EXPLORING SOCIAL LEARNING PRACTICES FOR CATCHMENT MANAGEMENT: A CASE STUDY OF TWO CATCHMENTS IN SOUTH AFRICA

by

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THESIS DECLARATION

I, Kwanele Siyengo hereby declare that this thesis is my original work, and that all the sources consulted have been duly acknowledged within the text and list of references. The thesis is submitted in fulfilment of the Master of Science in Environmental Science degree in the Faculty of Science at Rhodes University. This thesis has not been previously submitted for a degree or examination at any other university.

Signature:  Date: 16/09/2024

ABSTRACT

Social learning is achieved through a wide range of practices and is understood in different ways through multiple definitions in the literature. It is recognised as an outcome of stakeholder engagement through collaborative activities such as catchment management. Stakeholder engagement and collaboration in catchment management helps stakeholders understand the complex systems they work in, by enabling deliberation, dialogue, knowledge sharing and interdependencies. These are seen as processes which enable not only the sustainable use of natural resources but also help to achieve outcomes of transformative social learning. In partnership with the Living Catchments Project (implemented by the South African National Biodiversity Institute - SANBI), this study explores social learning practices and facilitation – and the role these play for transformation. Exploring two case studies, the Olifants River catchment and the Umzimvubu River catchment, the study adopted a qualitative participatory case study approach. It used observations, semi-structured interviews and reflections to look at the social learning practices in the two catchments. Additionally, it made use of the Social Learning, Knowledge Management and Mediation (SLKMM) framework as an analytical tool to investigate social learning practices and tools in the cases and explore how support for these can be enhanced in future. The results showed that there are existing social learning platforms and facilitation practices in the two catchments. Though not often explicit, social learning exists, and various tools (analytical, visual, participatory, and conceptual) and practices can be used to facilitate social learning. The greatest challenge for transformative social learning in these catchments is the need for a monitoring and evaluation practice which documents and makes explicit important learning and transformation taking place. This is therefore why, through a set of recommendations, it is suggested that it is key to build capacities within existing facilitators and to work closely with stakeholders from research, policy, and implementation to grow the existing social learning work, for future transformation.

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List of Acronyms

AWARD	Association for Water and Rural Development
BRWG	Blyde Restoration Working Group
CHAT	Cultural, Historical Activity Theory
CMA	Catchment Management Agency
CPA	Communal Property Association
CSA	Conservation South Africa
DEDEA	Department of Economic Development and Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
DSI	Department of Science and Innovation
EI	Ecological Infrastructure
EI4WS	Ecological Infrastructure for Water Security
EM	Environmental Monitor
EPWP	Expanded Public Works Programme
ERS	Environmental and Rural Solutions
ICM	Integrated Catchment Management
ISKM	Integrated Systems for Knowledge Management
IWRM	Integrated Water Resources Management
K2C	Kruger to Canyons
LCP	Living Catchments Project
NGO	Non-Governmental Organisations
NRM	Natural Resource Management
NWA	National Water Act
SANBI	South African National Biodiversity Institute
SL	Social Learning
SLKMM	Social Learning, Knowledge Management and Mediation
SWSA	Strategic Water Source Area
TSL	Transformative Social Learning
UCP	Umzimvubu Catchment Partnership
WATF	Water Alien Task Force
WRC	Water Research Commission
WUA	Water Users Association

CHAPTER 1:
AN INTRODUCTION TO RIVER CATCHMENTS AND SOCIAL LEARNING PROCESSES

1.1 Introduction

This introduction and literature review chapter aims to provide a background and an overview of social learning, social learning processes and social learning facilitation in the context of catchment management. The chapter contextualises the above from the perspective of the South African catchments which are the focus of this study.

This study focuses on two South African catchments discussed in detail towards the end of the chapter: the Umzimvubu and the Olifants River catchments. Partners in these two catchment work with the South African National Biodiversity Institute (SANBI) on the Living Catchments Project (LCP), and both catchments are classified as Strategic Water Source Areas (SWSA) (discussed further below). The chapter examines the literature to provide a clear narrative of how social learning processes contribute to natural resource management (NRM) in catchments, as well as explores what needs to happen for these social learning processes to take place. This study, through adopting a relatively new theoretical framework, seeks to contribute to the long-standing literature on social learning, specifically in South African catchment management. This will hopefully also provide rich insight on effective ways to achieve sustainable and transformative social learning processes.

1.2 Social ecological systems, catchments and water management

Social ecological systems are complex, dynamic, uncertain and non-linear This mirrors the state of natural resources management, which is a complex and evolving challenge internationally as well as in the South African context (Nathaniel et al., 2021; Pollard et al., 2014). With an abundance of biodiversity and diverse ecosystems, it is important to ensure that there is sustainable and effective NRM for the upkeep and conservation of natural resources (Cumming et al., 2017). South Africa, with its enormous amount of diversity, faces numerous NRM issues such as land degradation, alien invasive species and water scarcity and insecurity (Pollard et al., 2014; Suškevičs et al., 2019). Water insecurity is a challenge both internationally and locally. Over 844 million people worldwide still lack basic water services and over 2.1 billion have no access to clean drinking water (Nounkeu & Dharod, 2021). In Africa, there is an acute shortage of water with only 58% of the population having access to safe drinking water (Dunmande, 2015). The supply of water is threatened by social, political, economic, and

biological factors (Dos Santos et al., 2017; Hohenthal & Minoia, 2017; Langford & Russel, 2017). In South Africa, 56% of residents use unpurified surface water as their primary source of drinking water (Patrick, 2021). Water issues are of major concern in the country.

Catchment systems (also known as river basins / river catchments) refer to the dynamic capacity of interacting social-ecological elements of an area bounded by a river catchment (Adger et al., 2021). Catchments, as they will be referred to in this thesis, play an important role in feeding water supply into rivers and ensuring social sustainability (Riddiford, 2021). Catchment systems are also characterised by a great deal of complexity, especially in relation to the management of natural resources in these contexts (Riddiford, 2021). Catchments represent dynamic systems where the relationships between nature and people are closely related (Cockburn et al, 2018; Everard, 2019), which contribute to complexity and influence feedbacks into the system (Palmer et al., 2015). Midgley et al. (2021) has described how characteristics making up these catchments, such as partnerships, goals of different actors, types of ecological infrastructure, trade-offs in investment and models for social investment are only a few elements to consider when dealing with catchments.

There is a rising interest in studying catchment areas in South Africa owing to their importance in water resource planning, NRM, conservation, and rural livelihoods (Itzkin et al., 2021). In addition to this, in the past few years there has been a rise in studying catchments in the context of participatory approaches to natural resource management (Jager et al., 2016). Catchments fall under the current and ongoing movement of standardising water policies due to paradigm shifts prioritising transformation in the context of managing water resources (Bourblanc, 2017). In South Africa this transformative narrative stems from the mandate highlighted in the National Water Act (NWA) of 1998 (Bourblanc, 2012, 2017). The adoption of the NWA is largely characterised by international standards and encapsulates principles under the paradigm of integrated water resources management (IWRM) (Bourblanc, 2012; Weaver et al., 2019). At the core of this paradigm is the importance of stakeholder engagement, participation, and the decentralisation of water resource management (Cumming et al., 2017; Pollard et al., 2014), which are important considering the enduring historical inequalities and challenges of South African water management. Before the democratic era (1994 – to date) water resource management was largely privatised with unequal access not only to the water itself, but to the management of these water resources (Pahl-Wostl, 2019). Under the rising democratic and transformation mandate and paradigm shift, and in line with IWRM principles, which address holistic catchment management, there has been a rise in the number of decentralised water

resources management institutions. These are institutions such as catchment management agencies (CMAs), Water Users Associations (WUAs), local water committees, community-based organisations, local government departments and non-governmental entities (Claassen, 2013). These decentralised water institutions are a point of interest to those studying transformative processes in relation to NRM in catchments, due to the content and context of NRM work that is being performed by them. One of these institutions is the South African Biodiversity Institute (SANBI).

1.3 The Living Catchments Project (LCP) and the South African National Biodiversity Institute (SANBI)

The Living Catchments Project (LCP) implemented by SANBI is funded by the Department of Science and Innovation (DSI) through the Water Research Commission (WRC). It aims to strengthen water governance in South Africa by building communities of practice (Boni et al., 2021). Communities of practice are groups of people who share a concern or passion for something they do, and they aim to do it better as time progresses (Pahl-Wostl et al., 2007; Wenger et al., 2011). These communities of practice encompass key participatory governance characteristics such as collaboration and render processes such as transformative social learning, in order to improve policy advice and practice (Boni et al., 2021). Participatory governance is said to be key among stakeholders whose goal is to solve problems in contexts such as environmental management (Scholz et al., 2014). This is therefore why at the theoretical level, this study is framed under a set of social learning practices to explore how social learning processes and social learning facilitation are currently supported or could be better supported in catchment-level NRM. At the core of the LCP is catchment management in the context of how ecological infrastructure is managed and protected, and at the interface of ecological infrastructure (EI) and built infrastructure. Ecological infrastructure refers to the features of an ecosystem that provide ecosystem services (Cumming et al., 2017). Amongst other aspects, EI is important for socio-economic development. In addition, it supports an array of development imperatives at local, national and international scales (Cumming et al., 2017) and can be associated with the importance of catchment management to sustain livelihoods in the catchments.

1.4 Stakeholder engagement and collaboration

Stakeholder engagement is key in the decision-making processes of natural resource management (Journal et al., 2021; Kilvington et al., 2011; Waylen et al., 2015). Authors such as Wehn et al. (2018, p.1) have stressed its importance, stating that stakeholder engagement “is

defined as a critical principle for sustainable development and building a resilient society". Several countries in the global north have established stakeholder engagement as the foundation for efficient policy implementation (Wehn et al., 2018), and it is also recognised as an important process in South African environmental management and governance processes (Cockburn et al, 2018; Scholz & Methner, 2020). The case studies in this thesis, as will be discussed in section 1.10, consist of several facilitators and participants from different backgrounds and frames. Frames influence how people see reality. An example of this is the difference in how an ecologist and a farmer would look at and view natural resources (Mostert et al., 2007). There are governmental entities to consider such as municipalities, communal and commercial farmers, traditional authority, policy implementers, researchers, community members and non-governmental facilitators. Collaboration of these different stakeholders is key for many processes and is important to cope with the complexity of the catchment as a social ecological system (Pahl-Wostl et al., 2007). Stakeholder engagement is not only an important element for this study, but is also important in the LCP which seeks to build resilient communities of practice (Boni et al., 2021). Various motives are given for increased stakeholder involvement in water resource management, including the importance of democratic legitimacy and allowing all those who are influenced by decisions to be given opportunities to influence those same decisions (Mostert et al., 2007).

Stakeholder engagement, when done right, promotes collaboration and social learning (Wehn et al., 2018). However, this is not always the case. Several studies have highlighted shortfalls and claim that stakeholder engagement spaces do not always lead to more informed and effective policy and practice. This is due to factors such as poor design, power differentials or ineffective facilitation and coordination (Neba, 2009). The upkeep of collaborative relationships under stakeholder engagement is not always easy; stakeholders usually have diverse backgrounds and involve a heterogenous group of actors working together resulting in different visions and goals (Wehn et al., 2018). Different perspectives on NRM problems often lead to adversarial relationships and can sometimes form the basis of conflict (Bouwen & Taillieu, 2004). Effective NRM, regardless of this, requires collective decisions to implement (Lotz-Sisitka, 2012). Integrated management approaches cannot be taken without the consideration of different stakeholder inputs. In addition, stakeholders need to acknowledge interdependence between them (and what this means for the different inputs) so as to collaborate meaningfully (Bouwen & Taillieu, 2004). Through strong collaboration there is potential for opportunities of not only learning but transformation too (Ardoin et al., 2014).

Water users in South African catchments, specifically the catchments which are the focus of this thesis, engage in water management collaboratively through processes of stakeholder engagement. This promotes learning processes (Dawson et al., 2017). Collaboration feeds into social learning the same way that social learning feeds into collaboration as they are mutually reinforcing concepts (Bouwen & Taillieu, 2004; Dobbin et al., 2023). A diverse set of stakeholders will bring diverse perspectives, knowledge, and experiences. As these stakeholders engage through collaboration, they engage in dialogue, exchange ideas and make decisions on a shared basis which are some of the social learning qualities. The combined effort of individuals and institutions participating in the quest to achieve holistic catchment management, is dependent on healthy productive collaborative relationships and partnerships (Ison & Watson, 2007). Understanding how collaborative relationships and the arena in which learning is fostered within them is crucial for assessing social learning processes in catchments (Cundill, 2010)

1.5 Social learning in Natural Resource Management

Social learning has a long-standing history in theory and in practice. Social learning processes in NRM came to fruition through the realisation that past management approaches (e.g. 'command and control') were unsustainable (Cundill & Rodela, 2012; Katusiime & Schütt, 2020). Before this, the pioneer of social learning, Albert Bandura gave the earliest definition of social learning: the act of doing, observing, and mirroring those around you (Bandura & Walters, 1977). Though this was fitting for the time, discipline, and context through which it was developed, it presented shortfalls in encompassing a wide range of different elements and complex systems. Since then, several authors (Bouwen & Taillieu, 2004; Cundill & Rodela, 2012; Garmendia & Stagl, 2010; Maurel et al., 2007; Pahl-Wostl et al., 2007; Steyaert et al., 2007) in different disciplines have articulated and contextualised social learning in their own ways. Ison and Watson (2007), Pahl-Wostl (2006) and Mostert et al. (2007) were some of early researchers who worked with social learning literature, in the context of environmental and NRM, proposing different definitions. Lotz-Sisitka (2012) edited a monograph '(Re)views on Social Learning', which conceptualises social learning in the natural resource management setting and clarifies the different epistemological roots of the concept. Authors such as Rodela (2013) and Rodela et al. (2012) have developed comprehensive and coherent definitions of social learning while the latter also looked at the research and design of methods in the social learning literature. More recently, there has been a surge of authors (Johannessen et al., 2019; Murti & Mathez-Stiefel, 2019; Nikkels et al., 2021; Suškevičs et al., 2018) who have used and

built on this growing body of NRM social learning literature. Johannessen et al. (2019) proposed an ongoing need for improved social learning to transform water governance, however expressed concern over the fragmented research on this. Murti and Mathez-Stiefel (2019) advocated for social learning in NRM stating how it is a powerful tool for convening a wide range of stakeholders to support the co-creation of knowledge and enhance collective understanding of needed actions in management practices. Suškevičs et al. (2018), similar to Johannessen, looked at learning in natural resource management and how it supports real-world NRM practices.

As an interdisciplinary term, social learning has always had different meanings for different people and therefore there are different approaches to how it is practised (Reed et al., 2010). One of the most widely-used definitions of social learning in relation to natural resource management comes from Reed et al. (2010, p.1): "learning situated in social units such as communities of practice, organisations or institutions". They further emphasised the importance of a reflexive capacity through interaction with other stakeholders in social networks, and the importance of moving beyond the individual level.

Though the Reed et al. (2010) definition is relevant to this master's thesis, I have chosen Cundill and Rodela's (2012) conceptualisation of social learning in natural resource management. Adopting a broad conceptualisation, rather than a strict definition, this is more appropriate for the exploratory, participatory case study research approach I have used in my research.

Cundill and Rodela (2012) reflected on how learning and social learning have become ubiquitous in resource management and synthesise 'assertions' about the '***processes*** and ***outcomes'*** of social learning in NRM rather than providing a specific definition. They do this through tracking the emergence of social learning over time in literature, thereby documenting social learning processes and outcomes. These assertions, in terms of this thesis, speak specifically to the environmental NRM context and draw from published studies in this field. Cundill and Rodela (2012) identified ***processes*** that support social learning under the banner of adaptive management, collaborative management and adaptive co-management. Under these, they found that important processes in NRM included deliberate experimentation, ongoing monitoring, joint management actions, a reflective practice, knowledge sharing, deliberation, sustained interactions, exposure of values, trust building and a long term self-organising process. From these processes, there are accompanying ***outcomes*** of social learning

in the NRM context. These include improved decision making, a stronger awareness of human environment concerns, improved problem solving, stronger collaboration through addressing environmental concerns, changes in perceptions, values and norms. Authors such as Suškevičs et al. (2018) also discussed these social learning outcomes. Not only do these outcomes speak to social learning but they also allude to transformation which will be discussed in section 1.8. They highlight the role of transformation in NRM social learning as enabling a change in individuals' attitudes, values and frames of reference as well as a change in practices and actions. Transformation is key in this study as it links to the ontological approach discussed in section 2.2 and for two other reasons: firstly, for the political transformation that has also been experienced in South Africa in NRM under the move from apartheid to democracy, and secondly, because the LCP is concerned with transformative social processes in catchments. Therefore, conceptualising social learning through a set of processes and outcomes according to Cundill and Rodela (2012), enables a focused investigation into the potential for transformation as an outcome of social learning processes.

1.6 Theoretical framework: Social Learning, Knowledge Management and Mediation (SLKMM)

The conceptualisation of social learning above (Cundill & Rodela, 2012) provides a foundation for the theoretical underpinning used in this study – the Social Learning, Knowledge Management and Mediation framework (SLKMM) (Lotz Sisitka et al., 2020). This framework provides a theoretical basis for the analysis of social learning processes as well as social learning facilitation in the context of South African catchments. I work with this framework on the basis that it articulates the outcomes of using and assessing these practices which aligns with some of the outcomes in the conceptualisation of Cundill and Rodela (2012). The use of this framework is based on the idea of knowledge management and mediation being linked to social learning, as articulated in the SANBI-led EI4WS project which will be discussed shortly.

Similar frameworks have been developed to understand the concept of social learning and its processes. An example would be the Integrated Systems for Knowledge Management (ISKM), which includes an outcomes framework and a social spaces framework (Kilvington et al., 2011). These frameworks are used in the context of integrated catchment management (ICM), which is similar to integrated water resources management (Rollason et al., 2018).

The SLKMM framework was conceptualised and created by Lotz Sisitka et al. (2020). It was created for the purpose of developing a strategy for the Ecological Infrastructure for Water

Security (EI4WS) Project. The EI4WS project is a sister project to the Living Catchments Project and was also implemented by SANBI. Both the Living Catchments Project and the EI4WS work at the nexus of human and environment systems in the context of catchment management, and it has therefore been fundamental for coordinators of the projects to work closely together (Lotz Sisitka et al., 2020). The SLKMM framework was created in 2019 and acknowledges that social learning processes are inherently linked to knowledge mediation and management. Mediation in this context refers to engaging people in meaning making processes where they can link their existing knowledge (Lotz Sisitka et al., 2020). This is relevant when it comes to the outcomes of cluster two of the Living Catchments Project, which highlights the need for deepening networks and interactions between stakeholders in the catchment spaces.

At the interface of NRM in catchments exist different social learning and knowledge management elements which interact and are dynamic. For this reason, it was critical to identify and work with a framework which takes into account these dynamic interactions. The SLKMM framework chosen in this study has a strong focus on stakeholder engagement and collaboration in the context of social learning in NRM and this is seen in the practices at its core, as discussed in the paragraphs to follow. It aligns well with the research objectives of my study, and has a good track record and positive uptake in the EI4WS project. I found this framework to be the most suitable due to the structure it offers in relation to social learning practice in NRM, and its ability to strengthen my study.

Similar to the ISKM framework mentioned above, the SLKMM framework proposes a set of ***social learning practices*** to support and explore the social learning processes and outcomes in the catchments. The practices are used as an analytical lens in two ways to explore: (1) whether and how this set of practices is currently being fostered in the catchments, and (2) how one might enhance facilitation of effective social learning through future implementation of these practices. In the next section, the SLKMM practices are discussed and elaborated.

1.6.1 SLKMM social learning practices

The SLKMM framework consists of six key practices which relate to social learning facilitation and knowledge mediation. As shown in Figure 1.1, they are all interrelated with reference to the landscapes of facilitators and stakeholders. The blue puzzle pieces on the outer diagram (Figure 9.1) represent the activities of the Living Catchments Project or any other associated NRM catchment activities. The blue dots represent many other practices which might exist in relation to the social learning practices, which could also mediate engagement and learning

through NRM activities (middle green circle). The circled purple words in white font are the social learning practices, through a set of SLKMM-activities such as those being assessed in this study (dark blue puzzle pieces) (Lotz Sisitka et al., 2020). SLKMM activities differ from the practices themselves. The practices relate social learning to the meaning-making processes e.g. convening stakeholders or building stakeholder processes. The activities are the processes the facilitators are already engaging with such as meetings and workshops. The activities represent what this study will be assessing in Chapter Two (section 2.4).

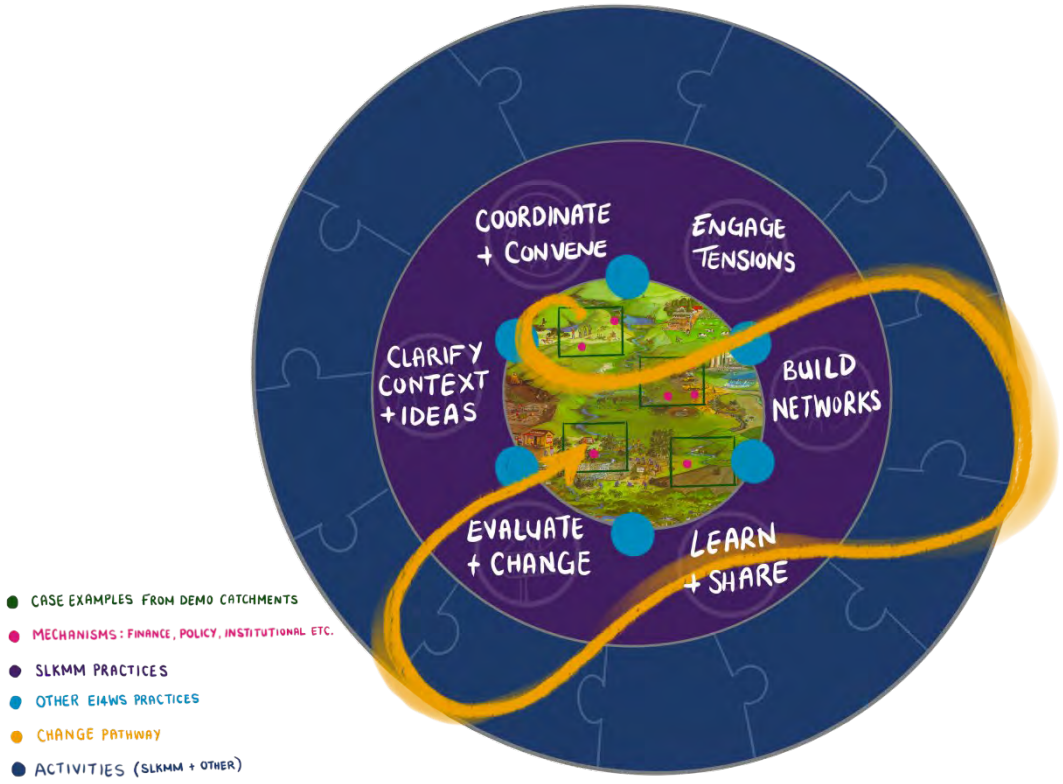

Figure 1.1: The Social Learning Knowledge Management and Mediation social learning practices in a catchment setting (Lotz-Sisitka et al., 2020)

The practices I discuss here are not new to social learning literature. They have been mentioned either directly or indirectly by numerous authors. Cundill (2010) noted the importance of monitoring social learning processes while Leys and Vanclay (2010) referred to diverse and conflicting landscape managers and the tensions which exist in landscapes. McLoughlin et al. (2021) and Rodela (2011) have highlighted different elements of NRM social learning literature as either being based individually or within built networks. Cockburn et al. (2020) discussed how someone, or a group of people, need to play the role of a convener and coordinator to build networks. Steyaert et al. (2007) emphasised the importance of coming

together to learn and share in social learning for reframing opportunities. Additionally, authors such as Cockburn and Cundill (2018) acknowledged the possibilities of tensions in catchments, i.e. that exist in the context of environmental management tensions and are real. These are only some of the examples of authors who directly address some of the social learning practices I work with in this study. This not only validates their importance, but also highlights how they foster stakeholder engagement as well as address complex challenges in natural resource management. They provide a dynamic and interactive learning environment that contributes to the enrichment of natural resource management. I now discuss each of the six practices in turn. Note that I have numbered them here, but the numbering is arbitrary: the practices should not be understood to be sequential or hierarchical in any way.

1.6.2 Social learning practice 1 - Coordinating and convening

Although coordinating and convening, are similar processes, they differ slightly. Coordinating refers to working with different stakeholders in an attempt to harmonise their efforts through collaboration. Convening, on the other hand, relates more to processes that encourage stakeholder engagement usually in the form of meetings, workshops and forums in efforts to engage with natural resource management (Murti & Mathez-Stiefel, 2019). Key to this practice is coordinating learning, knowledge management and mediation in the catchments, to maximise the effectiveness of natural resource management. Through bringing stakeholders together, convenors facilitate dialogue and knowledge exchange through different channels and platforms. Similarly, in coordination, platforms for information sharing are made available, where there are resources and strategies to achieve common goals (Reed et al., 2010). It is for this reason that I use the term ‘facilitator’ to refer to the actors in the catchments who take on the role of coordinating and convening stakeholders. The facilitators coordinate for the purpose of consuming, managing and mediating knowledge.

Key to facilitating social learning in catchments is to know who to coordinate and how to convene these stakeholders. Facilitation in this regard is known for being important for enhancing collaboration and partnerships in the catchments (Bouwen & Taillieu, 2004). In addition, facilitation is important for ensuring inclusive participation, conflict resolution and consensus building through effective collaboration (Wehn et al., 2018). Effective collaboration efforts increase the likelihood of not only knowledge management but of building trust and relationships among stakeholders (Weston et al., 2023). Where stakeholder engagement starts

with effective coordination through facilitation, it becomes less difficult to identify areas of common concern and to establish joint NRM initiatives upon which decisions can be made.

1.6.3 Social learning practice 2 - Learning and sharing

This practice looks at the development and use of tools and practices that are meant to support knowledge dissemination and learning in the catchments. These are tools and practices for knowledge mediation, clarification, skill development, cross-generational learning, adaptation and communication across facilitators and stakeholders who engage in NRM activities in the catchment. Key to this social learning practice is being able to create environments which are conducive to learning across diverse knowledge holders and users and different knowledge forms. The catchments consist of diverse stakeholder sets which include community members, and therefore there should be an integration of knowledge dissemination from and to groups such as community members and traditional councils. Tools and practices for learning and sharing are fundamental components of social learning for the reasons mentioned above but also for accommodating the complex, dynamic nature of NRM problems. They are fundamental for individual growth, problem-solving, innovation and the collective advancement of knowledge and supporting transformative action (Avelino et al., 2019).

Literature presents an array of tools and practices which are normally used for learning in NRM settings. These include physical tools such as stakeholder mapping or workshops, conceptual ones such as the use of frameworks (e.g. the value creation framework), capacity building tools such as reflection (Murti & Mathez-Stiefel, 2019; Raymond & Cleary, 2013). Learning and sharing practices are inherently participatory, and hence practitioners often draw on participatory tools such as workshops, participatory mapping and participatory modelling processes (Scholz et al., 2014).

