatim, with one exception. The test groups were told, "If you want to know how to do something on the word processor, do not be afraid to ask. Raise a hand and I will help."

At the instruction to begin, all began typing at once. No one showed evidence of thought or planning, but, interestingly, no one showed great uncertainty with the keyboard either, although the working speed was slower than that on the control group. This will be further discussed in a later chapter.

Only four questions were asked:

"How do I write 'hadn't'?"

"Do we write numbers in words?"

"I'm going to describe a monster here. Do I need a new paragraph?"

"May we use dictionaries?" (Answer: Not at this stage. When I have corrected your work you may look up the errors at home.)

Interestingly, only one question pertained to the keyboard.

As the pupils completed their tasks the time was noted and their work was saved onto a master disk, and backup disk, by the teacher. They were then free to leave.

After the lesson, the teacher printed copies of the stories for analysis at home.

Detailed data of this analysis will be presented in the next chapter.

Lesson 2

Task

The first task was revision. The pupils were presented with photostatted copies of their original tasks (or screen displays in the case of the test group). They were asked to

read through their earlier work correcting any errors. The time taken was noted. The corrected work was collected (or recorded on disk in the case of the control group) and later the amount of correction was analyzed.

Thereafter, copies of the teacher's analysis were given to the pupils. This, to provide comparable feedback, assumed the form below:

Good points:

Topic subject matter:

Planning and paragraphing:

Vocabulary and spelling:

Sentence structure:

Punctuation:

Grammar:

General:

Mark:

Example: *A Moment of Danger (M20L1)*

It all began when I was at a camp with some of my friends in the Kruger National Park. We were out on a trip to look for all different kinds of trees. After the gameranger had shown us all the different kinds of trees he said that we should go back to camp.

About four or five boys got lost on the way and I was one of them.We went walking all over trying to find the other boys but unfortunately we couldn't find them.We went walking in the direction which we thought lead to the camp,but it lead us in the opposite direction.We went walking towards the water hole where there were lots of lions but we did not know that.As we got nearer we heard the sound of a lion.

we looked around an saw a huge lion standing directly behind us.My one friend started making wierd sounds.I turned my head in his direction I saw that he was having an asma attack.I asked he where he kept his asma pump.He pointe in his pocket and I took it out of his pocket.I aimed it at the lion and sprayed the lion full on in the face.The lion roared and ran towards us.I thought that at that exact moment that my friends and I were gonners. Luckily the lion ran straight passed us.My friends took in the spray of the asma pump and we headed on toward the camp site.On the way to the camp site the gameranger passed us and stopped.He picked us up an we were on our way back to camp.

Assessment of A Moment of Danger by M20.

Good points: You can write fluently and your grammar and spelling are not bad.
Topic/subject matter: Potentially promising but not very convincing as you sacrifice genuine writing about experience for action which does not ring true.
Planning and paragraphing: Some attempt has been made at organisation, but your last paragraph is a bit disorganised. You do too much in it.

Vocabulary and spelling: I found 7 errors, some of which might be typographical errors: gameranger (usually two words), wierd, asma, lead, an, pointe and passed.
Sentence structure: In one instance you write two sentences as one. "I turned my head...attack."
Punctuation: Not bad, although you have used a lower case letter where a capital is essential.
Grammar: There are several points you can think about:
a) the repetition of "all different kinds of trees" in paragraph 1 is clumsy. Leave "all" out and make the statement once only.
b) avoid "got" if at all possible.
c) "my one friend" means that you had only one. "One of my friends" is better, or, better still, give him a name and character.
d) your third to last (antepenultimate) sentence does not make sense.
General: Do you believe this story? Make the experience real for the reader by attention to detail and by capturing the emotions involved.
Mark: 48%

Once the pupils had had the opportunity of reading the analyses of their essays, the following ludicrous example (a gem offered by a pupil 10 years ago) was read aloud and discussed.

"We were on a flight to San Francisco. It was all very exciting until the captain's voice came over the intercom saying, 'We're going to crash! We're going to crash!' Everyone was screaming and running around but the plane crashed into the sea. Everyone except my mom and dad and our dog, Rover, were killed. We were swimming a long time and then, just as we were getting tired, we saw breakers ahead. It was a beach. We were saved. As we reached the shore, a shark got my mom, but the rest of us were safe.

On the beach I was sad to have lost my mom but glad to be on a lovely tropical island."

Thereafter, the second task was introduced as follows:

"Now one of the main errors made by pupils when they write stories is the lack of genuine, convincing characters. We are all interested in real people: how they feel and behave. Unless the reader believes in the existence of your characters, he will not find your story convincing.

"Remember, the physical characteristics of a person are not as important as his personality. If your mom was asked by a good friend what her son was like, she would not say, 'He has brown hair and blue eyes, is 5 feet tall and has a scar on his cheek.' She'd probably say, 'He's a good kid. Ok, he gets up to mischief, and at times gives his sister hell, but, when it comes to the crunch, he'll chip in and do his bit for the family.

"So, you see, it's what your character is really like not what he or she looks like that is important to the reader.

"I would like you now to write a description of a character. It need not be of a real person, but when I read it, I want to feel that I know that person."

[Pause for questions]

The time taken was noted.

Test group

Of the ten pupils two asked permission to miss the lesson. A boarder, M14, with a lively personality but a recent history of underachievement, understandably wished to leave immediately after school for his free weekend (a once a term occurrence). He agreed to make up the lesson early in the new

week. M18 did not attend the Tuesday lesson[4], claiming that he forgot about it, but agreed to attend an additional lesson with M14, which he subsequently did. It was extremely interesting to note that M20, a notoriously unmotivated pupil who had the reputation of being lazy and disruptive in class, and whose inclusion in the test group was viewed with a certain amount of apprehension, was present once again, and very positive in his attitude. (Of the control group, one pupil missed his lesson through "forgetfulness" and another was absent from school through illness. All later caught up the lesson.)

When the pupils entered the room for their second lesson, the computers were already on and their earlier stories on the screens. They were instructed to read their work and make any changes they thought were necessary. As soon as they indicated that they were satisfied with their efforts, the time was noted, the corrected work was recorded on disk and they were given the analyses of their "Moments of Danger."

A difficulty which presented itself at this stage was the different times which the pupils took to check their work. It was necessary to provide some task for the early finishers which was not arduous, yet was not exciting enough to encourage rushed checking. Pupils were thus asked to read the teacher's comments carefully and note the errors, correcting them if they wished, although this correction was not noted.

The method of checking employed by three of the pupils is of interest. They laboriously moved the cursor from letter to letter, focusing only on the letters immediately beneath it

[4]It should be noted that Tuesday computer lessons commenced after a compulsory staff meeting which took place after the school had been dismissed. Thus the starting time was uncertain and the pupils had to wait around, sometimes for 40 minutes after their classmates had left. This should be borne in mind when assessing motivation.

and obviously not concentrating on the overall impact of the writing.

The pupils were given the opportunity to criticise the essay quoted on page 26 and amidst laughter, offered the following valid comments:

"It could never happen like that."

"It's silly." Why? "It's just made up - its imagination."

Both groups appeared to associate imagination with unrealistic fantasy. The teacher pointed out that true imagination could result in a pupil writing fiction that the reader thought was real. The assessment ended with the thought that no writer could be taken seriously if he obviously did not know what he was talking about, and if his characters were not seen as real people.

This introduced the next task: the character description, described earlier.

When asked for questions, there was only one: "Do we have to put the person's name as a title?" (Answer:"Not necessarily.")

The boys were then shown how to clear their screens and begin a new document. As all the groups were about to begin the descriptions, their notice was drawn to the help facility of the word processor, and they were shown how to access the "Options" screen which gives a choice of margin and format options.

Again, all showed relatively little interest in the medium, and plunged straight into the task, none pausing for more than twenty seconds before beginning to type.

In the Tuesday group, M16 and M17 typed until they had to leave as their mothers arrived to take them to other commitments. This was after 24 minutes 59 seconds, and 28 minutes 57 seconds respectively. Despite taking amongst the

longest times on the task, they were reluctant to leave and would, no doubt, have continued longer.

M16's effort, when compared with M14's, (which, though charmingly sincere took little over 5 minutes to write) serves to illustrate the range of work produced.

Bart Simpson (M16L2)
Bart Simpson is a little horror.His table manners are disgusting and never ever uses a knife or fork.His hair is always in an uproar and is never brushed.Even on a important occasion it will never get brushed unless his mother brushes it herself.It is very brave to walk into his bedroom for there are toys ,clothes ,socks ,shoes ,bed covers ,knives and other such things all over the show.When it comes to school work there is know chance of getting him to do it not even if he is promised sweets and chocolates.His help around the house is very min and will rather go and play baseball or skate board.His father is for ever helling at him for the things he does but nothing ever seems to annoy him only when they interfer with the things he loves doeing.

MY DAD (M14L2)
My dad is a very down to earth person.When he says something he means it.If he says he is going to do something for you,he gets it done.He is the most sincere person I know and he is the kind of person I can realy trust.He is very kind and hard working.He is also a very loyal friend.

Lesson 3

Task

The pupils were given the opportunity of correcting the character studies from the previous lesson. The same procedure as before was followed.

Of interest is the fact that M16 whose composition is quoted above spent nearly 9 minutes correcting his work, supplying the missing "he" in his second sentence, and making 3 major corrections, amongst which was the addition of a few sentences about Bart's relationship with his sisters, ending with the compassionate: "*I don't think he hates them but it's what all brothers are like to their sisters.*" M14, on the other hand, spent two minutes correcting his work and made no alterations whatsoever.

Each pupil was then given a typed copy of his original character description and an assessment of it typed according to the format used in lesson 2. After reading the assessment, each pupil was given examples of character descriptions written by Roald Dahl in his volume of short stories *Tales of the Unexpected*. The first of these was read aloud (Appendix IV) and briefly discussed.

The next task was designed to incorporate skills of character description into a simple story. The following instructions were given verbatim:

> "I want you all to imagine now that you are sitting in class. The teacher is called to the door by the head of department or the headmaster. When he returns he has with him a new pupil, who he introduces to you all.
>
> "At once, you form an opinion about the boy. He might be one of those who make you think, "Uh oh,

here's trouble," or he might be very nervous and unhappy. He sits near you and the lesson continues.

"I would like you to tell me a story about that day, starting with the boy's arrival. If you wish, you may write from his point of view.

"No length is stipulated. Write until you feel that you have told the story well."

The time taken by each pupil was noted.

Test group

M13 requested to be excused as he had a dentist appointment, but expressed regret and asked when he could catch up the lesson. M12 and M15 did not arrive for their lessons, and claimed to have forgotten about them. All later attended an extra lesson. Of the control group 3 pupils failed to arrive. None had any excuse other than absentmindedness and all were happy to catch up the lesson.

Again, the test group launched straight into the task with little preliminary organisation, although M14 and M19 asked how to centre a heading and M11 used the options screen to adjust the right hand margin, making the composition unusually narrow and long. He subsequently changed the width to the default setting.

The narrative style of the compositions encouraged lengthier writing in general, and paragraph organisation was more evident.

It was pleasing to note that two pupils, M16 and M17, wrote "The End" underneath their work then appended their full names, (*"by ....)* suggesting a certain pride

in their achievements. Neither was aware that the other had done so as they were at different ends of the room.

Lesson 4.

Task

As with the other tasks, the pupils were first given the chance to edit their previous work, and the time taken was noted. Thereafter their work was assessed.

The feedback differed from the earlier reports. In the interests of making the pupils realise that they are actually communicating with others when they write, the stories were (as promised) read aloud. Participants in each session had their essays read to the group, and thereafter five minutes of discussion was prompted by the teacher using the following words:

"Well, what do you consider the story's strong points to be?" If no response was forthcoming, the teacher would ask each pupil (apart from the author) the same question in turn. Thereafter the question, "How could the story be improved?" was asked in a similar manner. The third task was for the pupils (other than the author) to give the story a mark by raising their hands when the teacher called out an appropriate mark. The teacher called out marks in 5% blocks.

After the pupils had given their opinions and rated the work, the teacher pointed out errors and promising features, roughly following the guidelines for assessment of the first two tasks.

The pupils were then given the fourth task. This was introduced by the following words, recited verbatim by the teacher:

"Now I want you to imagine something. You are sitting in class on a hot day. The lesson is the last one, and you are battling to concentrate. You are finding it boring, and would rather be elsewhere. The more you think about this, the more you long to be there, and you begin to forget that you are in class. Your daydream becomes real.

"I want you to allow me to experience your daydream through your description of it. It need not be real. You might well imagine that you are wearing roller skates and "surfing" on a foam rubber sea, with no fear of sharks or getting hurt in any way. You might be at the ten pin bowling alley, or merely lying on your bed reading a magazine. Whatever daydream you choose, I want to feel that I have experienced it after I have read your work.

"To give your story an ending, you might be woken up. For example, in my first suggestion, you might, while sliding down the spongy wave, be hit in the face by a polystyrene flying fish. As you re-focus, you realise that the teacher has swatted you with an exercise book.

"Please be original. I don't want to get x stories about spongy waves and flying fish. Try to invent an interesting daydream of you own. If you like, you may begin your story as follows: 'It was extremely difficult to concentrate on the teacher's voice, particularly in the blistering heat of Durban in February. As my eyelids grew heavy, the everyday noises of the classroom grew dim and..."

As usual, the time spent on the task was noted.

Test group

Two pupils, M14 and M12, did not arrive, M12 having earlier excused himself. Both later attended an extra lesson to catch up to the others. The checking was done as before but there

was considerably more interest in the comments and marks. Four compositions were read aloud (the same four were read to all groups with the writers remaining anonymous - although their pleased reactions invariably gave their identities away to their own groups) and strengths and weaknesses were discussed. The reactions of all groups were positive.

With the new task, several of the pupils seemed less at ease than with the former. None of the pupils used the suggested opening which had been written on the board, while the majority of those in the control group did. A possible reason for this illustrates a problem with the layout of a computer room. In order for a teacher to see what is happening on the screens, particularly when a large group is involved, it is necessary for the computers to be placed round the perimeter of the room with the screens facing inwards. This means that, while working, pupils face away from the teacher and the chalkboard. It was apparently easier for the pupils to invent their own beginnings than to swivel round and copy something from the board.

The spirit of the original, however, was retained. Six pupils mentioned heat, and M12 and M15 began as follows:

> "*It was a blistering ho day the temperature was about 38 degrees celcus...*"(M14L4)
>
> "*Iwas sitting in class one day in the blistering heat.*"(M15L4)

Lesson 5

Task

The pupils were given the chance to edit their work from lesson 4 and the time was noted. The past work was discussed briefly and two examples were read aloud and discussed briefly.

Lesson 5 comprised an exercise on tone and tact. It was introduced as follows: "You have an extremely close friend whom you have known for years. Your elder brother or uncle who is a student in Johannesburg has invited you up for two weeks and as you have never been to the city you are excited despite the fact that you will be spending much of the time alone. It then occurs to you that the holiday will be much more fun if your friend were to come along, although it is unlikely that his parents will give permission as they are highly -almost over- protective of their only son.

You and your friend approach his parents. The one thing in your favour is their respect for you. They consider you a mature, level-headed person who can handle responsibility well. With this in mind, they, albeit reluctantly, give their permission and you are overjoyed.

The first week of the holiday in Johannesburg flies by happily and without problems, BUT early in the second week, <u>through your stupidity</u>, your friend is injured, not fatally, but seriously enough to merit two or three days in hospital. It could happen in a number of ways. For example, you could playfully trip him whilst going down stairs, or you could pull his chair out as he sits down causing him to break his coccyx. You might borrow your brother's motorcycle, and cause him to fall off the pillion while you are showing off. You might even encourage him to experiment with your brother's store of whisky despite knowing that neither your friend nor his parents touch alcohol. In his drunken state he injures himself in some way.

I want you to think of something original and not just use these examples. The point is, however, that YOU must be the guilty party, and that the injury results through your foolishness and is not merely an unfortunate accident.

The hospital will have notified his parents, and you know you should telephone them, but you can't face talking directly to an infuriated father. You realise that you would not express yourself clearly under those circumstances and might create the wrong impression. The best thing would be to write a letter to your friend's parents, explaining what happened and as far as possible appeasing them. Write the letter you would really send under those circumstances.

Test group

The response to the task was enthusiastic, particularly from M20 (no stranger to punishment) who broke into a broad grin when the examples of errant behaviour were quoted. Questions asked were as follows:

"Must we write the address?" M14 (Ans. "No. Begin, 'Dear Mr and Mrs .....'")

"How long must it be?" M11 (Ans. "As long as you feel it needs to be.")

"Can we lie?" M20 (Ans. "No. You may tactfully play down your role a little but you cannot disguise the fact that it is all your fault.")

"Can we use real names?" M13 (Ans. "Yes, if you wish.")

Possibly through the difficulty of the task, the pupils spent longer than before staring at the screen before writing. Most (eight out of the ten) immediately wrote "Dear Mr and Mrs....." but then paused. Two did not write anything at all for a while. It is interesting to note that although scrap paper was freely available on the teacher's desk at all times none made any attempt to use it.

