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Chapter 3

Research methodology, design and process

3.1 Introduction

The previous chapter examined the literature and demonstrated the derivation of the conceptual framework for the study. This chapter will describe how the research design for the study evolved from the conceptual framework and explain how the methodology and process ensued from the research design. It will also address issues of validity, ethical considerations and limitations.

3.2 The research approach

Research is the critical examination of issues (Loughran 2003, p.183). It is concerned with understanding the world and is determined by the understanding of the researcher (Cohen *et al.* 2000, p.3). Educational research provides the opportunity that the workplace rarely provides to understand the lives and work of teachers (Elbaz-Luwisch 2005, p.ix-x). Research in education needs to become relevant to the everyday concerns of teachers (Murray & Lawrence 2000, p.6), offering opportunities to explore issues, tackle problems or test hypotheses (Bassey 1999, p.66). Bassey describes a research problem as a *"difficulty which can often be expressed as a contradiction between what is happening and what someone would like to happen"* (Bassey, 1999, p.66). In order to solve such a problem data is collected, analysed and interpreted systematically and with sensitivity by a researcher using trustworthy procedures (Bassey, 1999, p.40). In systematic inquiry the basis for each decision is explained and documented to enable others to assess its adequacy and trustworthiness (Rossman & Rallis 2003, p.12)

In this study, the research is guided by the over-arching problem of evaluation of effectiveness of ICTs. However, as explained in Chapter 1, the problem was distilled to identify the need to understand the context in which ICTs are

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integrated from the point of view of teachers within a particular context and the dynamics that impact such integration. The particular context is characterised by complex, simultaneous and ongoing changes. In order to solve the problem, it needed to be formulated as a question that incorporated these aspects. The resulting research question that guides this study is therefore:

How do teachers innovate in the face of complex, simultaneous and ongoing changes and, in particular, how do they innovate with ICTs amidst such changes?

In order to answer this question the research question was broken down into further sub-questions namely:

- *How do organisational interactions influence teachers' ability to innovate and to sustain innovation in practice?*
- *How do collegial and professional interactions influence teachers' ability to innovate and to sustain innovation in practice?*
- *How do ICTs influence teachers' ability to innovate and to sustain innovation in practice?*
- *How do leadership interactions influence teachers' ability to innovate and to sustain innovation in practice?*

It is in answering these questions that the interactions reveal the extent to which convergence, mutuality and extensiveness occur (Ch.2 Section 2.5.2, p.84). In order to describe and understand these interactions I chose to draw on the experiences of my colleagues who are teachers in the context of the school that is the focus of this study. The understanding of context from a teacher's point of view involves the interaction of policy, practice, individual beliefs and relationships, the organisation and the systems that comprise the school as a complex entity. Policy dictates the broad direction of change, but does not account for how a teacher responds to that change. The teacher's response is at a personal level: what they understand of the expectations of policy, how they grapple with personal innovation and creative ideas to interpret and implement the requirements of policy, how they are individually

enabled or inhibited in their endeavours by systemic contextual factors and how they relate with others to change their practice in order to accommodate policy changes. To understand such teacher responses is to understand human experience within the complexities of context, to look at their social worlds holistically (Rossman & Rallis 2003, p.9). To understand human experience requires a qualitative approach as such experiences cannot be measured and predicted: rather, such experiences require description, analysis and interpretation (Rossman & Rallis 2003, p.11) in which the voice of the participants, rather than that of the researcher should come to the fore (Cohen *et al.* 2000, p.22). Qualitative case studies are appropriate to naturalistic, context-specific settings (Patton 2002, p.39) in which the researcher is involved and immersed (Golafshani 2003, p.600) and becomes an instrument through which the experiences of the participants may be interpreted.

While the voice of the participants may be paramount, the voice of the researcher cannot be discounted in qualitative research. The researcher is an integral part of the process and some form of relationship is always present between the researcher and those being researched (Hammersley & Atkinson 1983, p.15). In this study, there is a dual relationship between myself as the researcher and my colleagues, as the researched, and this duality needs to be expressed and accounted for. As an insider I am an integral part of the school community bringing an emic perspective, whilst at the same time, as a researcher, I am an outsider with a researcher's or etic perspective. In reporting the research the account will be my own account of their stories. However, my participation in the research is overt and my colleagues are fully aware of the research and its intention (Patton 2002, p.127).