1.6.4 Social learning practice 3 - Building networks

Social learning practices in NRM, as mentioned in different sections (see, for example, section1.4) of this thesis require framing and reframing across different knowledge types by different stakeholders. This therefore requires a diverse stakeholder set coming together to engage on different environmental issues. Building networks, similar to the other practices, is necessary in the context of natural resource management for several key reasons. There is an important need to identify facilitators who can support the learning processes through fostering an environment where different sectors and disciplines are able to build on each other's

strengths, abilities and performance areas. An example of this would be stakeholders with policy advice who could assist on the ground through influencing certain environmental policies concerning NRM. This highlights the importance of building partnerships, both vertically and horizontally, which can then share information, transfer different knowledge forms, engage with communities, influence policy, mobilise resources and have an impact nationally.

The way in which partnerships are built and networks are fostered is very contextual and depends on the nature of the catchment itself. However, fundamental elements of any network building include identifying key stakeholders, understanding the roles, interests, resources and concerns of these stakeholders and inviting them to gatherings such as workshops or meetings. Following this, it is key to establish clear objectives which enable catchment management as well as learning and to do this while promoting inclusivity and encouraging information-sharing from all stakeholders in the network. Through implementing some of the above steps and employing the same or similar strategies, facilitators are able to foster environments where they can build strong interconnected networks of stakeholders for effective natural resource management.

1.6.5 Social learning practice 4 - Engaging tensions

Given the diversity of natural resource management as a stakeholder process, it is likely to be characterised by contradictions and tensions due to differing opinions, interests and knowledge systems (Cockburn & Cundill, 2018). As mentioned, environmental challenges are complex and dynamic and this can present a number of challenging elements such as limited resources, conflicts of interests and perhaps differing goals among stakeholders. Though tensions can be intimidating and challenging at times, it is important that these are not seen as problems but rather as learning opportunities for advancing NRM activities. Amongst the tools and practices, I have seen numerous conceptual ones, though others exist too. An example of a conceptual tool which could be used for addressing tensions and contradictions is the Cultural, Historical Activity Theory (CHAT) framework. CHAT is particularly useful in the environmental context as it analyses and attempts to mediate tensions by considering the social, cultural and historical context in which NRM activities take place (Engeström & Sannino, 2011; Mukute, 2019). This consideration makes tools such as this relevant because of the relationship they have with learning amongst a certain group. For a practice as important as mediating and engaging tensions, because the truth is that tensions exist and will always be there, tools such as CHAT

are key as they mediate interactions between culturally and historically produced stimuli and responses (Engeström & Miettinen, 1999). This also goes beyond the CHAT framework and field of practice. For example, Emborg et al. (2020), who worked in the context of complex adaptive systems also noted that it is important to have holistic tools or practices for engaging with tensions which examine the complex social systems, diverse stakeholder engagement, historical perspectives, sustainability, adaptation and transformative potential.

1.6.6 Social learning practice 5 - Clarifying context and ideas

Clarifying context and ideas (or concepts) in natural resource management is essential for making informed decisions and fostering clear communication amongst stakeholders. Terms such as social learning, NRM, collaboration, stakeholder engagement may be unfamiliar to some stakeholders in catchments. This was evident in the contextual analysis of this Master's study. There is a need for clear articulation and framing of the terms, processes and practices of both NRM and social learning so as to develop shared understandings for stakeholders. Understanding ideas or context is important in collaborative initiatives where the complexity of social ecological system dynamics are present (Cockburn & Cundill, 2018). In addition, this practice is key not only for preventing misunderstandings among stakeholders, but also for ensuring that management practices align with broader goals and objectives. For example, a fundamental understanding of NRM with a strong connection to learning means a higher likelihood of the practices being adopted into policy. Clarifying context and ideas contributes to transparency, accountability, the efficient use of resources, stakeholder participation and cooperation as well as holding transformative value and potential (Slater, 2021).

1.6.7 Social learning practice 6 - Evaluate and change

The practice of monitoring, evaluating and changing is key to both NRM and social learning processes in the catchment. Not only does it make sure that management efforts align with dynamic, constantly changing environmental and social conditions. In addition, evaluation ensures that learning is based on experience that hopefully leads to more effective and sustainable resource management practices (Itzkin, 2022).

Not only does a monitoring practice mean evaluation and improvement of process, but it also means adaptation for improved development and social learning (Sterling et al., 2022). Monitoring and evaluation can help determine whether social learning efforts are effective in achieving intended goals, by looking at opportunities, gaps, and challenges in management

efforts. Additionally, in improving processes, this practice ensures validation of past or present knowledge processes, identifying approaches which are successful, and which may need refinement.

Monitoring the effectiveness of existing social learning practices improves the design of future processes (Cundill, 2010). For transformative social learning assessment, there is a need for close monitoring and evaluation to see what learning is being fostered. Cundill (2010) suggested that effective collaborative monitoring processes are part of the essential ways of tracking social learning in NRM over time. Aspects such as trust building, attendance of meetings and engagements, add value to sharing information and developing common interests and are worth monitoring (Cundill, 2010; Itzkin, 2022). Other examples of effective monitoring of social learning processes, for example through Participatory Monitoring, Evaluation, Reflection and Learning (PMERL) processes, have been explored and implemented in the immediate vicinity of these two catchments, i.e. by AWARD in their RESILIM-O project (AWARD, n.d)

Monitoring proves to be an effective way to transparently track progress and outcomes when it comes to managing resources as well as the social learning associated with it. Through this, there are constant opportunities to take lessons from the field and ensure they are fed into the learning processes.

1.7 Social learning facilitation

Facilitation plays a big role and is a key element in natural resource management; in addition, it is strongly related to and interconnected with all of the above-mentioned social learning practices of the SLKMM framework. Jiggins et al. (2007) stated that facilitation is a core skill in the social learning process and in this thesis, I conceptualise facilitation as a practice as per Reed et al. (2010). They conceptualise facilitation as an individual or organisation which creates an environment which allows collaborative social learning, knowledge sharing and dialogue, where stakeholders can engage in sustained interactions, e.g. through enacting the SLKMM practices.

In Table 1.1 below, key terms used in this thesis are defined and conceptualised and used in this way throughout.

Table 1.1: Table of frequently used terms in the thesis

Term	Definition
Platforms	"Space where various stakeholders, including government bodies, non-governmental organisations, researchers and communities come together to engage in discussions, share knowledge and make decisions to address natural resource challenges." (Reed et al., 2010)
Facilitator	"Someone, or people who play a role in guiding and supporting social learning processes. Facilitators create environments which enable stakeholders to engage in meaningful dialogue, share knowledge and address complex challenges." (Reed et al., 2010)
Convenor	Convenor, often used synonymously with facilitator is "an individual or organisation that is responsible for organising collaborative processes or platforms where stakeholders come together to discuss, plan and make decisions together" (Reed et al., 2010). The term 'convenor' is used and preferred in the Living Catchments Project to describe organisations who convene and facilitate different stakeholders for natural resource management activities.
Coordinator	"An individual or entity responsible for overseeing and managing various components of a natural resource management program, project or initiative. Coordinators make sure stakeholders are organized and aligned to achieve goals and objectives of programs or projects." (Armitage et al., 2009)
Practices	"Specific actions, activities or methods employed by individuals or organisations to address and manage specific entities. Practices can encompass activities and ways of doing." (Folke et al., 2005)
Tools	"Methods, instruments and techniques used to facilitate, support and enhance social learning processes among stakeholders. Can include communication methods, knowledge sharing platforms, frameworks and participatory techniques that help stakeholders collaborate and exchange information." (Scholz et al., 2014)

McLoughlin et al. (2021) reiterated the importance of facilitation, stating that the type of facilitation is one of the key criteria known to influence social learning amongst groups i.e. stakeholders.

Leys and Vanclay (2010) have explored how the concept of facilitators has changed over time. Recently, the concept of specific organisations providing facilitation has started to gain importance and traction, i.e. governmental or non-governmental organisations (NGOs). Certain organisations act as an intermediary for communication and support in networking and cooperation amongst other stakeholders (Mackay et al., 2020; Rixon et al., 2007). Kamaruddin et al. (2013) have discussed the role of NGOs in advancing facilitation practice in catchments acknowledging their significance and importance in this regard. For instance, in the case study catchments in my study, non-governmental organisations play an integral role in advancing

Natural Resource Management (NRM) work. They are agents of collaboration through implementation on the ground. In line with the Wenger conceptualisation of facilitation, Kruger to Canyons (K2C) and Environmental and Rural Solutions (ERS) integrate and support environmental policies which support catchment management and NRM activities. They are responsible for the deliberation and bringing of stakeholders together for relationship building and the support of catchment activities (refer to section 3.2).

Authors on social learning facilitation have highlighted key facilitation strategies such as capacity building, building learning platforms, fostering trust and mutual respect (Raymond & Cleary, 2013). In this study it is interesting to see how facilitation strategies such as these are fostered in relation to the six SLKMM social learning practices. In this way, the study is contributing to advancing the literature on social learning ***facilitation***, specifically.

Using a framework such as the SLKMM in this study will hopefully provide a new lens for facilitators, or at least, reveal unique capacities needed by facilitators in the catchments to examine how NRM systems are functioning and how this promotes learning. Additionally, facilitators should hopefully be able to critique and interpret the value of their current strategies to make plans for future actions and enable effective social learning processes and outcomes identified by Cundill and Rodela (2012) .

Within the Living Catchments Project, catchment conveners were contracted to serve the role of enabling dialogue and enabling opportunities, i.e. to serve the role of social learning facilitators as they have been conceptualised in this study. The catchment convenors, as they are called, provide opportunities to collectively solve challenges, facilitate spaces where stakeholders can continuously reflect on their way of working and use their lessons to feed into social learning processes (Boni et al., 2021). In this thesis, I refer to the catchment convenors as facilitators for consistency.

Facilitators must be aware of their biases in the stakeholder processes (Aguirre et al., 2017). In addition, using the principles of social learning should allow for differences in opinion to be overcome through knowledge-sharing and decision-making. Facilitation needs to encompass capacities such as awareness of different stakeholder goals, fostering shared interdependencies, influencing cooperation in working together, encouraging joint problem-solving, and allowing an exchange of ideas and information which all influence social learning processes that may take place (Mackay et al., 2020).

In light of the above, it is important to note that not all social learning or social learning processes need to be explicitly facilitated (i.e. social learning can be emergent or self-organising) but, in this study, I am focusing on facilitated social processes in catchments.

1.8 Transformative social learning

The LCP has a broad mandate of encouraging and advancing transformation through social learning in the two case study catchments (amongst others). This motivated the choice behind the ontological approach (section 2.2) as well as the theoretical framework (section 1.6) in my study. In relation to the SLKMM framework, Lotz-Sisitka et al. (2020, p. 3) defined transformative social learning as "critical transformative forms of co-learning and collective agency that can challenge unsustainable, taken for granted norms, habits, cultural and institutional practices, systems, and structures that promote unsustainability". The notion of 'transformative' is taken to mean an irreversible, persistent adjustment in societal values, knowledge, and outlooks (Lotz-Sisitka et al., 2016).

Transformative social learning processes stem from the progression of looped learning. Johannessen et al. (2019) defined single, double, and triple looped learning. Single loop learning is said to be surface level, where the learning is within the bounds of existing frameworks or rules. Double loop learning goes beyond the surface by questioning individuals underlying assumptions and values. Though double loop learning makes reference to changes in practices, it is not deemed transformative because it does not challenge values or norms. Triple loop learning, which is regarded as the deepest form of learning, encompasses transformation and has transformative value. Triple loop learning not only challenges and questions underlying assumptions, but it also addresses social justice issues (Johannessen et al., 2019; Steyaert et al., 2007) which again, strongly advocates for the transformative paradigm outlined in section 2.2. Figure 1.10 highlights the outcomes under each of the different levels of learning.

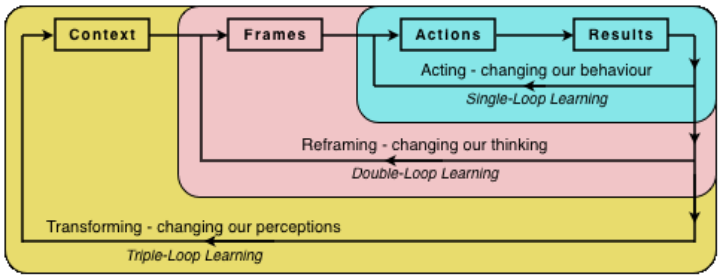

Figure 1.2: The three levels of learning with differences among them depicted (Hargrove, 2008)

Transformative social learning is key as an operational principle, a policy instrument and governance mechanism (Lotz-Sisitka et al., 2015). If effectively understood and facilitated, with adequate resources to support it, it could have significant impacts such as innovation, empowerment, social equity, capacity building and system resilience on South Africa's water resource sector (Ison & Watson, 2007; Johannessen et al., 2019). It is important to note that transformative social learning processes take place over time and in light of the social learning conceptualisation in this study, are an outcome which is dependent on certain processes as outlined in the Figure 1.3.

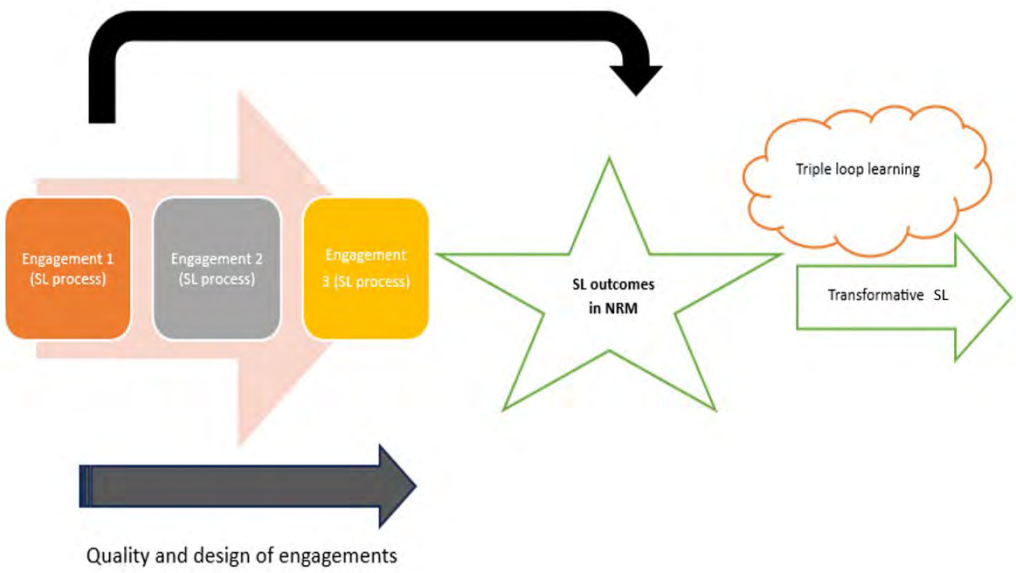

*Figure 1.3: Social learning engagements which yield social learning outcomes and therefore potentially transformation (Adopted from Cundill & Rodela, 2012) * SL indicating Social Learning).*

1.9 Significance of the study

This study forms part of a collaborative effort by the Living Catchments Project and feeds into the objectives of development strategies for South Africa's Strategic Water Source Areas at the nexus of ecological and built infrastructure in South Africa. This study intends to enable a growth in knowledge and literature on social learning, social learning processes and social learning facilitation for NRM in South African contexts. Working with the SLKMM framework can expand knowledge on the different ways social learning practices are supported, or could be better supported in catchments. Moreover, practice-based insights can build knowledge on social learning facilitation in the context of NRM. Overall, the study aims to contribute to growing scientific rigour on studying and understanding collaborative stakeholder engagement which yields social learning processes at catchment level. Through this, it could

usefully feed into the LCP's objectives and further into policy advice and engagement. It was part of the aim of this study to grow support for the SLKMM and enable it to be developed further for social learning processes. Lastly, this study will contribute to empirical research by offering practical insights and recommendations from catchment facilitators on the ground working on water resource management in the South African context.

1.10 Contextualising the study

The Living Catchments Project (LCP) was developed in response to the Water Research, Development, and Innovation Roadmap (Water RDI Roadmap). The Water RDI Roadmap is a South African planning intervention aimed at addressing water scarcity in South Africa over a ten-year period between 2015 and 2025 (Boni et al., 2021). The LCP is a collaborative effort between the WRC, DSI, DWS and SANBI (see Table 2.1 in the next chapter). SANBI is responsible for leading the project, which intends to strengthen the enabling environment for water governance in South Africa. The LCP addresses national ecological infrastructure issues through improving their sustainability and performance. The LCP intends to contribute to the healthy, optimal functioning of ecological infrastructure to complement built infrastructure, given how critical and urgent water issues are in South Africa. The LCP prioritises livelihoods and aims to enable more resilient, more resourced water governance structures and relational communities at both catchment and national scales.

The Living Catchments Project identified four primary catchments in South Africa which fall within Strategic Water Source Areas (SWSA) (Jay, 2023). These were the Umzimvubu, Tugela, Berg-Breede and Olifants River catchments. This study's focus is the Umzimvubu and Olifants catchments (Figure 1.4) because of their unique demographics, the ecosystem services the catchments provide as well as the NRM work which is gaining attention and traction in the catchments.

The LCP is focused around three clusters of work. Cluster One promotes collaboration and co learning within the catchments. Cluster Two, which is the focus of this master's study, focuses on rendering social learning more visible and recognised for transformation. Cluster Three focuses on expanding and strengthening policy practice and implementation for water security (Figure 1.5). All three clusters are interrelated and involve social learning.

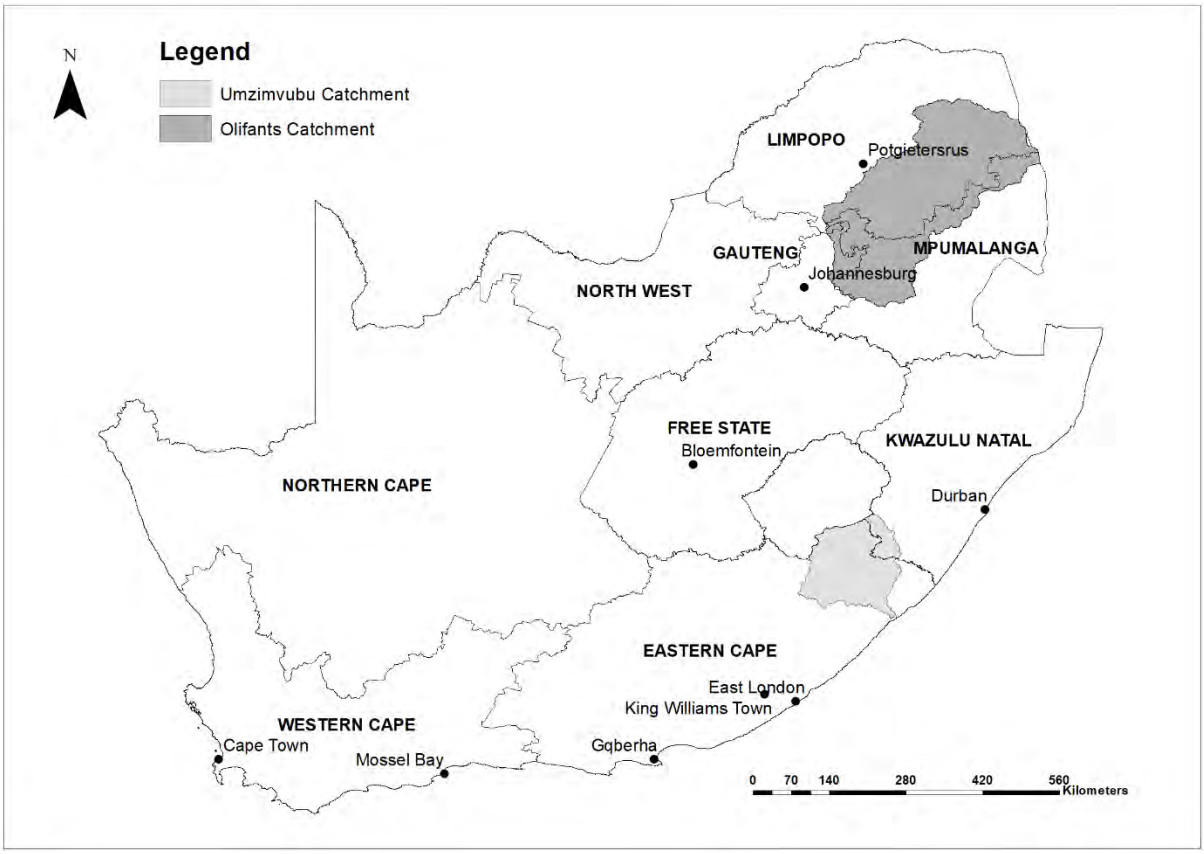

Figure 1.4: The Olifants and Umzimvubu catchments (shaded in grey) (Map by Kathy Cassidy, Department of Environmental Science, Rhodes University)

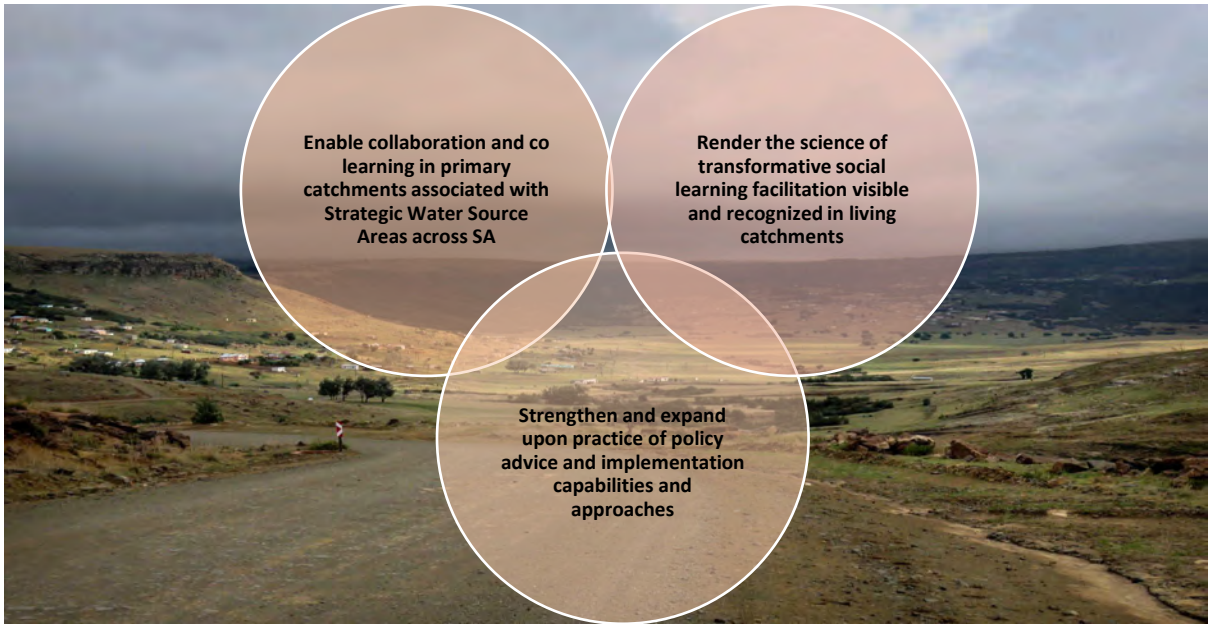

Figure 1.5: The three clusters of work in the Living Catchments project
Background image: Umzimvubu catchment, by Willeen Olivier (Boni et al., 2021)

The LCP intends to bridge the gap between the biophysical and social interactions in these catchments and through this, to encourage a more holistic approach to future catchment management approaches (Boni et al, 2021). Decades ago, transformative social learning was never a conventional requirement nor outcome of catchment management; however, collaborative adaptive management has highlighted the importance of engaged facilitators with decision-making capacity (Rollason et al., 2018). Transformative social learning allows for facilitators engaged in NRM to broaden their approaches towards resource management and improves overall catchment activities (Lumosi et al., 2019; Rollason et al., 2018).

The 21 SWSAs are important ecological infrastructure that generate and deliver valuable water resource to the people of South Africa (Le Maitre et al., 2018). SWSAs sustain water-supply systems for more than 50% of the population, supply cities and towns that generate more than 64% of the national economic activity and supply about 70% of the water used for irrigation. The SWSA ground water sources are equally important to settlements, agriculture, and house 4% of the national population (Le Maitre et al., 2018). The SWSAs sustain water supply systems for more than 50% of the population; however, only 18% of SWSAs are protected (Le Maitre et al., 2018). The LCP established links in the Tugela catchment, which flows through the Kwa Zulu-Natal midlands; the Berg and Breede in the Western Cape; the Umzimvubu catchment, which flows in the former highland areas known as the Transkei; and the Olifants catchment which falls within the Limpopo River basin. This study focuses on the Olifants and the Umzimvubu catchments which are discussed below. The two catchments were selected because: (1) they are already part of the LCP, and (2) there are engagements and activities which have shown that there is social learning or potential for social learning. This includes a range of facilitated social learning processes which makes them feasible to study social learning in practice.

1.10.1 The Umzimvubu catchment

The Umzimvubu River catchment (see Figure 1.6 for map and Figure 1.7 for images) is one of 21 SWSAs in the country and is situated along the northern boundary of the semi-arid Eastern Cape province of South Africa (Conservation International, 2022). The catchment extends over 200 km from the Maloti-Drakensberg watershed on the Lesotho escarpment to the estuary at Port St Johns near the Indian Ocean (Umzimvubu.org) (Figure 1.6). It is divided into the upper and lower catchment, and this study only looks at activities in the upper catchment. The source

of the main Umzimvubu River falls within the Matatiele Local Municipality in the Eastern Cape.

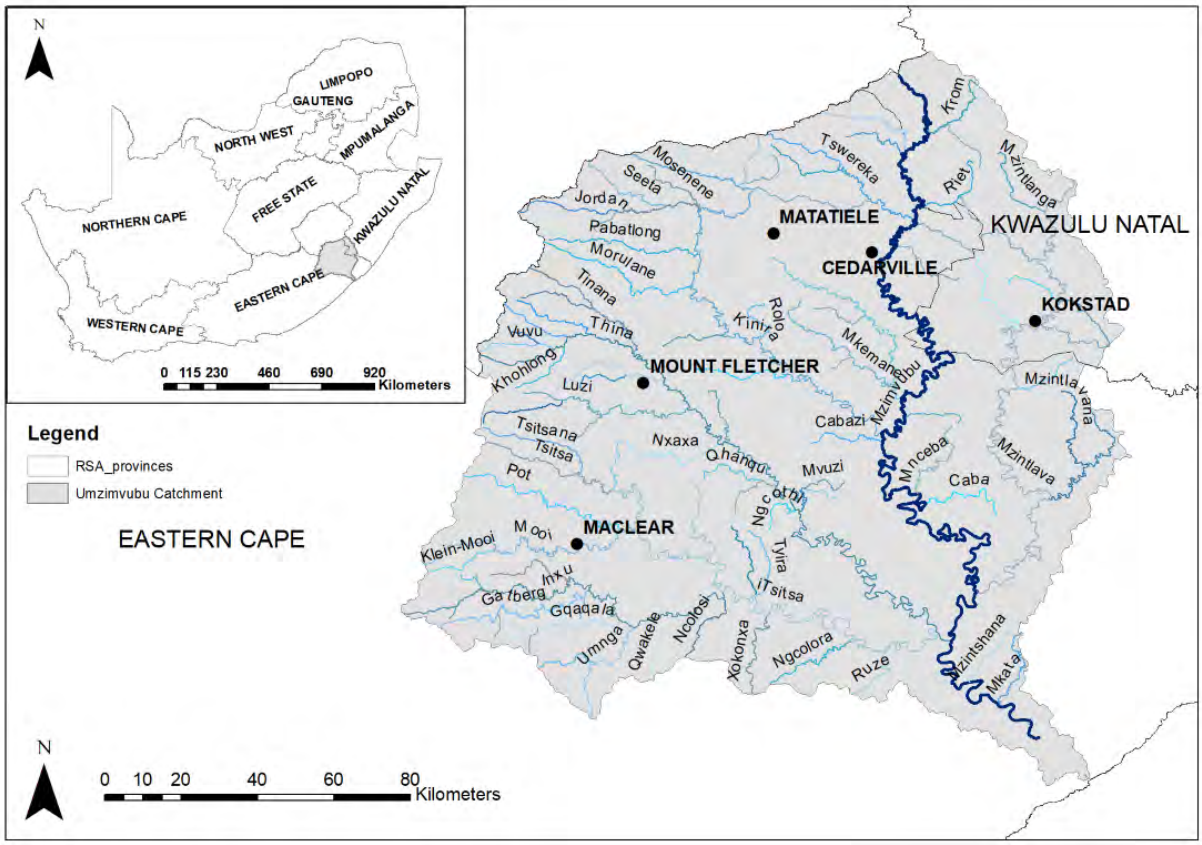

Figure 1.6: The Umzimvubu catchment, showing the Umzimvubu River (dark blue) (Map by Kathy Cassidy, Department of Environmental Science, Rhodes University).