M12 was the last to finish, having plodded on for over half an hour at a rate of 3.02 word per minute.

Seeing their letters "in print", however, did not, as was hoped, improve the pupils' use of tact. Most of the letters

contained lurid detailed descriptions of injury and agony which would have rendered the parents suicidal.

One pupil, M16, missed his lesson without excuse and had to make it up later, while three of the control group were in the same situation.

Lesson 6

The Task

The previous work was checked as before.

Extracts from several letters (from both groups) were read aloud and there was much general amusement at the effect certain sentences would have on the parents. Tone and tact were discussed in some detail, with the pupils being asked to imagine that they were receiving the letters.

Continuing the theme of tone the next task was one to which most could relate. The intention was to convey indignation while remaining respectful. It was introduced as follows: "I want you all to imagine a situation which might even have already happened to some of you. You are punished by a teacher for something you did not do. You undergo the punishment, be it lines or caning, but the more you think about it, the more indignant you become. You respect the teacher and do not want him to gain an incorrect impression of you. Write a letter to the teacher expressing your feelings and explaining your innocence while NOT BEING IN ANY WAY INSOLENT. Begin, 'Dear Sir,...'."

Test group

All were present. Of the control group three had to catch up the lesson.

Smiles were general when the task was announced, and seven pupils began with little preliminary thought. The only question asked (by a pupil in each test group) may explain this: "Can it be true?", "What if I write something that really happened?" (Ans. "Go ahead.")

Of interest is that these letters were in most cases much shorter than the previous ones. It must be borne in mind, however, that the time taken by the first pupil to finish would influence the others. As the room becomes emptier there is more pressure on those remaining to finish. This was far more noticeable in the control group than in the test group which suggests that, while working on a computer the pupil is either more motivated, or less aware of others around him. Both factors possibly play a part.

Significantly, all but one pupil used more than one paragraph, while, in the control group, only three did so.
The following example shows the organisation which was absent from most of the control group's work:

Dear Sir

Yesterday you gave me a terrible hidding for something I didn't do.It was about 9:30am when we had just started P.T.We had just started our rugby season so we were being taught some new positions when I fell and hurt my leg.

I went to the change room so I could get a rest.But as I went in I could smell something in the air.I thought it was the caretaker but as I turned the corner I saw one of my friends having a smoke.I took them away but as I did this my P.T. instructor walked in to see if I was alright.he now thought I faked the whole thing just to go have a good puff.He

amediately sent me to you and without hessitation you gave me 4 of the best.

I am righting to say it was not fare to give me a hidding without asking me why I was here.I hope this will never happen again as it was very unfare.

Your Trusting School Pupil
(M13)[7]

Lesson 7

The task

Correction of past work and discussion proceeded as usual.

The next task involved functional writing. The situation was a genuine one and the pupils were told the following: "You all know that I am in charge of introducing the new standard six pupils into the school. Some settle down quickly and well and others have a more difficult time. I am thinking of putting together a short booklet, a survival guide to high school so to speak, that we can issue to boys new to the school.

You have all survived the system and probably know more about problems new boys experience than I do. I would therefore like you to write an essay to a boy about to enter standard six here, giving him advice which would make things easier for him.

When I have read all your essays I'll use any good ideas I have found, so take the task seriously and give it a lot of thought."

---

[7]It is interesting to note that despite having had the necessity of leaving a space after a full stop frequently pointed out to them no pupils adopted the practice.

The test group

One pupil requested permission to attend on another day, as opposed to three of the control group who had to do so.

On the whole, the offerings were disappointingly short. Few pupils put much effort into exploring issues other than superficially. Some were contradictory and complaining rather than advising in tone.

The following, written by a pupil in a mixed ability class is typical of the responses:

> *BEWARE OF THE SCHOOL*
> *The school is very much into tradision and the prefects manely run the school.*
> *The thing the prefects find most enjoyable is to blame every thing on the second formers.*
> *The school is very much in to sport.*
>
> *The teachers are resnbally nice but some are very strict. in order to do well you must study well otherwise you go into mixed abilaty class whitch is not very nice.*
>
> *I like the school and hope you will it gets better as you go a long. (M19L7)*

<u>Lesson 8</u>

The task

The checking of the previous work proceeded as usual.

The final task was in a way an extension of the previous task. It was introduced as follows: "Imagine that you have been

asked by the headmaster of the school to tell him what changes you would make to the school and to the teaching of English?[8] Remember, it is his responsibility to ensure that the school functions efficiently so you can't be silly and ask, for example, every day to be a holiday. Your actions must be sensible."

The test group

All attended the final session, while two of the control group did not and had to be fitted in later.

The compositions were the briefest to date. Disappointingly, no pupils mentioned the use of word processors to improve English teaching. Indeed, their casual and superficial[9] use of the computers showed an ready acceptance of, but not appreciation of, or curiosity about the medium, as far as writing was concerned.

The following extracts illustrate the focus:

> *I think that english would be more interesting if we had to play games.Not rubbish games(Mad)but educational games eg.scrabble,trivual persuit etc. I also think we should do a lot of reading studies (which we already do) and reading.* (M11L8)

> *First of all we must have more interesting exercises and not the boring comprehensions.They must be more*

---

[8]This was included to see whether any of the pupils would suggest using word processors in the English syllabus.

[9]Although all were able, almost effortlessly, to delete and insert material, hardly a pupil experimented with further editing features, even after these and the adequate help facility had been explained. Underlining was avoided, as it involved using a code.

lively.Another point is we must watch more films.(M17L8)

English in this school could perhaps be changed to more exciting and interesting by doing more worksheets on Nouns, Verbs, Adjectives and all the rest of them. We could also read interesting books, or maybe even go to the A.V rooms once in a while to watch educational movies. (M16L8)

The only mention of computers came in a pupil's general advice to the headmaster. He concludes:

It would also be nice if we could work on the computer every day just for one lesson.Maybe when we apply for a job we might have to know how to use the computer.This is what I would like to see changed in this school. (M13L8)

Sadly, the computer is seen, not as something he is using at the moment as an efficient tool, but as some vague future employment requirement.

Chapter 4 : Research Findings

Before discussing some of the aspects which have been quantitatively measured, some general observations are of interest. The attitude of the test group towards the use of computers was, in every case, positive. The pupils appeared to enjoy the novelty of the situation and in no case was there any sign of tension. The attendance of the test group was slightly better than that of the control group, and the pupils seen by the staff as "difficult" in the classroom situation were in no way discipline problems in the computer room. The relatively small size of the group might have assisted in this respect, but of greater importance was the solitary nature of the work. Unlike Liechty, who found that using the word processor aids collaboration with peers (Liechty, 1989), I found that the pupils tended to be absorbed in their own work and despite sitting alongside each other within easy talking distance, they communicated very little, and then only to indicate a problem with the software or hardware. There was hardly any reading of one another's work and no critical discussion thereof.

A summary of results follows.

Detailed results are tabled in Appendix I. Of interest here are the results obtained by averaging the results of each of the pupils in the test group for every task.

Test Group				
	Lesson 1	Lesson 2	Lesson 3	Lesson 4
No. of words:	226.8	115.7	179.9	169.1
Syllables:	299.4	126.982	217.3	212.9
Paragraphs:	4	2.1	3.9	3.7
Time in secs.	2588.5	1332.1	2106.2	1813.5
Words per min.	6.4	6.2	5.8	6.4
Syll. per word:	1.34	1.19	1.21	1.27
Mark:	49.4	47.9	53.3	52.6
Simple sent:	6	3.1	4.6	3.4
Non-simple sent:	10.3	7.2	7	7
Non-sent (del):	0	0.2	0	0.4
Non-sent. (err):	1.6	1.4	1.6	1
Total sent/non	17.9	11.9	13.2	11.8
Spelling err:	9.6	4	5.2	4.8
Cap. err:	1.7	0.2	0.6	0.8
Other punc. err:	0.6	0.9	1.2	2
Ed. time (secs):	600.3	488.9	379.5	335.5
Spelling corr:	0.7	0.1	0.4	0.9
Minor corr:	2.8	0.9	1.7	1
Major corr:	2	1.4	0.3	0

	Lesson 5	Lesson 6	Lesson 7	Lesson 8
No. of words:	168.7	109.2	109.4	111
Syllables:	218.9	140.262	142.9	143.9
Paragraphs:	3.1	2.3	2.5	2.3
Time in secs.	1719.4	845.7	770.3	853.6
Words per min.	5.91	8.03	7.61	7.10
Syll. per word:	1.27	1.28	1.31	1.31
Mark:	51	48.5	46.7	45.5
Simple sent:	2.7	0.6	1.7	1.2
Non-simple sent:	6.5	4.7	3.7	3.8
Non-sent (del):	0	0	0.1	0
Non-sent. (err):	0.5	1.1	0.8	0.6
Total sent/non	9.7	6.4	6.3	5.6
Spelling err:	4.7	2.2	3.2	1.9
Cap. err:	1	0.8	0.5	1.3
Other punc. err:	1.4	1	1.4	1
Ed. time (secs):	334	181.9	181	
Spelling corr:	0.7	1	0.2	
Minor corr:	1.2	1.8	1.5	
Major corr:	0.4	0.5	0.1	

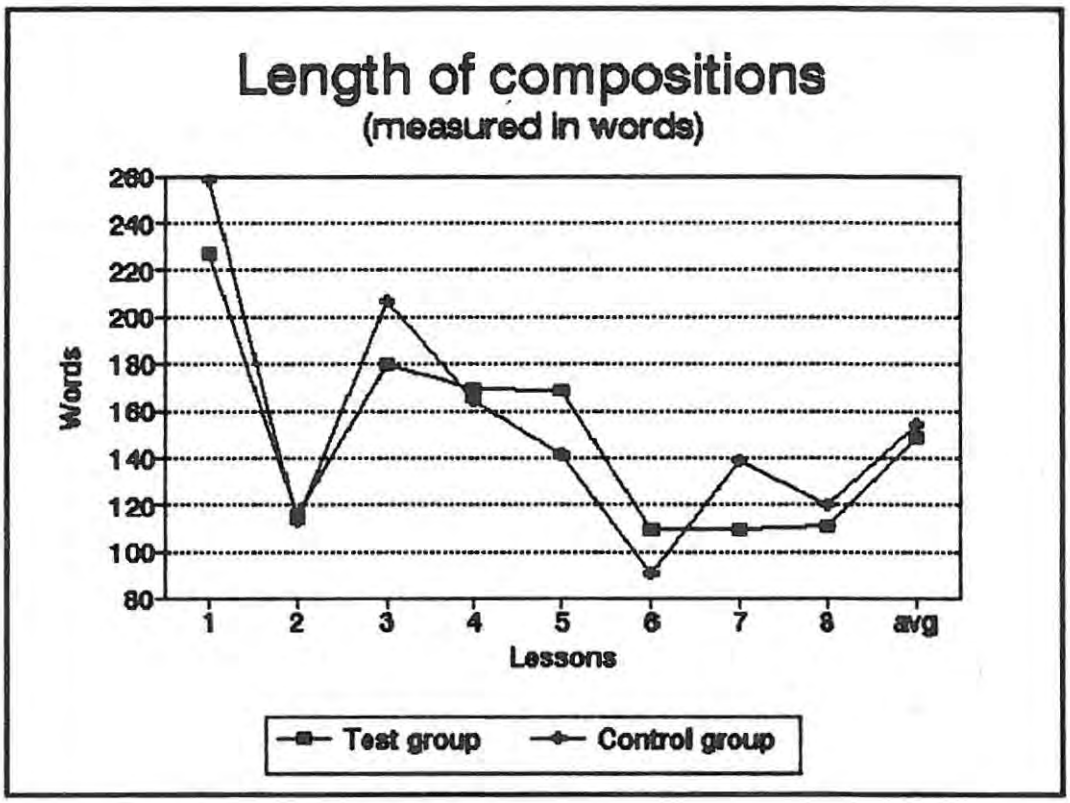
The above figures have been simplified to 2 decimal places for convenience of display, but all calculations and graphs reflect figures accurate to 8 decimal places.

The table below reflects the control group data.

Control Group				
	Lesson 1	Lesson 2	Lesson 3	Lesson 4
No. of words:	258.3	112.5	206.9	164.2
Syllables:	324	148.962	256.6	205.8
Paragraphs:	3	1.8	3.3	3
Time in secs.	1171.4	630.2	1036.8	823
Words per min.	13.23	10.71	11.97	11.97
Syll. per word:	1.25	1.32	1.21	1.25
Mark:	49.1	47.9	52.3	51.3
Simple sent:	4.5	4.3	5.3	3.5
Non-simple sent:	9.7	3.8	7.6	6.1
Non-sent (del):	0	0	0	0.4
Non-sent. (err):	2.9	1	2	0.9
Total sent/non	17.1	9.1	14.9	10.9
Spelling err:	6.9	4.7	5	5.1
Cap. err:	2.9	0.1	0.9	0.8
Other punc. err:	2.5	1.3	2	1.8
Ed. time (secs):	209.7	150.4	152.9	117.4
Spelling corr:	0.5	0.6	0	0.1
Minor corr:	1	0.7	0.2	0.4
Major corr:	0.6	0.3	0.3	0.4

	Lesson 5	Lesson 6	Lesson 7	Lesson 8
No. of words:	141.6	90.5	139.1	119.8
Syllables:	180.5	112.2	174.3	154.6
Paragraphs:	2.7	1.5	2	2.2
Time in secs.	800.3	456.5	667.077	550.7
Words per min.	10.62	12.34	12.41	13.43
Syll. per word:	1.27	1.24	1.25	1.29
Mark:	53.1	46.8	44.8	43.3
Simple sent:	3	0.9	4.6	2
Non-simple sent:	6.3	3.9	4.4	3.8
Non-sent (del):	0.2	0	0	0
Non-sent. (err):	0.6	0.4	1.2	1
Total sent/non	10.1	5.2	10.2	6.8
Spelling err:	4.8	2.1	3.8	2.8
Cap. err:	0.3	0.3	0.8	0.5
Other punc. err:	1.3	0.6	2.1	1.3
Ed. time (secs):	100.5	65.8	84.1	
Spelling corr:	0	0.2	0.1	
Minor corr:	0.6	0.8	0.3	
Major corr:	0	0	0	

Graph 1 [10]



If one disregards the group averages (the ninth point on the x axis) it can be seen that there is a tailing off in the length of work produced by both groups. This, in all probability, is the result of the novelty of the lessons wearing off. Also, the amount of thought required in the later tasks was more than that required by tasks 1 and 3. The exception to the pattern and the dramatic decrease in length from the first to second task is understandable as the pupils moved from personal narrative writing to the vastly more difficult and less familiar realm of character study. Despite the instructions, most pupils tended to give a brief list of

[10]In this and all following graphs, the x-axis lists the lessons in chronological order and ends with the overall average of the groups. The y-axis gives the scores obtained by averaging the 10 individual scores each group for each lesson.

characteristics, usually based on appearance. All else being equal, however, one would have expected task 3, a more structured story, to have stimulated the longest compositions. A tailing off is already evident.

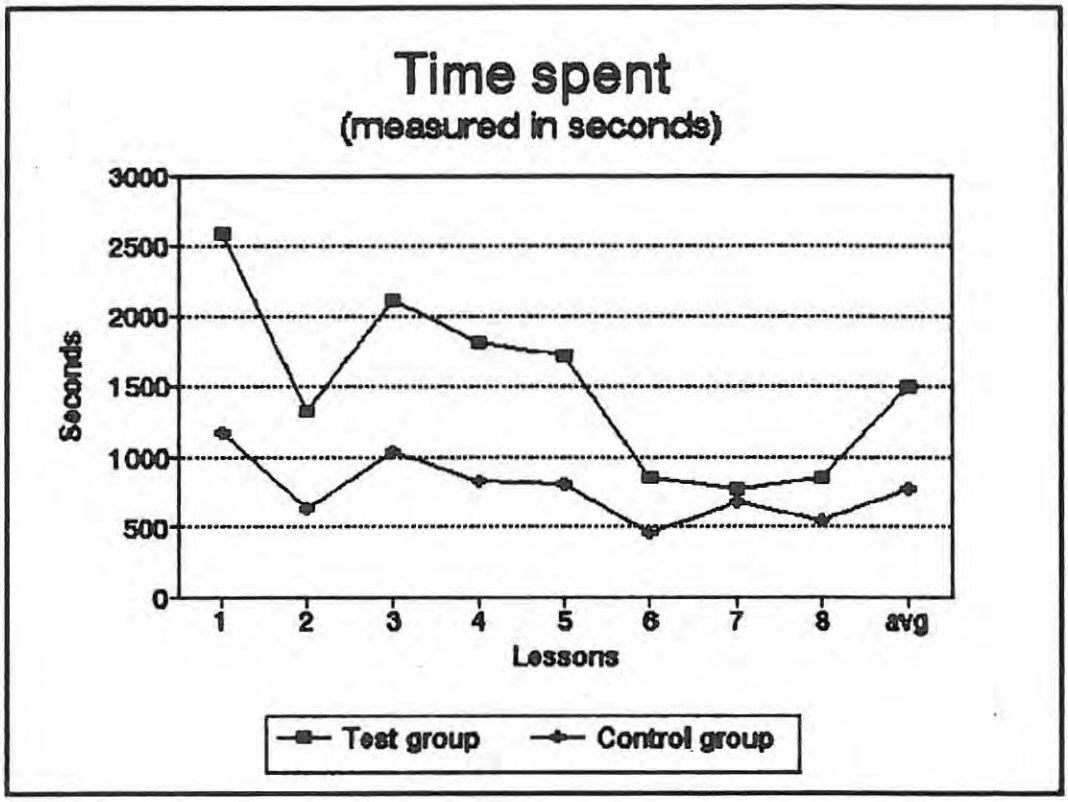
As can be seen from the averages of the groups for all lessons, there is, somewhat surprisingly, a negligible difference between the groups as far as length of composition is concerned. Considering the difference in physical appearance between a handwritten composition and single-spaced[11] print on a screen, one might reasonably have expected at least some initial difference. It seemed logical to assume that one of the following would occur:
1) the pupils using the unfamiliar computers would initially have made heavy weather of the actual writing task and produced shorter work, or
2) the more condensed appearance of print would have made the pupils think that they had written less than they had, and would have encouraged longer compositions.
If either of these factors influenced the writing, the effect was neutralised by the other, or another unrecognised factor.