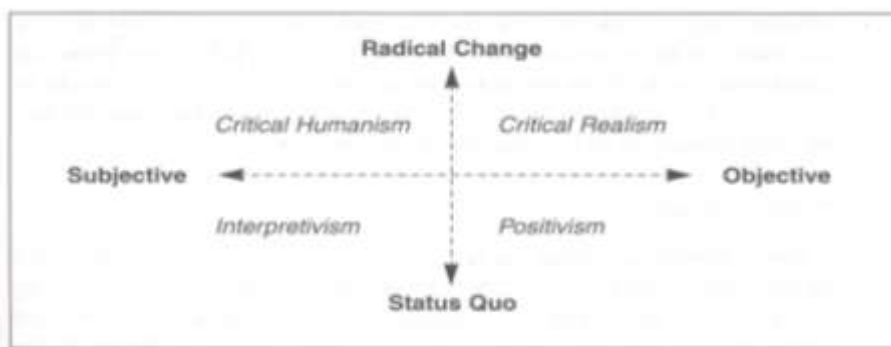
What then are the position and assumptions that I bring to this study? As a consequence of my role in the school as described in Chapter 1, I am involved on a daily basis with teachers and their individual needs. In order to provide insight into this context in which I am a participant researcher, a qualitative approach, using naturalistic and interpretive methods of inquiry (Denzin 1994,

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p.118) and focused on the experiences of individual teachers, is indicated. In choosing the qualitative approach I acknowledge my post-modern viewpoint (Kvale 2002, p.300) and my belief that human experience needs to be understood from the point of view of the individual rather than that of an objective reality. The positivist approach assumes knowledge to be a mirror of reality, whereas the post-modern approach sees knowledge as a social and linguistic construction of reality (Kvale, 2002, p.306): there is no objective reality against which it can be validated, only a perspectival reality (Kvale, 2002, p.300). The post-modern focus is on “*interpretation and negotiation of meaning of the lived world*” (Kvale 2002, p.306).

In terms of Burrell and Morgan’s (1979) diagram of epistemological and social change assumptions, as illustrated in Figure 3.1 below, my viewpoint lies within the subjective/interpretive paradigm.

Figure 3.1: Four paradigms of social research. (Burrell & Morgan 1979, p.22)



My viewpoint is subjective in that I recognise that there is no single or absolute truth, but multiple perspectives and multiple truths (Cohen *et al.* 2000, p.22; Kvale 2002, p.301; Schutz 1972). The subjectivist assumption is that “*humans construct understandings of reality through their perceptual and interpretative faculties*” (Rossman & Rallis 2003, p.41) and each individual’s reality is different. The acceptance of multiple perspectives and no single reality foregrounds the role of human agency in “*shaping everyday lives and larger social patterns*” (Rossman & Rallis 2003, p.41). It is through the stories

of individual teachers that the phenomena of this particular social world are described, each contributing from their own perspective.

Interpretive research attempts to understand the process within a given context, and the interactions and relationships between the subjects of the research. The goal is to “*discover the specific ways in which local and non-local forms of social organization and culture relate to the activities of specific persons in making choices and conducting social action together*” and to reveal the “*invisibility of everyday life*” (Erickson 1986, p.121-129). This paradigm resonates directly with the objectives of my research. My approach to this research is interpretive in that I rely on description, analysis and interpretation to describe the processes within the context. Even though the data are gleaned largely from interviews in which teachers tell their stories which represent their reality, this report of their stories is subject to my interpretation. I become the instrument through which their experiences are interpreted and need to be mindful of the perspective that I bring to the collection, analysis and selection of data reported.

Underlying the qualitative approach is the philosophic premise on which the research is built. The choice in this particular study was between ethnography and phenomenology. The ethnographic approach is designed to extract characteristics of the group. Gregory (2005, pp.xx-xxi) describes ethnography as starting with a question and not a hypothesis, working from the question to identify patterns to form an analytic framework or “cultural grammar” of the cultural group targeted by the research.