Figure 1.7: A few images from the Umzimvubu catchment (Caxton Local Media, 2022)

The catchment is home to 1.4 million individuals who depend on it for food security, grazing, drinking water and household use (WWF, 2018). The upper catchment spans approximately 435 000 hectares and exists within the grassland biome with scattered patches of mist belt forest. Much of the natural landscape has in the past been destroyed by anthropogenic pressures on the land. In addition, poor governmental policies, human pressure and other factors have contributed to degradation of the catchment landscape (Meerza & Gustafon, 2018).

There are multiple NRM projects in the catchment, including rangeland management, alien invasive clearing and spring protection. These not only benefit the natural environment but also social and economic livelihoods. Demographically, social sustainability is as important as ecological sustainability in the catchment, and this is because there are over 250 000 people living in the rural settlements of the upper catchment (StatsSA, 2011). The Umzimvubu forms one of the poorest catchments with an abundance of rural dwellers depending on grants, remittances and on the landscape for their livelihoods (StatsSA, 2011). The main economic activities in the catchment include agriculture, tourism, forestry and fishing (Umzimvubu.org)

The catchment already has an active partnership involving various initiatives, events, and engagements. This is known as the Umzimvubu Catchment Partnership (UCP) and many of the initiatives under this partnership are linked to local organisations such as Environmental and Rural Solutions (ERS). The partnership is made of a broad network of diverse stakeholders and is not limited to those only living physically in the catchment .

1.10.2 The Olifants catchment

The second catchment in this study is the Olifants River catchment (see Figure 1.8 for map and Figure 1.9 for images of the catchment. The Olifants catchment, also part of the 21 SWSAs, has a river basin that forms a part of the Limpopo River (Figure 1.8). It flows through Gauteng province, east of Johannesburg through Mpumalanga province, into Mozambique to reach the Indian Ocean (Olabanji et al., 2020). This study worked with stakeholders which span multiple parts of the catchment, though it leans towards those working in the Blyde sub-catchment, where social learning processes were happening during the time of the study (under the auspices of the LCP). The Olifants catchment contributes to 40% of the water that flows in the Limpopo River (Association for Water and Rural Development [AWARD], n.d). This catchment supports over 3.2 million people and includes various activities such as mining, agriculture, and eco-tourism. This water source is highly stressed, subsequently affecting about 6% of the country's GDP (Olabanji et al., 2020). About two thirds of the population live in

rural communities using the water and land sources for the goods and services they provide either directly or indirectly. These include traditional medicine, grazing and food.

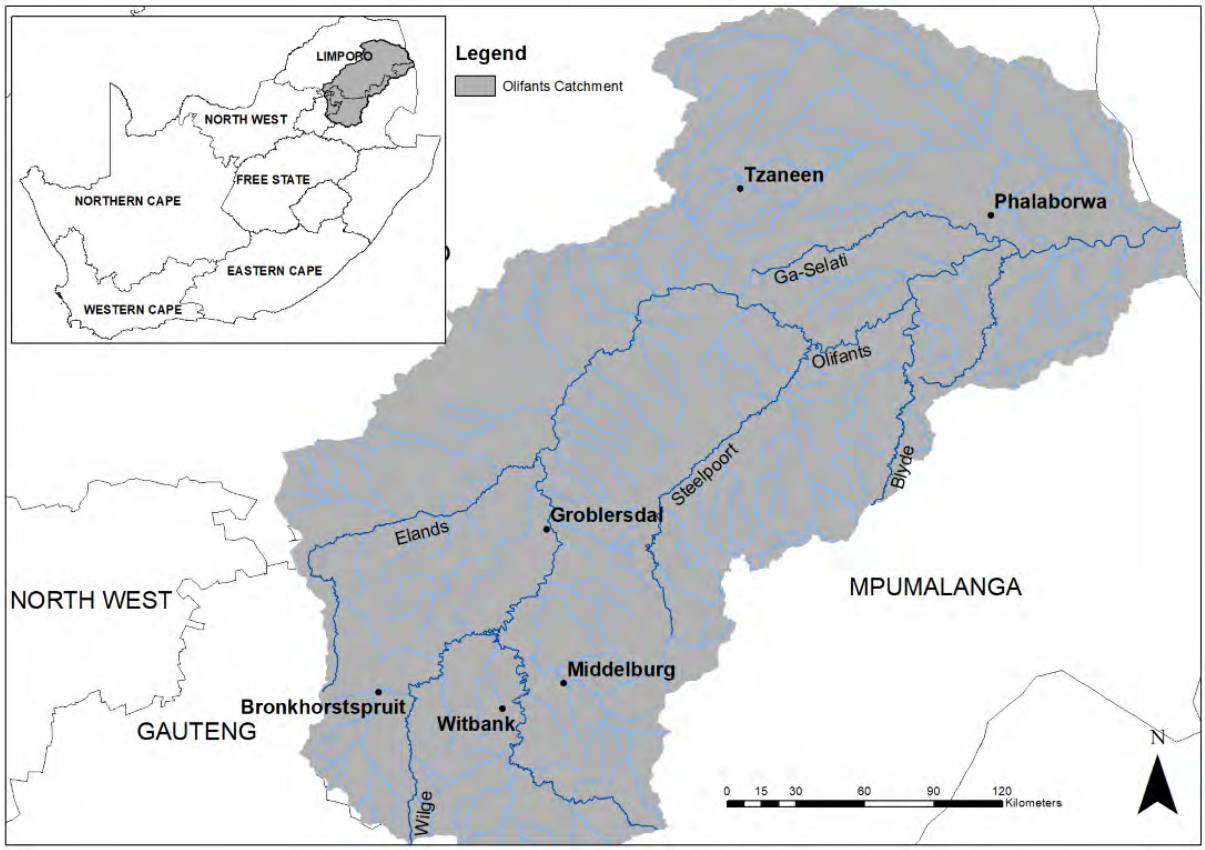

Figure 1.8: The Olifants catchment, showing the flow of the Olifants River (dark blue) (Map by Kathy Cassidy, Department of Environmental Science, Rhodes University).

Figure 1.9: Images from the Olifants catchment (AWARD, n.d)

The catchment has become quite degraded due to factors such as poor policy planning, pollution, unsustainable land use and lack of biodiversity protection. The degradation has social implications for those who depend on the land and water for livelihoods (AWARD, n.d). If the system degrades, quality of life decreases, threatening health and well-being and limiting further opportunities such as jobs. This is why it is important to address and engage with opportunities for sustainable NRM. It is important to address issues such as acid mine drainage, disposable nappy waste and animal waste affecting and driving poor water quality. Through organisations such as Kruger 2 Canyons (K2C) and Association for Water and Rural Development (AWARD), catchment stakeholders are involved in several projects aimed at promoting environmental sustainability, knowledge creation and sharing. In addition, there is high potential for job creation through opportunities such as the Expanded Public Works Program (EPWP) projects which are at the core of improving social livelihoods in the catchment.

Like the Umzimvubu, there are NRM initiatives which are already taking place in the catchment. There is strong stakeholder engagement through the Blyde Restoration Working Group (BRWG) which is a partnership structure similar to the UCP in the Umzimvubu. Here stakeholders come together to engage and plan for management activities. Under this partnership structure, most social learning processes are facilitated, which is one of the main motivations and rationale with working with this catchment.

1.11 Thesis aim and key questions

Aim

The overall aim of this thesis is to investigate and explore social learning practices and facilitation, for transformation, in two South African catchments.

Key questions

In the two case study catchments, the following questions were asked:

1. Where is social learning happening and through which platforms is it being facilitated? (Chapter 3)
2. Which facilitators are responsible for facilitating social learning processes and what kind of social learning processes exist? (Chapter 3)
3. What are the tools and practices that are used by facilitators to advance social learning processes in the catchments? (Chapter 4)
4. Do the social learning processes in the catchments enable transformation? (Chapter 4)

1.12 Thesis roadmap

Following this chapter, Chapter Two outlines and describes the methodology of this study. The methodology chapter discusses the guiding ontology and methodology of this thesis as well as the adopted research design. It outlines the steps taken to collect and analyse data. Following the methodology are two results chapters (Three and Four). Chapter Three addresses key questions 1 and 2. It focuses on the platforms through which social learning takes place as well as on who facilitates the social learning in the two catchments. Chapter Four analyses the tools and practices used for social learning facilitation and general social learning processes in the catchments, i.e. key questions 3 and 4. Chapter Four also discusses the value and potential for transformation achieved through social learning processes and practices.

The final chapter, Chapter Five, discusses the two previous results chapters in conjunction with the existing social learning literature. In this chapter, research implications are discussed, and a set of thesis recommendations are provided. The chapter closes off with a conclusion to the master's study.

CHAPTER 2:
METHODOLOGICAL APPROACH

2.1 Introduction

This methodology chapter aims to describe the research approach and design undertaken in this study. In line with the aim and key questions in section 1.11, data was collected in the Olifants and Umzimvubu catchments from January to June 2021. The methodology was undertaken in line with objectives of the Living Catchments Project (LCP) which is discussed in depth in section 1.10 of the previous chapter. The LCP objectives aim to explore how best to grow capacity for transformative social learning processes in South African catchments (Boni et al., 2021). This chapter also contextualises the transformative worldview of this study and assesses both reflexivity and positionality adopted throughout the research process. Lastly, critical to this research were ethical considerations which are outlined in depth in section 2.7.

2.1.1 Research design

This study's research design drew on a case study approach (Yin, 2018) focusing on the Umzimvubu and the Olifants catchments. In this study I focused on stakeholder interactions through catchment engagements to explore learning and knowledge sharing among participants. These were explored through methods such as semi-structured interviews, participant observation and personal reflection (Barrett& Twycross, 2018; Dredge & Hales, 2012; Hennink et al., 2020). Stakeholder participants in the catchments were chosen from those already active in NRM in the two catchments and active in associating with or attending events promoting NRM especially in collaboration with the Living Catchments Project. Table 2.1 provides an overview of the stakeholder set in both catchments.

Table2.1: Overview of stakeholders involved in data collection of study

Organisation	Catchment	Role
Environmental and Rural solutions (ERS)	Umzimvubu	Implementer NGO, Convenors of The Living Catchments Project
LIMA	Umzimvubu	Community development organisation
Traditional Authority	Umzimvubu	Management of communal lands
Conservation South Africa (CSA)	Umzimvubu & Olifants	Implementer NGO, sub-body of Conservation International
Kruger 2 Canyons (K2C)	Olifants	Implementer NGO, Convenors of the Living Catchments Project
AWARD	Olifants	Implementer and Research NGO

Government Entity (SANBI, Municipality)	Umzimvubu & Olifants	Research, policy, implementation work (roles of governmental entities are broad and vary within the two catchments – they offer a wide range of support)
Communal Property Associations (CPAs)	Olifants	Management of communal lands. CPAs are seen as a way to promote community participation and empowerment – to ensure that local people have a say in how their land is managed and developed

Based on a qualitative case study method (Yin, 2018; Silverman, 2020, Figure 2.1), the methodology aimed to support a deeper look into, provide an understanding and enable shifts in the nature of facilitated transformative social learning within and stakeholder partnerships in catchment settings (Boni et al., 2021; Hoverman et al., 2011) i.e. in the case catchments which were the Umzimvubu and the Olifants catchment. It is important to note that the two catchments were not studied to the same extent with particular focus given to the Umzimvubu catchment, and the Olifants was used for comparison and to better understand and support the findings of the Umzimvubu. This was done for two reasons, 1. Because there was more NRM and social learning activity in the Umzimvubu, making it a better case to study in-depth and 2. because resource and time constraints did not allow the catchments to be studied to the same extent, and hence the Umzimvubu was given more emphasis.

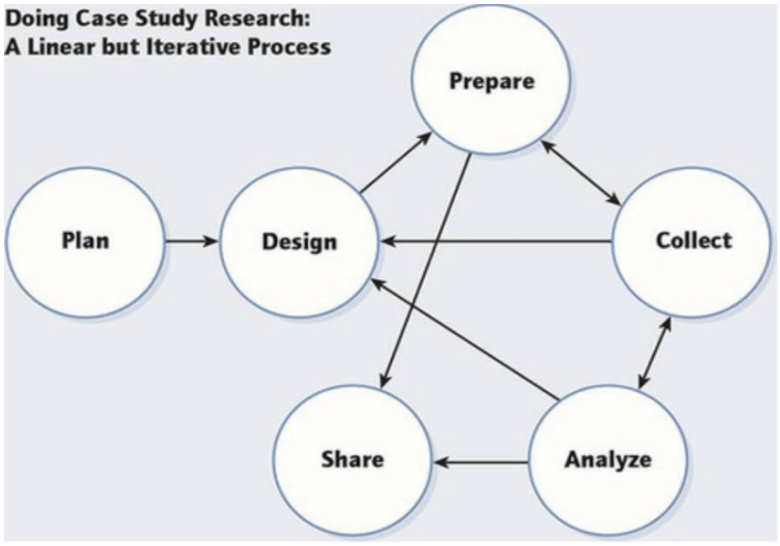

Figure 2.1: Case study research approach adopted in this master's thesis (Yin, 2018).

According to Ellinger and McWhorter (2015), qualitative case study approaches are not only important for understanding nuances and complexities but are popular as a tool for evaluating learning over time and providing multifaceted dimensions of experiences and perceptions. By adopting this specific approach, I hoped to get a rich set of data which provides valuable

insights and would shed light on the nature of social learning processes and practices to be able to contribute to a more comprehensive understanding of them. In accordance with Yin (2018), the case study research and application were designed using the five-part plan as depicted in Figure .

2.2 Ontological approach: The transformative worldview

Both the Umzimvubu and the Olifants catchments represent complex social ecological systems as explained in section 1.2 of the previous chapter. Effective resource management of water resources in these catchments requires a rethink in the way management strategies have been previously structured. In the past, under the apartheid government and following from this, catchment management has been narrowly focused e.g. not realising the importance of relationships and social livelihoods, which had negative implications for both social and ecological systems (Bourblanc, 2017). Previous management of these systems is often associated with unsustainable resource use, inequality, and injustice (Bourblanc, 2017) in catchments such as the Umzimvubu and the Olifants, which share a common demographic of previously disadvantaged communities and stakeholder groups. NRM in the past few years has been motivated by finding strategies which are inclusive, collaborative and have a strong focus on stakeholder engagement (Bourblanc, 2012). The social learning processes at the core of this thesis, form an important part of collaborative decision-making processes.

Contemporary NRM recognises and places high value on human environment relationships and their interdependence (Pahl-Wostl et al., 2007). It aims to close the gap in decision-making processes to promote a greater sustainability through participatory processes which give rise to learning and potential transformation (Pollard et al., 2014). It is for this reason this study has undertaken a transformative ontological approach.

The transformative worldview, like NRM practices, acknowledges the need for participatory decision-making process which involve all stakeholders especially those who have previously been disadvantaged and marginalised in processes such as these (Mertens, 2007). Groups such as women, youth, and indigenous people have to be represented in NRM processes. There is a high value in seeing these groups contributing to the NRM space for a more holistic, equitable and sustainable approach which yields social justice (Mertens, 2007). Additionally, a transformative worldview is about reimagining existing paradigms, and prioritising critical learning which challenges and questions existing practices.

Adopting this worldview for this study means I am committed to contributing to social justice and equity through the research. This study is acknowledging and representing a shift towards more inclusive, sustainable and equitable approaches to addressing complex environmental challenges. It will hopefully see a narrative where stakeholders are critically examining existing practices and are grappling with innovative decision-making and decisions. Adopting the transformative worldview as the ontology for this study has implications for methodology and approach, which will become clearer below.

2.3 Methodology

2.3.1 Planning stage

The research design started with an initial process of contextual profiling (Li et al., 2019) and a literature review process. I looked at ongoing catchment work and where there were opportunities for participant observation and reflection. This included an early visit to the Umzimvubu catchment for an initial scope on how things were done, what relationships exist and where these stakeholder relationships existed as well as the nature of them. In addition, it was important to establish an understanding of existing platforms and partnerships in the catchment. The planning phase was especially important to get a sense of the environment and to familiarise myself with the organisations doing NRM work in the catchment. This meant having key conversations with catchment stakeholders as well as understanding LCP engagements, observing carefully, and reflecting before starting with the data collection phase of the study.

2.3.2 Methodology design phase

The planning phase was followed by designing the methodological approach (Yin, 2018). This phase worked to align the methodology with what was planned during the planning phase as well as with aligning with the context of the study. It is here where I formulated four research questions drawing insight from the contextual profiling, the Living Catchments Project objectives and overall research goal. Following a literature review and contextual profiling, this phase required that I link research questions matching the context of the catchments and aligning this with the theoretical framework of the study. The questions were chosen under broad key questions as outlined in section 1.11.

2.3.3 Preparation phase

The preparation stage involved developing a protocol for the study and drawing up plans for data collection (Yin, 2018). Multiple studies emphasise the importance of adequate preparation

before going out to the field (Moura et al., 2019; Yin, 2018). In this phase I conducted scoping interviews with key facilitators from the Umzimvubu and the Olifants catchments, to get an understanding of their expectations from me as a student coming into the catchment, as well as capacitating myself with knowledge of how things are done in the catchments. Scoping interviews were conducted mainly with individuals from Environmental and Rural Solutions (ERS) and Kruger 2 Canyons (K2C), which are the main contracted facilitators under the Living Catchments Project as discussed in section 1.10. Further, duing this phase I adapted the theoretical framework (section 1.10) and created data collection apparatus such as interview and observation sheets (see Appendices A - C). While preparing to collect data for the study, it was important that I was aware of my positionality and reflexivity (Reich, 2021), both of which will be discussed in depth in section 2.6. In line with this, it was also important to keep in mind adaptivity and flexibility as key components of case study research (Yin, 2018). In addition to being adaptive, ensuring effective ethical measures would be taken throughout the masters was top priority in the preparation phase (Thomas, 2021).

2.4 Participant selection and data collection

Data for this thesis was collected from January to June 2022, based on primarily on participant observation in key events, and interviews (Table 2.2). Purposive sampling was used where facilitators within these cases were chosen based on being active participants and leaders of social learning for NRM processes during catchment management engagements. Non-facilitator stakeholders were chosen amongst those who attended events in the two catchments, and which were not playing a facilitation role (i.e. they were participants in the processes). To look at the social learning process and social learning facilitation space, facilitators or practitioners of NRM and social learning needed to identify as facilitators according to the conceptualisation in section 1.7. In the context of this study, facilitators were both individuals and organisations (e.g. ERS).

Data for this study was collected through a qualitative research process at multiple and cross catchment engagements in the Umzimvubu and in the Olifants catchments. The study employed various data collection methods such as personal reflection (Ortlipp, 2008), participant observation (Hennik et al., 2020) and using semi structured interviews (Hennik et al., 2020; Magaldi, 2020) and these will be discussed further below. A total of 19 events were attended and amongst these were learning workshops, field visits, quarterly meetings, strategy alignments and catchment-based workshops, convenors forums etc. (see Table 2.22.2). Source

codes were allocated to each event attended and each interview conducted to make the reporting in the results easier.

Table 2.2: Summary of data collection activities including catchment engagement events and interviews (note: names are pseudonyms).

Catchment	Data collection activity	Source code
Events – Participant Observation Data:		
Umzimvubu	UCP quarterly meeting x4	DU1 – DU4
Umzimvubu	Spring protection field visit x2	DU5
Umzimvubu	Alien invasive species clearing field visit x2	DU6
Umzimvubu	Co-learning change labs / workshops x2	DU9
Umzimvubu	Rangeland management auction	DU7
Umzimvubu	CSA conservation agreement workshop	DU10
Umzimvubu	Water Alien Task Force (WATF)	DU11
Umzimvubu and Olifants	Catchment convenors forum	DU12
Umzimvubu	Expansive co learning workshop / change labs certificate ceremony	DU13
Umzimvubu	DFFE NRM strategy planning and alignment	DU8
Olifants	Ecosystem valuation workshop	DO1
Olifants	Climate Positive Action workshop	DO2
Olifants	Blyde Restoration Working Group meeting (virtual)	DO4
Interviews:		
Umzimvubu	Interview with Mr Thabo	TI_UM
Umzimvubu	Interview with Mr Sam	SI_UM
Umzimvubu	Interview with Ms Rachel	RI_UM
Umzimvubu	Interview with Mr Gontse	GI_UM
Umzimvubu	Interview with Ms Julia	JI_UM
Umzimvubu	Interview with Ms Kweno	KI_UM
Umzimvubu	Interview with Mr Sipho	SPI_UM
Umzimvubu	Interview with Mr Mandla	MI_UM
Olifants	Interview with Ms Zanele	ZI_OL
Olifants	Interview with Ms Imi	II_OL
Olifants	Interview with Ms Luvuyo	LVI_OL
Olifants	Interview with Mr Zabir & Bertha	ZBI_OL
Olifants	Interview with Mr Richard	RI_OL
Olifants	Interview with Mr Lionel	LI_OL
Olifants	Interview with Mr Gerald	GI_OL
Olifants	Interview with Ms Amanda	AI_OL
Olifants	Interview with Ms Sinothando	SNI_OL
Olifants	Interview with Mr Gerald	GI_OL

2.4.1 Reflections

Reflection data was collected in the form of my own personal reflective notes as a researcher, as well as reflections from some of the facilitators in the catchment during interviews. Reflections were an integral part of this study as it was concerned with understanding the

subjective experiences and perspectives of the stakeholders (Chang, 2019). The facilitator reflections helped me as the researcher - and hopefully also helped the facilitators - to better understand and conceptualise experiences and perspectives in relation to the research, to the catchment and to the Living Catchments Project. My own reflections were noted down in a structured reflection sheet (Appendix A) with prompts from social learning practices of the SLKMM framework (section 1.6.1). This was done by looking out for evidence of practices while I was in the catchment attending events and collecting data. Reflections from the facilitators were captured during visits to the catchments through conversations and interviews, sometimes quite informally. I asked general questions of some of the facilitators and I made a mental note of these and later hand wrote my notes about them. Reflections from the facilitators and myself were intended as a way of complementing and supplementing the observation and interview data and these were not reported separately in the results chapters.

In addition to facilitator and my reflective notes, I interacted quite closely with a social learning practitioner who forms an integral part of the Living Catchments Project and is also my co-supervisor, Ms Tanya Layne. Through being in the catchments with her and reflecting together on what we were observing and learning, I gathered informal information about social learning processes, including what I should have been looking out for in my observations and interviews. This was key as she had years of experience and knowledge; she made the experience of working with social learning practice easier and improved my personal reflective practice.

2.4.2 Participant observation

Participant (and process) observation was used as the second method of data collection in this study (Alam, 2021). This was done through structured sheets (Appendix A) of observation which recorded behavioural observation, process and how things were being conducted during stakeholder engagements. Behavioural observation included looking at elements such as body language and ways of interacting amongst facilitators (emotions while engaging included) (Alam, 2021). Process observation focused on elements such as facilitators present, venue of events, time, type of engagement (Table 2.22.2) and elements of learning using the SLKMM practices as seen in Appendix A. The goal was to try and understand how facilitators and stakeholders interacted with each other in these social settings while engaging in processes of natural resource management and to understand how these influenced learning. Furthermore, I wanted to look at what kind of environment was fostered to identify current practices that could have been contributing to social learning and transformation. Observations were made during

January – June 2022 which was when field engagements were attended in the catchments. Throughout this observation period, I was able to establish a rapport with the facilitators and most importantly with individuals from the implementer NGOs under the Living Catchments Project.

This participant observation was a good method for gathering data as it allowed me as a researcher, to gain a first-hand understanding of the dynamics at play as well as factors which contributed to the social learning space in the catchments (Alam, 2021). In addition, it allowed me to immerse myself in the process which gave rich and detailed data. It enabled clear conceptualisation and a rich contextual understanding of the social and environmental context and conditions in the catchments. Participant observation together with the reflection process allowed for not only deeper understanding of experiences but for rich data on social learning processes or potential social learning processes (Bailey, 2008; Saldana, 2011)

2.4.3 Semi-structured interviews

The third and final data collection method in this study was the use of semi-structured interviews. According to Leavy (2014), semi-structured interviews are "interviews with the purpose of obtaining descriptions of the life world of the interviewee in order to interpret the meaning of the described phenomena". Semi-structured interviews were conducted with facilitators and stakeholders who engage in NRM and catchment management in the two catchments. These interviews were customised for a) those who are stakeholders engaging in the catchments generally and did not necessarily form part of the facilitation team but were active in the NRM that was happening, and b) those who assume the role of facilitator as defined in section 1.7 of the previous chapter. Interview sheets, to guide conversation, were created for these two groups (Appendices B and C).

According to Adams (2015), one of the greatest advantages of using semi-structured interviews in qualitative studies is that they include open-ended questions allowing the interviewer to get a broad sense of the context and to get to know the interviewees on a more personal level. This was intended in this study, and it was achieved. In addition, a rich context was provided by the semi-structured interviews through being able to follow up from different angles. It was important while conducting interviews, to be careful not to encourage or overuse leading questions as this could have influenced the integrity of the data. To overcome this, I listened to the answers given actively, ensuring follow-up questions were relevant without leading the interviewee.

Nine facilitator or stakeholder interviews were planned for each catchment. In the Olifants catchment, 10 interviews (three stakeholders and seven facilitators) were conducted. In the Umzimvubu eight semi-structured interviews (six facilitators and two stakeholders) were conducted. The number of interviewed stakeholders and stakeholders was not necessarily planned or fixed, but rather depended on availability and willingness to participate. Stakeholder fatigue was one of the reasons interview participants were lower in the Umzimvubu catchment compared to the Olifants. Due to the emphasised reflexivity and being an engaged researcher, I had to work and adapt around this. Interviews with facilitators and stakeholders were done online or physically, depending on the circumstances. Most interviews with facilitators from the Olifants catchment were conducted online given the time constraints while in the catchment. Most interviews in the Umzimvubu were conducted face to face. Online interviews were recorded via the Zoom platform, while face to face interviews were audio recorded on my cell phone.