The similarity of the groups' graph patterns is encouraging as it points to the success of the selection process.

Despite the small differences involved, it is interesting to note that the extremes of the graph belong to the control group. This suggests a possible moderating influence of the word processors, with increased motivation preventing the pupils from writing very little, but the greater time needed preventing the pupils from writing very lengthy passages.

[11]Although the pupils were aware of the availability of formatting options not one used double spacing, despite the fact that this would have made the work easier to read on the green monochrome screens as well as on paper.

Graph 2



Remembering that no restrictions whatsoever were placed on length of work or on time spent, two things are at once apparent:

1) in every lesson the test group took longer on the task than the control group.
2) the test group was prepared to take longer on the tasks.[12]

The first finding above can to some extent be explained by the pupils' use of unfamiliar equipment and, in particular, unfamiliar keyboards. The second finding suggests that the motivation provided by the novelty of the situation (or by the

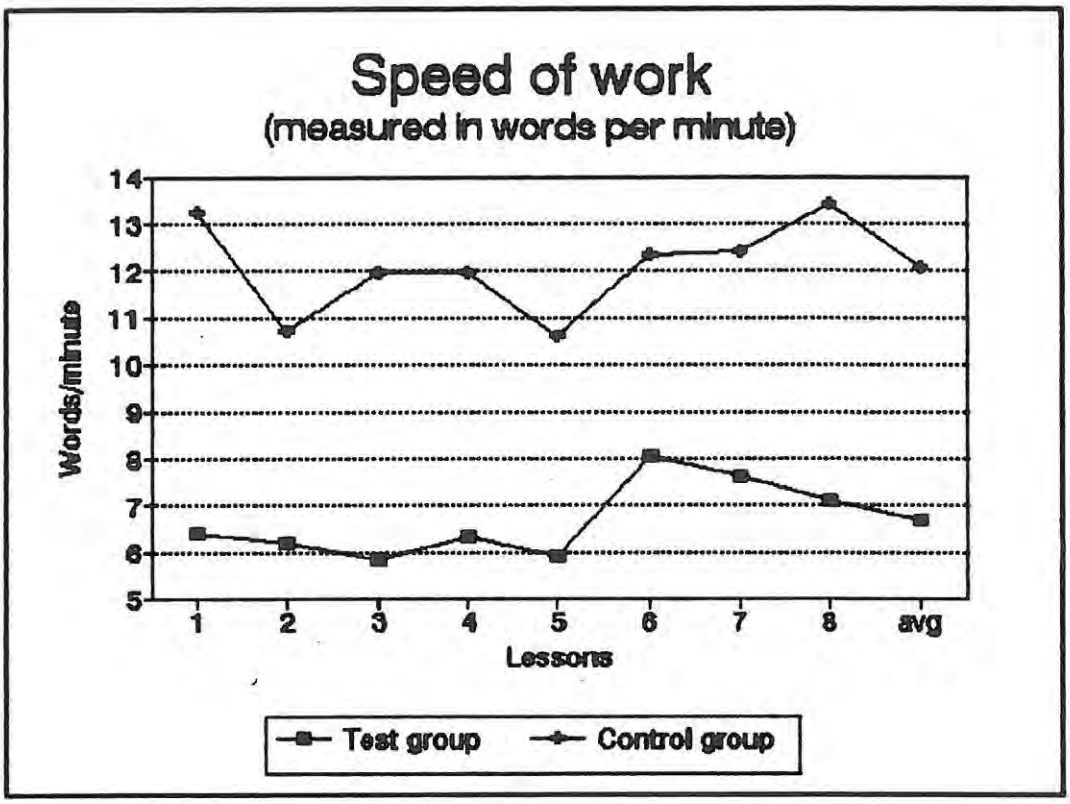
[12]The figures in Appendix I show that this is a general trend and that the graph has not been distorted by the presence of one or two particularly slow pupils in the test group.

computers themselves) was sufficient to keep them at work for longer than their control group peers. This reinforces the findings of Liechty and Etchison (Liechty, 1989) (Etchison, 1988).

If unfamiliarity combined with novelty initially kept the pupils working, one would expect the gap between the groups to have decreased as the lessons progressed. As can be seen from the graph, this is indeed the case, the gap shrinking from approximately 24 minutes in lesson 1 to approximately 5 minutes in lesson 8.

It might be argued that this decrease is attributable only to the length of the task, the shorter tasks inevitably giving rise to smaller differences. This, of course, does play a part, but the difference noted in task 2 (one of the shortest tasks) is considerably more than that noted in task 7. Whether through increase in skill, or weakening motivation, there is a steady lessening in the discrepancy between the groups.

Graph 3



If the decrease in time spent on tasks by the test group, noted in graph 2, is attributable to increasing familiarity with the keyboard and typing skill, then one would expect the speed of work to increase steadily with time. It is obvious here that the test group's rate of work, measured in words per minute, remained remarkably constant, are far below that of the control group. Furthermore, there is little indication of the gap closing.

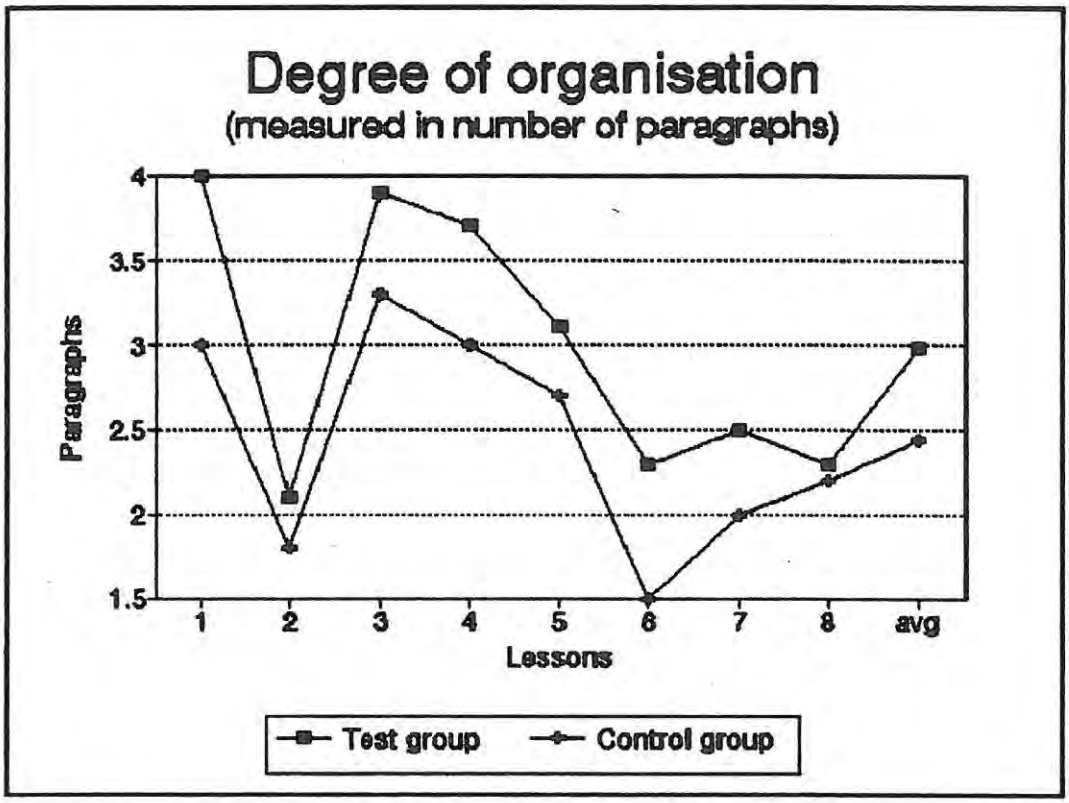
It is, of course, optimistic to expect evidence of improved keyboard skills to manifest themselves in eight lessons. It is an important area of research, given the general move towards computer literacy, but one which would need a far longer study.

If the decrease in time spent cannot then be attributed to faster work, it appears that the motivation provided by the novelty of the situation and the excitement of using computers, with their positive associations, was weakening steadily.

Of interest is the fact that the work rate of the test group was far steadier than that of the control group. It is possible that the difficulties of typing the work had a restraining effect on creative enthusiasm. Whether this is desirable or not is debatable. It seems logical that a slower, more conscious selection of letters should result in the elimination of the careless hand-written errors so common where the mind outruns the pen, so to speak. The frustration of typing slowly might, on the other hand, contribute greatly to the loss of motivation mentioned above.

It is also interesting to note that there is a steady increase in the speed of writing in the control group during the last four lessons. A definite falling off of motivation, care and attendance was observed in 2 pupils, one of whom voiced his grievance that he had heard that others were using computers to write the compositions. This raises another issue, possibly worthy of research: to what extent does the presence of the word processor in the English language classroom affect the work of those who do not have home or other facilities to use word processors regularly? Although Partridge, dealing with college students, found that those who did not use word processors did not feel disadvantaged (Partridge, 1987), high school students, at a time when computers are establishing themselves slowly in our educational system and still carry with them a certain amount of mystique, might well do so.

Graph 4



It is reasonable to assume that most of the pupils' reading is in the form of printed material, and that, being literate, they are familiar (possibly at a subconscious level) with the patterns of the printed word: the organization into sentences and paragraphs, the use of headings etc. On the other hand, they read very little script, other that what they write themselves.

The above suggests that the student, presenting his work in typed form, would be more open to recognising discrepancies

between his work and his internalised idea of what printed material ought to look like than would the pupil who used long hand.

Graph 4 above is interesting in this respect. Although the number of paragraphs is small (the averages ranging from 1.5 to 4) it can be seen that, in every lesson, the test group organised the work into more paragraphs than the control group.[13]

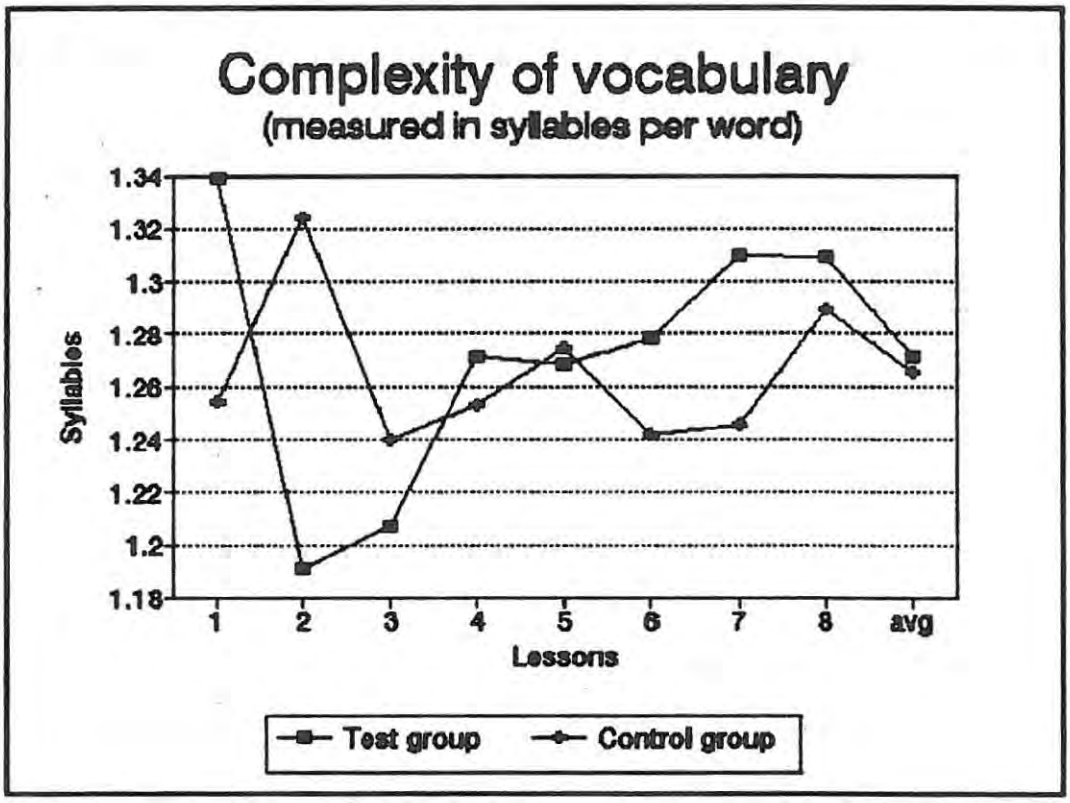
Another point of interest is that very few of the test group (two pupils) initially made incorrect paragraph breaks in block format by beginning on a new line when a complete line was required to be left blank.[14] Of the control group, six compositions contained such formatting errors.

It seems that, at the very least, using word processors focuses the pupils' attention on the need for some form of organization into paragraphs. This supports Golder's finding (Golder, 1982).

[13] It can be seen from the detailed results in Appendix I that this is a general trend and not caused by one or two pupils alone.

[14] Neither group was shown the required format until the work was returned in lesson 2.

Graph 5

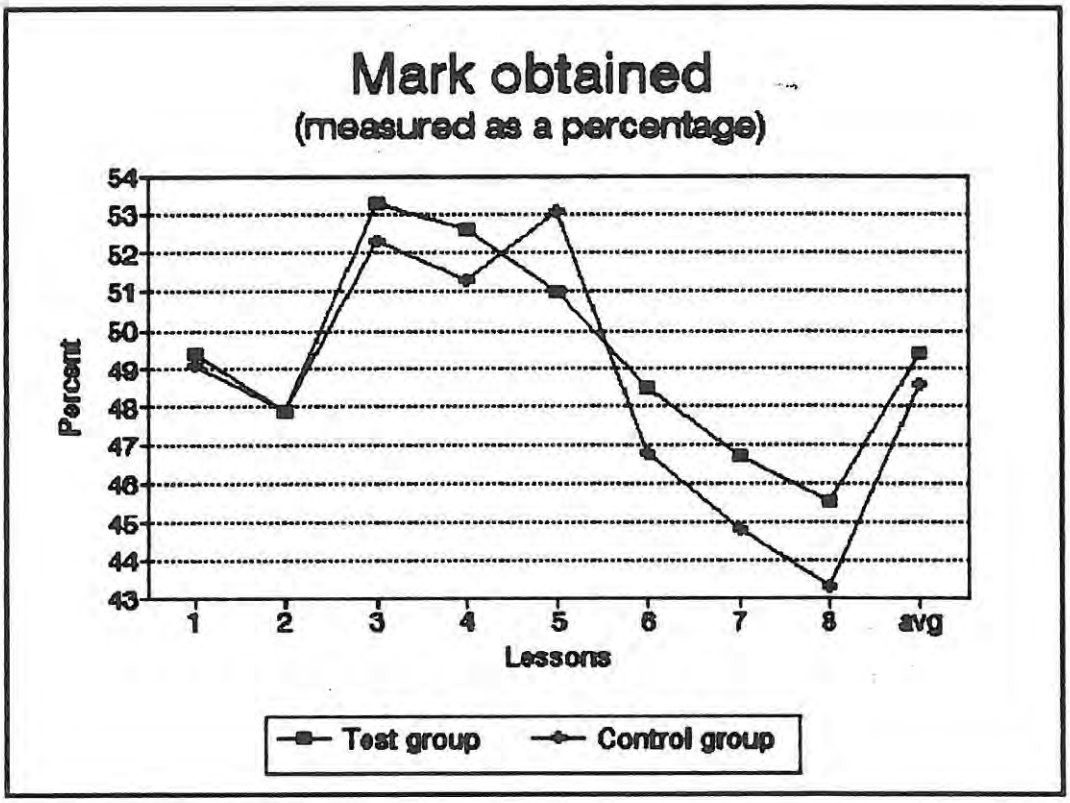


Although little of great significance emerges from this graph, it is of interest that the complexity of language used in lesson one by the test group was never again manifested by either group, although there is a steady rising towards that level by the test group. The control group, on the other hand, vacillates almost at random. This could indicate that, as the test group grew more familiar with the word processors, the desire to write interesting material was able to be exploited. Again, the issue seems to be one of motivation.