The phenomenological approach has been described in two conflicting ways. Maykut and Morehouse (1994, p.3) describe it as “*an overarching perspective that includes qualitative research*” while Merriam and Simpson (1984, p.89) describe phenomenology as “*an orientation that falls within qualitative research*”. Ehrich (2003, p.44) notes the lack of specific definition that calls phenomenology a philosophy, a paradigm and a methodology. Phenomenology is about describing and interpreting phenomena as they are

experienced by individuals. Ehrich (2003, pp.44-69) uses the metaphor of a web to explain phenomenology. The hub of the web represents the underlying philosophy, the threads or spokes represent differing approaches, while the silk coils represent the four themes or key qualities that hold the coils in place. The spider represents the phenomenological researcher who spins the web in order to understand the underlying structures of human experiences. The key qualities are description, reduction, essences and intentionality. Reduction (Husserl 1931 cited in Griffiths 1985, p.200) requires that taken-for-granted assumptions and pre-suppositions about the phenomena be temporarily suspended in order to not influence their description (Merleau-Ponty 1962 cited in Ehrich 2003 p.45). Essences refer to the core meaning that an individual experiences of a phenomena: the researcher would need to determine what is essential or necessary and what is accidental or contingent. Intentionality is the conscious experience of a phenomenon. Phenomenology therefore gives credence to ordinary conscious experience and does not separate experience from reality (Ehrich 2003, p.48)

The second element of phenomenology is hermeneutic interpretation. As the researcher I need to understand and interpret the experiences of the teachers as though it were text in order to more fully comprehend the situations and the people (Ehrich 2003, p.51; van Manen 1990, p.26). While description is "*investigating experience as we live it*", interpretation is "*making sense of the investigation*" (van Manen, p.2). To do this, personal interactions through, for instance, interviews and observations are indicated.

Naturalistic inquiry embraces the ethnographic approach which is characterised by "*thick description*" (Geertz 1973, p.6). Thick description catches the diversity, variability, creativity, individuality, uniqueness and spontaneity of social interactions (Cohen *et al.* 2000, p.139). Detailed description of the group facilitates generalisability. In this case, the stories of the teachers as revealed through the interview, place the study within the realm of ethnographic inquiry. However, the purpose of this study is not

intended to distil salient cultural characteristics of that group, but rather to describe and interpret the social interactions of the group from the perspective of specific phenomena. The focus is on the phenomena and not the individuals (Ehrich 2003, p.58). This study therefore falls within the phenomenological ambit.

My philosophical standpoint is from a constructivist perspective. Constructivism, essentially a philosophy of how people learn (Clements 1997, para.2), has two central ideas. Firstly, learning is not a passive, but an active process in which the individual is in control of what they learn and how they learn it (Schuman & Ritchie 1996). Secondly, constructing knowledge is based on the premise that individuals all construct their own reality or perspective of the world, using reflection of their individual experience or interpretation as a starting point. Individuals all have different perceptions, learning styles and attitudes and do not all understand things in the same way. Individual understanding changes as new situations that do not fit their current idea of reality are confronted (Hoover 2003, para.7). Time is therefore required to build on new knowledge and reflect on it. Group interactions ensure that individuals can form and measure their understanding in relation to their peers (Hoover 2003, para.7) and learning therefore becomes a social process (Vygotsky 1978, p.24).

Constructivist learning is not limited to students per se, but is equally applicable to teachers' professional learning and to the process of research as a learning activity (Rossman & Rallis 2003, p.5) in which the report becomes the construction of the researcher's reality as an interpretation of the reality of the researched. This study recognises that, given the complex environment of multiple simultaneous changes, teachers are as much learners as are their students and that on-the-job professional learning is a process of each teacher constructing their own individual realities, either in isolation or through collaboration. At the same time, the collective entity, the school as an organisation, is constructing its own reality.

In this study, what is reported is my interpretation of my colleagues' reality. As a participant researcher, whilst my intention is to be as objective or detached as possible in the selection and interpretation of the data for analysis, the likelihood of subjectivity is acknowledged. However, as the value of the study is dependent on its ability to tell the story using others' voices as accurately as possible such accuracy is the prime endeavour.