2.5 Data analysis

2.5.1 Stage 1: Transcriptions

Following the interview and observation processes in the two catchments, transcriptions were made of all the interviews, reflections, and observations in MS Word 2016 and the transcription process was supplemented by OTTER AI software, an artificial intelligence (AI) based transcription service (Gray et al., 2020). Transcriptions were captured verbatim and all non-verbal expressions were noted. Observation transcriptions were guided by the Social Learning, Knowledge Management and Mediation (SLKMM) framework. The narrative of each of the six social learning practices was transcribed separately.

2.5.2 Stage 2: Thematic analysis

Insights from manifest content analysis and latent content analysis were used for thematic coding (Kleinheksel et al., 2020). Manifest content analysis is useful for identifying patterns and trends in data while latent content analysis assists in identifying meanings, interpretations, and associations (Kleinheksel et al., 2020).

I began interrogating transcriptions to prepare for analytical coding of the data. In the interrogation stage, I expressed any of my own internal ideas and began drafting memos in the form of notes and comments in MS Word (Mohajan et al., 2022). Memos were important in helping me record and organise my thoughts, observations and insights (Mohajan et al., 2022) which in the long run helped identify patterns and make connections in my data. An iterative

process of initial coding was done through thematic analysis (Kiger & Varpio, 2020). The thematic analysis was used to identify, analyse and report patterns/ themes within the textual data generated (Kiger & Varpio, 2020) .

2.5.3 Stage 3: Coding

Prior to the process of coding, I familiarised myself with the transcribed field notes and transcriptions from the semi-structured interviews.

Through breaking down the data, initial themes which summarised different meanings, under the different research questions, were generated through a simple colour coding system in MS Word. The themes captured essential elements of the narrative given by the facilitators interviewed (Braun & Clarke, 2012; Saldana, 2011). An example of the themes included the different 'social learning practices' i.e. how learning and sharing is facilitated or the different platforms through which the social learning took place. Additional examples included looking at the 'challenges for social learning processes' and looking at 'opportunities and potential for transformative learning processes'. This process combined both inductive and deductive reasoning (Chandra & Shang, 2019; Pearse, 2019). The inductive process focused on looking at patterns in the data already while the deductive process involved me as the researcher bringing a series of ideas, concepts and themes into the data (Braun & Clarke, 2012). Some of these themes were drawn from the six SLKMM practices (see Figure 9.1), general facilitation practices and observed practices.

Following the grouping of themes, standardised codes in the form of abbreviation letters, numbers and colours were used in margins and different topics or themes (and sub-themes) were generated. According to Bazely (2009), from the first interview, the major themes are often evident, and this indeed was the case in this research. The themes that were clear during the observations in the field were used as insights and prompts for themes when analysing interview data. I captured these themes in a separate Word document together with their codes before I could present them in the results. At this stage, I developed a mini code book to capture the data. This codebook included definitions of the codes and demarcated themes and sub-themes under those codes (Saldana, 2011).

In addition to codes allocated to themes, codes were also allocated to each participant who took part in the interviews to simplify the reporting, and these are used in the results chapters as source codes for referencing something a stakeholder or facilitator said, these codes are outlined in Table 2.2. The codes are shortened versions of the participant pseudonym and the

catchment they are based in i.e Mr Lionel = LI_OL (**L**ionel **I**nterview_**OL**ifants) Events attended were also given source codes as shown in Table 2.2 2.2 and these are used as points of reference in the results too.

2.5.4 Stage 4: Recoding and analytical memo

Following the initial coding process, I performed a second round of coding known as recoding (Saldana, 2011). This was necessary for ensuring that codes created made sense and gave opportunity to further condense the data. In this stage I ensured that the themes and codes generated accurately represented the data. This is when I created an analytical memo from the coded data, grouping the codes from the themes and summarising preliminary findings from the data (Mohajan et al., 2022). In this final stage of analysis, I reflected on the meaning and significance of the different themes in preparation for interpreting them for the results chapters that follow. The codes were represented as narratives in the results chapters and they were supplemented by quotes generated from the themes.

Limitations with comparing data for the two catchments included having a limited scope of the Olifants due to resource constraints. The time which I spent in the catchment did not give me the same range of stakeholder experiences and social learning processes as for the Umzimvubu catchment. I did not get as much time to explore social learning processes to the same extent and this might have meant missing important nuances and lacking a comparative analytic lens. The contextual understanding of that catchment was also limited compared to that of the Umzimvubu.

2.5.5 Stage 5: Quotes

The use of direct quotes to report on what was said in the interviews during the process of data collection was important not only in this analysis but in the observation and reflection analysis as well (Lingard & Watling, 2021; Sandelowski, 1994). Key quotes were taken note of to be used in the results chapters. The aim was to capture the voice of the participants and convey key nuances of the participants' experiences. In addition, the aim was to ensure not only validity but transparency and credibility in the data and in the research process (Eldh et al., 2020). The themes were presented in both the results chapters as a narrative of the experiences and perspectives of the facilitators and stakeholders on the ground. The quotes were attributed to the different participants using pseudonyms, to maintain participant anonymity, as will be seen in the following two chapters. Where possible and necessary, connections and links between quotes were made and the relationship between them explained. In terms of quotes, it

was important to avoid overquoting but also to ensure that I was consistent and had ethical considerations in mind at all times.

2.5.6 Stage 6: Describe-Compare-Relate

To enrich the analysis of both interview and observation sheet analysis, I further adopted the Bazely (2009) D-C-R method: describe, compare, and relate. I identified key themes and concepts that emerged from the data. These were themes such as social learning facilitation practices, social learning practices as well as catchment NRM experiences. I tried to provide a clear description of the data through capturing elements of its depth. I also used quotes in this regard. I compared the themes to those existing in prior research such as studies done in the LCP and studies in literature. This was mostly done in the discussion chapter, and the aim was to help contextualise and situate the findings within the literature. In addition, the 'compare' step in the D-C-R method was used to compare the two case studies, particularly looking for similarities between the two. Within this comparison the emphasis was on first identifying key findings in the Umzimvubu catchment, and the data from the Olifants catchment was used in a secondary manner to support the findings of the Umzimvubu catchment. The 'relate' step meant that I considered the relations between the themes or concepts. This was done to develop a nuanced understanding of the relationships which exist between the themes. The D-C-R method was applied between creating the codes and contextualising the results chapters.

2.6 Positionality and reflexivity

Critical to undertaking this study was being aware and reflecting on the position I assumed and how I situated myself in both the catchments and in the research (Bourke, 2014), which is a key process considering the transformative worldview adopted (see section 2.2). According to Qin (2016), researchers need to be conscious of themselves as intentional agents who research and write about participants' and facilitators' lived experiences from an outsiders point of view. I needed to be aware of the ways of doing and the accepted practices from the researcher community and facilitators (Bourke, 2014; Mason-Bish, 2019). Prior to commencing with the study in the preparation phase, I had to gain permission from the relevant facilitators and organisations – I had to be open about my perspective as a researcher and how I would be undertaking the research. This included interacting with key role player organisations such as ERS in Umzimvubu and K2C in the Olifants catchment (Benn et al., 2016). This was not only a sign of respect but acknowledgement that I came into the catchments as an 'outsider' trying to understand the social learning processes of the catchment. As a young, early career researcher I had to be cautious and aware that there might be implementers and practitioners

who held researchers in a certain esteem. In this regard it was critical that I engaged in both early-stage contextual profiling and literature reviewing (Knopf, 2006). In addition, as a student in the Living Catchments Project, it was key that I recognised any preconceived biases, taking into account any personal aspects of my identity, as a female largely based in academia, and how this could have influenced the study.

Following the discovery of some of the challenges implementers face when it comes to research in the catchment, I had to be extra careful in conceptualising a clear motive and backing for my study, to participate in catchment activities. In addition to being careful when interacting with facilitators, I also had to ensure not to 'push a certain narrative' but to listen and engage with genuine intent (Soedirgo & Glas, 2020). Being engaged in a study concerned with social transformative change, I had to be mindful and aware of my biases when working with a diverse set of facilitators and acknowledge that factors such as my race, gender, social and educational status might have been an influence in the research (Bourke, 2014; Soedirgo & Glas, 2020)

2.7 Ethical considerations

As a transdisciplinary researcher involved in co-engaged research which looks at stakeholder relationships between academics and non-academics, and organisational relations, ethical considerations were an absolute imperative (Anyan, 2013). In this study, it was important to consider both procedural and everyday ethics – procedural ethics looking at the submission of an ethics form and personal ethics highlighting the need for everyday ethics in the implementation of the research (Cockburn & Cundill, 2018).

2.7.1 Procedural ethics

In relation to procedural ethics of the study, an ethics clearance application was submitted with Rhodes University for review and it was approved (2021-5258-6473) by the Rhodes University Ethical Standards Committee (Appendix D). In addition to this, on all field visits, it was necessary that I obtained verbal and written consent from all facilitators present during field observations (Mertens, 2018; Wa-Mbaleka, 2019). I obtained verbal and or written permission from all facilitators and stakeholders which were interviewed in this study (Anyan, 2013). Though procedural ethics form an important part of this master's research, they failed to consider activities outside of that professional researcher stage especially during the early days of research. Owing to this, I practised what is known as 'everyday ethics'.

2.7.2 Everyday ethics

The elements of transdisciplinarity and potential transformative nature of the study made it important to constantly implement ethical measures throughout this study (Mertens, 2018; Wa-Mbaleka, 2019). Owing to the multiple challenges faced in stakeholder work which is grounded in partnership and collaboration, it was imperative that I relied not only on regulatory approaches to ethics but, in line with Cockburn and Cundill (2018), I needed everyday ethics to pervade the transdisciplinary research design. Throughout the study, I had to embody reflective practice, practice ethical standards and take responsibility for all ethical principles through reflexivity and rationality as emphasised in section 2.6 (Cockburn & Cundill, 2018; Wolff et al., 2018).

2.8 Conclusion

This study's research design drew on Yin's (2008) case study approach, encompassing planning, designing and preparation phases. The study made use of a qualitative methodology approach collecting data using participant and process observation, reflection, and semi-structured interviews. Data was analysed using thematic coding and this was done using MS Word 2016. Both data collection and analysis relied on an iterative process where the goal was to create a final refined set of data which could be used for the results chapters. In this chapter I described the step-by-step process I took in collecting and analysing data for the study, while in the following two chapters data will be reported on in the form of results. Chapter Three looks at research question one and two, while Chapter Four will consider research questions three and four (see section 1.11).

CHAPTER 3:

INVESTIGATING THE PLATFORMS AND ACTORS THROUGH WHICH SOCIAL LEARNING IS FACILITATED IN THE UMZIMVUBU AND OLIFANTS CATCHMENTS

3.1 Introduction

This results chapter will attempt to answer key question one and two (see section 1.11): *1. Where is social learning happening and through which platforms is it being facilitated? 2. Which facilitators are responsible for facilitating social learning processes and what kind of social learning processes exist?* I provide a narrative of where social learning is taking place in the catchments and who is facilitating the social learning in the two catchments (section 1.10). The narrative comprises a detailed description of the key facilitators, their learning related practices and convening spaces created and utilised for their natural resource management work. References to observations and interviews have been presented in the form of codes which are listed and explained in section 2.4. It is important to note that all names of individuals used in the results sections are pseudonyms and not real stakeholder names for the purpose of stakeholder anonymity as per ethical considerations (section 2.7) of the study.

Table 3.1 below gives a brief overview of some of the results which will be discussed in results Chapters Three and Four. It represents a culmination of answers to the research questions, with a focus on the six SLKMM practices. Greater detail is provided below the table. The table illustrates the synergies between Chapter Three and Four. Chapter Three focuses on 'WHO and WHERE' of social learning, whereas Chapter Four focuses on the HOW, in particular with regard to the SLKMM practices.

Table 3.1: A brief overview of results: how is social learning facilitated, by whom, and where?

HOW?	**WHO & WHERE?**		
6 SLKMM practices	**Partnership platforms**	**Researchers**	**Activities (including youth, etc.)**
Coordination and convening	Through channels such as mailing lists and social media to let stakeholders know about engagements.	Coordination of stakeholders usually done through partner NGOs to convene relevant stakeholders i.e. working with ERS.	Coordination via community visits, word of mouth and media platforms i.e. WhatsApp
Learning and sharing	Through tools and practices which are reflective, conceptual, visual, participatory etc. Tools used in the platforms as well as in the field visits, learning exchanges, participatory workshops.	Through being engaged and bringing new knowledge into the catchment in the form of workshops tools including **CHAT, FHI, VCF.**	Youth facilitation in the catchment through supporting field visits, facilitating learning on spring protection work and alien clearing. In addition, facilitates and leads rangeland management.

Clarifying context and ideas	Stakeholder platforms to clarify context and ideas include the Umzimvubu Catchment Partnership and the Blyde Restoration working group among other meetings, forums and workshops i.e. strategic planning meetings.	Using tools, use of co-facilitation and through a reflective practice adopted for clarifying.	Done mostly through interaction with stakeholders in engagements such as the UCP and BRWG or mostly in the field, working with community members.
Engaging tensions	Use platforms such as UCP network to communicate any opportunities (even though they are limited) i.e. strategic planning was amongst some stakeholders of the network.	Limited tools mentioned but an example would be tools such as CHAT.	Being focused on the ground, addressing tensions such as resource challenges, barriers to social media and language barriers.
Building networks	Not limiting opportunities to visit catchment to only stakeholders from the case study catchments, ensuring interactions with diverse stakeholders, always encouraging chatter among stakeholders. Additionally, holding engagements over 2–3-day intervals sometimes to build strong relations.	Opening and inviting various stakeholders to the workshops and engagements, ensuring stakeholders interact by putting them in groups and giving them tasks to do together, having follow-up workshops where opportunities are present.	Engaging with all stakeholders and making sure to bring them together through activities such as field visits.
Monitoring and evaluation	No observed practice.	An example would be the VCF tool and reflection as the observed methods.	No observed or reported practice.

3.2 Overview of facilitators involved in social learning activities

At a broader catchment scale, there are facilitators operating at different levels and in different sectors or disciplinary areas. There are governmental entities such as the municipality, Department of Forestry Fisheries and the Environment (DFFE), Working on Fire (WOF) and elected councillors who operate at a government level and scale. Non-governmental entities and organisations such as Kruger 2 Canyons (K2C) and AWARD in the Olifants and Environmental and Rural Solutions (ERS), LIMA Rural Development and Conservation South Africa (CSA) in the Umzimvubu catchment who operate at more specific implementation and research scales are represented in Table 3.23.2. Further, there are other (environmental) entities in both catchments such as communal and commercial farmers, traditional authority and community members living within the catchments. Owing to the broader objective of the study, this study focused on the two organisations which are responsible for facilitating learning spaces within the Living Catchments Project, namely ERS in the Umzimvubu and K2C in the Olifants. ERS works closely with LIMA and K2C (Table 3.23.2). Here I present findings related to how these organisations were engaged in social learning activities through elements such as the platforms they use, collaborative tools which are available, facilitator support and interaction, discussion forums and learning based communities as well as features which foster engagement in the learning spaces. Table 3.23.2 locates the different facilitators in the catchments with the aim of contextualising their work. It highlights the roles and

responsibilities of the different facilitators and how their work relates to that of the other organisations.

Table 3.2: Facilitators involved in facilitating social learning in the study catchments also showing platforms and the geographic location of the facilitators

Stakeholder	**Platforms and how they contribute to learning processes**	**Geographic location and focus of activities**
Environmental and Rural Solutions (ERS) (Umzimvubu) https://enviros.co.za/	Forms an integral part of the Umzimvubu Catchment Partnership (UCP). Works in multiple villages across multiple projects, e.g. waste management initiative called WASH. Plays and has played the role of secretariat of the UCP for many years. Works with the Living Catchments Project in partnership with SANBI.	Offices situated in Matatiele, Eastern Cape. ERS forms a significant part of the NRM in Matatiele and in the Umzimvubu catchment. Play a major role as facilitators and convenors in the landscape which motivated for SANBI to partner with them under T Umzimvubu Catchment Partnership (UCP) the Living Catchments Project.
Conservation South Africa (Umzimvubu) https://www.conservation.org/south-africa	Focus on multiple catchments in South Africa, including both the Umzimvubu and the Olifants catchment. Forms part of partnership structures, UCP and the Blyde Restoration Working Group. CSA in the Umzimvubu catchment forms part of the secretariat.	Conservation South Africa (CSA), an implementation NGO, is a sub-body of Conservation International (CI), with visions to catalyse growth and development through sustainable management of natural resources. CSA has a particular focus on working closely with other facilitators in the catchments but more so with community members and farmers CSA implements management projects across the board with particular concern for social and economic development.
LIMA Rural Development foundation (Umzimvubu) https://lima.org.za/	Forms part of facilitators who form part of the secretariat. They are a longstanding organisation within the UCP and work closely with ERS and CSA within the catchment. .	NGO that promotes transformative as well as sustainable community growth in South Africa. Leverages local rural development activities in the Umzimvubu River catchment but also across South Africa. Establishes institutions that help and are concerned with addressing sustainable development goals and ensuring they help alleviate poverty and build human capacity. Contributes to the learning space through in-depth community engagement and in their quest to understand communities'

		environmental and sustainable needs and challenges. They promote social mobility and sustainable development through strong interaction.
K2C (Olifants) https://kruger2canyons.org/  	Focus on participatory governance in the Olifants catchment. AWARD forms part of and attends events of the Blyde Restoration Working Group. Part of the Living Catchments Project.	Plays a key role in the landscape as the biggest role-players working in a space which aligns with the UNESCO Man and Biosphere (MaB) strategy. Promotes learning by being knowledge drivers in promoting an understanding of impacts of environmental changes especially climate change with the aim of developing capacity and support through adaptation actions.
AWARD (Olifants) https://award.org.za/  	Part of the Blyde Restoration Working Group. Resident programme which fosters collaboration, community engagement and sustainable integrated management approaches in the catchment with other partners.	One of the organisations which operates in and has a strong presence of collaboration and participatory governance in catchment management activities in the Olifants catchment. Responsible for several projects within the Olifants and has long been part of the NGOs focusing on capacitating and being drivers of change. Through their engaging programmes, build institutional, community and individual capacity to implement projects which work towards managing and restoring water, land and biodiversity with a strong focus on the context of climate change. Strong intentions of engaging in social learning processes for the purposes of transforming change and practice.

3.3 General background of social learning processes in the catchments

Facilitators and stakeholders were interviewed to explore their knowledge of social learning and its associated processes and practices. Though the responses to the questions varied, recurring theme among the facilitators and stakeholders was reflected. It became evident that there was a prevalent awareness of social leaning but also a limited understanding and conceptualisation of the term 'social learning' and its underlying processes, particularly as these are conceptualised in academic literature (e.g. see section 1.5). Those facilitators who did display an understanding of social learning frequently mentioned two key aspects. Firstly, they emphasised the platforms where social learning occurs and secondly, they highlighted the key role players and facilitators who actively participate in and organise social learning within their respective catchments. The following sections of this chapter explore these points for a more comprehensive understanding.

3.3.1 Engagement and understanding of social learning processes in the catchments

The perspectives of the facilitators interviewed in the catchments, discussed in the preceding sections, indicated a varied comprehension of the concept of social learning and its accompanying processes. The facilitators interpreted social learning differently and had varying viewpoints on its presence and significance in their catchment areas. Some described it as an opportunity for collective questioning and understanding of different perspectives, while others saw it as a platform enabling people to engage in discussions on vital topics as well as catchment challenges. According to Ms Zanele, for example: *"It means bringing our experiences and knowledge together … it is a vision to partner through different platforms …it gives people urgency to conserve and protect ecological infrastructure."* (ZI_OL).

In both catchments, the facilitator organisations detailed in section 3.2, have actively embraced the concept of social learning in different ways (from formally defined social learning to more informal or emergent processes) through the work that is being done and interactions being facilitated. Recurring themes from the interviews suggest that the Umzimvubu catchment has exhibited a broader and more informal approach to social learning. Informal in this case being 'non intentional' or a process that occurs as a result of other activities and or processes, and is more emergent in nature. Facilitators such as ERS, though they may not employ terminology such as 'social learning' are in fact facilitating a diverse array of social learning processes. In addition to the 'in-catchment' facilitators, external facilitators who collaborate closely within the Umzimvubu catchment also contribute to the facilitation of social learning processes. Mr Thabo, for instance, a researcher not originally from the Umzimvubu, is deeply engaged and

involved in catchment engagements. Mr Thabo has a comprehensive understanding of social learning as he has engaged with it before, and also actively participates in meaningful social learning processes within the catchment. The following quote illustrates a clear conceptualisation of social learning processes and shows that even though some facilitators based in the catchment may have a varied understanding of social learning processes, those that are visiting from time to time might have a clearer conceptualisation. According to Mr Thabo:

> *So, I think social learning, just to simply put it, is where people from different perspectives, different walks of life, intentionally engage on a matter, and they decide that they're going to bring all the expertise, all the knowledges, and different backgrounds, etc. and they come together to learn about a common theme.* (TI_UM)

Mr Thabo's understanding, conceptualisation and engagement in social learning processes is backed by his experience in participatory co-learning workshops within the catchment (DU9; DU14). In these participatory workshops, Mr Thabo uses tools such as Cultural Historical Activity Theory (CHAT) (Engeström & Miettinen, 1999) which was discussed in section 1.6.5 and the Value Creation Framework (VCF) (Wenger-Trayner & De Laat, 2011). These two tools actively evoke and foster social learning processes and a more in-depth exploration of these tools will be given in section 4.

In the Olifants catchment, there is a similar comprehension of social learning. Organisations such as K2C appear to be following in the footsteps of facilitators who have previously, and continue to, engage extensively in social learning processes. A good example is AWARD, which has dedicated over a decade to social learning work and takes pride in their social learning endeavours, both within the catchments and as demonstrated on their websites (see Table 3.1). In relation to this, it is clear that facilitators in this catchment demonstrate an understanding of, are able to articulate and pratice social learning. The following quote from Mr Lionel in the Olifants (LI_OL) illustrates this: "*You need to have the right institutional environment to make sure that transformative social learning works. So again, just sort of coming back to the AWARD reference, you know, they played a certain role in the catchment from that facilitated environment.*"

The quote above shows the value of social learning held by one organisation and being observed by other organisations who work in the same space and share the same learning platforms.

3.4 Platforms for social learning processes: Partnerships

By showing their involvement in social learning processes, facilitators emphasised the importance of platforms and forums that facilitate their collective learning experiences. These platforms serve as opportunities and spaces for bringing both stakeholders and facilitators together to facilitate knowledge exchange, collaboration and joint decision-making. Themes from stakeholder interviews in this regard illustrated a strong appreciation of two platforms: the Umzimvubu Catchment Partnership (UCP) and the Blyde Restoration Working Group (BRWG). Reasons for the popularity of these platforms were mentioned in the interviews and became even clearer through direct observation. These two platforms are now described and discussed in further detail.

3.4.1 The Umzimvubu Catchment Partnership (UCP)

The UCP is a partnership platform in the upper Umzimvubu catchment (Table 3.1). Though situated in the upper catchment area, the partnership is not limited to facilitators or stakeholders solely from this part of the catchment and is open to the larger Umzimvubu stakeholders which consists of the Upper and the Lower catchment. The Upper Umzimvubu includes surrounding catchment areas such as Matatiele where most organisations active in the UCP are situated (Figure 1.143.1). When facilitators and stakeholders were asked about their experiences of social learning in the catchment, this platform frequently emerged.

The broad objectives of the UCP are to create a formally recognised water management forum, improving knowledge of ecosystem values, restoration techniques and climate vulnerability, and promoting institutional alignment for formalising and coordinating communal and commercial stewardship efforts (RI_UM). In addition, the UCP aims at establishing baseline monitoring information on the ecology and socio-economic development of the region (SI_UM). It seems that the UCP is one of the most powerful platforms for convening facilitators and stakeholders for catchment NRM related issues. It does this through four quarterly meetings a year, which take place over 2-3 days. There are sit down dialogue engagement opportunities and field visits are included during these quarterly meetings (DU1-DU6). UCP meetings are usually held in Matatiele, where the secretariat is based. ERS, LIMA and CSA form the majority of this secretariat, with a rotational system for the positions of speaker, secretary and deputy speaker from the three organisations.

3.4.2 Social learning elements within the UCP

The UCP meetings are held in a venue that can accommodate stakeholders either indoors or outdoors depending on the weather and the organising institution. Figure 3.1 below is an example of a UCP quarterly meeting held on 9 November 2022 at the local municipality offices.

Figure 3.1: The UCP quarterly meeting held at the local municipality offices on 9 November 2022 (Photo: Author)

The UCP meetings encourage in-depth dialogue and deliberation as well as engagement based on both built and ecological infrastructure matters of the catchment (DU1 – DU4). This was not only frequently mentioned in the interviews but was prominent in observations too (DU1-DU4). Content covered in the meetings included matters of water, clearing of invasive alien plants (IAPs) and plastic waste initiatives. This kind of engagement is highlighted as important within the Living Catchments Project, and is especially important for social learning. Facilitators and stakeholders interviewed shared insights and sentiments on the importance of the engagement platform provided by the UCP with Mr Sam sharing:

> *We've had a long relationship with the UCP. But I think being based here (Matatiele) and having this team has allowed us to properly engage in a deep and meaningful way with partners… with engaging communities kind of develop these trusting relationships in the UCP… UCP develops the strong, trusting relationships with community members … and because of that, they trust us to take action within the community and trust that we are taking action in their own best interest. And through that action, we see that social learning process.* (SI_UM)

The sentiment expressed in the above quote was shared frequently, even during the informal conversations I had while in the catchment. In addition, it was echoed by ERS facilitators in the LCP convenors forum (DU12).

3.4.3 Social learning value and shortfalls of the UCP

The UCP is not only a knowledge exchange platform but is also a platform where partnerships can be strengthened through collaboration, capacity building, information dissemination and community empowerment. Results show that the value of the UCP is widely appreciated; it brings stakeholders together, who would have otherwise worked in siloes. It provides an effective platform to connect and build networks and this is key in the SLKMM framework. It allows those from different disciplines, sectors and backgrounds to come together and share information as well as make informed decisions together. In addition, it provides strong value in involving and focussing the work of the catchment around the community, which promotes participation and involvement in decision-making processes.

The UCP has some challenges when it comes to social learning processes. Though it provides a strong platform for collaboration and learning I questioned (based on my observations and reflections, (DU1-DU4)) the quality of social learning that was taking place, and whether stakeholders experienced it in this way. The sit-down meetings sometimes had a traditional knowledge transfer format of presentation rather than listening and sharing (see Figure 3.) which can limit opportunities for the interactive dialogue required for social learning. In addition, most decisions are managed by the secretariat demonstrating a certain hierarchy of power. In terms of participation, not all catchment stakeholders participated or engaged as much as others; some were a bit reserved. This made me question the amount of trust that exists among the stakeholders, and whether this could have an impact on the effectiveness of social learning processes present (DU1-DU4).