Also of interest is the fact that it was in one of the most difficult tasks (as is borne out by the earlier graphs) - task 2 - that provided both the nadir for the test group's graph and the zenith for that of the control group. Although there is too little data to do more that speculate, this might

indicate that, in an effort to do a difficult task correctly, the test group retreated into simplicity, while a less motivated control group felt no such restraint.

Graph 6



Bearing in mind the subjective nature of this form of assessment, the correlation between the groups is of interest. The type of task was obviously a far more important determinant of quality than was the equipment used to write the compositions. This could, of course, reflect the marker and moderator's prejudices as to the relative value of the types of task.

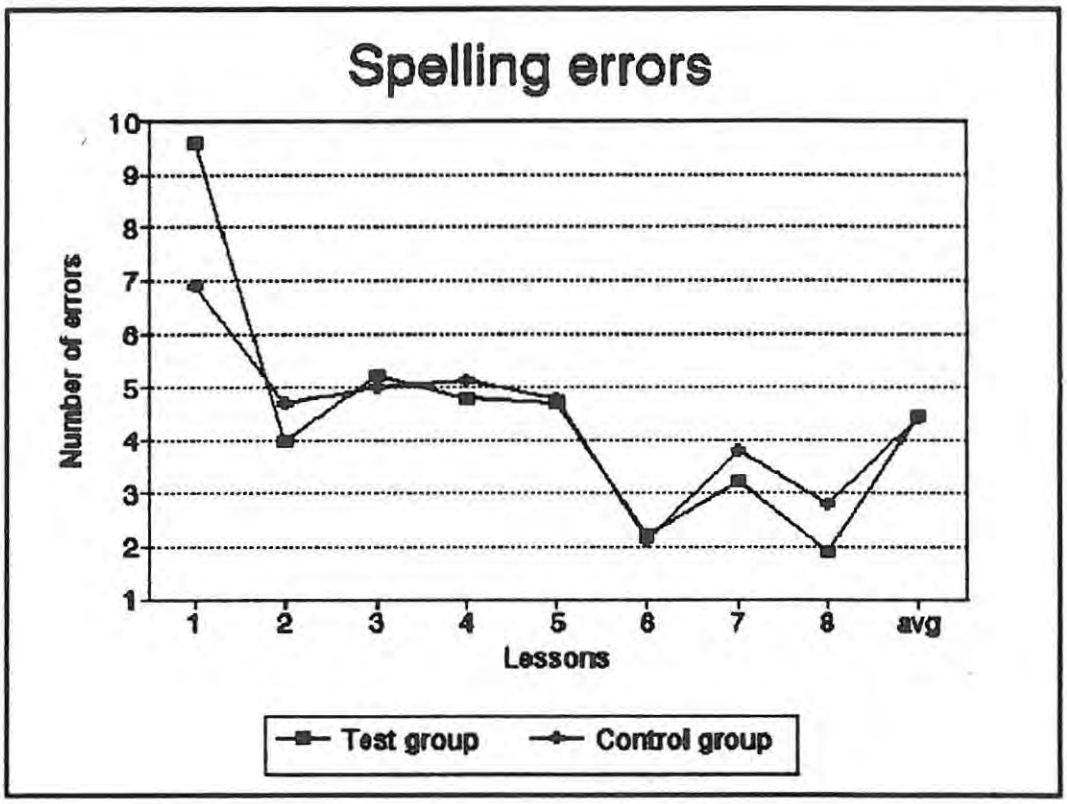
It is also interesting to notice the downward drift of general quality. If this is the result of the boredom factor, as the initial enthusiasm wanes, then it appears that the waning noticed in the motivation of the test group is matched by that of the control group.

Marring the almost too perfect paralleling of the results is the control group's performance in task 5. This is not easily explained, although, in the real situation of a pupil writing to a member of staff to describe an incident of incorrect punishment, the medium would more often than not be pen and paper. The artificiality of the computer situation might well have encouraged pupils to sacrifice sincerity for cleverness.

Although not significantly so, the marks awarded the test group were consistently slightly higher than those given to the control group. This might well reflect the marker's more positive attitude to work which is instantly legible and neat. In order to test this, the work produced in the final lesson was marked by an teacher who was not otherwise involved in this study after the hand-written work had been word processed. Again, the average scored by the test group was slightly higher (2,6 %) than that of the control group.

It is also interesting to note that at no stage did either break out of the below-average category which had been one of the criteria of selection. It appears the availability of computers as aids to typing and correction of manuscripts does not, in itself, improve the writing significantly in the totally subjective area of "quality".

Graph 7



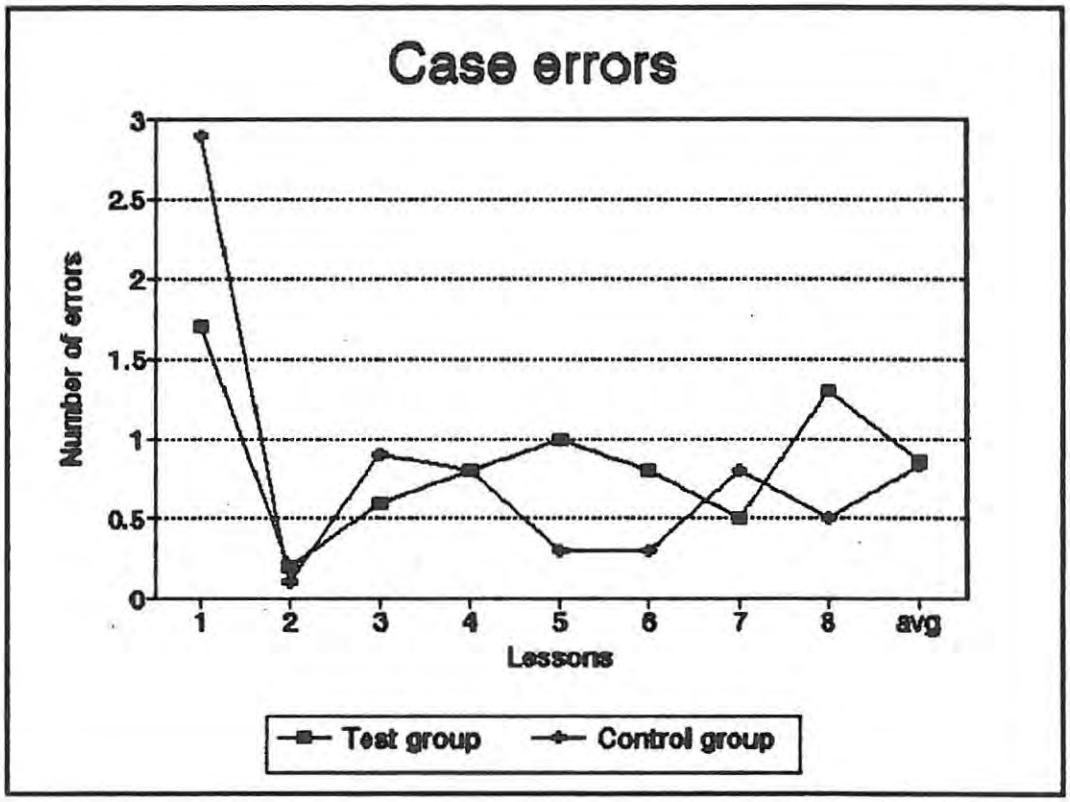
One might hypothesise that pupils would notice spelling errors more readily in print, the form of writing they read the most. The only positive conclusion one could come to from the results of this graph is that the control and test groups were reasonably well matched by the selection criteria.

It is obvious that, after a poor start as regards the test group's spelling, possibly because of the number of typographical errors resulting from unfamiliarity with the keyboard, the degree of spelling error evinced by both groups was remarkably similar.

It must be remembered that the pupils chosen for the study were of below average English ability and probably, on average, read far less than their more able peers. The latter

might recognise errors in print more readily. This suggests a possible future study.

Graph 8



A common error, often classed as a careless error, is the omission of capital letters, or the unnecessary capitalization of words. Errors of both types were counted and summed to form the number represented on the y-axis above.

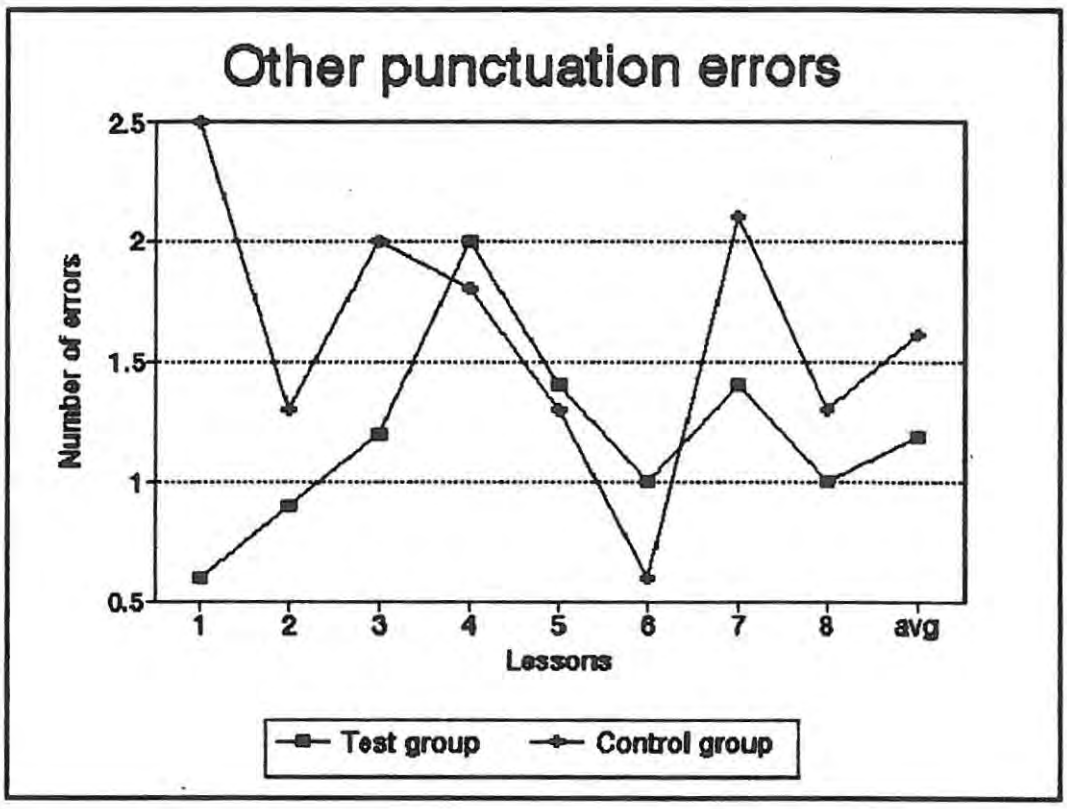
In its very randomness, this graph is interesting. One would logically have supposed that one of two trends would be evident:
1) familiarity with printed text would cue the test pupils to use the correct case, or

2) unfamiliarity with the physical aspect of using a "shift" or "caps lock" key would result in the test group's neglecting of this aspect.

During the first lesson, there appeared to be more care taken on the part of the test group, but subsequently there is no discernible pattern, suggesting that the use of the computer is no panacea for errors of case.

It must be noted that these errors certainly did not represent a major weakness in any of the essays, averaging over all fewer than one per composition.

Graph 9

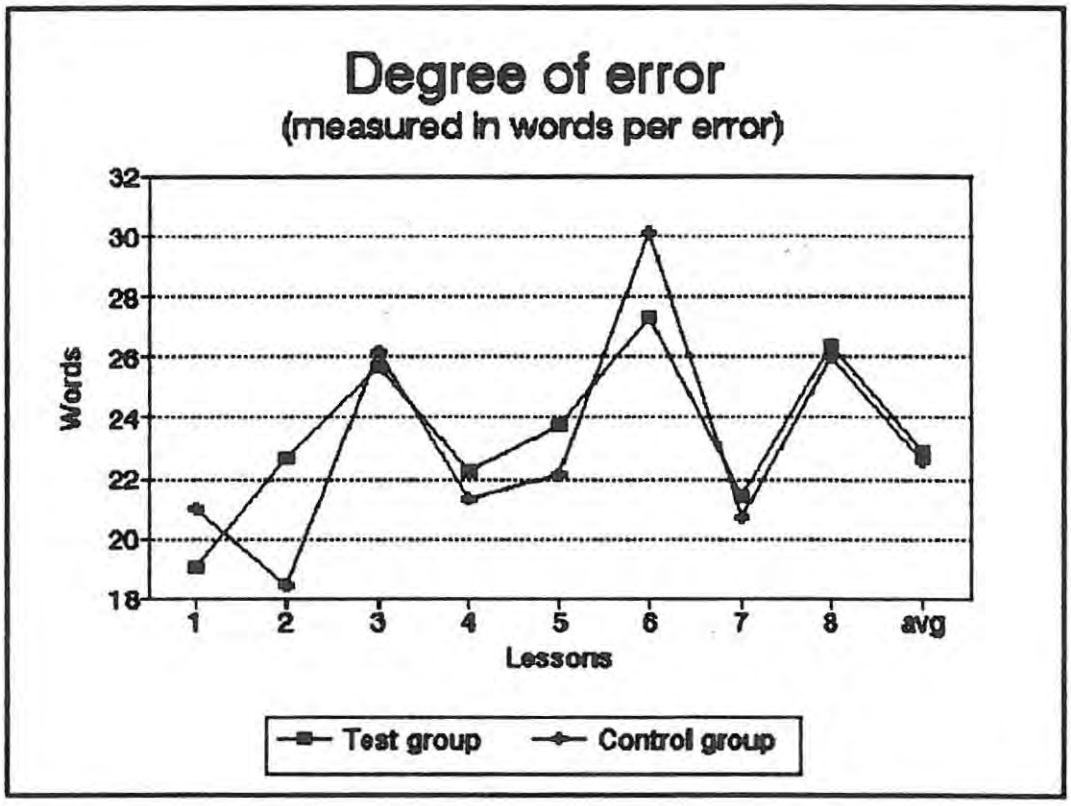


Any errors in punctuation, other than case errors and sentence structure errors, were counted. Paragraph format errors were included.

By far the most common error noted here involved the apostrophe. Not one, however, resulted from keyboard confusion, despite the apostrophe key also being used for the opening of inverted commas on a standard keyboard.

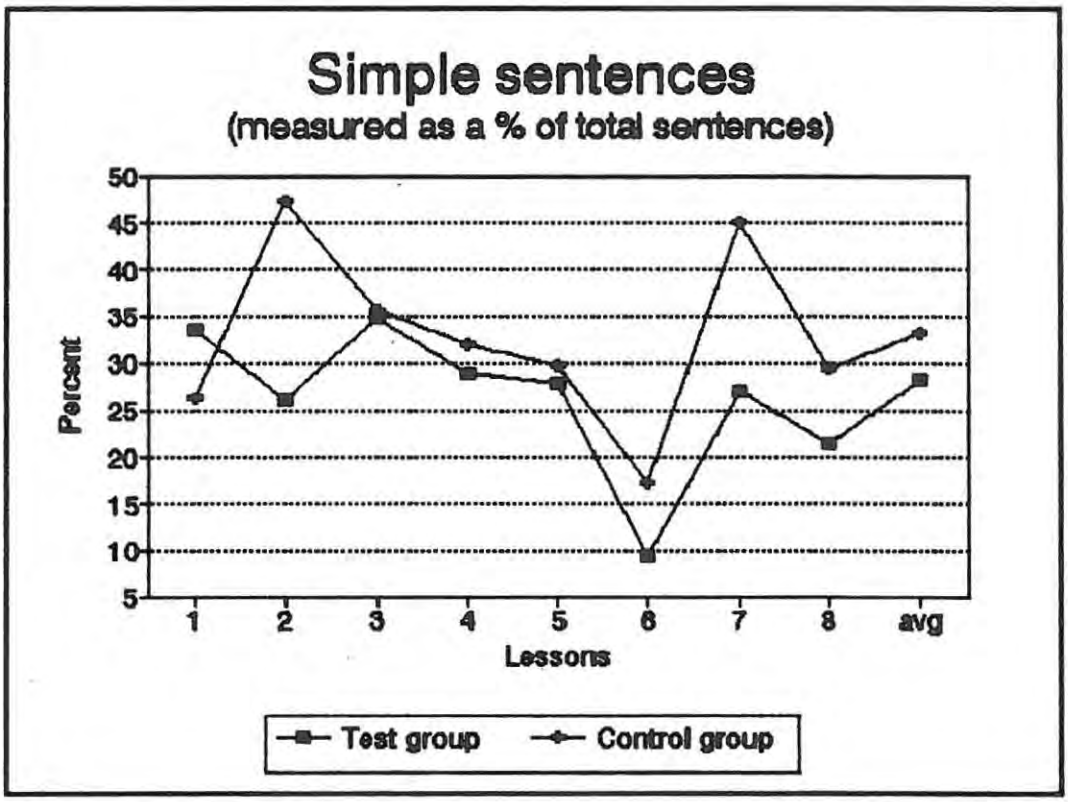
Again, it is interesting that the test group initially fared very differently from the control group, this time being more accurate in their punctuation. This trend lasted till lesson four, after which there was little to distinguish the groups. A possible reason for this is the possible loss of motivation noted in earlier graphs.