3.3 Research methodology

To describe the interactions that impact teacher innovations I needed to understand and describe their experiences. Such experiences are not objective facts that could be quantified and aggregated by statistical methods, hence the choice of a qualitative approach. The choices of empirical research types included case studies, experiments, surveys and action research. The rationale excluded an intervention or experimental approach and action research was not an option for me as I was aware of pressures that my colleagues were under with the new curriculum. As methodology is influenced by epistemological and ontological assumptions (Rossman & Rallis 2003, p.42), I needed to choose a methodology appropriate to subjective description and interpretation of human experiences. Given the above assumptions, my background in the research context and the conceptual framework as derived from the literature and described in Chapter 1, the choice of methodology fell naturally to a case study. A case study deals with first hand knowledge of the social world and interpretive analysis of data (Rossman & Rallis 2003, p.42). Stake (2000, p.435) notes that “[c]ase study is not a methodological choice but a choice of what is to be studied. By whatever methods we choose, we choose the case”. In the case of this study, ‘the case’ was a given. The study of ICT-related issues cannot be separated from their contexts (Ch.2, Section 2.3.5, p.49) and qualitative case studies are appropriate to naturalistic, context-specific settings (Patton 2002, p.39) in which the researcher is involved and immersed (Golafshani 2003, p.600) and becomes an instrument through which the experiences of the participants may be interpreted.

Case studies have been described by various authors in different ways. Whilst there is agreement that case studies refer to bounded systems (Smith

1974, cited in Bassey 1999, p.27) it is difficult to put boundaries around case studies as a genre. Case studies are a *“natural way of reporting”* (Lincoln & Guba 1985, p.43) in that they produce *“thick descriptions”* (1985, p.214) or richly detailed accounts of participants' experiences. Adelman, Kemmis and Jenkins (1980, p.59) capture the sense of an instant in time and the dynamic nature of social conditions in their definition of a case study as *“the study of an instance in action”*. In describing case studies, Nisbet and Watt (1984, p.78) draw a parallel with complexity in that they refer to a case study as *“more than the sum of its parts”*. Similarly, Sturman (1999, p.103) argues that contexts are unique and dynamic and that case studies are able to *“investigate and report the dynamic interaction of events, human relationships and other factors in a unique instance”*. Case study is the generic term for the investigation of individual, group or phenomena (Sturman 1999, p.61). Case studies are *“a style of research that lead to the perfection of observation”* (Skilbeck 1983, p.18), an overall strategy for studying the case rather than a genre (Stake 2000, p.435). Yin and Stake are amongst the most commonly cited authors of texts on case studies. Yin defines a case study as:

- *“an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when*
- *the boundaries between phenomenon and context are not clearly evident”* (Yin 1994, p.13)

Case studies rely on multiple sources of evidence. Data from such sources needs to converge and triangulate and will do so, particularly if guided by theory (Yin 1994, p.13). On the other hand, Stake (1995, p.xi) defines case study research as *“the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances”*. In other words, as pointed out by Bassey (1999, p.27), while Yin takes a theoretical standpoint, Stake's definition arises from the case itself. A case study is *“a bounded system ... an object rather than a process ... an integrated system”* in which the *“parts do not have to be working well, the purposes may be irrational, but it is a system. Thus people and programs clearly are prospective cases”* (Stake 1995, p.2).

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Whilst there is little agreement on what defines a case study, there is some overlap on the characteristics of case studies and what they do. These overlapping characteristics are detailed in Table 3.1. This study accepts the broader definition of case study as a methodology and endeavours to demonstrate the consensual characteristics of case studies as indicated in Table 3.1. However, case studies also occur in various types according to different authors. These types are tabulated in Table 3.2, Types of case studies and their purposes.