However, in addition to the sit-down meetings, the UCP also organises field visits (DU5 & DU6) which provided more opportunities for social learning, addressing the shortfalls of the sit-down meetings. The field visits are characterised by a strong reflective practice and learning-by-doing elements which invoke questions and critical engagement among facilitators. These elements were largely absent in the formal sit-down meetings. Furthermore, field visits challenge existing ways of thinking through taking stakeholders to see the lived

realities on the ground and observe practical application of knowledge. Stakeholders, both from within the catchments and those who live outside, were deeply engaged (DU5) during these field visits, asking and deliberating on what was being observed. The facilitator (Ms Julia) of this catchment described the aim and benefits of the field visits during UCP meetings: *"There is a strong value in experiencing the catchment through the UCP meetings, but an even stronger value in being able to see, touch and feel what is happening in the catchment through these field visits."*

The quote above reiterates the point that the field visits provide a comprehensive contextual understanding of the social, cultural, and economic environment of the catchment. Engaging with scientific concepts in a different manner e.g. spring protection work (DU5 & DU6) forms a good foundation for not only collaborative learning but also for reframing knowledge of NRM as well as knowledge from the different disciplines and domains.

3.4.4 The Blyde Restoration Working Group (BRWG)

The Blyde Restoration Working Group in the Blyde River catchment is also a partnership platform which brings facilitators operating in the Olifants together. This including stakeholders from surrounding catchments and sub-catchments such as the Blyde (Figure 2). The Blyde Restoration Working Group is a catchment working group consisting of key partners such as Department of Forestry, Fisheries and the Environment (DFFE), Working for Water, Working on Fire, High Altitude Teams (HAT), Mpumalanga Tourism and Parks Agency, Blyde Communal Property Associations (CPAs), K2C, South African National Parks (SANParks), South African Environmental Observation Network (SAEON), commercial forestry facilitators and facilitators from neighbouring catchments such as the Sand.

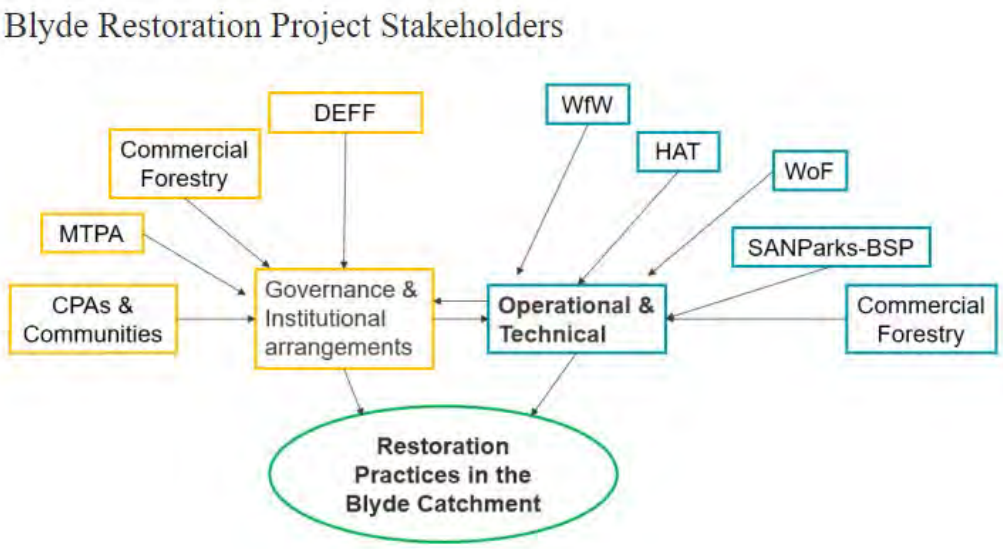

Figure 3.2: The main facilitators which make up the Blyde Restoration working group (Adapted from AWARD, 2018).

3.4.5 Social learning work within the BRWG

The BRWG enables and works based on the collaboration of these key stakeholders. Points of discussion in this working group include topics on ecological and built infrastructure, but specifically elements such as water and biodiversity monitoring plans, funding opportunities, restoration plans, timber resources, wetland assessments and catchment mapping (AWARD, 2018). Similar to the UCP, the Working Group is coordinated by implementer NGOs in the catchment, mainly K2C and AWARD. Different to the UCP however, is the value of reflective processes (ZI_OL) present during meetings, which probably provides foundation for emergent social learning processes. Reflection was evident during my time in the catchment. In one of the workshops I attended reflection was frequently used and mentioned as a tool for working and learning together (ZI_OL; LVI_OL).

Moreover, there appears to be considerable value in cross-catchment learning among stakeholders of the BRWG, with a few activities being adopted from neighbouring catchments (DO1). I observed this during the participatory Ecosystem Service Valuation workshop hosted by Ms Zanele (DO1), which was adopted from the neighbouring Sand catchment; the workshop was first held in the Sand catchment where Ms Zanele appreciated its value for the catchment stakeholders and decided to develop a similar process. This ecosystem valuation workshop, like others in the catchment, acted as a learning space where a diverse group of actors were

present to build their knowledge around the Freshwater Health Index (FHI) tool to reframe their preconceived ideas around the catchment water resources. This workshop represented a learning process in the way it was facilitated but, according to the some of the stakeholders (LI_OL), it would need to be complemented by a long-term process for that social learning to be more visible and better comprehended. Ms Zanele, like Mr Thabo, is an external researcher who brought valuable social learning opportunities into the catchment through her activities.

The facilitators (Ms Zanele and her co-facilitators) of the Ecosystem Service Valuation workshop mentioned the prospect of follow-up workshops, however, these did not take place within the timeframe of my study. Workshops such as these would be valuable if they could be embedded long term in the BRWG; in this way they could develop rich value and close the gaps between stakeholders. An example of a gap was articulated by Mr Richard: *"I feel like the workshop was rushed, there was not enough time, and we were not familiar with some of the processes.…… they could have prepared us prior to it happening and this would have been more valuable."* This quote also shows some of the challenges of researchers facilitating social learning processes in the catchments: while they may add value in the short-term, the once-off or short-term nature of these events also reduces the potential for social learning which usually requires multiple engagements and on-going interactions.

3.4.6 Value of social learning in the BRWG

The general theme from the results is that the working group is a good platform for stakeholder interaction and engagement and therefore most likely for social learning. It seems to allow for in-depth dialogue and shared decision-making. Stakeholders are exposed to further social learning opportunities through workshops offered through the partnership network. An example of this is the value offered by Ms Zanele's workshop. Ms Thando reflected:

> *I went there with an expectation of understanding the river systems of the Olifants, you know, because they said they were doing this Fresh Water Health Index. I knew that usually we get equipped and get to work together, so I was curious to find out what's happening within our river and if we've got enough fresh water and the availability of water and ecosystem services.*

According to Ms Amanda:

> *We are working on the slopes and the teams are working on the lower areas So the workshops are where we get to meet the Kruger2 Canyons and other facilitators in such*

engagements. … It is great exposure, and it adds to learning about what is happening in the catchments.

The above quotes show that the BRWG as a coordinated effort not only allows for the coming together of stakeholders who would conventionally not be able to (e.g. Working for Water centres their work in the field as opposed to being in workshops and meetings with the other facilitators at times) but it also provides an opportunity to build networks amongst a diverse stakeholder set. Through this, I was also able to observe how the Communal Property Associations (CPAs) are involved and add to the reframing as they have first-hand experience of living directly in the catchments. In addition, they are the only stakeholder in the BRWG who have in-depth indigenous knowledge about the catchment. This joint management and shared decision-making seems to contribute to the learning spaces.

As with the UCP, similar social learning shortfalls exist with the working group. The interviews revealed that at times the interactions felt more like an ecological update session greatly focused on restoration (SI_OL) than a multi-perspective, interactive dialogue. Furthermore, not all stakeholders attend meetings or even interact. Meetings are often 'tick box exercises' for tracking key performance areas or to serve the interests of external researchers, rather than facilitating meaningful engagement required for NRM related learning (LI_OL; ZI_OL; RI_OL).

3.5 Platforms for social learning processes: Media

In addition to the physical platforms provided in the two catchments, both the UCP and BRWG offer alternative means to connect with their facilitators to enhance and accentuate engagement and learning in the catchments. These additional platforms could provide an opportunity to improve the learning and social learning experience through the engaged networks they foster. Facilitators of both catchments have regular communication via mailing lists, websites and social media platforms such as Facebook as shown in Figure 3. These results, though not often mentioned by the facilitators, are significant and offer valuable opportunities for social learning. Platforms such as these not only share information to grow the networks but facilitate diverse stakeholder engagement in other forms of learning such as sharing best practices, building virtual networks and encouraging public participation, all of which are important in the SLKMM framework.

Ms Julia highlighted the value of the UCP Facebook page for engaging stakeholders and the broader community. She noted that through this platform they had seen a growing interest in

the work that they are engaging in. By leveraging the value and influence of the social media platforms, catchment NRM can be effectively communicated and shared and this is key to the conceptualisation of NRM I provide in the first chapter. This provides varied platforms for alternative ways of interaction and learning, but more than anything provides a strong basis for growing networks and continuing dialogue and deliberation committed to sustainable catchment management (DO2).

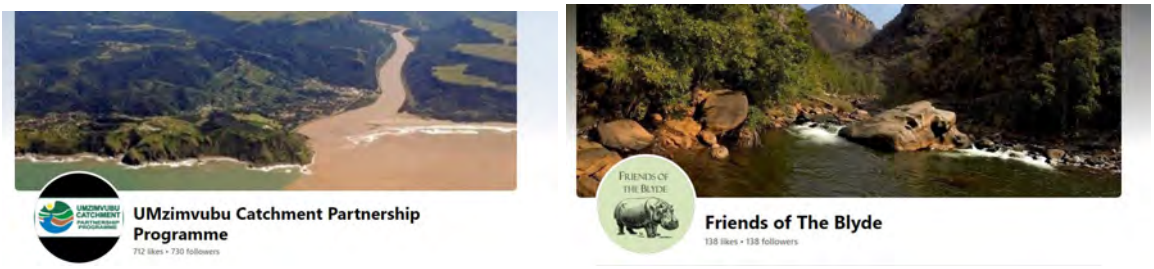

Figure 3.3: Facebook pages of the two groups in the catchments

The greater the platform and the opportunity for facilitators to connect in ways like these, the greater the enabling environment for learning to take place. This was echoed at the convenors forum especially by convenors from the Umzimvubu with Ms Julia stating "*We have seen that social media is powerful in telling the stories and promotes the learning and relationships in the catchment."*

The above quote illustrates the unique opportunity provided by social media for building networks in alternative ways in the catchment. Though not everyone can engage on social media, it helps to builds a further foundation for interested parties to keep conversations going even with those not physically in the catchments. It is however unable to accommodate all stakeholders. Platforms such as these present barriers to those facilitators and stakeholders who have no access to technology as well as those with limited digital literacy. Considering the demographic of the two catchments (see section 1.10), this might be a common challenge which could hinder this type of learning.

The work done on these media platforms, in fact in the partnerships in general, is taken on by the ERS and K2C staff. In doing the work and keeping the partnerships and the platforms functioning, not only do the staff engage, but they also capacitate and support youth programmes which support a significant amount of social learning work on the ground. This will be discussed in the following section.

3.6 Who else is facilitating social learning in the catchments, and where is this taking place?

In order to better understand the dynamics of social learning in both these catchments, it is important to also look beyond the central platforms discussed above to other individuals and groups who are also responsible for certain learning processes, and consider how they facilitate them and the motivations driving the concerted effort. The following section looks at role players involved in facilitating social learning and the reasons behind facilitating these engagements.

3.6.1 Youth initiatives

Within the organisations which coordinate and convene other facilitators as well as stakeholders within the Living Catchments Project (ERS & K2C), I noticed the important role played by youth who are associated with the facilitator NGOs. The youth form and lead collaborative partnerships within or in conjunction with the central platforms such as the UCP and the BRWG. Critical to NRM social learning work and evident in both catchments, is ensuring that stakeholders are constantly engaged and that networks are maintained, strengthened, and grow. The main youth groups and roles in the catchments are Eco Champs, Eco Rangers and Environmental Monitors. In this second half of this chapter, I showcase where and how these youth groups conceptualise and support social learning in their catchments and the significance of their work.

3.6.2 Facilitation practice of Environmental Monitors in the Olifants

The Environmental Monitors (EMs) implement and interact closely with communities in the Olifants catchment. They learn from being exposed to platforms such as the Pride Group, which, like the Blyde Restoration Working Group, is a platform with opportunities for stakeholders to come together around issues of catchment management specifically targeting engagement with the communities and the youth. The Pride Group is not only made up of EMs but is open to all NRM stakeholders in the catchment. The EMs learn from the experienced facilitators and stakeholders in the Pride Group, putting what they learn into work on the ground. It is here where EMs are supported with capacity and skills in conservation and agricultural work, amongst other things. The EMs use this in creative and relational ways, promoting strong qualities of social learning. Facilitators in the Olifants felt strongly about the role this group plays (DO2) to share knowledge and information, and highlighted the role they play in enabling social learning. This is further illustrated in these quotes:

Ms Sinothando (Olifants): *They (EMs) were doing remote monitoring along the Sand sub- catchment. So, we did a lot of trainings with them like facilitation training, conducted awareness with the communities and clean-up campaigns that we involve the communities…we do a lot of trainings and sharing on water, sanitation and hygiene…* (Ms Sinothando is an employee of K2C who supervises and supports the EMs in the work that they do.)

Ms Imi (Olifants): *The Pride Group allowed people to come together and discuss what are the challenges and progresses we are experiencing. If people had projects in the municipality areas they discuss those – engaging with the EMs and it was learning. We would just engage and remove that gap between people doing administrative office work and break those silos. We would come together, analyse data, and determine how to move forward, showing the maps we created.*

The above quotes show that the EMs contribute to multiple processes across multiple levels in the catchment. They contribute to learning in the catchment through their own social learning from the Pride Group (LVI_OL). They seem to be well capacitated for social learning processes through training they receive from some of the facilitators. Results showed that they share knowledge, have discussions and deliberations around knowledge sharing and creative tools used (section 4.2). Through the EMs there is good facilitation work happening on the ground, which seems to be effective in enabling learning (SI_O). Facilitators who mentioned this group during interviews seem to have not been able to articulate their work as accurately as it is evident on the ground. It seems the significance and impact of the Pride Group's work is not being articulated clearly enough and this might make their processes difficult to track, make visible and value.

One facilitative role of the EMs is evident in their forming part of a process where they are known as 'screeners'. In the screening process they use documentary screening sessions to share knowledge, manage projects and create deliberation around water issues in the catchment. This facilitation work is managed under the K2C and communities especially engaged with it (SI_OL).

Ms Sinothando (Olifants): *In K2C, we have this group of 'Screeners' raising awareness with the communities around the journey of water. These youth are showing our water documentary to different villages. After facilitating they have conversations around it. It is meant to be an awareness but also evoke emotions around the challenges of water*

so we can have actions implementations with the communities and the screeners. It has been working well because the communities have been taking initiative. They have something called a mandala garden, it is agro ecology aiming at saving water and there are different themes in the documentary – when they are watching the documentary, they pick up these different themes and because of this there is real change on the ground. We are supported by WWF with funding. It improves relationships between traditional council, our ward councillors and municipalities which all want to get involved. Those are the kinds of things which are showing us real change in the communities.

As described by Ms Sinothando, the 'Screeners', in line with the conceptualisation of social learning in section 1.5, seem to have an impact when it comes to deliberation and dialogue of catchment issues with the facilitators, especially with community members. The social learning which they facilitate has transformative potential according to facilitators such as Ms Sinothando and Ms Luvuyo. The apparent change in the communities' attitude and agency, through their environmental initiatives and conversations, indicates a positive response to the social learning facilitation practice of EMs.

3.6.3 Eco Champs and Eco Rangers facilitation

Similar to the Environmental Monitors, in the Umzimvubu there are Eco Champs and Eco Rangers who work within the local NGOs including ERS. These groups operate for the purpose of advancing social-ecological work in the catchments with the communities. ERS works with rangeland associations where communities are encouraged to sign and learn about conservation agreements (agreements which explain conservation, and state that the community member will act in a manner which respects rangelands through mostly their grazing livestock). Eco Champs and Eco Rangers play a significant facilitation role here. The aim of the rangeland associations is to promote rotational grazing in communal areas, to rehabilitate eroded soils and to encourage sustainable rangeland management. The success of this lies with communities being equipped with knowledge and information of the rangeland management processes that need to take place. This is done through capacitating Eco Rangers to facilitate community-based rehabilitation through conversations, deliberations, sharing of knowledge and in-depth sessions, workshops, and processes on conservation agreements (DU10). The work being done by the Eco Rangers in the communities have social learning process qualities and demonstrate the potential for transformative impact, especially because of the accompanying change in mindsets and behaviour (GI_UM).

As an incentive to communities and rangeland associations which comply with the rehabilitation process, CSA and ERS have partnered with a company known as Meat Naturally to facilitate mobile, convenient cattle auctions (DU7) for the benefit of community members (see Figure 3.5). Here they can sell their livestock and this contributes to social well-being and provides economic opportunities which would have otherwise not been available. This process enables not only learning, but agency through knowledge exchange and learning by doing. A general reflection seems to be that it is a self-sustaining process because the community has learnt and developed agency. Conditions of the rangelands have improved and the community constantly looks forward to the auctions. Having had the opportunity to attend an auction (DU7) it was clear how comfortable with and excited the communities were during this process. I had a few informal conversations during an auction and it was clear that the broader objective of these auctions were understood through compliance and articulation of the purpose of auctions. Reflections in the UCP meetings by Mr Gontse illustrated how these auctions have changed and transformed livelihoods in the catchment:

> *Mobile auctions have so much value when it comes to these communities, they used to sell their cattle in Cedarville which was quite far but now we bring the auctions to them. They understand the value of the rangeland association because of the incentive they get from it. Eco Rangers and Eco Champs play a big role in making sure that communities understand the processes taking place.* (GI_UM)

Figure 3.4: The auction process as it takes place in the Umzimvubu – the process is supported by ERS, CSA, Eco Rangers, Eco Champs, farmers who purchase livestock and facilitators from Meat Naturally. (Photo: Author).

The above quote by Mr Gonste illustrates and contextualises the learning that takes place during the cattle auction process. In line with the social learning literature (section 1.5), it demonstrates how a change in thinking and understanding about the rangelands can take place through practical and engaging processes on the ground that speak to people's livelihoods and needs. These processes demonstrate transformed value and appreciation for the rangeland through ERS support and practice enacted through the auctions.

Eco Rangers play an important NRM facilitation role in communities such as Mzongwana, Makhoba and Sibi, Nkosana and George Moshoeshoe which are sites where there are rangeland associations always willing to engage. Since Eco Rangers are already part of these communities, this enables constant interactions and deliberations to facilitate trust and transparency with not only the Eco Rangers but in ERS too (GI_UM).

The ERS Eco Champs also play a support role when it comes to facilitating conservation agreements within the rangeland associations (KI_UM). In addition to this, they play facilitation roles in other processes such as being part of the UCP quarterly meetings, spring protection work, waste management, fire management, veld monitoring, tribal authority meetings, alien clearing work and developing strategic plans (KI_UM). Eco Champs can interact closely with other stakeholder groups as they are distributed more widely across the catchment. This means they have a reach across farmers, traditional council, and community members (RI_U). They form the strongest links between the abovementioned facilitators and ERS. Eco Champs are selected from communities within the catchment, specifically from five tribal authorities to ensure a flow of information and shared decision-making in these areas. This, as per our definition of social learning in the study, would start constituting the work that the Eco Champs do as a social learning process due to the sharing of knowledge and inviting of inputs and making decisions together with these communities. This relates back to the SLKMM social learning practices (Figure 9.1) such as learning and sharing, coordinating, and convening as well as building important networks.

Figure 3.5: Field visit during a UCP meeting with ERS staff, Eco Champs and a community elder showing other facilitators how springs are protected, followed by a question and answer session (Photo: Author)

Eco Champs, through strong interaction on the ground have co-constructed a considerable amount of the learning material (section 3.6.1) at ERS with the communities, which according to our conceptualisation of social learning is an outcome of social learning processes. In addition, the Eco Champs facilitate a fair amount of learning-by doing especially with the spring protection work (DU5; DU6). They not only share knowledge of spring protection, but actively share the process from assisting in building of springs, to teaching other facilitators and stakeholders about the protection work. Sometimes the community members involved reflect on not only the importance of this spring work but the impact it has had on their lives (DU5). Based on my observations of multiple field-based events (DU5; DU6), I sensed a stronger (than during meetings, for example) sense of a social learning process for us as the attendees of the UCP meetings and for the communities through the field work. The youth seem to know how to communicate the work that is on the ground and integrate knowledge and dialogue amongst different stakeholders. I think it is significant and very important that the youth who are often from these communities understand the dynamics and challenges and therefore alter the work they do in an appropriate and useful way.

3.6.4 Researchers

There are researchers in the catchments concerned with participatory governance and social learning and they gain value from NRM social learning processes. I was privileged to observe participatory workshops conducted by researchers in both catchments. Researchers coming into the catchment often collaborate with local stakeholders to bring in new and diverse perspectives on NRM, and this often leads to innovative approaches to addressing local challenges. The researchers usually bring specialised knowledge and can offer valuable insight and skills which may not otherwise be available in the catchments (DU9; DO1).

Spaces and opportunities have been opened for universities and young researchers to share their work for the benefit of catchment activities. This was observed and reflected upon in the two workshops attended (DU9 and DO1). In the Umzimvubu, Mr Thabo facilitated a series of change laboratories, or change labs, around water resources in the catchment. Change lab workshops are specifically designed to catalyse social learning (expansive learning) and transformation required to change shared activities and address problems of participants. The change labs provided a space where a diversity of facilitators from different disciplines and domains i.e. practitioner, researcher, policy implementer, could be present to dialogue and work together on issues in the catchment. Facilitators such as LIMA, CSA, ERS, traditional authorities, government (such as SANBI), early career researchers and members of the municipality were present (DU9; DU14). This was a diverse stakeholder set with great opportunity for reframing of NRM issues through dialogue and deliberation. Stakeholders (including myself) worked through a series of workshops to develop a co-constructed management strategy for the catchment. The stakeholders ultimately developed two strategies, one for alien management and the other for water management through shared decision-making amongst the stakeholders. Through this facilitated process, a rich social learning process emerged as there was constant deliberation, shared decision-making, reduced hierarchies, and a promotion of agency. This improved stakeholder relationships and an increased level of trust amongst the facilitators was evident in the way everyone interacted during the process and even outside of the process (DO1).

The facilitator of these workshops used a series of tools to enhance the process, and these are discussed in section 4.2. At the end of the series of workshops, the stakeholders presented implementation interventions based on what they had learnt in the change labs. For me this was the greatest indication of a social learning process, one which could even have been transformative. In a follow-up certificate ceremony for the facilitators, Mr Thabo shared

reflection videos of the facilitators and testimonies were shared which showed how valuable the change labs had been.

A similar participatory workshop in the Olifants around the valuation of ecosystem services was organised for facilitators in the Blyde Restoration Working Group (DU1). This workshop was aimed at being a participatory, inclusive ecosystem service assessment process to support the development of a collective understanding of restoration needs among catchment facilitators (ZI_OL). Ms Zanele used the process as a set of planning tools being developed under the Blyde Restoration project. DFFE, MTPA, CPAs, SAEON, SANParks and Working on Fire and early career researchers such as myself were present at the workshop. Through a tool called the Fresh Water Health Index (section 4.2) facilitators working together to map and score different ecosystem services in different parts of the catchment. This workshop was grounded on the reframing of what stakeholders thought they knew about ecosystem services in the catchment versus what was happening based on scientific knowledge shared by the facilitators. Reflections showed the workshop to be a useful process in the deliberation of issues commonly ignored. Many qualities of this workshop contributed to it being a social learning process especially those opportunities that allowed for long-term interactions around the process. The figure below shows facilitators from the Olifants catchment in the ecosystem service valuation workshop by Ms Zanele.

Figure 3.6: Ecosystem valuation workshop by Ms Zanele in the Olifants catchment showing participatory working in groups (Photos: Author)

Though work being done by the facilitator organisations is important in the catchments, it is equally key to open up opportunities for other activities such as research. This not only enables opportunities for new methods and knowledge, but also complements the social learning practices that already exist as seen with these two workshops.

3.7 Social learning challenges in the catchments

In both catchments my findings also indicated some challenges which seem to hinder meaningful social learning processes.

It seems some facilitators find it difficult to articulate the role of social learning because 'official' platforms do not capture it specifically (DU12), or articulate it in the academic sense. Facilitators also felt that if social learning was not acknowledged by all facilitators, it was

difficult to vouch for it or to monitor its processes. This could also be due to individuals expecting social learning processes to look a certain way, and if certain expected qualities were absent, they did not see the processes as social learning. In the Olifants and the Umzimvubu, participants felt that social learning was a new field with not many people knowing much about it (SI_UM; MI_UM). In addition, most of the facilitators in the catchments had no clear conceptualisation of the term 'social learning', similar to the confusion and lack of articulation 'crisis' of social learning in natural resource management (section 1.5). It can be difficult to facilitate and foster processes that are not fully understood.

While platforms such as the UCP and the Blyde Working group are effective, it seems there is no practice of baselines, monitoring, and evaluating to get a sense of whether the learning is taking place or to find out what processes are constituted as social learning processes. This will be discussed further in section 4.2.6. For example, Mr Sam from the Umzimvubu spoke of the gaps where there are no tools or processes to critically look at and assess social learning. Mr Lionel echoed this in the Olifants alluding to the need to capture or document processes taking place.

> Mr Gerald (Olifants): *Are these examples being tracked? Transformative learning is latent in that results happen over time. There should be a baseline, monitoring and evaluation from a transformative learning perspective, and it needs to be tracked over time in these pockets to see how the changes in practice, language or knowledge are being changed over time. We need that baseline in what people know relative to what we are trying to change. We don't do it because we don't have evidence of transformative learning because it is a difficult thing to look at.* (GI_OL)
>
> Mr Lionel (Olifants): *But just in terms of how it's captured. Yes, that's probably the gap. So, from my own perspective, we don't really have the means to capture that learning, per se, except in the form of (meeting) minutes.* (LI_OL)
>
> Mr Sam (Umzimvubu): *There is a role that learning as a whole plays and that social learning plays in the catchment even though it has not been looked at extensively yet, and the channels to look at the learning are not established, but I would say it inherently plays a big role in ensuring that what needs to happen happens and the work keeps going with the facilitators.* (SI_UM)

In addition to the above, tensions and challenges around social learning processes also relate to a lack of stakeholder participation which was experienced by some facilitators. This was a

concern shared in both the interviews and in the forum held by the catchment convenors. There is a frustration linked to the need for more facilitators and stakeholders to contribute to the social learning space in the catchments. Perhaps more external researchers could contribute to this opportunity. This is because social learning processes rely on shared decision-making of all responsibility holders in a catchment, not only the implementer NGOs. Often it is felt that some stakeholders engaging in the catchments are just ticking off objectives rather than engaging in co-constructed process which forms the foundation of social learning, especially in platforms such as meetings and workshops though less so during field visits. During the events I attended, I observed that some individuals absorb passively and do not always contribute to the dialogue or deliberation (DU1-DU4). This could be a reflection of the way in which some meetings and engagements are designed, i.e. in a less participatory and reflective way, or in a way that feels exclusive to some participants or voices This also speaks to the significance of meeting design and facilitation which is discussed in the following chapter. Perhaps meetings and engagements need to be designed in a way that is 'reflection-friendly' and inclusive, with knowledge sharing, rather than knowledge giving or updating. The meetings need to draw on carefully planned structures of participatory workshops or the youth engagements with a clear purpose and objective for social learning.