Graph 10



This graph confirms that, as far as ability to write correct English goes, the test and control groups were remarkably similar, and that the use of the word processors had little effect on the degree of error in the first drafts of the work. Freed from the limitations of their handwriting, the test group still made the elementary errors one would expect from a group of its ability.

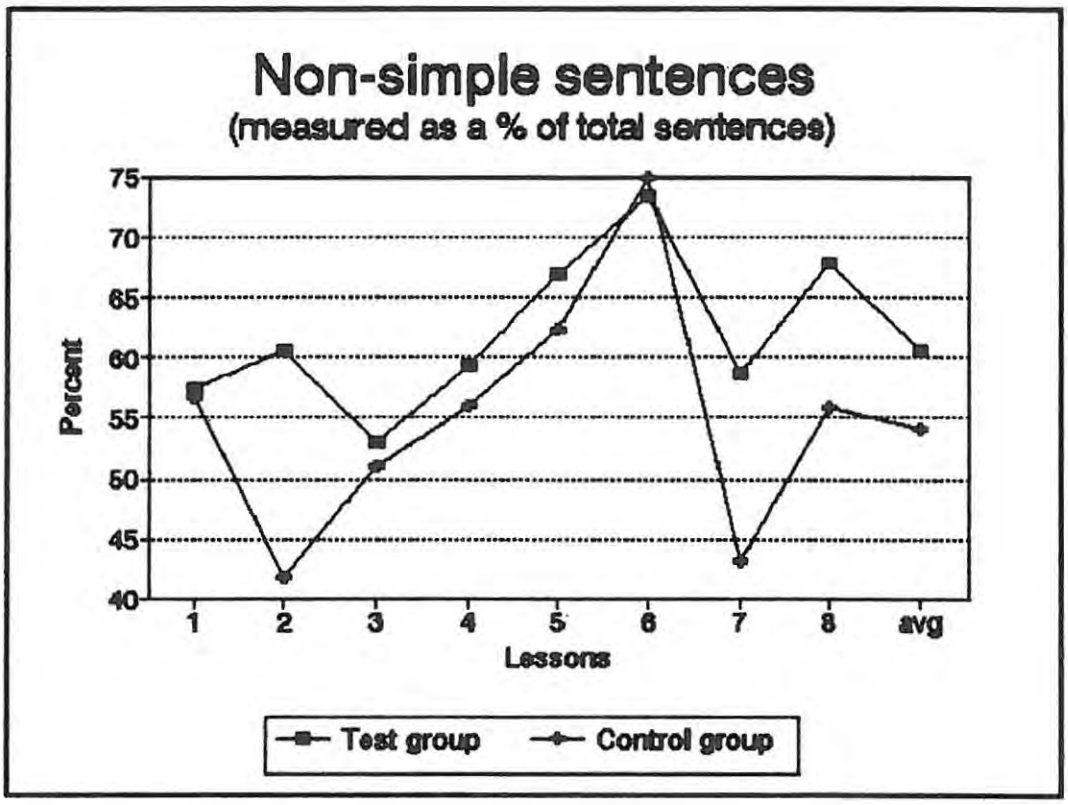
Graph 11



Although the patterns are similar, there is a slight tendency for the control group to write compositions containing a higher percentage of simple sentences[15] than that seen in the test group work. Perhaps the condensed nature of print as opposed to sprawling handwriting drew the test group pupils' attention to the brief nature of many of their sentences and encouraged lengthier constructions.

[15]For the purpose of this study a simple sentence was defined as a legitimate sentence containing a subject and a single finite verb.

Graph 12



The work of pupils contained simple, non-simple[16] and non-sentences[17] It was initially surmised that the test group would make fewer errors in sentence structure as these would be obvious in print. The trend of the test group towards writing longer and more complex sentences, albeit a slight trend, was a surprise. Possibly the condensed appearance of work written on word processors made pupils aware of the simplicity of their work and encouraged a more mature approach to sentence construction. This suggests an area for further research.

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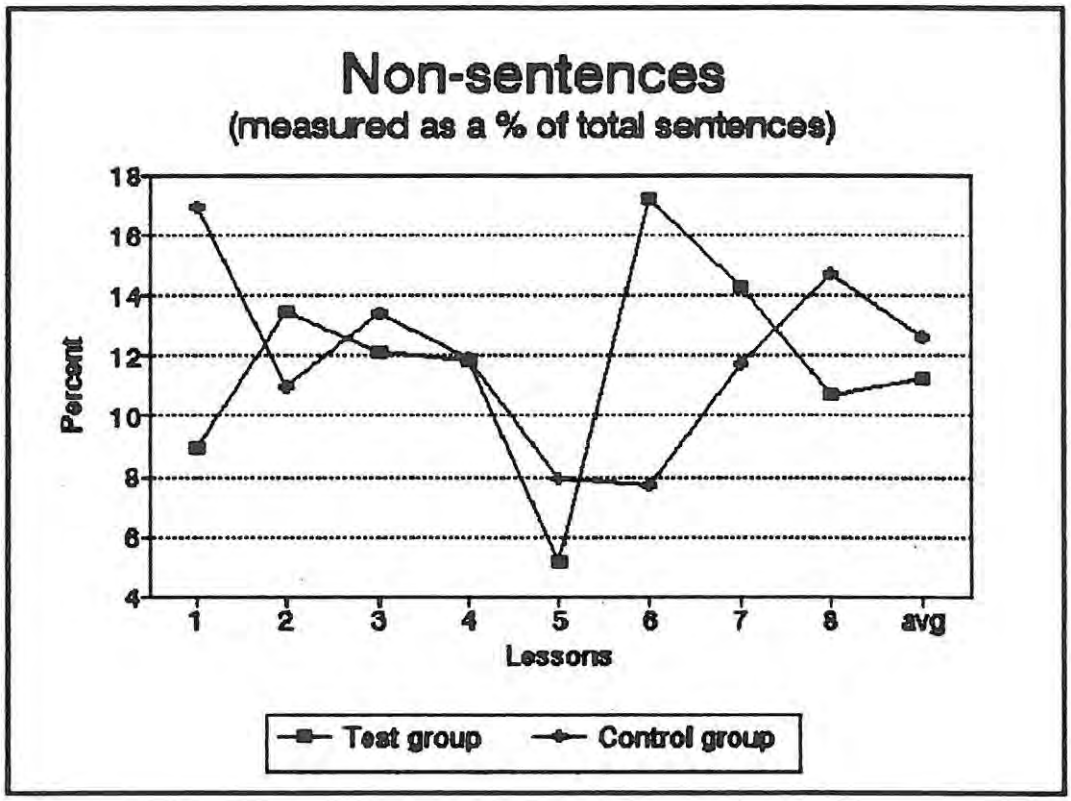
[16] These included compound and complex sentences. By far the greatest number were simple sentences strung together with weak conjunctions such as "and" and "but".

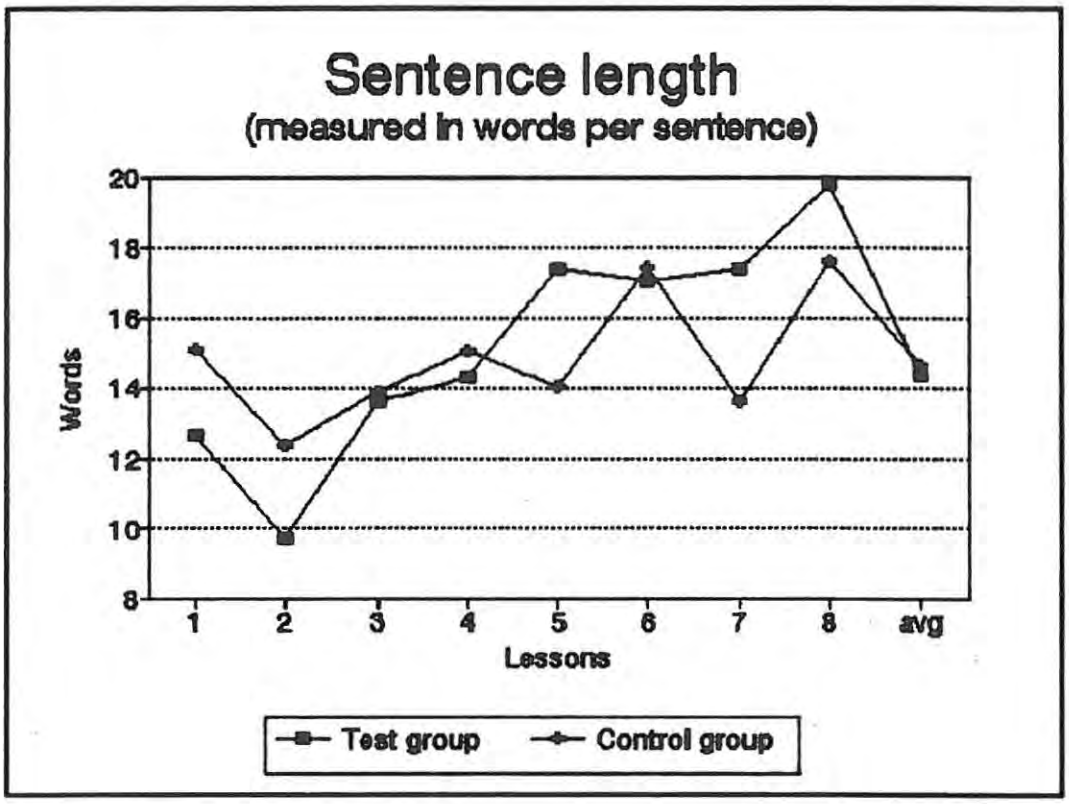
[17] These included comma splice errors (e.g. The boy jumped the wall, it was too high so he fell.) and sentence fragments (e.g. Falling over the wall.).

Graph 13



The test group's expected decrease in the number of sentence structure errors did not materialise. This graph clearly indicates that the use of word processors had little effect on the number of erroneous sentences, and that the pattern showed no sign of changing. These errors are amongst the commonest found in pupils' writing, and it is disappointing that the use of the computer alone offers little assistance in overcoming them, as one might have surmised that, as most correct sentence structure which the pupils read is printed, the transfer of their writing to typed form might have allowed them to recognise sentence structure errors more easily.

Graph 14



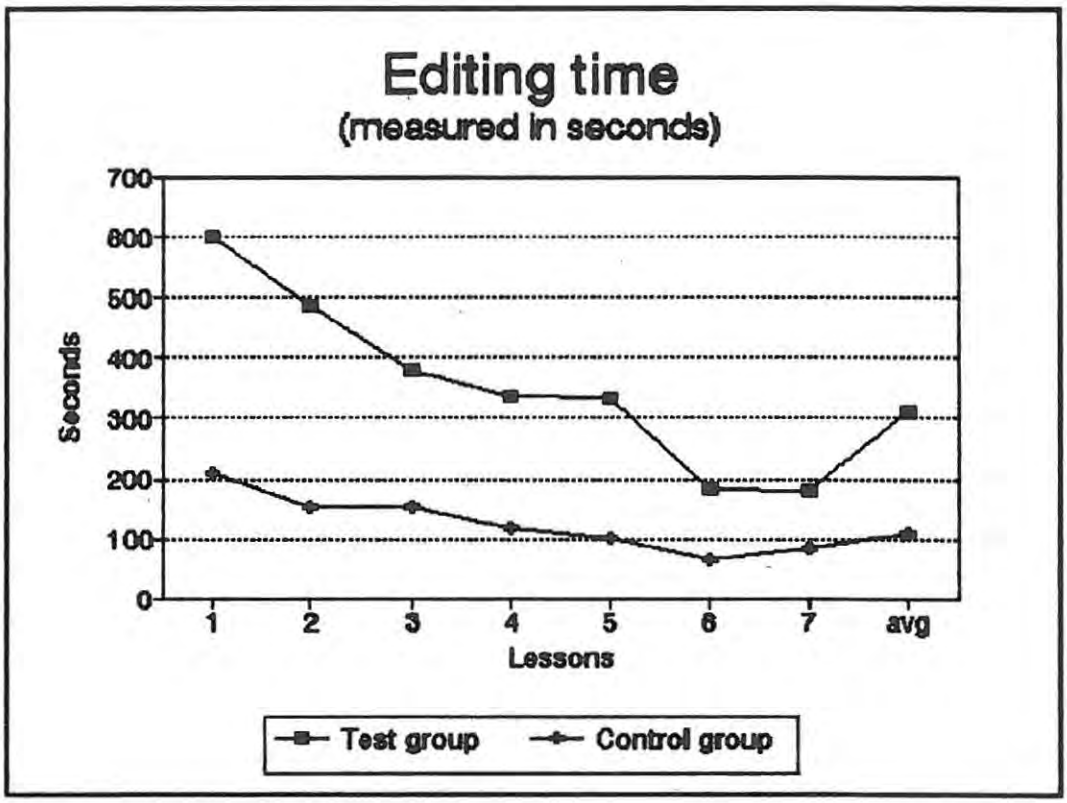
It is interesting to notice the gradual lengthening of sentences shown by both groups, regardless of lesson content, as the lessons progressed. The increase is steeper and steadier as far as the test group is concerned, but not significantly so, given the small numbers involved.

The task which was seen by the pupils to be the most difficult, task 2, produced the shortest sentences in both groups, but more so in the test group, as will be seen later in the non-simple sentence analysis.

Although the averages of the groups over the eight lessons are almost identical, there might be significance in the fact that the test group initially wrote shorter sentences than the

control group, but reversed this trend as the lessons progressed.

Graph 15



It should be noted that the time spent editing the work was left entirely to the discretion of the pupils, and of importance only so far as the pupil saw the need to improve his work. The corrected work was collected, but at no stage was it marked or returned to the pupils. Certainly, no feedback as to the merit of major or minor corrections was given because of the difficulty of standardising the effect of such individual feedback. There was, in fact, psychological pressure on the pupils to complete the checking as they received the teacher's notes on their work the moment checking was complete.

Of interest is obviously both the decline in time spent editing work by both groups, and the difference between them.

Initially the test group spent far longer reading over and correcting their previous week's work. The measurement began once the work came up on the screen, so the boot procedure of the computers did not affect this.

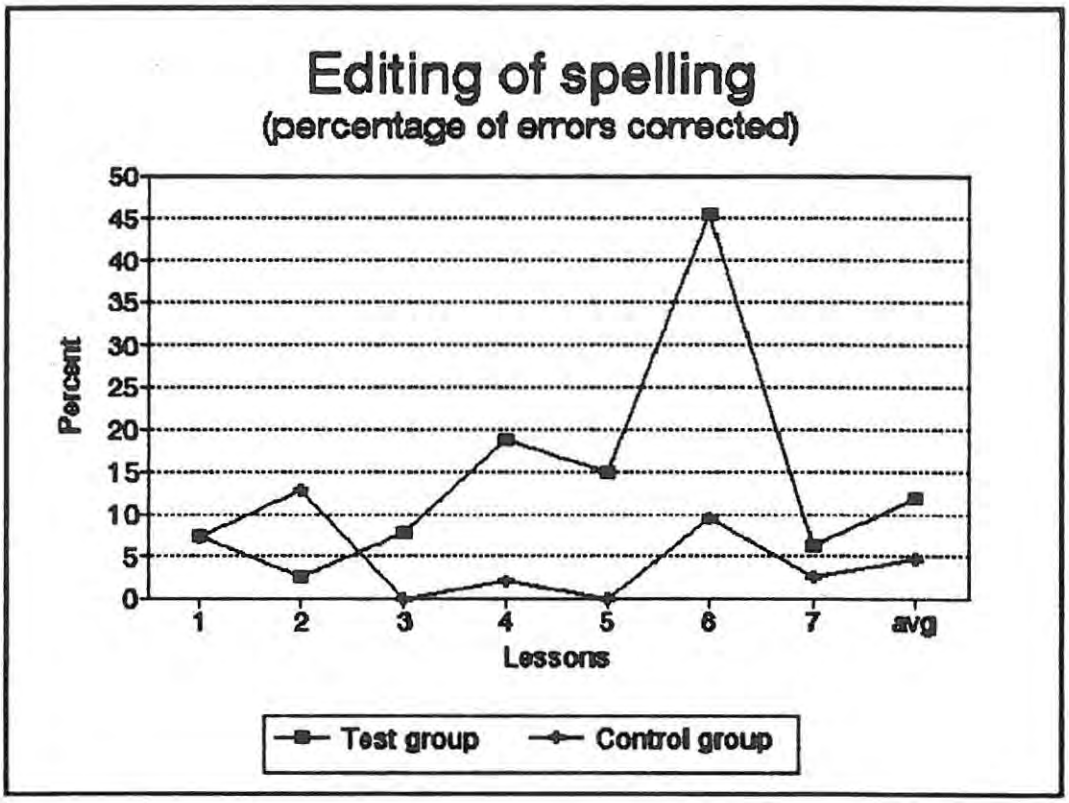
The laborious use of the cursor by some pupils to highlight each letter could account for some of the difference in time, as could the added interest stimulated by the novelty of the situation.