Table 3.1: Case study characteristics

| Author | Case study characteristics |
|--|--|
| Adelman, Jenkins & Kemmis (1980, p.3) Rossman & Rallis (1999, p.92-94, 103-104); Bassey (1999, p.5); MacDonald & Walker (1975, p.1) | <ul style="list-style-type: none"> ● <i>in-depth and detailed explorations of single examples that are 'instances drawn from a class' of similar phenomena.</i> ● <i>seek to understand the larger phenomena through close examination of specific instances or cases and therefore focus on the particular</i> ● <i>strength is their detail, complexity and use of multiple sources</i> ● <i>studies of singularities</i> ● <i>the examination of an instance in action</i> |
| Sturman (1994, p.61) | <ul style="list-style-type: none"> ● <i>belief in wholeness of human systems</i> ● <i>requires an in-depth investigation of the interdependencies of parts and of the patterns that emerge</i> |
| Adelman, Jenkins & Kemmis (1980, p.3) Rossman & Rallis (1999, p.104); Yin (1994, p.25) | <ul style="list-style-type: none"> ● <i>focus on events, processes, individuals, groups, organisations or programmes to understand their perception of events</i> ● <i>provide a chronological narrative of events relevant to the case</i> ● <i>describe or explain events, processes and perspectives as they unfold i.e. real life contexts, and build an explanation for those events or outcomes</i> |
| Rossman & Rallis (1999, p.104) | <ul style="list-style-type: none"> ● <i>descriptive, holistic, heuristic and inductive complex and multi-layered</i> |
| Merriam (1998), p.11 | <ul style="list-style-type: none"> ● <i>good for dealing with practical problems.</i> |
| Hitchcock & Hughes 1995, p.317) | <ul style="list-style-type: none"> ● <i>richness is reflected in how the case is written up or reported.</i> |
| Rossman & Rallis (1999, p.104) | <ul style="list-style-type: none"> ● <i>researcher is integrally involved in the case.</i> |
| Nisbet & Watt 1984, p.78) | <ul style="list-style-type: none"> ● <i>commence with a wide field of focus and narrow down.</i> |

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| Author | Case study characteristics |
|--|--|
| Rossmann & Rallis (1999, p.105) Bassey (1999, p.58) | <ul style="list-style-type: none"> methodologically eclectic, relying on a variety of techniques for data gathering are conducted over a period of time. |
| Rossmann & Rallis (1999, p.104) | <ul style="list-style-type: none"> give insight into other similar settings the reader judges the applicability of the case |
| Skilbeck (1983, p.18; Burgess (1985, p.177) | <ul style="list-style-type: none"> lead to the perfection of observation and documentation they illuminate the process of schooling open it up to evaluation by all those concerned with education. |
| Adelman <i>et al.</i> (1980, p.59-60) | <ul style="list-style-type: none"> strong in reality but difficult to organise pay attention to the subtlety and complexity of the case in its own right. |
| Adelman <i>et al.</i> (1980, p.59-60) | <ul style="list-style-type: none"> complexity and embeddedness of social truth 'a step to action': they begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use ... |
| Adelman <i>et al.</i> (1980, p.59-60) | <ul style="list-style-type: none"> present research or evaluation data in accessible form |
| Adelman <i>et al.</i> (1980, p.119) | <ul style="list-style-type: none"> 'preserves indeterminacy' intertwined processes of conceptualisation of the research problem, investigation, interpretation of findings and their application |
| Bassey (1999, p.44) | <ul style="list-style-type: none"> essentially interpretative |

In terms of Stenhouse's definition (Table 3.2), this study is an educational case study in that it is concerned with understanding educational action. In part, this study uses theory testing in that the angle from which the teachers' experiences are viewed is theoretical (seeking convergence, mutuality and extensiveness), but it also draws on the story-telling aspect in that the interview method was loosely structured in order to capture the teachers' experiences as stories. In terms of Bassey's types (Table 3.2), the approach is therefore theoretical and in terms of Stake (Table 3.2), it is intrinsic. Whilst the study will serve the institution that it investigates, the intention is that it will resonate with similar case studies.

Having established the intrinsic or educational case study as a methodology within the interpretivist paradigm, the design of the research began to take shape. The research design is described in the following section.

Table 3.2: Types of case studies and their purposes

| Author | Type | Characteristic/s |
|---------------------------|------------------------------------|---|
| Bassey (1999, p.3, 40) | theory-seeking and theory-testing; | purpose: to understand; to portray the topic as it is; includes story-telling and picture-drawing; |
| | evaluative | purpose: to understand and evaluate |
| | action research | purpose: to understand, evaluate and change |
| Yin (1993, p.5) | an exploratory case study | <i>"[aims] at defining the questions and hypotheses of a subsequent [...] study"</i> |
| | a descriptive case study | <i>"presents a complete description of a phenomenon within its context"</i> |
| | an explanatory case study | presents data bearing on cause-effect relationships – explaining which causes produced which effects |
| Stenhouse (1985, p.50) | evaluative case studies | intended to judge <i>"the merit and worth of policies, programmes or institutions"</i> |
| | action research case studies | <i>"contribut[es] to the development of the case or cases"</i> |
| | educational case studies | concerned with the understanding of educational action; to enrich the discourse and to systematically reflect evidence |
| Stake (1995, p.3) | intrinsic | Research into particular situation for its own sake and irrespective of outside concerns. |
| | instrumental | <i>"Research into one or more particular situations in order to try to understand an outside concern. Issues dominate the case"</i> . |