> Mr Lionel (Olifants): *So that links into that kind of challenge of, you know, these multiple organisations with very specific objectives and initiatives that they're running, how do you align it and make sure people are interacting and learning with it? And prevents, the stakeholder fatigue because, you got this climate positive approaches, you've got the Catchment Investment Program and there is the Freshwater Health Index. All these things. people are expected to attend these as communities of practice to help build what we trying to build. And quite often it does boil down to people starting to sometimes feel like, people trying to achieve project objectives, but it doesn't have any relevance or impact on me at the end of the day, if it's in my KPA (key performance area), it's fine, I'll go because kind of ticks that box, but then for other people, why should they care.* (IL_OL)

In line with the above quote, it seems that the benefits of social learning processes are not known and therefore not much attention is given to the processes. There is limited shared understanding or shared collaboration with specific regard to social learning processes as an outcome. Only a few facilitators understand and carry these out, and even then, these are sometimes not articulated as social learning.

There is still a gap in the social learning processes in both the catchments, and these will also be discussed in the following chapter. Though some facilitators understand the social learning process, there is no formal baseline of where and how these processes are carried out. The partnerships and groups which exist have social learning potential but there are opportunities for improvement. The youth, through the work of Eco Champs and Environmental Monitors carry out important work and share a strong facilitation practice, which if strengthened and improved could enable rich social learning and transformation. With the correct tools and ways of engagement, these two catchments could have thriving social learning processes. Existing social learning tools and practices are discussed in the following chapter.

3.8 Conclusion

In conclusion, the findings represented in this chapter detail the presence of an existent yet varying comprehension of the term ‘social learning’ and its associated processes in the catchments. Facilitated platforms such as the UCP and the BRWG are playing a pivotal role in shaping learning processes. In addition, the involvement and participation of youth through roles such as Eco Champs, environmental monitors and Eco Rangers contribute significantly to knowledge sharing and dialogue among stakeholders. The way events and engagements are facilitated and designed is important as this is seen as the determining factor in learning outcomes as well as the perception of these outcomes by facilitators. Following this, the subsequent chapter will dive deeper into the specific tools and practices employed by the facilitators in the catchments with an emphasis on how social learning is supported and how the SLKMM is reflected in the catchments.

CHAPTER 4:
EXPLORING THE TOOLS AND PRACTICES FOR SOCIAL LEARNING IN THE UMZIMVUBU AND OLIFANTS RIVER CATCHMENTS

4.1 Introduction

This chapter serves as an extension of the narrative presented in Chapter Three where I explored the important role of platforms and facilitators in creating opportunities for social learning. I flagged the significance of platforms such as the UCP and the BRWG in bringing stakeholders together for deliberation and shared decision-making. While I explored these platforms, I also highlighted mechanisms for social learning which might still need to be explored within these platforms. Chapter Three also looked at where social learning is taking place in the catchments and who the different facilitators of these processes are.

This chapter looks more deeply at some of the mechanisms, tools and practices which are used to directly or indirectly foster social learning. What was evident in the previous chapter is that within the discussed platforms and networks, practices and strategies still need to be looked at and fully understood. In this chapter I probe into those tools and practices and look at how they foster and stimulate social learning processes, by building on the narrative in Chapter Three.

4.2 Unpacking social learning tools and practices

The results of this study confirmed that a facilitation practice exists, though those that facilitate, do not specifically see it this way at times. The previous chapter highlighted platforms that present opportunities for social learning, though they are not clearly 'marked' as being for social learning. Their qualities i.e. enabling dialogue, collaboration, deliberation, knowledge exchange and sharing, mean they can be seen as social learning platforms. The questions raised in the study were: If this social learning practice exists in the catchments, how does it come about? What mechanisms are used to support it? What tools are used? How are these tools used and supported? And do the six SLKMM practices play a role in the catchments under study?

There were multiple tools observed in this study. Some were directly linked to stakeholder engagement and learning, while others less so. A comprehensive definition of tools and practices in the context of this study was given in section 1.6.1. Some of the tools were physical tools while others were practices and ways of doing (see Table 1.1). Though not all tools and

practices were specified for social learning, all generally contributed to the facilitation practice. Key to note is that practices vary and are contextual, and in most cases could have been adopted from other catchments or other sources (DU9; DU10; DU13; DO1; DO2) indicating the value of cross-catchment knowledge and learning exchanges. The set of practices discussed in the following sections aim to create a picture of how facilitators ground their learning or social learning practice in the context of their catchments.

4.2.1 Social learning practice 1: Coordination and convening

An essential aspect of understanding how social learning emerges in catchments is understanding how facilitators organise and convene diverse stakeholders. This is important not only for effective catchment management but also for fostering social learning dynamics. Findings in this study confirm that facilitators recognise the significance of establishing and nurturing relationships with the stakeholders they interact with in the catchments. This involves an understanding of their roles, areas of expertise and contributions to the learning environment, all of which play a significant role in shaping the course of social learning (LI_OL; SI_OL). Such knowledge is fundamental in tailoring engagements to specific contexts and ensuring all stakeholders are included and invested in learning processes.

A recurring theme among facilitators is the value of collaborative efforts within the catchment. This collaborative spirit, as previously discussed in section 3.2, enhances the ability to identify opportunities and pinpoint areas that require attention for more effective engagement processes. For example, facilitators attributed the success of the UCP to the coordinated facilitation and collaborative efforts of its three partner organisations, namely ERS, CSA and LIMA (JI_UM). The synergy among these partners in being able to work in a team is vital (ZI_OL). This was also exemplified in the Olifants catchment during the Ecosystem Valuation Workshop (section 3.6.4). Participant feedback after this workshop underscored the strength and effectiveness of the facilitation by Ms Zanele and two co-facilitators from partner organisations

The two co-facilitators supported in the design, coordination, and facilitation of the workshop. Working in a co-facilitation team led to an enhanced sense of collaboration. Additionally, it meant the learning was spread throughout the room with the enhanced participant support. Not only did this contribute to the enthusiasm of the workshop, but it ensured constant dialogue, deliberation, and exchange. The role modelling by the co-facilitators ensured that the attendees

participated meaningfully and learnt about the content. Working in a competent and functional team influences social learning processes due to the improved design, tools and reflexive practice.

The platforms employed for stakeholder coordination in both catchments exhibited similarities. These platforms usually involve the utilisation of tools such as websites, mailing lists, meetings and workshops, all of which were discussed in section 3.5. It is important to note that these tools and platforms are significant because of the flexibility they offer and their ability to disseminate information to stakeholders. Because they are diverse, they offer adaptability to engage a broader spectrum of stakeholders. In addition, coordination in the form of the youth is pivotal (section 3.6.1) especially for stakeholders such as community members.

Coordination practice and the inclusivity for stakeholders relied on critical elements such as communication, adaptability, and flexibility by facilitators. These not only create a shared understanding of goals and processes, but also maintain engagement and reduce misunderstandings and conflicts. These are discussed below.

4.2.1.1 Communication

Communication and language appear to be critical to the facilitation and coordination practice of both the cases. Communication in this instance relates closely to the exchange of information on engagements while language encompasses multiple elements. These elements include how information is presented, how scientific and non-scientific the format is, what information and knowledge is being shared and how this contributes to catchment management. Most of the engagements are designed to provide stakeholders with a clear understanding and conceptualisation of what is going to transpire (before the engagements), with the intent of giving stakeholders opportunity to be better prepared to engage meaningfully and collaboratively during the engagement (MI_UM). Examples of communication platforms are digital methods such as mailing lists through the catchment partners networks. These include circulation of regular emails mostly containing NRM material. This process builds enthusiasm for knowledge sharing, that sets the scene for the physical catchment engagements. Communication through other digital platforms such as social media was also highlighted by the facilitators (see section 3.5). Facilitators such as CSA are increasingly moving to digital social media platforms such as WhatsApp to facilitate stakeholder communication. This 1) enables targeting a larger reach of stakeholders, and 2) makes knowledge sharing easier and more accessible (GI_UM). Digital platforms do, however, present challenges to those without

access to them (e.g. in rural areas where internet access is limited, or for people with limited literacy). It is here where I see the importance of Environmental Monitors and Eco Champs, who span the communities and can communicate where access to digital social media platforms is limited.

In addition to platforms of communication, the way information is communicated was flagged as important (JI_UM, SI_UM). It is important to articulate information and knowledge in a way that facilitates understanding for all stakeholders (ZI_UM) and which further allows for interpretation and representation. Every stakeholder needs to be able to contextualise information in a way that allows them to learn and consume knowledge. Facilitators often expressed that language not only has the power to determine power dynamics but is also key to being respectful and building trust among and with stakeholders.

> Mr Gerald: *I think language is also very critical in our practice, the phrases we use make a difference – for example we have been using phrases like 'getting buy- in', 'educating them', 'delivering the message to them' and that is incredibly undemocratic and somewhat arrogant. The ways we use words as convenors is extremely important; we need to keep an open mind and acknowledge that we might not know everything and that everyone has a piece of the puzzle. We need to be careful not to alienate people and make them feel like we know best so we want to deliver our message to them.* (GI_OL).

There are instances where content communication does not work well and creates a barrier to engagement and social learning. For example, I attended a Climate Positive Action workshop in the Olifants (DO2) where the content was highly scientific and largely unrelatable to the attending stakeholders. The content was given purely through presentation, with occasional opportunities for questions. The lack of engagement in this workshop could have been an indication of the disconnection between the facilitators and the audience, created by the language, content, and engagement design. Working with a diverse set of stakeholders, such as in the two cases, requires contextual analysis and knowing how to effectively share content, knowledge and encourage learning. This requires both flexibility and adaptability as a facilitator.

4.2.1.2 Adaptability and flexibility

Being adaptable and flexible to change is an important characteristic of the coordination practice of these two catchments (DU9; DO1). Not all engagements will be designed the same

as not all engagements have the same purpose. Facilitation should be adaptable and flexible depending on the content and the context. Engagements, through adaptive facilitation should be flexible in order to produce effective learning. Related to this element of adaptability, Mr Lionel mentioned that it was important to design processes that are reflective and meaningful – and not simply another 'check box' exercise (LI_OL).

4.2.2 Social learning practice 2: Learning and sharing

Amongst important catchment social learning practices, mechanisms and tools for learning and sharing hold a position of great significance. Learning and sharing as a practice encompasses the exchange of not only information and knowledge but also collaboration, insights, values and content (DU1-DU4; DO4). In addition, a key component of this practice pertains to collective decision-making by both facilitators and stakeholders (DU8; DU11).

There are multiple tools, aids and learning methods which have been adopted to develop and grow not only the social learning practice but the social learning facilitation practice too. These tools vary in number and application, and some are used specifically, while others are generic and only used occasionally. A summary of some of the tools which were mentioned and seen is provided in Table 4.1, to offer a holistic view of both application and intended outcome.

Table 4.1: Tools and practices which were mentioned in interviews and observed during field observations which enable learning and sharing

Tools and practices for learning and sharing	**Process and intended outcome**
Use of social media (e.g. WhatsApp)	Makes learning accessible to most especially during COVID 19. Fosters knowledge management in a convenient way for facilitators, and a flow of communication to communities. Allows for wider sharing of decision-making. e.g. CSA hydrological cycle to the communities in the Umzimvubu
Visual aid such as booklets, posters, whiteboards (e.g. veld sanitation guide)	Provide key natural resource management messages in non-scientific ways. Breaks down knowledge for easy understanding and sharing. Visuals make it appealing to especially the non-scientific community. Make processes less intimidating and fun. Allows for 'stretched participation' e.g. spring protection toolkit in the Umzimvubu and veld guide in the Olifants
Digital and manual storytelling	Allows for different understandings and experiences of natural resource management. Sparks curiosity amongst facilitators and fosters a different

	kind of dialogue and deliberation. Unique way of knowledge mediation which encourages participation e.g. *The Journey of Water*
Field visits	Enhances different ways of learning by seeing. Encourages network building amongst different types of facilitators. Advances dialogue beyond just conversation. Real world learning providing real world experiences though seeing and experiencing on the ground e.g. alien clearing site visits in both catchments
Participatory map analysis	Allows facilitators to work together to learn around their resources in a practical way. Allows for facilitators who are not on the ground to see lived realities and learn from implementers. Enables dialogue, deliberation, and discourse around prominent environmental challenges e.g. Fresh Water Health Index workshop in the Olifants
Participatory workshops	Interesting way of involving all facilitators. Not only do facilitators learn about the topic at hand but they provide an understanding of the perspectives of others. Builds a narrative of catchment activities around which different knowledges come together. Encourage many types of learning including social e.g. Co-Learning workshop in the Umzimvubu
Clean up campaigns	Translating learning in a practical way – by doing. Provides conceptualisation and knowledge mediation to facilitators. Plastic Pollution clean-up campaign in the Umzimvubu
Frameworks and conceptual tools such as the Cultural Historical Activity Theory (CHAT)	Solicits information concerning facilitators' activities in the catchment. Through change lab participatory workshops double stimulation tools allow for conversation and dialogue, key for social learning processes. Realised potential for transformation and transformation e.g. Co-Learning workshop

The facilitators in the catchments have developed creative and unique ways of utilising learning material and inviting interest from a variety of stakeholders. Booklets, lesson plans, workshops, capacity development engagements, and topic-specific training events are some of the tools which were mentioned as advancing social learning practice. Additionally, some of the facilitators alluded to exploring frameworks and conceptual tools for their learning practice (TI_UM, LI_OL). In addition to the physical tools emerging from this practice, the facilitators also highlighted a few qualities as essential for learning and sharing, and accompanying the

tools, including fostering trust, promoting respect and integrity, and promoting ways in which facilitators can learn and benefit across different stakeholder responsibilities.

Mr Sam from LIMA emphasised the importance of creating workshops to simplify contexts and clarify ideas for learning and sharing to take place (SI_UM). This is often through community centred workshops where time is spent thoroughly unpacking and describing the concepts, seeing the impacts, and finding local solutions together with the communities and other stakeholders. For example, the CSA in the Umzimvubu has also designed Ecosystem Based Solutions workshops for not only the community members but for stakeholders on a larger scale. This was designed not only to introduce participants to the concepts of ecosystem-based solutions, but to also help support learning around conservation agreements and rangeland management. Though these clearly provide a grounding for learning to take place as described in section 1.5, some of the tools lack elements to cater specifically for social learning, which is not always negative especially if social learning is not the aim. It is important to note also that not all engagements and tools need to enable social learning. Perhaps what is important is to combine or modify existing tools so that they promote social learning. Social learning should not be seen as an end, rather a process that strengthens stakeholders' ability to engage with complex problems associated with catchment management.

Mr Thabo, who is a visiting researcher and facilitator in the Umzimvubu echoed the importance of using conceptual tools for social learning and shared decision-making. He uses CHAT (Cultural-Historical Activity Theory) in his workshops which makes it easier and simpler to create spaces for dialogue and engaging tensions in the catchment amongst stakeholders (see section 3.6.4) (TI_UM).

Having attended and participated in change laboratory workshops, the tool was interactive and inclusive of all those present and promoted open dialogue and learning. Change Laboratory workshops intentionally use mediation tools (e.g. the activity system triangle) to encourage participants to overcome tensions and contradictions by analysing and reconfiguring their shared practice (Engestrom & Sannino, 2011). This facilitator also used the Value Creation Framework (Wenger et al., 2011), a social learning tool that aims to assess different forms of value that participants derive from engagements. Ms Thando from the Olifants also used the Value Creation Framework as a tool in her practice, mainly for evaluation purposes (D01).

As a similar conceptual tool, Ms Zanele in the Olifants used the Freshwater Health Index (FHI) tool (section 3.6.4 and Figure 4.1) to allow facilitators to learn about issues of ecological

infrastructure. The FHI tool is an ecosystem health tool used to make connections between freshwater, people and their governance systems. Social learning is an inherent property of the tool (Vollmer et al., 2018, p. 306). Ms Zanele stated that the participatory nature of her workshops stimulated an overwhelming amount of engagement and sparked conversation not only about the Olifants but also regarding other sub-catchments (ZI_OL). She credited this to the participatory and interactive design of the workshops (through the FHI tool) which also made the workshop a social learning one.

Figure 4.1: Fresh Water Health Index scoring depiction, as a tool used by one of the facilitators in the Olifants catchment (Vollmer et al., 2018)

The Olifants facilitators were also exploring alternative visual tools to promote learning amongst stakeholders in the catchment. One of these was a veld and sanitation guide booklet (LI_O) which addresses key environmental issues of the catchment. Through this booklet, which includes many visuals and simplified terms, stakeholders (especially from the non-scientific community) can access the learning material and interact with the others through it. This relates back to the element of diverse perspective inclusivity as discussed under the transformative worldview in section 2.2. The participants vouched for the effectiveness of this booklet as a knowledge dissemination tool and as the basis for starting dialogue around activities in the catchment: *"We feel like they [booklets] are more effective, even for the tribal authority, where people are also busy that they [communities] can come and see and engage with them [booklets] too"* (Ms Liyabona) (LIY_OL).

The potential for these booklets to enable social learning depends on how people engage with them. For example, there is a difference between simply disseminating them for individuals to read versus including them as a tool to promote multi-stakeholder dialogue.

As in the Umzimvubu, the Olifants also has awareness campaigns targeted at spreading catchment management information and inherently promoting catchment education across stakeholders. A team of restoration custodians ensure capacity development, raise awareness, and conduct training with partners of the Olifants catchment (SI_OL). Like the above, though these seem to make a significant difference in terms of creating a foundation for dialogue and information sharing, certain key elements need to cement this as a social learning process such as the sharing of decision-making. These processes are largely characterised by information transfer with limited opportunity for exchanges of perspectives which limit their potential to enable learning (SI_OL).

Facilitators shared that what seemed important for social learning was to continue creating spaces for dialogue to happen; this relates to engagement design as well as coordination (LI_OL; ZI_OL). Further, it is important to create opportunities for interaction where 'specialists' and 'generalists' can converse and navigate power differences often caused by expertism (DU12). A good example of this would be the UCP meetings in the Umzimvubu and more specifically, the field visits (DU5). In addition, participants from the two catchments emphasised the importance of creating a space for bottom-up (and tools which enable this) rather than top-down engagement approaches which has been the typical format in the past. Bottom-up approaches improve collaboration which is at the centre of the conceptualisation used in this study of social learning. Furthermore, they improve not only the decision-making process but allow for the empowerment of stakeholders to share inputs and explore interdependencies. At the convenors forum, facilitators emphasised the need to incorporate and work with the notion of equal partnership grounded on respect and trust (GI_UM). Mr Thabo from the Umzimvubu noted that any learning and sharing in the catchment needs to be grounded on several 'heart skills', namely trust, respect and integrity (TI_UM). According to him, learning and sharing needs an environment of trust and integrity. These will, in the collaborative spaces, promote not only reflective thinking but also minimise conflicts, ensure respectful communication, and allow for empathy and an openness required to promote genuine learning and interest.

4.2.3 Social learning practice 3: Clarifying context and ideas

This practice, compared to the others, was more difficult to gauge and investigate in the catchments. When asked what it is they do to clarify context, facilitators expressed the strong role required of a facilitator (ZI_OL; SI_UM; MI_UM). Facilitators needed to be knowledgeable about the context and the content of the activities to translate and share this

during engagements. This relates strongly to the coordination of social learning practices where it is important to bring stakeholders together with a clear conceptualisation (e.g. clarifying context) of the event and reasons for coming together also taking into regard the importance of the knowledge of stakeholders.

Results showed that facilitators try to be actively engaged in the catchments to ensure that relevant people are present at field visits, meetings, and workshops, i.e. they build interpersonal relationships with stakeholders outside of the formal meeting events(JI_UM; SI_UM). Mr Sam from the Umzimvubu catchment reiterated the idea that there needs to be an understanding of what needs to be done in the landscape by all parties including the facilitators and stakeholders e.g. to understand the context, and the needs of the context. In addition, communities need to be engaged with carefully, which requires understanding of where one as a facilitator is coming from and what the intent of coming together is (SI_UM). This relates back to the example of the Climate Positive Action workshop (D02) and how it was not very successful in engaging stakeholders and how it could have been strengthened through a contextual profiling of its intended learning participants.

The spring protection and alien clearing work in the Umzimvubu presents a strong case for the importance of clarifying context (DU5; DU6; DU7). I sensed a lot of trust from the communities during my field visits. This trust might have been based on understanding the work that the implementer organisations do through close interaction with them i.e. context has been clarified and trust has been built. Communities seem to understand the goal of the implementers and how they feed into the catchment management ‘bigger picture’. During a spring work field visit in the Umzimvubu, a community member part of the spring protection work expressed how important they think catchment management is, and how much they have learnt and now know e.g. they understand the context and why the work is being done (DU1). These learnings occurred through interacting closely and working with the ERS team (and most importantly the youth who facilitate there) to protect the springs (that their families have been using for years).

Clarifying context needs to be managed in conjunction with monitoring and evaluation work(DU1-DU4). Monitoring and evaluation enables the identification of gaps in processes of natural resource management to evaluate how and where clarity can be provided through close stakeholder interaction.

4.2.4 Social learning practice 4: Engaging tensions

Though there are platforms in the catchments, there are limited opportunities dedicated to the practice of engaging with tensions (DU1-DU4). This could possibly be due to capacity constraints in terms of facilitation skills available. Intentionally engaging with tensions is especially important for catalysing social learning. In general, it seems that there are tensions in both the catchments specifically related to the implementation of NRM activities that express themselves relationally. An example of this in the Umzimvubu took place when the Expanded Public Works Programme (EPWP) teams clearing on the ground were frustrated about the payment processes at one point. These frustrations were directed at the NGO implementers though challenges were related to the government department disbursing the funds (DU6). Through conversation, it emerged that the tensions were driven by changes demanded by the Auditor General in institutional processes and how procurement and payments worked, and this reflected strongly on the ground. Things like this seem to compromise trust and relationship building, especially between the communities and implementers, which could compromise learning or any openness to it (this also affects coordination). Spaces to address tensions with those affected are limited. There was, however, a learning session held with the implementers and the funders to try and rebuild relationships in the catchment so that partners – government and NGOs – can address the payment challenge together (DU8). This session was a social learning process, as labelled by the facilitator and experienced by stakeholders (JI_UM; SI_UM; MI_UM) (I attended as well). It was productive and solution oriented, and was organised by a facilitator from outside the catchment, although from a partner organisation. Perhaps this demonstrates the need for contracted social learning facilitators in the catchments or the need to build social learning facilitation capacity with facilitators in the catchment. Sometimes it may be necessary when engaging with tensions to draw on outsiders who are less invested in the issues, an insight relevant to how one designs social learning processes.

In the Olifants, tensions occurred within and between different industries operating at catchment level, for example, the mining industry and the farmers' associations (LI_OL). Mining in the catchment is a sensitive issue, especially regarding catchment management activities. The mining industry has adverse environmental impacts which in turn affects NRM negatively. Some facilitators in the catchment partnerships were concerned about mining impacts and advocated for catchment restoration (LI_OL). This was because at some point there were talks of open cast mining which would have compromised the state of water resources and water security even further. These tensions seem to often be ignored or not

articulated or expressed during meetings (SI_OL). I suspect that this could also be a cause of lack of trust between facilitators and stakeholders and contribute to breaking down working relationships. An additional tension discussed in the Olifants was linked to CPAs (Communal Property Associations) and how they often take priority in benefiting from the catchment socio-economically which leaves other community members often feeling ostracised and excluded (LVI_OL). Again, there was no mention of how such tensions could be resolved beyond inviting stakeholders to engagements such as meetings and workshops.

As mentioned in section 3.7 a significant challenge in both catchments is stakeholder participation and genuine engagement. The participation tension is one which was echoed with great frustration (SI_UM; MI_UM). Stakeholders stated that a lack of catchment participation causes breakdowns in communications and in stakeholder relationships (for example, could cause breakdowns in relationships between the municipality and local NGOs) which causes further loops of tensions which hinder all other potential social learning practices. The biggest question is how these tensions and breakdowns in communication are addressed.

Though there are structures for dialogue and deliberation in the two catchments, there are limited platforms and opportunities to intentionally engage with tensions. Through reflection, the facilitators mentioned practices they feel are needed as a starting point for engaging with tensions. They often mentioned the importance of being able to hold spaces and giving time to deliberative discussion linked to uncomfortable conversations and relationships (RI_UM; SPI_UM). Though this was mentioned in the interviews, it did not seem to come to fruition on the ground. Facilitators from the Umzimvubu added that the easiest way to ease such tensions was to understand the context of NRM work through different stakeholders lenses (which shows how important coordination and clarifying context is) with a strong element of communication in one's practice (TI_UM; RI_UM).

In addition to opening space for communication, some facilitators mentioned conceptual tools that they feel are beneficial for the practice of addressing tensions. Mr Thabo uses CHAT and its associated tools in his facilitation practice to address contradictions and tensions (section 3.6.3). Not only do tools such as CHAT stimulate and promote social learning, but they are important in gauging contradictions between stakeholders in a setting (TI_UM).

Another important tension exists between different disciplines, occupations, and stakeholder roles (or domains). For example, tensions between the scientific and non-scientific community members or between policy makers and implementers (JI_UM; LI_OL). Many participants at

the convenor's forum felt that most catchments in South Africa still operate largely under top-down management approaches (for example, Ms Julia and Mr William) that constrains stakeholder autonomy and freedom of expression. Here again it becomes important to look at how one communicates and addresses stakeholders tensions created by power dynamics have great potential to hinder transformative social learning.

Platforms such as the UCP and the Blyde Restoration Working Group could be seen as good opportunities to address specific catchment tensions. Platforms already exist where stakeholders engage, meaning most of the groundwork is done already (MI_UM; RI_OL). Drawing on conceptual and analytical tools like CHAT could aid in promoting learning and finding collaborative solutions.

4.2.5 Social learning practice 5: Building networks

There is a strong sense of partnership and relationship building that is being fostered amongst stakeholders in both the catchments in this study. There is a clear intent for relationship building through existing platforms and mechanisms (DO1; DU1-DU4).

Results show clearly that communication is key to building networks with diverse stakeholders. Important to network building is being able to bring policy makers together with the researchers, implementers, the government, the community and traditional authority in spaces of mutual understanding and equity (DU1-DU4; DO1; DO4) i.e. the development of a diverse multi-stakeholder platform (some already exist) strategically formed around the idea of strengthening networks. This means making sure that the opportunities for networking will bring policy advisors, researchers, government stakeholders (both local and national) together to develop an appreciation of the work happening on the ground i.e. through platforms such as the UCP.

A stakeholder from the Olifants catchment alluded to the importance of building these networks through platforms such as catchment management strategy development processes (LI_OL) (again, with all key stakeholders) and being open to the idea of being adaptable, open to new ideas, and new ways of working together in a constantly changing system.

In line with this, there was a strategy alignment session in the Umzimvubu which offered an opportunity for relationship building (DU8). This session was so productive that an additional network and community of practice was created from it. This was known as the Water Alien Task Force (WATF), created with the intent of being a specific platform for alien and water

challenges in the catchment. Networks such as these can be, and should be, built from foundations such as the UCP and the BRWG.