As expected, as the novelty of the lessons wore off there was a general lessening in the effort made by members of both groups to correct their work.

Of particular interest is the fact that the decrease in correction time shown by the test group is far greater than that noticed in the control group. It is possible that this is a result of the pupils' becoming used to the medium of word processing and concentrating on reading the work rather than the mechanics of movement around the screen, and the growing familiarity with the keyboard. This suggests that seeing their work on the screen and using a keyboard have a major short term effect on the pupils, and the analysis of corrections dealt with later is promising.

Very promising also is the fact that, even after seven lessons, the time spent editing work by the test group was still double that spent by the control group, and there is evidence that the rate of decrease is slowing. Perhaps there is a lasting benefit in the use of the computer in the motivation of editing, as found by McAllister and others (McAllister, 1987).

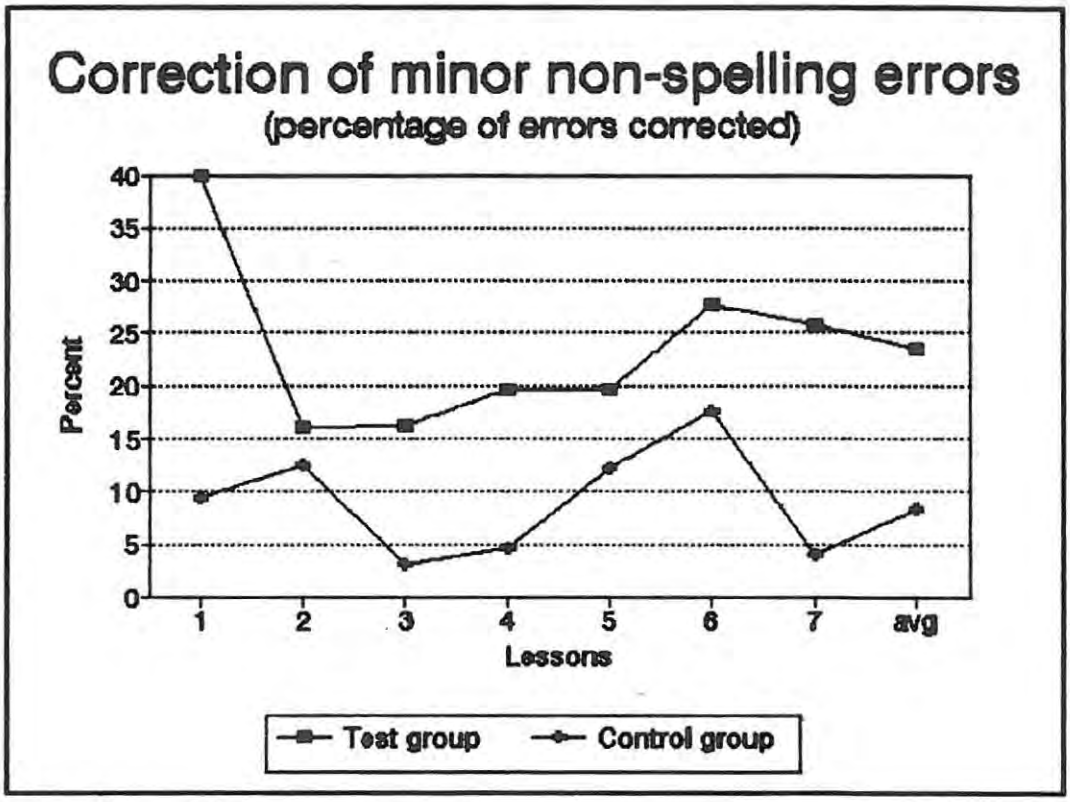
Graph 16



Although the scale of this graph visually exaggerates the difference between the groups, it is interesting to note that the test group consistently corrected more spelling errors than the control group. It can be seen from the figures in Appendix I that this is not the result of one pupil's methodical correction affecting the statistics of the whole group.

It seems logical that spelling errors would be more noticeable in print as this is the only way in which most pupils see the words written. The spelling ability of both groups having proved remarkably similar when the first drafts were written (graph 8), it seems reasonable to assume that it is the medium of communication which has resulted in the greater degree of correction by the test group.

Graph 17



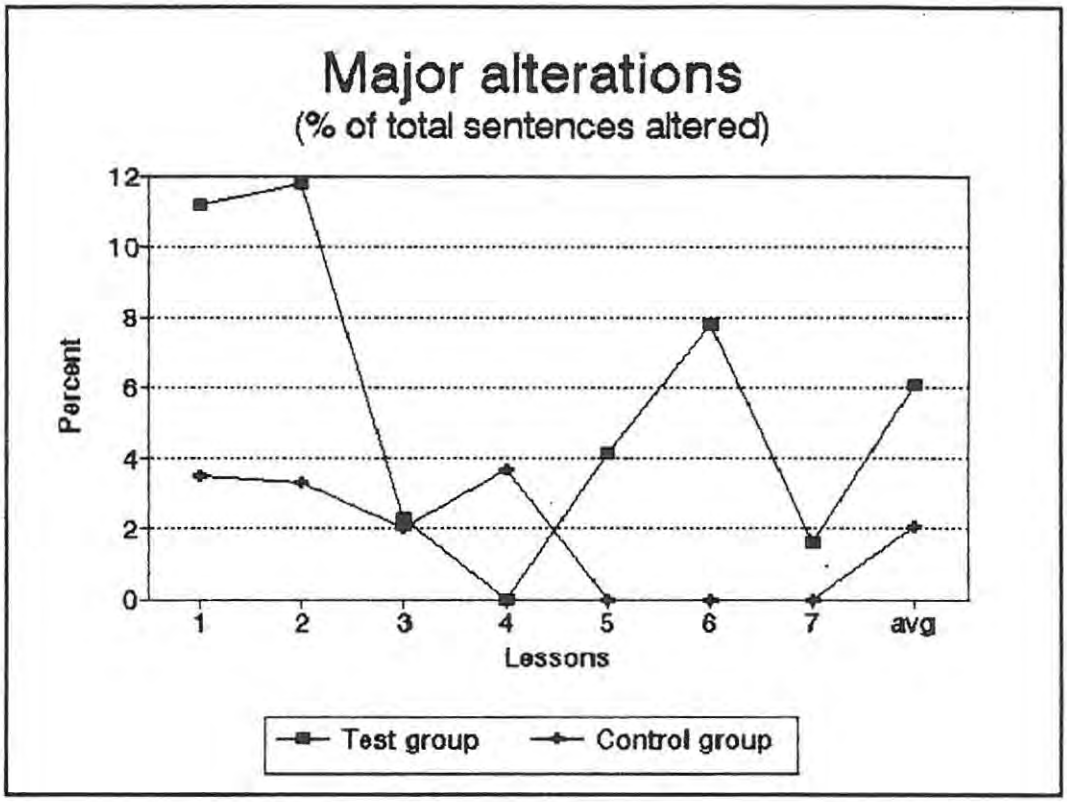
It is interesting to note that, despite the decrease in time spent editing the work, the test group consistently made more corrections of a minor nature to their work than did the control group, and that this trend showed no sign of weakening.

The ease of correction might well have encouraged this. The control group were given photostatted copies of their work, and had to correct the compositions by crossing out and writing above, something that ruined the tidiness of the work.

Also noteworthy is the dramatic decrease in correction by the test group after the first lesson. This again indicates the possible decrease in attention to the task after the initial novelty has worn off, although this sudden decrease is not

reflected in the time spent editing the work. A greater possibility is that the comparative difficulty of the task focused attention away from the spelling and grammar, though this trend is not reflected by the control group.

Graph 18



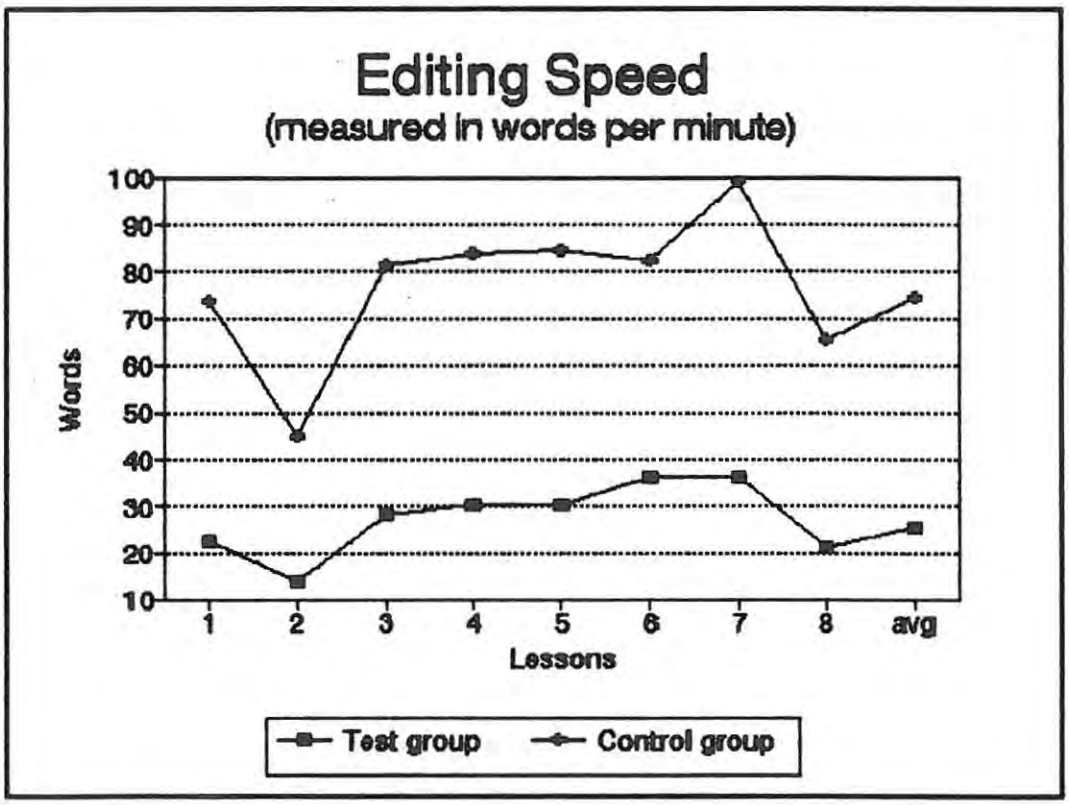
As with the minor corrections, the test group tended to make more corrections than the control group, but the trend is not as obvious, with both groups making relatively few major alterations.

Of interest is the rapid decline in the number of corrections made by the test group, which calls to mind that seen in graph 12, but which strikes its nadir in lesson four as opposed to lesson 2 in the previous graph. This reinforces the idea that a factor not task-related is at work.

Once the initial impetus had worn off, the test group barely made more major corrections than did the control group, despite the ease with which these could have been made on the word processors.

When one takes the minor and major corrections into consideration, it seems that, while there is evidence that the test group spent more time correcting the work, the corrections tended to be of a minor, often "cosmetic" nature and that a lack of any really critical examination of the text was common to both groups.

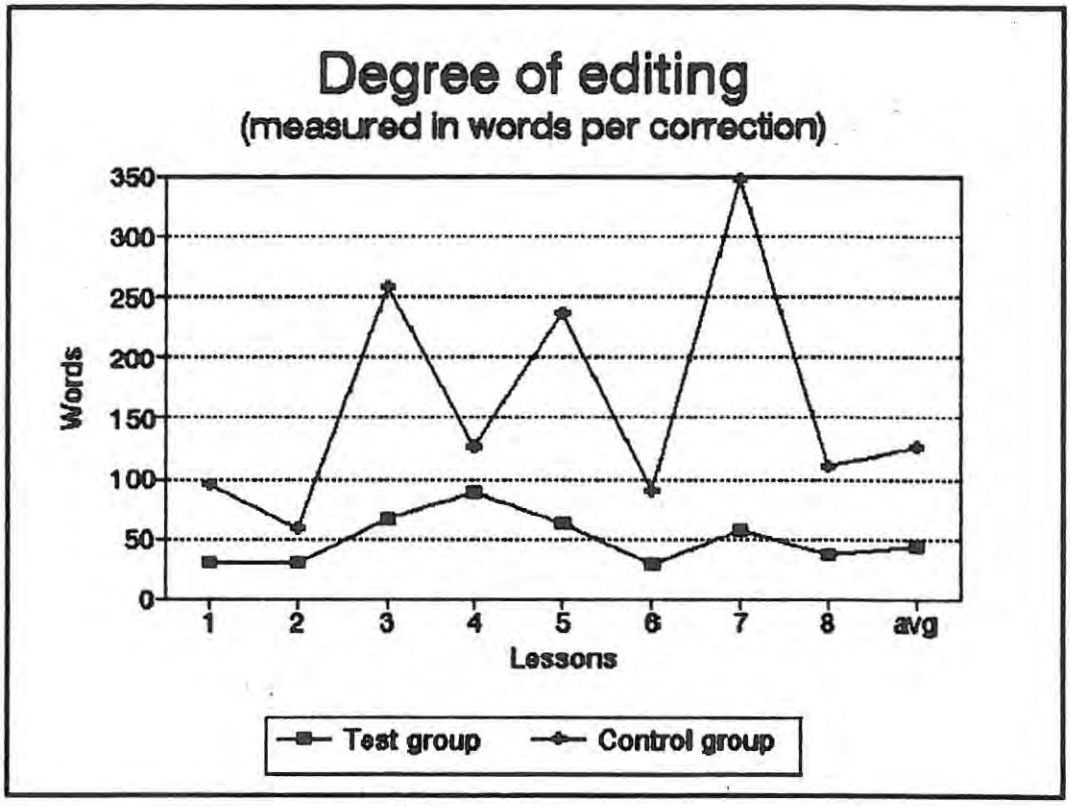
Graph 19



The similarity in pattern indicates that the groups responded in a similar fashion to the editing tasks. It is interesting therefore that the test group was consistently slower, and

that this trend shows no sign of diminishing, as it should if unfamiliarity with the equipment is the reason for the difference between the groups. This, coupled with the fact that the test group consistently made more minor changes suggests that more attention was paid to the task of correction by the test group, regardless of the task. It must be remembered that the speed of editing was left completely at the discretion of the pupil. Nothing was said if the pupil merely glanced at the work then requested the critique. The test group was prepared to work longer and at a slower pace.

Graph 20



Of note is both the consistency and the greater degree of editing done by the test group. Regardless of difficulty of task, or increasing familiarity with the equipment, the test group edited their work with constant effectiveness, averaging

one correction per fifty words, as opposed to the control group which approached this only once, and drifted to the cursory editing of one correction in three hundred and fifty words. As the initial number of errors made by both groups was very similar, it is obvious that a similar degree of correction was required. The test group was far more prepared to make an effort in this direction than was the control group.

It is in this area that the word processor might prove a valuable tool, encouraging self-critical evaluation by the pupil. Although the corrections were largely minor, the figures reflect a willingness to make these corrections. It would be interesting to investigate whether the lack of major correction would be reflected in the work of brighter pupils who have a greater critical faculty, and who have a greater familiarity with the printed word by virtue of reading more frequently.

Chapter 5: Conclusions

5.1 Limitations of, and problems with the study

5.1.1 Equipment

Although it is impossible to remain up to date in the computer field as the hardware and software is constantly being improved, the computers used were particularly dated, having only 64K of random access memory and having no hard drive storage. This necessitated a boot procedure whereby the operating system (Prodos) was loaded from a floppy disk then the word processor (Appleworks) had to be loaded in a similar fashion. As the machines contained only a single disk drive, saving the work involved exchanging disks. Printing immediately was almost impossible as there was only one printer available and the demand for printed copies tended to occur at the end of the lesson when parents were waiting for the students or when the students had to honour sporting commitments. The screens were of the harsh green on black variety which is, after a while, hard on the eyes.

The software, Appleworks, while being more powerful than the limited memory suggests, was by no means as "user-friendly" as some modern word processors, nor did it have an effective help facility, this being limited to a brief summary of key functions.

It must therefore be borne in mind that the students experienced a relatively difficult word processing environment. In an easier situation the positive results observed might well be more pronounced.

5.1.2 Sample size

A limitation of the study is the size of the groups, each containing only ten students. This makes it impossible to use sophisticated statistical analysis.

5.2 Analysis of findings

5.2.1 Motivation and length of written work

The results tend to support Liechty's observation that the use of a word processor causes greater time to be spent on a writing task (Liechty, 1989), but the greater length of written work she noted was not found. Rather, the study supports the observation of Kurth that no significant difference in length was found between word processed and hand-written work (Kurth, 1986).

Although the time spent on the tasks declined in both groups as the study progressed, after eight weeks the test group was still prepared to spend longer on their tasks than the control group. This is encouraging, particularly as they were not writing shorter passages. The difference is very likely one of motivation, and this is reinforced by the fact that the attendance of the test group was always better than that on the control group. Although all students completed all tasks, fewer extra word processing lessons had to be held, and the test group always appeared more eager than the control group. Certainly, the positive motivating effect was greater than any effect on the length of work, to an extent supporting the work of Schramm who found "a small positive effect" on length and "a large significant positive effect" on student attitudes (Schramm, 1991).

The word processing situation, with pupils sitting in front of equally spaced computers placed against a wall, focused the pupils' attention on their work and discouraged collaboration.

This, of course, is not necessarily positive, and might give credence to one of Papert's warnings, that computers could isolate the pupil (Papert, 1987). One positive aspect was that despite some of the pupils being known to have notoriously brief attention spans, there was no noticeable day-dreaming in the test group sessions. The control group students were far more easily distracted, and, in the process of passing pens around or borrowing Tippex, were more likely to discuss work (and other subjects).

It is interesting to note that Booth's observation that word processing causes an increase in the speed of writing is not supported by this study (although, in the long term, as typing skills increase, this would no doubt be the case) (Booth, 1984).

A final observation in the field of motivation is of interest. Little research has been done on the demotivating nature of word processors on students who do not have access to computers. In this study, it was noticed that the control group felt aggrieved that they were using pens while others were using word processors.

5.2.2 Quality of written work

The study supports the findings of several researchers (Booth, 1984; Elias, 1984; Hult, 1984; Monaham, 1986; Etchison, 1988; Mullins, 1988 and Pair, 1990) that there is no significant and automatic improvement in the quality of writing when word processors are used. The errors made by both groups were similar, even as regards upper and lower case errors, one area in which one would have expected some keyboard influence as the shift and caps lock procedures were foreign to the pupils at the start of the study.

A positive aspect of this is that the novelty and difficulty of learning to use the word processor in no way detracted from

the quality of the work. Also encouraging is the ease with which the test group, comprising students of lower than average ability in English, mastered the word processing task.

The general growth in complexity of vocabulary observed in the test group suggests an area which could benefit from more detailed research.

5.2.3 Amount and quality of revision

It is in the matter of editing that the greatest difference between the groups was observed. In every lesson the test group took longer over the editing of their first drafts, and made more alterations than the control group. This contradicts the finding of Kurth, that neither the quantity nor quality of editing is affected by use of the word processor (Kurth, 1986).

As far as quality of editing is concerned the findings of this study are less promising. The alterations made were essentially minor corrections of layout or typographical errors. This supports the findings of Freedman, Strickland and Chan (Freedman, 1988; Strickland, 1988; and Chan, 1989) that the editing tends to be cosmetic rather than genuinely critical. Neither group made many corrections at sentence or paragraph level, although, on average, the test group altered six percent of their work, as opposed to the control group which altered only two percent. It appears that the word processor does motivate editing, but that a teaching strategy to utilise this should be developed.

5.2.4 Spelling

While the number of spelling errors made by both groups was virtually the same, it must be remembered that typographical errors, which were at times indistinguishable from genuine spelling mistakes, were included in the test group's data. On

average the test group corrected seven percent more of these during editing than did the control group.

5.2.5 Organization

Golder's finding that use of the word processor encouraged paragraph organization (Golder, 1982) is supported by this study, for although there was virtually no difference between the groups in sentence structure errors, and only a marginal difference in sentence length (with the test group writing on average slightly longer sentences), the test group consistently used more paragraphs than did the control group, even though the pieces of writing were short. The poor quality of the screens might have had an influence here as the single spacing used by most of the pupils was not easy to read when bunched in one long and bright green paragraph. Even if this is so, however, the effect was salutary and work was organised better.

5.2.6 Professional appearance

There was no doubt that the pupils who used word processors were more proud of, or at least fascinated by, the end products of their work. After reading the teacher comments, the control students tended to leave the work lying on the desk or throw it away after the lesson. The majority of students in the test group retained the pages, with at least four students making an effort to keep them together in files or books.

5.3 Further research

There can be little doubt that the word processor merits a place in the classroom, if only for its motivating nature and its facilitation of editing, a vital part of the task of any writer. Less certain is its sociological impact, particularly in a society with our range of cultural and economic

diversity. Before the use of the word processor can be unequivocally recommended research should be done on the effects of its use on the motivation of those who do not have access to home computers, and on those whose circumstances have resulted in their being computer "illiterate". Will the word processor aid the less advantaged or will it increase the gap between those who have and those who have not.

Another area of importance is the development of strategies to utilise the advantages of the word processor in the English language classroom. Editing and planning strategies for improving handwritten work are not appropriate for, and do not take advantage of the power of the word processor.

5.4 Conclusion

In conclusion it is felt by the researcher that the motivating factor itself makes the computer a valuable tool for the teacher, and, with the trend towards smaller, more portable machines, the English teacher can no more ignore word processing than a mathematics teacher can ignore the existence of electronic calculators. Also, some of the positive effects noted could be strengthened by use of appropriate teaching strategies and word processing software aimed at the below average pupil.

The fact remains, however, that the word processor does not, in itself, free the pupil from any handicap other than that of his handwriting, and the teacher from any task other than the deciphering of scrawled work.

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Appendix I

	M1	M1	M1	M1	M1	M1	M1	M1
Words	199	99	156	188	169	76	99	92
Syll	253	146	205	242	243	102	125	114
Para	5	2	4	4	3	1	1	3
Time	1110	602	930	720	913	440	661	503
Words/min	11	10	10	16	11	10	9	11
Syll/word	1	1	1	1	1	1	1	1
Mark	53	40	48	57	52	40	44	44
Simple s	3	3	3	4	5	0	20	6
Non-simple s	9	5	10	7	6	4	1	2
Non-sen	1	0	0	0	0	0	0	0
Total sen	13	8	13	11	11	4	21	8
Spell-err	2	3	3	1	3	2	1	1
Case-err	2	0	0	0	0	0	2	0
Other punc	1	2	2	0	0	0	2	1
Ed. time	250	210	188	135	130	64	81	
Spell-corr	0	0	0	0	0	1	1	
Minor corr	4	1	0	2	1	1	0	
Major corr	1	1	2	2	0	0	0	

	M2	M2	M2	M2	M2	M2	M2	M2
Words	273	119	234	134	154	83	146	97
Syll	341	150	279	170	173	94	182	124
Para	1	4	5	4	3	1	4	1
Time	800	885	919	495	990	327	647	401
Words/min	20	8	15	16	9	15	14	15
Syll/word	1	1	1	1	1	1	1	1
Mark	34	46	54	52	50	45	48	48
Simple s	2	2	3	2	7	2	2	1
Non-simple s	14	7	8	6	9	5	8	4
Non-sen	1	0	1	2	0	0	0	0
Total sen	17	9	12	10	16	7	10	5
Spell-err	12	12	8	3	10	2	9	2
Case-err	0	0	0	0	1	0	0	0
Other punc	2	2	3	1	0	0	1	0
Ed. time	185	242	190	119	122	60	114	
Spell-corr	0	1	0	0	0	0	0	
Minor corr	2	3	1	0	1	0	1	
Major corr	0	1	0	1	0	0	0	

	M3	M3	M3	M3	M3	M3	M3	M3
Words	444	160	330	290	150	99	207	183
Syll	555	214	404	364	194	127	262	249
Para	2	2	3	2	2	1	1	1
Time	1895	912	1478	1296	741	352	743	703
Words/min	14	11	13	13	12	17	17	16
Syll/word	1	1	1	1	1	1	1	1
Mark	54	55	58	57	51	52	50	46
Simple s	7	3	7	6	2	2	2	0
Non-simple s	8	6	10	9	8	4	5	6
Non-sen	12	1	3	4	0	0	4	2
Total sen	27	10	20	19	10	6	11	8
Spell-err	10	2	4	2	5	3	1	1
Case-err	4	0	4	1	0	0	0	2
Other punc	14	2	4	5	2	0	1	3
Ed. time	300	220	195	90	75	52	102	
Spell-corr	1	0	0	0	0	1	0	
Minor corr	1	0	1	0	1	0	0	
Major corr	0	0	0	0	0	0	0	

	M4	M4	M4	M4	M4	M4	M4	M4
Words	239	134	281	204	155	87	38	213
Syll	296	173	343	248	199	112	47	272
Para	3	1	3	2	3	2	1	3
Time	1095	620	2152	830	950	402	185	846
Words/min	13	13	8	15	10	13	12	15
Syll/word	1	1	1	1	1	1	1	1
Mark	46	48	54	58	60	48	15	54
Simple s	6	9	6	5	0	0	4	2
Non-simple s	11	3	10	6	9	4	1	10
Non-sen	3	3	5	1	0	0	0	0
Total sen	20	15	21	12	9	4	5	12
Spell-err	5	6	6	3	3	2	4	3
Case-err	1	0	0	1	0	0	1	1
Other punc	1	1	0	2	3	0	1	1
Ed. time	245	185	171	93	72	55	24	
Spell-corr	1	0	0	0	0	0	0	
Minor corr	0	1	0	0	0	0	0	
Major corr	1	1	0	0	0	0	0	

	M5	M5	M5	M5	M5	M5	M5	M5
Words	360	180	289	139	180	144	154	36
Syll	446	227	364	179	227	171	185	50
Para	5	4	3	3	3	3	1	1
Time	1394	690	1084	871	870	504	713	134
Words/min	15	16	16	10	12	17	13	16
Syll/word	1	1	1	1	1	1	1	1
Mark	52	57	57	55	56	50	48	20
Simple s	6	3	5	4	3	3	0	1
Non-simple s	13	7	11	6	6	5	7	1
Non-sen	1	2	4	0	1	0	0	0
Total sen	20	12	20	10	10	8	7	2
Spell-err	6	4	2	5	3	2	4	1
Case-err	14	0	1	1	1	1	0	1
Other punc	1	0	1	3	2	1	3	2
Ed. time	240	190	212	93	132	85	80	
Spell-corr	1	0	0	0	0	0	0	
Minor corr	1	1	0	1	1	3	0	
Major corr	3	0	0	0	0	0	0	

	M6	M6	M6	M6	M6	M6	M6	M6
Words	295	69	199	109	116	67	110	104
Syll	363	100	240	134	147	79	126	123
Para	1	1	2	1	3	1	3	3
Time	1545	568	810	865	657	446	632	630
Words/min	11	7	15	8	11	9	10	10
Syll/word	1	1	1	1	1	1	1	1
Mark	55	45	51	50	53	44	52	50
Simple s	3	4	5	3	1	0	3	2
Non-simple s	14	2	11	6	3	3	4	5
Non-sen	2	0	0	0	2	0	0	0
Total sen	19	6	16	9	6	3	7	7
Spell-err	6	4	4	4	5	3	3	3
Case-err	1	0	0	0	1	0	0	0
Other punc	2	2	1	0	1	0	2	2
Ed. time	150	90	60	100	98	72	75	
Spell-corr	0	2	0	0	0	0	0	
Minor corr	0	1	0	0	0	1	1	
Major corr	0	0	0	0	0	0	0	

	M7	M7	M7	M7	M7	M7	M7	M7
Words	206	131	223	204	99	76	162	110
Syll	278	176	291	260	122	96	212	136
Para	4	1	4	5	2	1	1	4
Time	1369	611	1090	1030	674	435	904	654
Words/min	9	13	12	12	9	10	11	10
Syll/word	1	1	1	1	1	1	1	1
Mark	54	51	56	54	56	45	46	43
Simple s	5	0	6	0	0	0	2	2
Non-simple s	6	5	4	5	4	2	4	1
Non-sen	3	2	5	2	1	2	5	3
Total sen	14	7	15	7	5	4	11	6
Spell-err	11	8	11	15	6	2	6	4
Case-err	1	0	2	1	0	1	3	1
Other punc	4	1	4	5	1	0	2	0
Ed. time	282	157	240	190	124	75	100	
Spell-corr	2	2	0	1	0	0	0	
Minor corr	2	0	0	0	1	1	1	
Major corr	1	0	0	1	0	0	0	

	M8	M8	M8	M8	M8	M8	M8	M8
Words	180	98	111	141	143	87	131	108
Syll	218	123	129	163	186	103	162	140
Para	5	1	4	4	3	1	1	4
Time	729	430	390	596	700	744	713	370
Words/min	15	14	17	14	12	7	11	18
Syll/word	1	1	1	1	1	1	1	1
Mark	50	46	46	42	52	43	44	38
Simple s	2	7	3	6	7	2	6	2
Non-simple s	6	2	7	6	7	3	4	1
Non-sen	3	1	0	3	1	1	0	2
Total sen	11	10	10	15	15	6	10	5
Spell-err	7	4	6	6	7	4	4	7
Case-err	3	1	2	4	0	1	1	0
Other punc	0	1	2	1	3	3	3	1
Ed. time	145	70	90	90	82	65	81	
Spell-corr	0	0	0	0	0	0	0	
Minor corr	0	0	0	1	0	2	0	
Major corr	0	0	0	0	0	0	0	

	M9	M9	M9	M9	M9	M9	M9	M9
Words	188	60	119	87	110	79	234	155
Syll	237	71	148	116	138	102	304	209
Para	3	1	2	2	2	3	6	1
Time	727	374	355	387	640	444	803	604
Words/min	16	10	20	13	10	11	17	15
Syll/word	1	1	1	1	1	1	1	1
Mark	48	46	48	47	47	48	51	44
Simple s	6	4	4	1	1	0	4	3
Non-simple s	5	1	3	3	3	4	6	5
Non-sen	3	1	1	1	1	0	3	0
Total sen	14	6	8	5	5	4	13	8
Spell-err	7	1	4	4	5	0	4	6
Case-err	3	0	0	0	0	0	1	0
Other punc	0	1	1	1	1	2	6	3
Ed. time	145	72	120	94	100	75	134	
Spell-corr	0	0	0	0	0	0	0	
Minor corr	0	0	0	0	0	0	0	
Major corr	0	0	0	0	0	0	0	

	M10	M10	M10	M10	M10	M10	M10	M10
Words	199	75	127	146	140	107	110	100
Syll	253	111	163	182	176	136	138	129
Para	1	1	3	3	3	1	1	1
Time	1050	610	1160	1140	868	471	670	662
Words/min	11	7	7	8	10	14	10	9
Syll/word	1	1	1	1	1	1	1	1
Mark	45	45	51	42	54	53	50	46
Simple s	5	8	11	4	4	0	3	1
Non-simple s	11	0	2	7	8	5	4	3
Non-sen	0	0	1	0	2	1	0	3
Total sen	16	8	14	11	14	6	7	7
Spell-err	3	3	2	8	1	1	2	0
Case-err	0	0	0	0	0	0	0	0
Other punc	0	1	2	0	0	0	0	0
Ed. time	155	68	65	170	70	55	50	
Spell-corr	0	1	0	0	0	0	0	
Minor corr	0	0	0	0	1	0	0	
Major corr	0	0	1	0	0	0	0	

	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Words	258	113	207	164	142	91	139	120
Syll	324	149	257	206	181	112	174	155
Para	3	2	3	3	3	2	2	2
Time	1171	630	1037	823	800	457	667	551
Words/min	13	11	12	12	11	12	12	13
Syll/word	1	1	1	1	1	1	1	1
Mark	49	48	52	51	53	47	45	43
Simple s	5	4	5	4	3	1	5	2
Non-simple s	10	4	8	6	6	4	4	4
Non-sen	3	1	2	1	1	0	1	1
Total sen	17	9	15	11	10	5	10	7
Spell-err	7	5	5	5	5	2	4	3
Case-err	3	0	1	1	0	0	1	1
Other punc	3	1	2	2	1	1	2	1
Ed. time	210	150	153	117	0	66	84	
Spell-corr	1	1	0	0	0	0	0	
Minor corr	1	1	0	0	0	1	0	
Major corr	1	0	0	0	0	0	0	

	M11	M11	M11	M11	M11	M11	M11	M11
Words	313	155	233	147	177	86	97	47
Syll	407	200	286	191	212	108	128	62
Para	6	3	6	3	4	1	2	2
Time	3473	1797	2638	1330	1871	601	793	570
Words/min	5	5	5	7	6	9	7	5
Syll/word	1	1	1	1	1	1	1	1
Mark	58	50	56	52	52	46	46	42
Simple s	10	5	6	2	6	0	4	0
Non-simple s	15	5	8	8	7	5	4	2
Non-sen	1	1	0	0	1	0	0	1
Total sen	26	11	14	10	14	5	8	3
Spell-err	0	3	1	2	0	0	2	1
Case-err	0	0	0	0	0	0	1	2
Other punc	1	1	0	0	1	0	0	1
Ed. time	415	226	540	222	386	120	126	
Spell-corr	0	0	1	0	0	0	0	
Minor corr	0	0	0	1	1	0	1	
Major corr	2	1	1	0	1	1	0	

	M12	M12	M12	M12	M12	M12	M12	M12
Words	228	106	137	147	109	84	68	91
Syll	299	137	166	184	130	110	90	112
Para	3	3	3	4	4	2	1	2
Time	3620	1706	1920	2114	2163	800	782	945
Words/min	4	4	4	4	3	6	5	6
Syll/word	1	1	1	1	1	1	1	1
Mark	46	41	46	42	43	48	48	43
Simple s	5	0	0	1	2	0	1	0
Non-simple s	7	2	4	4	3	4	3	3
Non-sen	2	3	2	3	1	0	0	2
Total sen	14	5	6	8	6	4	4	5
Spell-err	11	5	6	7	8	5	2	3
Case-err	0	0	2	3	0	0	0	4
Other punc	0	3	0	2	3	1	1	4
Ed. time	450	555	450	222	195	188	154	
Spell-corr	3	0	0	2	1	3	1	
Minor corr	0	1	1	0	2	3	1	
Major corr	0	0	0	0	0	0	0	