There are a few shortfalls in stakeholders supporting each other to build networks. Though the NGOs in the catchments have good working relationships and networks amongst themselves as the main implementers, some stakeholders are reluctant to participate in certain events. Mr Mandla, amongst other participants from the Umzimvubu, shared this sentiment:

> *It is sometimes difficult when work is sometimes one-sided in the catchment, when certain stakeholders assume the roles of implementing and are working more than others. It gets a bit tiring to incorporate processes such as social learning because you yourself as a facilitator are under pressure and chasing deadlines.* (MI_UM)

The quote above shows how if, for example, the facilitators assume most of the work this might result in a divide among the stakeholders and might be problematic when trying to build these networks in future.

Key tenets in building networks from the study interviews included strong and effective communication, fostering an environment with a common understanding, making expectations clear, aligning social learning engagements with deliverables, and building trust (ZI_OL; LI_OL; TI_OL; TI_UM; MI_UM; SI_UM). In addition, it is important to invest in the small conversations happening outside the outside the meetings and the workshops spaces. Ms Zanele and Ms Sinovuyo in the Olifants catchment spoke of the importance of how as a facilitator one needs to value individual one-on-one interaction with stakeholders. I think this was shared as it would 1) promote trust through more intimate relationships, and 2) clarify context for several stakeholders, both of which are key to social learning. Ms Rachel, a facilitator in the Umzimvubu, stated at the convenors forum that so much importance lies in the informal dialogue, whether one-on-one or in a group. These spaces, especially for informal conversations should be normalised and engagements should be designed in a way which allows enough time for connecting and for informal conversations to occur. Many facilitators felt that informal conversations played an important part in fostering social learning (TI_UM, LI_UM, AI_OL) – in the chatter during tea times, in the informal spaces where lunch is held and even when the conversations are not about NRM. Real knowledge transfer and learning takes place here often and more spaces such as these could be created.

> *We often think that when we have conversations, we are not doing real work, what we don't realise is that the conversations are the work … we feel guilty when we have these*

conversations and often this is where the learning is taking place, it happens in the midst of conversations together, conversations with the young people - the hard work is the conversations. (RI_UM)

4.2.6 Social learning practice 6: Evaluate and change

This practice is fundamental to tracking social learning processes and engagements. Feedback from monitoring and evaluation can inform the improvement of other social learning processes. Not only does this practice allow for better decision-making, feedback and reflection, it is also key in the adaptation of social learning processes. Key themes in the monitoring and evaluation practice in the catchments were the presence of monitoring through evaluation forms, reflective processes, and frameworks.

Leading facilitators in the two catchments acknowledged the importance of monitoring and evaluation to their practices (ZBI_OL; RI_UM). This can be done using evaluation forms. Though these are valuable and useful, it is questionable as to whether they capture the essence of social learning in the catchments. Often evaluation forms present a limited scope as well as a limited context of the engagements. Forms can sometimes present biases and are not usually reflective in nature, though this is not always the case. In the Umzimvubu, when I attended the Ecosystem Based Adaptation workshop, the evaluation forms came only a few weeks after the workshop (DU10). This delay might prevent capturing fresh key insights of stakeholders and facilitators. A delay such as this would likely also result in delayed actionability of engagement outcomes.

The Olifants catchment facilitators emphasised the importance of reflective practice for their evaluation practice (ZI_OL; LI_OL). They stated the importance of reflections amongst stakeholders and between facilitators. For example, Ms Zanele and her two co-facilitators made sure to foster a reflective practice amongst themselves prior to their workshops, during their workshops and even after the workshops. They interrogated their workshop process fully, to maximise the learning experience of their stakeholders, which from stakeholder reflections was a great success. This relates back to the importance of workshop process design and to the practice of coordination and planning social learning processes.

Related to the practice of reflecting above, K2C has started investing in monitoring and evaluation (M&E) frameworks. The K2C has developed a strong interest in seeing how best they can evaluate and monitor the work they engage in. This, however, is mostly not related to their social learning practice as stated by the K2C facilitators (ZBI_OL). They expressed

wanting to integrate monitoring and evaluation in relation to when they build stronger social learning practice. In contrast, I didn't see or hear much mention of M&E frameworks in place in the Umzimvubu catchment for their processes; this doesn't mean they do not exist and perhaps I was in the catchment at the wrong time for observing these. Mr Thabo, however, facilitated learning in the catchment using the Value Creation Framework. Having seen and participated in these workshops, this framework has real potential to capture the true essence of what facilitators and stakeholders gain from experiences on the ground.

> *But just in terms of how it's captured. Yes, that's probably that's probably the gap. So from my own perspective, you know, we don't really have the means to capture that learning, per se, except in the form of minutes and that kind of thing.* (LI_UM)

Challenges in monitoring and evaluation might affect the other social learning practices. It is key to 'capture' social learning to see how to improve its processes in future.

4.3 Exploring the transformative potential of social learning in the Umzimvubu and Olifants catchments

There is evidence of transformative social learning in the catchments. There are changes in values and perspectives among some stakeholders, especially community members.

Some facilitators who were interviewed from the Umzimvubu seemed to be confused by the term 'transformation' or 'transformative social learning'. Two of the facilitators, however, were vocal about the potential transformation which has already taken place in the catchment. At the catchment convenors forum, facilitators from the ERS emphasised the transformation they had seen from their processes in the catchments.

> Mr Mandla: *I think the traditional leaders in these communities with a bigger picture mindset, where they understand that we are here, we're here to learn, we're here for transformation, and we're here for the long-term benefit and they understand it because they understand that they trust us.* (MI_UM)

The quote above depicts the importance of traditional leaders in a catchment such as the Umzimvubu. They play an important role in bringing not only an immeasurable amount of knowledge to deliberations, but they also ensure a strong relationship between traditional council and other facilitators for effective and shared decision-making which is a strong tenet of social learning.

In addition, those in the Umzimvubu catchment also mentioned how through some workshops and engagements, such as the co-learning one by Mr Thabo, stakeholders have over time gained confidence and have changed in how they interact in engagements which has influenced the general attitude towards participating in learning exchanges. Sustained participation and observation is required to see evidence of transformative social learning.

> Mr Thabo: *I've seen people come up with ideas of things they're going to do and I've also seen how people were like, 'you know, my way of thinking concerning this thing has changed and the way I view this now has changed.* (TI_UM)

The above sentiment was also shared by another facilitator from the ERS. Even though many may not notice, there has been transformation in the catchment and this was evident through stakeholder interaction as expressed below.

> Ms Rachel: *Building on that and our example from UCP, Mr Sipho was saying transformative learning has happened with the communities and I asked how he knows this is transformative learning that is happening and how do you know its change - what has changed and how has it changed?We boiled it down to that the knowledge has changed, people have gotten knowledge, the language has changed with the facilitators they deal with for example the livestock farmers they deal with – how they work together has changed and there has been institutional change from the grazing associations. So, in these different types of changes – passive changes and the explicit changes. It is only that we figure out the explicit changes – those in practice or behavior but we often overlook those institutional softer changes which are the precursors, these are the change in discourse, a change in knowledge and a change in language before you hit those practices.* (RI_UM)

Mr Lionel in the Olifants emphasised the point of needing a Catchment Management Agency for all catchment management strategies which need to be documented. Mr Robert shared the same sentiment, of needing to document and track learning opportunities:

> *Transformative learning needs to be tracked over time; it is a difficult element to see especially when doing a short-term study such as a masters. It needs to be tracked carefully over multiple processes which could span a few years. We don't really know if it is happening in the catchment because there is no way to look at it.* (RI_OL)

This goes back to needing to use existing platforms in the catchments which will specifically foster social learning and social learning transformation, and which have in place mechanisms to carefully track and monitor such processes. Through such platforms, it will be easier to identify key tensions and address them thereby moving closer to a social learning practice. Mr Lionel stated that this would improve the opportunity for transformative learning.

There is also a need for closer and sustained interactions between policy, implementation, and research in both cases. This speaks to and relates to the practice of building networks (section 4.2.5). This requires a diversity of stakeholders to contribute and a distribution of responsibilities for ongoing social learning processes. This will improve working relationships but also open opportunities for other things such as funding. This funding could be used as a long-term injection to youth programmes who contribute to the facilitation spaces and build capacity as discussed in section 3.6.1.

There are opportunities for learning and social learning which could be achieved through catchment structures across policy, implementation and research as shown in Figure 4.2. The diagram shows close relations among research, policy and implementation which might favour conditions for social learning. A champion might need to 'spearhead' processes to render these spaces more visible and appealing to the facilitators, for example, the LCP positioned itself as a champion in the catchments. Through funding the catchments, one can start looking at how transformation is taking place.

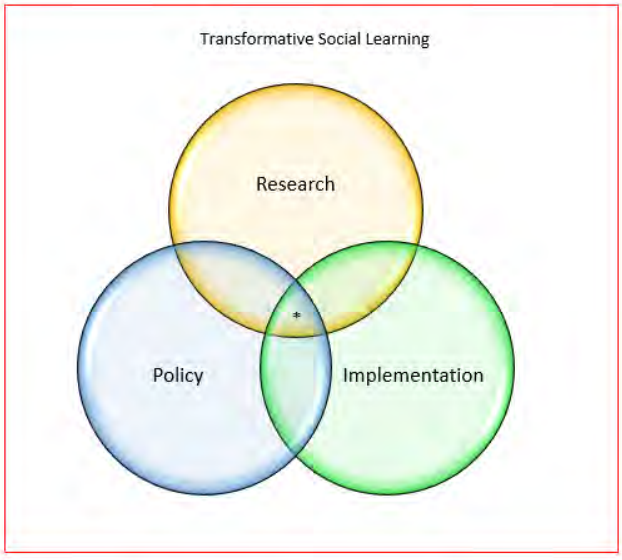

Figure 4.2: Interface at which facilitators believe transformative social learning is achieved (the asterisk shows where the catchments need to be operating for transformative social learning) (Source: Author)

It is likely that transformative social learning is occurring but going undetected. For example the work that is done by the youth represents early stages of transformation especially in the communities, both for them and for stakeholders in the catchments. A stronger practice of social learning monitoring and evaluation would better showcase evidence of transformative social learning.

4.4 Conclusion

In the catchments in this study, there are facilitators who assume important coordination work. This effort lays groundwork for social learning processes and has the potential to drive transformation. Coordination, as one of the six SLKMM practices, is pivotal to ensuring that social learning processes are transformative. Transformative potential can be seen through how stakeholders participate and interact, and this needs to be captured and extended as it currently seems to be happening at a small scale only. Existing platforms should not only serve as arenas for dialogue and knowledge exchange but also as arenas for practices such as engaging tensions and monitoring processes in, for example, work done on the ground, especially by the youth. It is noteworthy that a dedicated practice for monitoring and evaluating social learning is largely underrepresented in both catchments, therefore affecting other social learning practices. The development of a more robust reflective monitoring practice is imperative, as it plays an integral role in supporting and elucidating other social learning practices. This will present opportunity for expansion and growth in transformation for both catchments. The following chapter will synthesise the results of this study and add concluding remarks.

CHAPTER 5:
DISCUSSION OF RESULTS, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION

This conclusion chapter serves as the synthesis for this study. It not only concludes but also contextualises and discusses the results of this study. The primary objectives of this study were to explore social learning processes and practices in two South African catchments. To achieve this, I embarked on a qualitative research journey which employed different data collection methods as outlined in Chapter Two.

Key findings showed:

1) *The importance of facilitated platforms which are operational and allow for collaboration, dialogue, and deliberation.* Platforms were seen to be partnership based which promoted stakeholder engagement and inclusivity. Partnership platforms exhibited multiple characteristics of supporting a learning environment as conceptualised by Cundill and Rodela (2012).
2) *Through facilitation from organisations in the catchment, i.e. ERS and K2C, social learning, though sometimes not articulated as such, is supported in multiple other ways in the catchment*. These ways include:
   a) promoting activities such as youth facilitation, and
   b) allowing both external and internal researchers to operate in and promote NRM in the catchment.
3) *There is evidence of the six SLKMM practices in both catchments.* These practices exist in different capacities and may vary. Some of the practices, i.e. learning and sharing, are more evident and practised more than others, i.e. monitoring and evaluation. It seems that what is important and a unifying theme among these practices is the quality and design of process and engagements.
4) *There is transformative potential in the social learning processes occurring in catchments.* This is from the perspective of the facilitators and stakeholders who are active in the catchments. The challenge with this, as per the findings, is having opportunities to capture and track these transformative processes over time.

5.1 The importance of partnership platforms for social learning

Results showed how important partnership platforms were in the two catchments. Frequently mentioned was the Umzimvubu Catchment Partnership in the Umzimvubu catchment and the Blyde Restoration Working Group in the Olifants catchment. Both platforms present spaces where stakeholders can come together and engage regarding NRM issues in the catchment. The opportunities given by these partnership platforms are in line with the conceptualisation of social learning in section 1.5. They allow for dialogue amongst stakeholders, shared decision-making and deliberation. Shortfalls are discussed in detail in section 3.4. These platforms were popular and a frequent theme in the results, and their existence led to many social learning outcomes in the catchments. They promote a strong sense of stakeholder engagement and enable collaboration throughout the catchments.

5.1.1 Collaboration and stakeholder engagement in the catchments

Social learning literature highlights the importance of collaboration and collaborative platforms for both stakeholder engagement and social learning. For example, O'Donnell et al. (2018) stated that water governance is enhanced through partnership. Using a framework called the Learning and Action Alliance, they motivated strongly for how partnerships and partnership platforms enable social learning and collaboration. Further, they noted how collaboration is crucial to sharing experiences, skills and solutions amongst individuals – especially those who share common challenges. Fisher et al. (2020) as well as Jadallah and Ballard (2021) have highlighted how collaborative platforms are important for social learning, especially because they are key for engaging tensions, and this is key as it aligns with one of the six SLKMM practices for social learning (section 4.2.4). Musavengane et al. (2019) echoed the above and identified collaboration and participation as crucial for managing natural resources in Sub-Saharan Africa, and specifically in South Africa.

Wals et al. (2009, p. 3) have creatively described why social learning is more likely to be present in collaborative spaces such as those mentioned in Chapter Three:

> "Chaos frequently emerges in an (improvising) jazz ensemble, but structure rules. Everyone makes up part of the whole and that whole is, if it sounds good, more than the sum of the parts. Every musician has his/her own experiences and competencies, but also intuition and empathy. The ensemble doesn't know how things will sound ahead of time, but its members instinctively know when things sound good. They have faith in one another and in a good outcome. Leadership is sometimes essential and

> therefore provided by one of the musicians or a director, or it sometimes shifts and rotates. The music is sometimes written down, though this is often not the case, and everyone simply improvises. If it sounds good, then the audience will respond appreciatively, that is to say, those who enjoy jazz music (and not everyone does…). People from the audience sometimes join in, changing the composition of the ensemble. The acoustics of the hall in which the music is played is important as well: not all halls sound alike and some have more character. A concert may also be recorded to serve as inspiration elsewhere, though this does not happen often".

Collaborative platforms (such as those mentioned in the catchments) are known as learning spaces in literature. Learning spaces are defined as areas for interaction, deliberation and reframing as a lens for evaluating social learning processes (Lumosi et al., 2019). These learning spaces include workshops, training sessions, field visits, online platforms, knowledge sharing hubs and learning laboratories. Lumosi et al. (2019) analysed the emergence of social learning in learning spaces within transboundary river basin management. As in this study, they aimed to understand how learning occurs and is embedded in emergent processes and learning spaces in the management of the Zambezi River through platforms such as the Zambezi Water Course Commission (ZAMCOM). ZAMCOM is similar to the UCP and the BRWG in the sense that it was established to oversee the equitable utilisation, management, and development of resources within the river basin in the two South African catchments in this study. ZAMCOM is made up of council ministries, technical committees, and the secretariat. Lumosi et al. (2019) reiterated the ability of learning spaces to provide physical spaces (through meetings and workshops) and structural spaces (through protocols) which influence management practices, and learning through the reframing of different disciplines. These spaces often see the development of new institutions e.g. the WATF platform which was born through the UCP in the Umzimvubu catchment (section 4.2.5).

Learning spaces which enabled deliberation and dialogue proved to be very important as a product of the partnerships in the catchments as outlined in section 1.7. The convened and organised partnership structures in both catchments play an active role in promoting deliberation, knowledge sharing and negotiation (Murti & Mathez-Stiefel, 2019). In the Dee basin, Scotland, the lead organisation (which would be the equivalent to the ERS and K2C in this study) recognised that it would be impossible to engage on environmental matters and improvements without the knowledge and the expertise of others such as farmers, a model resembling that in both the Umzimvubu and the Olifants catchments. This contributes to

understanding why partnership platforms are key and essential for social learning in the catchments.

In exploring the UCP and the BRWG, it was found that they are important for social learning. In essence they are able to (1) convene and organise facilitators (Mostert et al., 2007), (2) enable collaboration (Fisher et al., 2020; Pahl-Wostl et al., 2007), deliberation and dialogue (Garmendia & Stagl, 2010), and (3) allow for shared decision-making (Lumosi et al., 2019). According to Snorek et al. (2022), one of the reasons the UCP is important and functional, is due to the care-based, non-hierarchical leadership it supports. The UCP and BRWG provide a physical space to collectively pool resources, knowledge and expertise resulting in accomplishing a vision with other stakeholders which can increase trust, transparency as well as cooperation. The diagram below (Figure 5.1) shows the importance of platforms such as the UCP and BRWG in collaboration and therefore in promoting social learning.

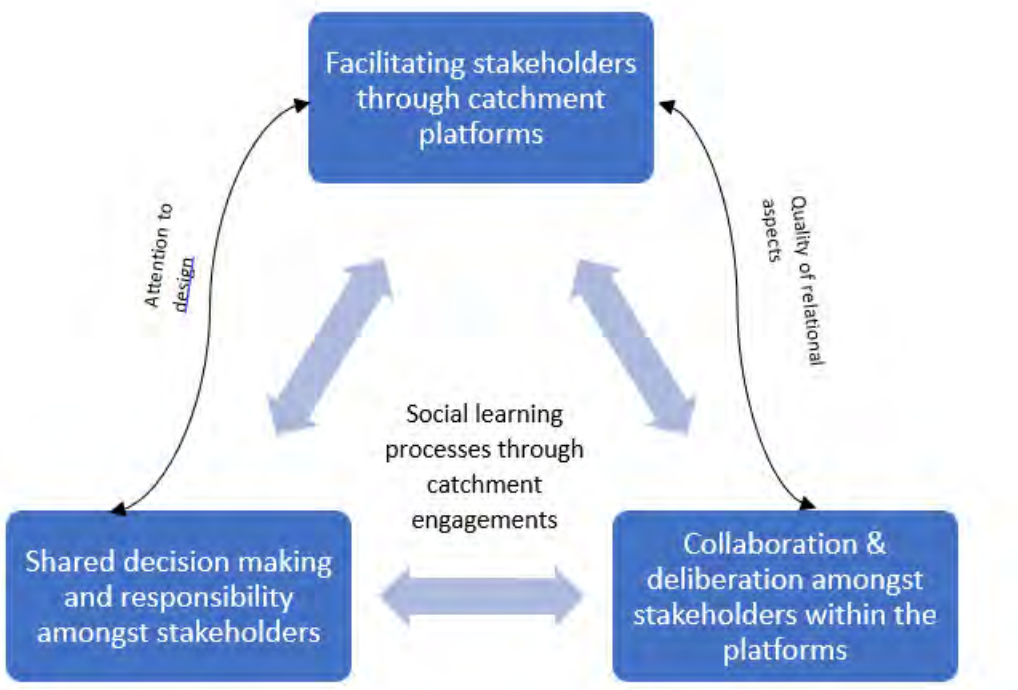

Figure 5.1: Enabling process for social learning in the catchments (Cundill & Rodela, 2012; Ernst, 2019)

5.2 Social learning processes from catchment facilitators

Findings in Chapter Three revealed that a facilitation practice exists in the catchments. The majority of social learning convening is assumed by implementer organisations such as ERS in the Umzimvubu and K2C in the Olifants catchment. These two organisations facilitate much

NRM work and in addition, were recognised for their convening and facilitation role by the SANBI Living Catchments Project. They work in collaboration with other non-governmental organisations highlighted in Table 3.2. Literature refers to the role and responsibility which often lies with NGOs for work that is done in complex adaptive systems (Cockburn et al., 2018; Kamaruddin et al., 2013). Mazwin et al. (2013) stated that NGOs often act as agents of social change though sometimes little is known about how they facilitate this change. Some literature emphasises collaborative governance models in which NGOs work as being key and effective in promoting social learning (Snorek et al., 2022). This means that they work in partnership with government agencies, local communities, and other stakeholders (Snorek et al., 2022). The NGOs in this study (ERS and K2C) are instrumental in not only being intermediaries among stakeholders but they create and support platforms and opportunities for sharing information and experiences such as the UCP and the BRWG discussed above (Snorek et al., 2022).

Facilitation plays a pivotal role in social learning by creating an organised and supportive learning environment (Reed et al., 2010). Facilitators promote active participation and guide stakeholders to a deeper and meaningful understanding of topics and concepts (Reed et al., 2010). In addition, facilitators are essential in ensuring that social learning is collaborative, inclusive and yields purposeful outcomes such as those outlined by Cundill and Rodela (2012). Both ERS and K2C are doing this, though this is not directly articulated as enabling social learning. This might be due to the challenges in conceptualising social learning by facilitators as highlighted in section 3.3.

The quality of social learning is said to be dependent on how engagements are facilitated and coordinated (section 1.7). Participatory workshops, for example, have strong social learning qualities depending on the way facilitators engage and coordinate them (Scholz et al., 2014). As seen in the results chapters, key findings under facilitation included activities within the broad facilitation of ERS and K2C. These activities include research and education in the catchment as well as youth facilitation under the banner of the NGOs. These two facilitation practices contribute to a significant portion of the social learning work that is taking place in the catchments and are discussed below.

5.2.1 Youth facilitation for social learning

The youth are facilitating social learning in both the case study catchments. As mentioned earlier, it sometimes might not be articulated as such, but having seen the processes and

outcomes, I can vouch for the processes as being forms of social learning or having qualities associated with social learning. Youth initiatives on the ground seem to yield sustainable social learning practices which are especially beneficial to those who are not able to attend events such as the UCP or BRWG meetings potentially due to aspects like financial restraints or limited transport from the rural areas. A challenge in the Umzimvubu is that UCP meetings usually take place in Matatiele, in town and this could be a barrier to those with financial constraints linked to travel costs. An additional observation was the language barrier between stakeholders and community members in the Umzimvubu. Youth of the same demographic as the community members, bridges this gap.

Similarly, in the Olifants, the Blyde Restoration Working Group meetings usually take place in central Hoedspruit or Graskop and not all stakeholders can get there. Eco Rangers, Eco Champs and Environmental Monitors, through being capacitated and trained within their NGOs, provide facilitation opportunities beyond the formal meetings. The work done by these groups involve much stakeholder-based networking that is especially focused within local communities.

An article by Angelstam et al. (2017) explored the role of Eco Champs in facilitating effective natural resource management in local communities of South Africa and it was found that they play a critical role in raising awareness about environmental issues. Additionally, strategies used by Eco Champs encourage community participation in NRM issues. Results in this master's study revealed the challenge of intermittent or short-term funding in these youth facilitation models. This is potentially a contributing factor to some of the NRM challenges and therefore social learning challenges (Cooper et al., 2021). With inadequate funding, programmes start and end abruptly and this makes it difficult and challenging to build sustainable practices and keep effective partnerships going.

Youth facilitation in this way is important and key not only because involving youth in facilitation roles empowers them but it also provides valuable opportunities for skills development, leadership, communication, teamwork, and problem solving (Kulundu-Bolus et al., 2021). The youth in these catchments have a large reach with community members and this allows for knowledge co-creation in that space (Kulundu-Bolus et al., 2021).

Similar to the Environmental Monitors and Eco Champs models in the catchments, is a Smart Rangers programme which is described by Kamaruddin et al. (2013). This programme encourages educating youth with knowledge and skills so that the younger generation are able

to help build a greener nation. The Smart Rangers mirror the Eco Champs and Environmental Monitors in the sense that they prioritise building capacity internally so that skills and knowledge can spread. The model for youth engagement in the Olifants and the Umzimvubu is potentially very progressive for social learning processes in the catchments, and is based on qualities such as enthusiasm and relatability through interaction (McKinley et al., 2017). In addition, Eco Champs work within communities they grew up in means they are well equipped with not only knowledge of places but also existing networks (McKinley et al., 2017). This also creates a sense of inclusivity and empowerment outlined as important for both social learning and transformation (section 2.2)

5.2.2 Research activities

Facilitation from external research and education stakeholders contributes to social learning in the catchments. Findings in this study showed the value which external researchers brought into the catchments, both in the Umzimvubu and the Olifants. Not only did the researchers introduce fresh insights, new knowledge, and methodologies, but they also specialised in participatory action research. This participatory action research involved actively engaging catchment stakeholders in the research process and in so doing, promoting collaboration and social learning. Scholz et al. (2014) highlighted the importance of participatory methods to stimulate social learning. They also emphasised the challenges in research for analysing the results of participatory methods with respect to social learning.

Examples of participatory workshops in the catchments included the co-learning change labs by Mr Thabo in the Umzimvubu, and the Ecosystem Valuation workshop by Ms Zanele in the Olifants catchment. Participatory workshops are useful in social units and stakeholder settings (Nikkels et al., 2021). They lead to the development of shared meanings and practices founded on participation and participatory models (Nikkels et al., 2021). Participatory workshops emphasise the involvement of local communities and facilitators in decision-making and resource management practices (Mackay et al., 2020). Perhaps this is why in both the participatory workshops clearly defined, understood and articulated social learning was evident compared to other less defined engagements and maybe this is a model useful for catchment engagements. Through future investment in participatory workshops, it is worth noting that ongoing processes that can begin and be supported here increase the likelihood of teaching and learning success. Garmendia and Stagl (2010) suggested that more evaluations are needed to understand the social learning processes of workshops such as the participatory ones, and in order to improve workshop designs to foster social learning.

In light of the above, Johnson et al. (2015) stated that participatory workshops are a useful tool for grappling with the uncertainty and complex adaptive systems which are found in catchments. They highlighted that participatory workshops build adaptive capacity through the contemplation of multiple future possibilities. In their study, looking at the Minnesota 2050 project (a collaborative project through which citizens collectively imagine future scenarios and contemplate the implications of these scenarios), they found that participatory scenario workshops built and strengthened relationships and as well as triggered systematic thinking. This is similar to not only my experiences in the participatory workshops in the catchments (section 3.6) but also mirrors some of the reflections of the stakeholders. Contrary to this finding, Bentley Brymer et al. (2018) stated that participatory workshops do not necessarily challenge knowledge claims and nor do they encourage participants to make factual claims. Nikkels et al. (2021), on the other hand, similar to Johnson et al. (2018), highlighted that participatory workshops such as the water valuation workshops encourage learning with and from others and they promote extended networks which is a key practice in the SLKMM framework. Nikkels et al. (2021) concluded that participatory valuation workshops can foster social learning which is also what I observed (DO1; DU9).

5.3 Evidence of SLKMM practices in the catchments

There is evidence of most, if not all, of the social learning practices from the SLKMM theoretical framework used in this master's study in the two catchments (section 1.6.1). The practices varied and some were more evident than the others. In this section, I do not discuss all six practices in detail but rather those which were prominent in the results of this study.