	M13	M13	M13	M13	M13	M13	M13	M13
Words	398	166	178	285	151	185	116	127
Syll	498	221	221	348	202	230	148	155
Para	4	2	3	6	3	3	3	3
Time	3485	1497	1594	2534	1358	1062	695	657
Words/min	7	7	7	7	7	10	10	12
Syll/word	1	1	1	1	1	1	1	1
Mark	51	46	50	55	56	49	48	55
Simple s	9	6	4	2	2	0	1	0
Non-simple s	17	6	4	12	7	10	6	7
Non-sen	3	1	2	2	1	1	1	0
Total sen	29	13	10	16	10	11	8	7
Spell-err	14	5	10	8	4	7	9	1
Case-err	0	0	1	0	1	2	0	0
Other punc	0	0	1	0	0	0	1	0
Ed. time	455	290	413	411	547	216	154	
Spell-corr	0	1	0	2	1	2	1	
Minor corr	4	1	3	1	1	1	2	
Major corr	0	0	0	0	1	0	0	

	M14	M14	M14	M14	M14	M14	M14	M14
Words	157	66	191	119	140	102	74	82
Syll	212	85	255	156	182	141	98	111
Para	3	1	6	4	3	3	1	3
Time	1570	616	1830	1312	1377	1043	720	957
Words/min	6	6	6	5	6	6	6	5
Syll/word	1	1	1	1	1	1	1	1
Mark	36	45	56	57	57	50	50	44
Simple s	3	4	9	9	7	2	2	0
Non-simple s	10	2	7	2	3	4	3	4
Non-sen	0	0	1	0	0	1	1	0
Total sen	13	6	17	11	10	7	6	4
Spell-err	7	1	5	1	4	4	1	1
Case-err	2	0	0	1	1	1	0	0
Other punc	2	1	0	0	1	2	0	0
Ed. time	362	136	225	220	255	180	138	
Spell-corr	0	0	0	2	1	2	0	
Minor corr	0	0	2	1	1	1	1	
Major corr	2	0	0	0	0	0	0	

	M15	M15	M15	M15	M15	M15	M15	M15
Words	152	125	165	196	175	101	91	82
Syll	220	163	196	249	221	134	118	113
Para	6	3	4	4	3	2	3	1
Time	1805	1377	1750	1265	1745	742	793	685
Words/min	5	5	6	9	6	8	7	7
Syll/word	1	1	1	1	1	1	1	1
Mark	41	47	57	54	55	55	42	41
Simple s	4	3	2	2	2	0	2	1
Non-simple s	8	4	7	6	7	3	2	2
Non-sen	0	1	1	1	1	1	1	2
Total sen	12	8	10	9	10	4	5	5
Spell-err	7	2	3	8	6	1	2	3
Case-err	0	0	0	0	0	0	2	1
Other punc	1	2	0	0	1	1	5	1
Ed. time	172	244	185	244	220	68	128	
Spell-corr	0	0	0	2	1	1	0	
Minor corr	1	0	3	1	1	2	1	
Major corr	0	0	0	0	0	1	0	

	M16	M16	M16	M16	M16	M16	M16	M16
Words	287	148	331	310	261	92	129	139
Syll	373	213	391	399	349	124	146	180
Para	4	1	4	4	3	3	4	2
Time	2994	1499	2826	2269	2076	991	903	1070
Words/min	6	6	7	8	8	6	9	8
Syll/word	1	1	1	1	1	1	1	1
Mark	57	53	52	54	58	46	52	50
Simple s	10	1	6	6	0	1	0	0
Non-simple s	10	6	14	12	14	3	5	5
Non-sen	2	1	2	0	0	1	1	0
Total sen	22	8	22	18	14	5	6	5
Spell-err	10	6	6	7	3	0	3	1
Case-err	11	0	0	0	0	0	1	3
Other punc	1	0	2	7	3	0	2	0
Ed. time	1167	528	297	358	301	179	157	
Spell-corr	4	0	1	1	1	0	0	
Minor corr	8	1	2	2	1	1	2	
Major corr	5	3	0	0	0	1	1	

	M17	M17	M17	M17	M17	M17	M17	M17
Words	270	126	247	207	248	152	118	93
Syll	381	173	329	282	306	190	154	131
Para	4	3	4	3	3	3	5	2
Time	2812	1737	2470	2031	1988	976	894	978
Words/min	6	4	6	6	7	9	8	6
Syll/word	1	1	1	1	1	1	1	1
Mark	58	48	57	55	48	53	48	48
Simple s	10	4	12	4	2	3	4	3
Non-simple s	9	4	7	7	10	4	4	3
Non-sen	1	4	1	3	0	4	1	0
Total sen	20	12	20	14	12	11	9	6
Spell-err	7	1	5	5	5	0	0	1
Case-err	1	0	0	4	3	2	0	2
Other punc	0	1	3	0	3	1	3	0
Ed. time	1066	1085	490	651	451	175	197	
Spell-corr	0	0	1	0	1	0	0	
Minor corr	7	3	4	2	2	6	3	
Major corr	5	4	0	0	1	1	0	

	M18	M18	M18	M18	M18	M18	M18	M18
Words	212	92	152	200	110	75	71	78
Syll	273	121	186	245	144	92	98	102
Para	3	1	4	4	4	2	1	2
Time	2705	1068	2005	2242	1904	870	777	958
Words/min	5	5	5	5	3	5	5	5
Syll/word	1	1	1	1	1	1	1	1
Mark	54	47	55	57	40	43	43	44
Simple s	1	0	0	1	1	0	1	3
Non-simple s	7	3	8	6	3	4	2	3
Non-sen	0	2	0	2	1	1	2	0
Total sen	8	5	8	9	5	5	5	6
Spell-err	5	3	3	6	4	2	4	4
Case-err	0	0	0	0	0	0	0	0
Other punc	0	0	0	3	0	2	0	0
Ed. time	476	610	355	400	121	213	190	
Spell-corr	0	0	0	0	0	0	0	
Minor corr	5	2	1	1	1	0	1	
Major corr	0	1	1	0	0	0	0	

	M19	M19	M19	M19	M19	M19	M19	M19
Words	239	101	166	140	133	93	84	88
Syll	323	130	109	166	174	119	119	124
Para	4	2	2	2	3	2	3	2
Time	2250	1187	1491	1708	1450	630	752	859
Words/min	6	5	7	5	6	9	7	6
Syll/word	1	1	1	1	1	1	1	1
Mark	45	47	46	48	43	45	41	38
Simple s	5	1	1	5	4	0	1	1
Non-simple s	4	33	3	5	4	4	4	3
Non-sen	6	3	6	3	0	1	1	1
Total sen	15	37	10	13	8	5	6	5
Spell-err	25	8	12	2	12	2	8	3
Case-err	2	1	2	0	4	2	1	1
Other punc	1	0	4	8	2	2	1	2
Ed. time	735	430	422	405	660	354	329	
Spell-corr	0	0	0	0	0	0	0	
Minor corr	1	0	0	0	1	3	1	
Major corr	2	1	0	0	0	1	0	

	M20	M20	M20	M20	M20	M20	M20	M20
Words	282	198	246	147	161	148	117	169
Syll	389	0	363	191	194	172	155	198
Para	3	2	3	3	1	2	2	4
Time	1171	837	2538	1330	1262	742	594	857
Words/min	14	14	6	7	8	12	12	12
Syll/word	1	0	1	1	1	1	1	1
Mark	48	55	58	52	58	50	49	50
Simple s	3	7	6	2	1	0	1	4
Non-simple s	16	7	8	8	7	6	4	6
Non-sen	1	0	1	0	0	1	1	0
Total sen	20	14	15	10	8	7	6	10
Spell-err	10	6	1	2	1	1	1	1
Case-err	1	1	1	0	1	1	0	0
Other punc	0	1	2	0	0	1	1	2
Ed. time	705	785	418	222	204	126	237	
Spell-corr	0	0	1	0	1	2	0	
Minor corr	2	1	1	1	1	1	2	
Major corr	4	4	1	0	1	0	0	

	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
Words	254	128	205	190	167	109	109	111
Syll	338	144	250	241	211	140	143	144
Para	4	2	4	4	3	2	2	2
Time	2589	1332	2106	1814	1719	922	928	959
Words/min	6	6	6	6	6	8	7	7
Syll/word	1	1	1	1	1	1	1	1
Mark	49	48	53	53	51	48	48	46
Simple s	6	3	5	3	3	1	3	1
Non-simple s	10	7	7	7	7	5	4	4
Non-sen	2	2	2	1	1	1	1	1
Total sen	18	12	13	12	10	7	7	6
Spell-err	10	4	5	5	5	2	4	2
Case-err	2	0	1	1	1	1	1	2
Other punc	1	1	1	2	1	1	1	1
Ed. time	600	489	380	336	396	273	210	65
Spell-corr	1	0	0	1	1	1	0	0
Minor corr	3	1	2	1	2	2	2	0
Major corr	2	1	0	0	1	1	0	0

Appendix II

Computer familiarity survey - page 1

Name..... Form.....

Please read carefully:

This is not a test. It is a questionnaire designed to determine the degree to which second formers are familiar with computers, in order for the school to determine the best way to use and to teach computers. Apart from some questions in the last section, there are obviously no right or wrong answers, and the answers you give will in no way affect your marks in any subject. Please be as accurate in your responses as possible.

For office use:

Section A

Section B

Section C

Section D

Computer familiarity survey - page 2

The term "computer" in this survey means an electronic device which uses microchip technology to store and manipulate data. It is usually operated by means of a keyboard.

Examples:

An Atari games computer used with a television set.
An IBM compatible machine.
An Apple computer.
A laptop business computer.
An electronic typewriter with a built in memory.

For the purposes of this survey the following are not to be treated as "computers":

A programmable hand-held calculator.
A BMW on board distance/petrol consumption computer.
Computerised alarm systems etc.
Computer controlled ovens, TV sets, fax machines etc.
Hand-held computerised games.
Computerised scales.

If you are in any doubt, treat the device as a computer if it has a keyboard.

Computer familiarity survey - page 3

How to answer:

Draw a tick in the box which contains the appropriate answer.

Example:

1. What is your sex?

Male	Female

Computer familiarity survey - page 4

1. How many computers are there in your home?

[0] [1] [2] [3] [More than 3]

If you answered [0] then ignore the rest of question 1.

1(a) Computer 1

1(a)-1 To whom does it belong?

[You] [Your father/mother] [Your brother/sister] [Someone else]

1(a)-2 What type is it?

[IBM compatible] [Apple] [BBC] [Commodore] [Other]

1(a)-3 Where in the house is it situated?

[Your room] [A brother's/sister's room] [Your parents' room]

[Other]

1(b) Computer 2

1(b)-1 To whom does it belong?

[You] [Your father/mother] [Your brother/sister] [Someone else]

1(b)-2 What type is it?

[IBM compatible] [Apple] [BBC] [Commodore] [Other]

1(b)-3 Where in the house is it situated?

[Your room] [A brother's/sister's room] [Your parents' room]

[Other]

1(c) Computer 3

1(c)-1 To whom does it belong?

[You] [Your father/mother] [Your brother/sister] [Someone else]

Computer familiarity survey - page 5

1(c)-2 What type is it?

IBM compatible	Apple	BBC	Commodore	Other

1(c)-3 Where in the house is it situated?

Your room	A brother's/sister's room	Your parents' room

Other

2. Does a close friend own a computer?

Yes	No

3. Does a relation you visit often (once a fortnight or more) own a computer?

Yes	No

4. Is there a computer available to you should you wish to use one?

Yes	No

For official use
1-4=

5. Has your family ever owned a computer?

Yes	No

6. Is a member of your family intending to buy a computer soon?

Yes	No

7. Can any member of your family other than you write programmes on a computer?

Yes	No

8. Is a brother or sister of yours doing or intending to do computer studies at school or university?

Yes	No

Computer familiarity survey - page 6

9. Does your father use a computer at work?

Yes	No	I don't know

10. Does your mother use a computer at work?

Yes	No	I don't know

For official use:
5-10=

11. Have you ever switched on a computer?

Yes	No

12. Do you use a computer regularly (at least once a week)?

Yes	No

13. How long per week do you spend in front of a computer?

0 hours	1-2 hours	3-4 hours	5-6 hours	7+ hours

Computer familiarity survey - page 7

14. What activity do you spend most time doing on the computer?

Playing games | Typing stories/letters | Writing programmes | Other

15. How often do you play cafe and arcade computer games in a week?

Never | Hardly ever | Once a week | 2 or 3 times a week | 3 or 4 times a week | Every day

16. Have you ever written a computer programme (no matter how simple)?

Yes | No

17. Have you ever written anything using a word processor?

Yes | No

18. Do you use a typewriter regularly (at least once a fortnight)?

Yes | No

19. How often did your primary school let you use computers?

Never | Once or twice a year | Once a month | Once a fortnight | Once a week | More than once a week

20. Are you intending to do computer studies as a school or university subject?

Yes | No

For official use:

11-20 =

Computer familiarity survey - page 8

Do not worry if you don't know the answers to the following questions. Only those who are very familiar with computers will get them all correct.

21. RAM in computer terminology stands for:

Real, available memory	Random access memory
Ready and maintained	Rapid auxiliary memory

22. ROM in computer terminology stands for:

Read only memory	Read on microprocessor
Reams of megabytes	Repeat or manipulate

23. DOS in computer terminology stands for:

Digital operating signals	Dirt on screen
Disk operating system	Desktop office system

24. The computer language that uses "turtlegraphics" is:

Pascal	BASIC
Prolog	Logo

25. The "S" key on a typewriter is on the.....side of a usual keyboard.

Left	Right

For official use:

21-25 =

Appendix III

English essay writing course

At present I am involved in research to determine the effectiveness of various ways of improving the quality of pupils' written work, and intend to hold a series of extra lessons for selected pupils.

In view of your son's controlled test essay marks, which I feel are not a true reflection of his ability, I believe that he will gain from attending these lessons which will be held once a week immediately after school over a period of twelve weeks.

Should you wish him to do so, please fill in the form below and return it to me. There will be no charge for the lessons.

Yours sincerely

D.J. McKENZIE
HEAD OF DEPARTMENT
IN CHARGE OF ENGLISH

K.L. TOMLINSON
HEADMASTER

PLEASE COMPLETE AND RETURN TO MR D.J. McKENZIE

I, _____ parent/guardian of _____,

wish/do not wish* him to participate in the essay writing course which will be held in the third term.

Signed:_____

Date:_____

* Delete whichever is not applicable.

Appendix IV

ENGLISH AS FIRST LANGUAGE

MARK SCHEME

		100	70	30
A+	Outstanding	90 - 100	63 - 70	27 - 30
A	Very Good	80 - 89	56 - 62	24 - 26
B	Good	79 - 79	49 - 59	21 - 23
C	Above Average	60 - 69	42 - 48	18 - 20
D	Average	50 - 59	35 - 41	15 - 17
E	Fair	40 - 49	28 - 34	12 - 14
F	Rather weak	33⅓ - 39	21 - 27	9 - 11
FF	Weak	30 - 33		
G, H	Very weak and incompetent	20 - 29 0 - 19	14 - 20 0 - 13	6 - 8 0 - 7

SOME SUGGESTIONS :

1. Always work from the category to the specific mark : i.e. ask yourself whether the candidate is worth a B or a C, before deciding on something like 73% or 61%.

2. "AVERAGE" means the average for Natal. The average pupil in your school may be well above or below the Natal average. Consequently, it may be necessary for you to revise your particular standards and adopt those of the marking committee. A correct and consistent standard can only be reached comparatively and relatively.

3. Remember : "Timidity in marking leads to a bunching of candidates at the C-D levels, and favours mediocrity."

   Explore the extremeties of the mark scale.

4. Always mark in detail 15+ representative lines of an essay : language facility, tone and style are almost always an index of the final quality of an answer.

5. Beware of a rigid model answer or of your own preconceived ideas. Mark positively, not negatively : give credit for what is there, don't merely look for what is not there.

6. Good candidates' answers show evidence of mind and intelligence; control of presentation as well as content; a sound interpretation of the question; the capacity to distinguish between the relevant and irrelevant, between what is important and trivial.

   A sudden sharpening of interest in the mind of the sub-examiner is usually a symptom of the A and B categories.

   The "A" category exists and is therefore meant to be given : it is usually distinguished by maturity; an easy assurance of manner and tone; a distinct sense of style; a sound command of the language.

7. The C-D category displays a thorough but conventional grasp of the subject or question. The language and expression are generally clear and the content reasonably comprehensive. Sound, if dullish writing. The D candidate's points are more obvious and his command of language more uncertain than that of the C. He may become more repetitive and woolly, but he knows what is required. Mere repetition of plot and story is not enough for a D.

8. Remember : an E (40 to 49%) is a University pass. The basic essentials - capacity to write an English sentence,