5.3.1 Coordination & convening + Learning & sharing

Multiple tools were listed as being key for the two practices of coordination and convening and learning and sharing. Among the tools were visual, participatory, conceptual, communication and digital tools. Communication tools to coordinate and learn amongst stakeholders were amongst the frequently mentioned aids. This was not surprising given that multi-stakeholder platforms require adaptability and flexibility and social media seems to provide this. Mailing lists, Facebook and WhatsApp are used as ways of not only communicating but facilitating knowledge sharing for facilitators. For example, CSA facilitators use WhatsApp to educate facilitators on hydrological cycles (see section 4.2.2). According to Maurel et al. (2007) and Dahdal (2020), effective and creative communication tools encourage participation and can be important for learning. The number of different interactions between different stakeholders in spaces such as catchments and having to combine different disciplines is sometimes difficult

and therefore platforms and tools of communication are essential (Dahdal, 2020; Maurel et al., 2007; Swinford & Jeffrey, 2000).

In terms of these tools, the findings in this study are not unique and are evidenced in the literature. In a study by Bodin (2017) exploring the role of platforms such as social media relating to NRM, there are three key functions of tools such as social media: information sharing, community building and collective action. Benyishay and Mobarak (2019) found that communication tools improve relations amongst social networks for better learning.

In addition to the effectiveness of digital tools for these practices, field visits were mentioned frequently for their ability to bring stakeholders together. Field visits are used by the facilitator organisations in the two catchments in collaboration with other organisations. For example, in the Umzimvubu, all the implementer NGOs facilitate field visits for different reasons and in addition, there is a lot of value in facilitating them under the banner of the UCP, which attracts more stakeholders (section 3.6). The model of field visits works for fostering social learning thrives for multiple reasons. Not only does it encourage strong deliberation and dialogue which is visually stimulated, it also encourages the practice of building networks, with facilitators and especially with those who are more in the policy space (Murti et al., 2020). In this way facilitators are encouraged to see and face the realities of the natural resource work which is being done on the ground but additionally enables the essential networks to be built (section 4.2.5). They learn by actively engaging interactively through discussions which probably allows them to critically analyse and reflect on their experiences and triangulate them with those on the ground (Murti et al., 2020). The field visits make things more ‘fun’ for the facilitators and for participants; they seem to add a different excitement through bridging theory and practice. This re-emphasises the important point of quality and design of engagements and how this has the power to influence the trajectory of learning.

In addition to the two tools above, participatory tools such as workshops, learning exchanges and forums were also prominent. Participatory tools have already been discussed in section 4.2.2. In addition to coordination and convening, as well as learning and sharing which are key for social learning, two other important practices prominent in the results were engaging tensions as well as monitoring and evaluation. These were not, however, as evident in application in the catchments.

5.3.2 Monitoring and evaluation + Engaging tensions

Engaging tensions in a catchment setting where a multistakeholder platform exists and is represented is important. For example, Bernauer and Bohmenlt (2020) stated that tensions in freshwater resources are more common than is usually acknowledged, and that they need to be addressed for stakeholder cooperation. In addition, Fisher et al. (2020) shared that in light of the links between natural resources and social tensions, successful natural resource management requires conflict management and conflict mitigation and prevention. There is further support for the findings of my study from Fisher et al. (2020) who noted shortfalls in the practice of engaging tensions and that knowing what tools and processes to use is difficult and stressful. This mirrors some of the results in this master's study; the catchment stakeholders often found it difficult to articulate the tensions requiring capacity development in this regard. Ratner et al. (2017) stated that it is important to engage with tensions in natural resource management within the institutions which are managing resources. They also noted that the outcomes of social interactions affect incentives for learning and cooperation. This would be challenging in the two case catchments considering they did not articulate many of the tensions taking place. This could have been due to the fact that there were limited platforms or tools to discuss, discover and engage with these tensions.

The reasons for the lack of engagement in this practice of engaging tensions, contrary to the results in section 4.2.4, seems to not be in the absence of available platforms, but rather that existing platforms are not designed in a way that can enable engagement specifically with tensions. Additionally, lack of resources such as time and capacity (Schusler et al., 2003) could contribute. Time seems to already be a limiting factor for some stakeholders and a practice such as this could come across as being a chore rather than a learning opportunity with other stakeholders (Shackleton et al., 2009). Looking at the work done by the researcher Mr Thabo with the CHAT framework (section 5.3.2), there are opportunities to get such conversations started and for capacity to be built for this practice. If this does not happen, there will be limited growth in terms of social learning in the catchments; Waylen et al. (2015) highlighted how engaging tensions enables learning and growth and desired participation for stakeholder engagement and learning.

Similar to engaging tensions, the practice of 'evaluating change' was a key finding when looking at the six SLKMM practices. Monitoring processes such as social learning is complex and challenging, and it is very rare for people to 'get it completely right' (Cundill, 2010). According to Rosenberg and Kotschy (2020), considering the growing recognition of complex

problems and contexts, new framings are required including new approaches to monitoring and evaluation. Existing monitoring and evaluation frameworks that focus on collaboration and collaborative partnerships tend to overlook the role of learning at times (Cundill, 2010).

My findings showed that facilitators expressed frustration at often not being able to see or articulate the social learning happening, probably because of challenges in capturing the processes (section 4.2.6). These results show that there could be significant transformation through social learning taking place in the catchments that is not being documented and tracked. Reasons for this lack of monitoring could include that social learning is difficult to articulate to the stakeholders in the catchments but is also a relatively new concept in the context of South African catchments (Claassen, 2013; Turner et al., 2020). There might need to be a common definition of social learning process for all involved in the social learning processes to ensure consistency for monitoring purposes as well (Lotz-Sisitka, 2012). With clearer conceptualisation might come creative and effective ways and methods of monitoring, evaluating, and changing as needed and as learning progresses. Additionally, through being able to articulate and conceptualise social learning, it seems that catchments would be able equip themselves with monitoring methods, tools and frameworks which would be adaptable and work for them such as the SLKMM framework (Lotz-Sisitka et al., 2020). This would include methods which are able to capture the nuanced nature of social learning yet accommodate the diverse stakeholder set which is present (Reed et al., 2010).

Facilitators who use tools which have embedded monitoring frameworks such as the Value Creation Framework (VCF) (Wenger-Trayner et al., 2020) have tried to capture some of the processes in the Umzimvubu catchment. The VCF has been used extensively in social learning processes (Restrepo et al., 2018; Triste et al., 2018; Wenger-Trayner et al., 2020). It has been used across a range of endeavours including research and practice with most of its work focusing on value creation in communities (Wenger et al., 2011). It gives guidance on how to promote the creation of value proactively and could act a baseline for seeing what benefits other catchment stakeholders gain from participating in social learning processes (Wenger et al., 2011). This could therefore be useful in growing and building a monitoring practice which can enable demonstration of the value of learning in the catchments.

5.3.3 Quality and design of social learning processes

A common thread across the findings, especially in terms of social learning practices, was the importance of attending to both the quality and the design of social learning processes. There

are multiple design elements one could consider but based on the context of this study, I focus on relevant ones for South African catchment management spaces. Several stakeholders mentioned 'context' and emphasised the importance of this (which also links to the SLKMM practice of 'clarifying context and ideas'). It is also important to gain knowledge and appreciate past and current catchment dynamics (Ernst, 2019). These dynamics include the roles and values of actors, behaviours of stakeholders and knowledge of both those who facilitate and those that do not (Ernst, 2019; Mostert et al., 2007).

Secondly, with designing engagements one needs to be aware of the stakeholders in the catchments. This point was evident in the 'coordinate and convene practice' in section 4.2.1. There is an emergence and change in interests, disciplines, relations and legitimacy of responsibilities and stakes in the catchments. It is therefore critical to have a collective understanding of the catchment itself as well as key activities. Facilitators should incorporate different stakeholders' knowledge and perceptions in processes of natural resource management. This needs to be shaped by building strong networks and genuine quality relations amongst experts, sectoral stakeholders, and experiential knowledge (Baird et al., 2014; Ernst, 2019; Turner et al., 2020). In summary, the quality and design of engagements provide opportunities for effective social learning in the catchments. They determine the structure (Ernst, 2019) and inclusivity of an environment and whether there will be meaningful participation and collaboration. Thoughtful engagement design is essential for achieving the desired outcomes of catchment management and social learning.

5.4 Transformative social learning evidence and potential in the catchments

Transformation (through social learning) is taking place in the catchments even if this can only be seen at a micro scale by some. There is evidence of this transformation as described by some of the stakeholders (section 4.3). However, facilitators felt that often this transformation was not being tracked and therefore was difficult to 'quantify' and describe.

Transformation is often a gradual process, and this was echoed by facilitators in the catchments. Changes in attitudes, behaviours and practices is often subtle and usually does not manifest as immediate visible shifts (Lotz-Sisitka et al., 2015). This, combined with challenges in monitoring and evaluation, make it challenging to document transformational changes. Transformation also does not look the same to everyone. It occurs at various scales from individual behavior changes to broader shifts in policies and practices (Macintyre et al., 2018). This could make it difficult to see comprehensive transformation. In addition to this, resource

constraints were mentioned in one of the catchments. Limited resources such as funding and capacity can make transformation efforts difficult to see or track. This, together with knowledge gaps which exist among facilitators, may hinder awareness and understanding of transformative processes.

What is important in tracking transformative processes, including transformative social learning, is to employ adaptive and holistic approaches. A combination of effective methods is required that can engage stakeholders over time and address the barriers to tracking transformation effectively.

5.5 Research implications, limitations, and recommendations

5.5.1 Research limitations

One of the limitations of this study was the short-term opportunity to visit the catchments. Social learning, as well as transformative social learning are processes best observed and monitored long-term. To address this, future research related to this could employ a longitudinal research design which will allow for examination of changes over time. Secondly, the study collected data based on real engagements in the catchments. Given the (post) COVID-19 era, there were not as many engagements as I would have anticipated. Though this could not have been anticipated, future research could also look at the impacts of COVID-19 on social learning processes and research thereon. Further, because of resource constraints (and stakeholder research fatigue), especially financially and time-wise (related to the scope of a master's degree), I was unable to interview and observe the two catchments to an equal extent. I think it would have been beneficial for a comparative analogy, to get a diverse view of differences in social learning, if the catchments had been studied equally. An additional limitation was the lack of co-engaged design in the methodology of this master's study. When I went into the catchments, the catchment stakeholder were not really sure what my visits and research were about and this meant some were a bit reluctant to answer fully. This, more than anything, made the study feel like it was extractive rather than engaged. Though the study was initially framed as being participatory and transdisciplinary, this was not fully the case. Having it embedded in a larger project such as the LCP, which was implemented in a transdisciplinary manner gave it elements of being transdisciplinary but as a stand-alone it was not fully participatory and transdieciplinary. Additionally, having brought in social science to a study at the interface of catchment management and natural resource management transcended discipline boundaries which gave it elements of transdisciplinarity. Perhaps in future, projects such as these can be conceptualised from identifying a gap with the stakeholders who operate

in the catchments, rather than being conceptualised from the top and 'brought down' resulting in unequal power dynamics and limiting the participatory nature of it. In addition, to employ a clearer demonstration of participatory methodology in the problem formulation, research design and data gathering stages.

5.5.2 Personal research reflection

Engaging in this master's degree was an exciting challenge in the sense that I was not familiar with qualitative research methods and application. I understood that it was going to require that I put in nothing less than 110% throughout. The transition to qualitative research demanded a shift in my mindset and required me to embrace a more nuanced and open-ended approach to the study. This was both exciting and scary in equal parts.

Being part of the Living Catchments Project was an exciting venture for me. I knew I would be on the ground interacting with stakeholders and experiencing NRM in real life. This enabled me to develop the skill of observation and inspired my interest in the NGO space. This project challenged me to view research questions from a different angle and appreciate learning as I went. In addition, it made me appreciate and realise the magnitude and complexity of human experiences and perspectives. Learning to navigate the landscapes I was in as well as conduct interviews with some of the 'biggest' facilitators and stakeholders was intimidating. I had to quickly adapt to the dynamic nature of research and be ready to expect the unexpected at any point and time. During my research interviews I realised the power of active listening and open-ended questioning, a skill that will stick with me for life. I had to continuously question my biases, acknowledge my role as an instrument and be transparent about my positionality. The importance of reflexivity in qualitative research became very evident for me.

It was quite challenging making sense of my qualitative data and knowing what steps to take next. This was an iterative process that was rather intertwined. I had to be open-minded and remind myself of the research objectives constantly. Embracing the thought that my data analysis would not be perfect, but rather would be an ongoing dialogue with the data, assisted in making sense of it. An additional challenge was the constant 'imposter syndrome' which gave me the sense that neither the data nor the study was good enough – a challenge I am still trying to overcome.

I grew to appreciate the iterative nature of qualitative research. The research journey was far from linear and it challenged me in different ways. I believe I have grown in academia and have adopted a new mindset, new skills and have begun the journey in learning how to manage

the intricacies of qualitative data analysis. The research process was both challenging and rewarding. Through this study, I definitely have come to appreciate catchment and NRM complexities. As I move forward my academic journey, I will carry with me valuable lessons and skills from this masters research. I look forward to revisiting the catchments to share this work with them and embody the true nature of what it means to embark in transformative research.

5.5.3 Research implications

This study, with a strong focus on social learning, social learning facilitation and social learning processes in South African catchments will contribute to the long-standing literature which has been developed on social learning in catchment management. In addition to this, given the limited knowledge there is on social learning processes in South Africa, it can highlight how these can be addressed in the South African catchment context. Through identifying some of the factors and practices which influence social learning, and how these are reflected and experienced on the ground, I believe that this study has identified a useful methodology (which can be improved in future) to assess future social learning processes in the catchments. In addition, with a strong focus on tools, this study can show how to navigate knowledge exchange, collaboration, shared decision-making, deliberation and capacity building in the context of social learning. Governance settings in stakeholder engagement though not explored in great depth in this study, provide opportunities for this study to be scaled up and to be considered further for additional social learning processes.

This study also contributes to highlighting factors that influence social learning in different catchments. While the two catchments (Umzimvubu and Olifants) were quite similar in the way they manage their natural resources, studies such as this allow for opportunities to explore catchments with different operating factors and adaptations for their social learning processes and practices. Catchments need opportunities to compare with what other catchments are doing, and to actively build social learning practices and processes of their own, though this will depend on effective sharing of feedback of the research findings with the catchment stakeholders and facilitators.

The study explored a relatively new theoretical framework which is the Social Learning, Knowledge Management and Mediation (SLKMM) framework. While I have advanced research into this particular framework, it needs to be explored further. The framework captures essential dynamics of practices which are supported, or which need to be supported for

transformative social learning in catchment management. It shows the need for methods which are simple yet effective, especially for stakeholders who have not established their practices fully. This framework ensures an exploration of key and essential learning and sharing methods, network building mechanisms, coordination strategies, evaluation tools and ways to establish rapport with facilitators, tensions, and conflicts in the catchments as well as quality and design aspects.

5.5.4 Recommendations

It is evident that there are social learning processes taking place in both these catchments. Challenges were, however, also identified which can be addressed through this recommendations section both theoretically and practically on the ground.

The common denominator and the prerequisite for the social learning processes to take place are the stakeholders who interact closely on the ground. Without the stakeholders and the relations among them, no learning processes (or social learning processes) would be possible. Thus this study recommends that catchments invest in ways which can keep both facilitators and stakeholders interested and engaged by strengthening stakeholder relationships and engagements. With a good foundation of relationships already in place, and existing platforms for networks in both the Umzimvubu and the Olifants, genuine stakeholder participation and collaboration should continuously be built to encourage social learning. Active participation should be encouraged with the incentive of knowing the benefits of social learning processes within the catchments. Facilitators should build on the platforms which exist and develop them further for specific social learning processes. This can be done by making it clear that the core of effective engagements and positive social learning outcomes is shared decision-making, collaboration, knowledge exchange and transformation.

In line with the above, it is then key to build on existing platforms such as the UCP and the BRWG to establish effective social learning networks. Through these platforms, there need to be continued and improved lines of communication throughout the stakeholder set. There needs to be a diversity of engagements beyond the normal ‘meeting format’ and these should include more participatory workshops and introduce interactive forums and other platforms which promote different knowledge systems and methods of sharing. In light of this, it is critical to pay attention to both the quality and the design of processes in the catchments

Youth programmes are an effective way to promote facilitation of social learning in the catchments; however, their existence is built on short-term funding models. Perhaps it is worth

trying to explore ways in which long-term funding commitments can be made across policy, research, and implementation, for youth programmes specifically, but also for broader catchment partnership processes. There needs to be wide-scale recognition that social learning is an important process in transforming how catchments are managed and is therefore key across the three areas of work (research, policy, and implementation). In addition, these three stakeholder groups need to establish stronger working relationships to source longer term funding. This will also increase trust between different stakeholder groups which will have positive effects on the process taking place on the ground. In terms of youth work, there is great benefit in cross-catchment learning exchanges around facilitation and capacity development as different catchments have different insights to offer.

In the absence of longer-term funding above, a key recommendation would be that the facilitators in the two catchments invest in broader capacity building for social learning facilitation. This means that more employees should be equipped with the knowledge and skills needed for social learning processes for transformation. This would include getting people to 'spread the gospel' of social learning to foster a culture of learning throughout the catchment. Facilitators need to be equipped with knowing what social learning processes are so that everyone else can articulate and contextualise them as such. Capacity building should factor in essential skills needed for facilitation such as communication skills, conflict resolution, participatory decision-making and trust building. In this, there should be a strong relationship between the implementers and the researchers to establish a baseline of the South African social learning literature to strengthen their practices.

The last of these recommendations, which might be one of the most important, would be establishing effective and adaptive tools for monitoring and evaluation. This is both for social learning as well as for transformation. There is so much excellent social learning work taking place that is not being recorded or shared. There needs to be a way for facilitators to assess the effectiveness of the social learning processes which are already put in place, and reflect on how best to improve these. Monitoring and evaluation should capture key changes in elements such as knowledge, decision-making, attitude and perspectives. This will allow for opportunities to constantly change and for improvements to develop based on the way in which things are done in the catchments. There are frameworks such as the VCF (section 4.2.2) which could be developed for richer process. In addition, it is important to invest in strong cross-catchment learning and capacity development when building these monitoring frameworks and tools.

Partnering with external researchers over the long-term to implement this practice could also be strategic, especially considering resource constraints.

It is important to note that these recommendations are not prescriptive but rather should be adapted and explored for different contexts and different catchments. It is hoped that further research from other scholars or members of the catchment will be able to refine and expand upon the insight from this thesis. Challenges in catchments are dynamic, uncertain, and unique which is why this study strongly recommends context dependent approaches.

5.6 Thesis conclusion

In conclusion, this thesis has explored factors which foster social learning and social learning processes for catchment management. The thesis looked at current social interactions of the Olifants and the Umzimvubu catchments and using the SLKMM framework and also considered which social learning practices can be and are currently supported in the catchments. Through analysing different elements of social learning processes in these catchments, valuable insights have been developed and this has positive implications for the Living Catchments Project and for studies considering social learning tools and practices in the South African context.

The findings in this study highlight a few elements which are important when facilitating learning processes and social learning for potential transformative change. At the core of all processes is the importance of facilitators being able to provide platforms to bring a diverse set of stakeholders together – from government, policy implementers, practitioners, researchers, non-government bodies and the community. This study also showed the importance of NGOs in bringing stakeholders together to engage in caring for catchments. This highlights the value of the Living Catchments Project contracting K2C and ERS as the main coordinators in their respective catchments. Platforms for facilitators to come together and deliberate on catchment issues has been identified as crucial for fostering social learning processes (Lumosi et al., 2019). Through the UCP and the BRWG, strong collaboration is fostered bringing together diverse perspectives, different knowledge, different frames of discipline, and good potential for shared decision-making on issues. Diversity is fostered and enabled through this. NGO facilitators need to consider youth facilitation and participatory workshops from external researchers to support important social learning work.

In addition to the above, the study identified evidence of the six SLKMM social learning practices in these catchments with some more prominent than others. Learning and sharing

involved a variety of different materials and tools used to engage participants and potentially add value into their lives. Engaging with tensions and monitoring and evaluation were highlighted for the opportunities they provide. This study gives recommendations to capacitate facilitators to both identify and engage with tensions meaningfully.

In the absence of methods, tools, or frameworks to track, monitor and evaluate, the transformative potential of the catchments under study has also been compromised. It is possible to see that transformation is happening; however in the absence of a formal way to track this, there is not much solid evidence available.

In acknowledging the limitations of this study, it is important to note that it was conducted on a short-term basis and I was not able to track all the social learning processes which are likely to happen on a longer-term basis. This is the same with transformation; it needs a continued and sustained process of observing and tracking and this was not possible in the context of a master's study. This research was conducted in the context of two South African catchments, with a relatively newly developed theoretical framework and this may present challenges for upscaling. In addition, social learning processes are dynamic and far from being linear, no single researcher would be able to contextualise and articulate them. This requires continued efforts in monitoring and evaluating social learning processes to assess what really constitutes them in the South African context.

I hope that this thesis will contribute to the growing body of literature on social learning processes in the South African catchment context. There needs to be an emphasis on stakeholder engagement across policy, implementation, and research as a prerequisite for effective social learning processes to take place. Natural resource management activities need to be adapted to produce social learning opportunities, and not simply to satisfy performance areas and procedural requirements. Frameworks and methods of social learning such as the SLKMM, need to be a key investment in all South African catchments needing to advance their practices. The development of key social learning tools and practices can lead to improved catchment management outcomes, strengthened facilitation capacity, a greater abundance of sustainable resource use and the preservation of South African catchments.

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Appendices

APPENDIX A: Observation and reflection sheet

Workshop data collection: Observation and Reflection sheet

Student: Kwanele Siyengo Supervisors: Mathew Weaver, Tanya Layne & Jessica Cockburn

Time:	Day: Event:
Physical Setting	
Type of convening	
Members/stakeholders present	
Activities planned	
Faculties used	

Qualities of the SLKMM (Social Learning, Knowledge Management and Mediation) FRAMEWORK Practices		
Coordinate and convene		
Evaluate and change		
Engage tensions		
Building networks		
Learn and share		
Clarify context + ideas		
Critical turning points		

Time: Day : Event:	
My feelings about the process	
Problems arising	
Impressions on interactions	
Social learning qualities I see	
Transformative social learning I see	
Critical turning points from my perspective	
Qualities of social learning I see i.e trust, interdependencies, shared decision making, power sharing etc.	

APPENDIX B: Semi-structured interview schedule

Interview stakeholder:
Date:
Interview no.
Catchment & Venue:

Key questions (to align with my interview schedule)
1. What is the role of social learning in integrated catchment management in the Umzimvubu and the Olifants catchments?
2. What are the tools and practices which can be used to support social learning and stakeholder collaboration in South African catchments?
3. What elements of transformative social learning are seen through integrated catchment management in South African catchments?

Interview Schedule
Questions relating to social learning in general:

1. Please take me through what you would define as (transformative) social learning in your personal life and in your professional work space. Do you think it is important in the catchment management setting?
2. Using your definition of social learning, together with the one used in both theory and practice (which I explain), how has your experience of social learning been in the catchment management space?
3. To follow up on the above, what about the workshops / stakeholder engagements (that you have been involved in the catchment) has been particularly important for you with regard to learning for your organisation / personal capacity
4. Transformative social learning requires a change at an individual level, would you say your learning in the catchment has been progressive enough to invoke transformation – how?

Questions relating to the ecosystem service assessment and valuation workshop we attend:

1. Were your expectations of learning met at this particular workshop? How was your experience of participating in it?
2. Is there anything in particular that inspired you/ that invoked learning in you today?
3. Reflecting on the workshop, what could have been done differently in terms of information sharing and learning?
4. How best do you think the following practices were highlighted in today's workshop and any other workshops in the catchment:
    - Coordinate and convening
    - Learning and sharing
    - Tensions engaged
    - Networks built
    - Clarifying context and ideas
    - Evaluation & change
5. Do you think the direction and type of learning facilitation of an event makes a huge difference to your learning? Care to share how?
6. How do you think the facilitation was at this particular workshop?

APPENDIX C: Semi-structured Interview schedule – facilitator interview

This interview forms a part of a flexible guide for the interview on the day. It mainly lists themes to be covered on the day. Precise, follow up questions will be developed as interviews are being conducted in the field.

Section A: Facilitator and interview details

Date and Time	
Place	
Name & Surname	
Organisation	
Level	
Interview no.	

Section B: Review of ethics and Introduce interview

Introduce myself and briefly explain project (including the aim of the interview)

Explain ethics that guide the research

Ask for verbal consent and explain permission of withdrawal from the interview

Ask to have the interview recorded

Section C: Facilitator experience

Would you briefly describe your experience as a facilitator in this workshop or any other workshop in relation to the Living catchments project?

Do you have any formal training for facilitating?

How has the answer to the above question influenced your journey as a facilitator?

What style of facilitation do you use or prefer?

Follow up question: How does the method preferred above influence the process?

Follow up question: What is the significance of the style of facilitation you use?

What are some of the tools/you have used in your facilitation processes?

Have you drawn on processes of facilitating social learning which have been used in the past? If so, which ones

Section D: Social learning from facilitator perspective

How do you, as a facilitator understand social learning, transformative social learning? and what does it mean to you?

How important do you think transformative social learning is in the context of water management (catchment management)?

What indications of social learning have you seen taking place in your workshops?

How important do you think collaboration and stakeholder engagement is in social learning?

How best do you think the facilitator can support the process of social learning?

What are the most important elements you have seen to support social learning the most amongst stakeholders in workshops? i.e.

Follow up question: What is the best way to establish the above?

Section E: Reflective questions

Reflecting back to the workshop, how do you think the quality of engagement was?

Do you think place setting influenced learning taking place?

Did you notice any critical turning points as you were facilitating?

Using the following set of practices, how would you describe the presence or absence of any of the practices at this particular workshop? How were these achieved?

- Coordinating and convening
- Evaluation and changing
- Learning and sharing
- Building networks
- Clarifying context and ideas
- Engaging tensions

APPENDIX D: Ethical clearance

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13 December 2021

Dr Jessica Cockburn

Email: j.cockburn@ru.ac.za

Review Reference: 2021-5258-6473

Dear Dr Jessica Cockburn

Title: Understanding and supporting the practice of facilitating social learning and stakeholder engagement for catchment management in the South African context

Principal Investigator: Dr Jessica Cockburn

Collaborators: Ms Kwande Siyengo

This letter confirms that the above research proposal has been reviewed and **APPROVED** by the Rhodes University Human Ethics Committee (RU-HEC). Your Approval number is: 2021-5258-6473

Approval has been granted for 1 year. An annual progress report will be required in order to renew approval for an additional period. You will receive an email notifying you when the annual report is due.

Please ensure that the ethical standards committee is notified should any substantive change(s) be made, for whatever reason, during the research process. This includes changes in investigators. Please also ensure that a brief report is submitted to the ethics committee on the completion of the research. The purpose of this report is to indicate whether the research was conducted successfully, if any aspects could not be completed, or if any problems arose that the ethical standards committee should be aware of. If a thesis or dissertation arising from this research is submitted to the library's electronic theses and dissertations (ETD) repository, please notify the committee of the date of submission and/or any reference or cataloguing number allocated.

Sincerely,

Prof Arthur Webb

Chair: Rhodes University Human Ethics Committee, RU-HEC

cc: Ms Danielle de Vos - Ethics Coordinator