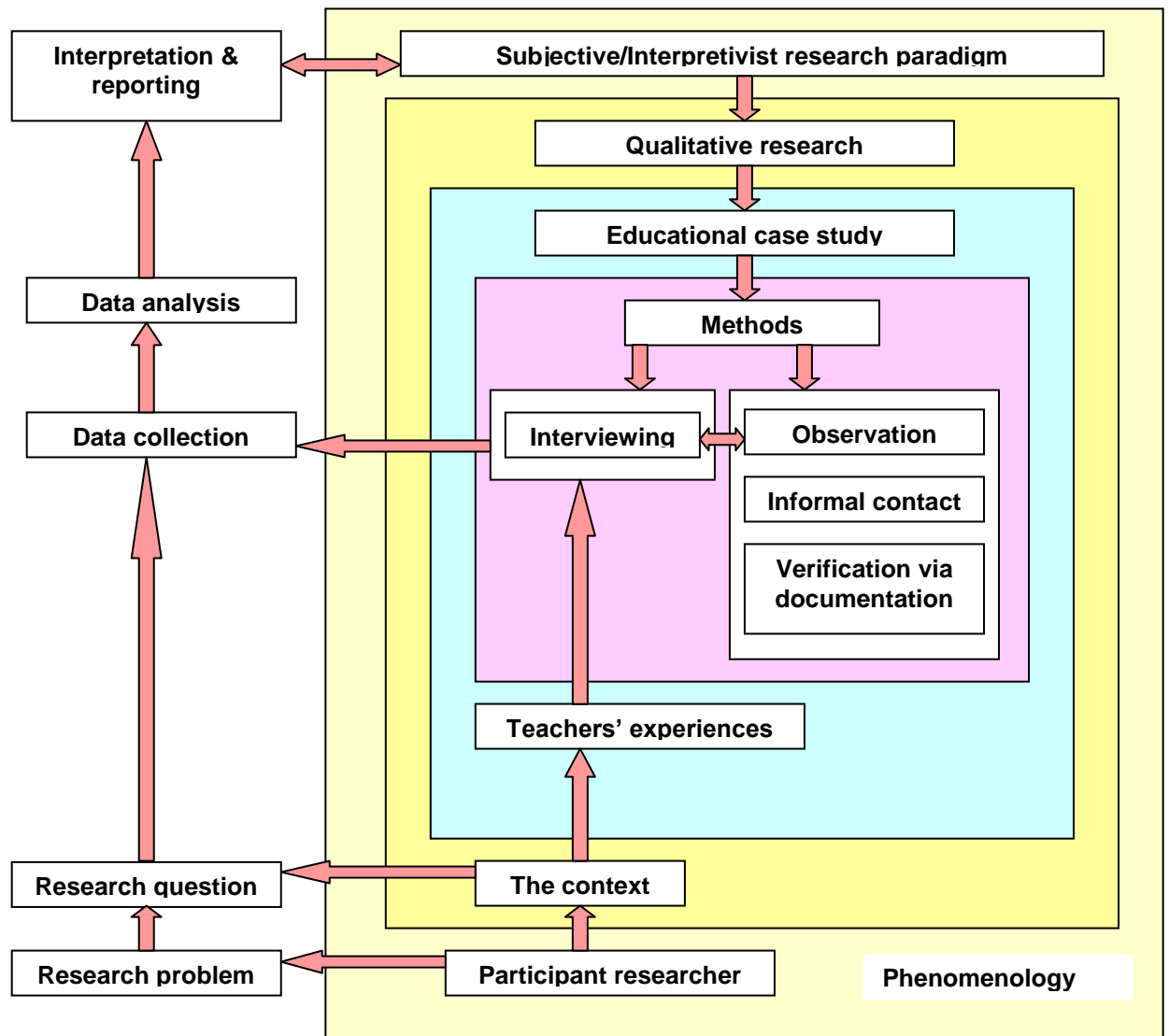
3.4 Research design

This section will illustrate how the research design emanates from the research approach and chosen methodology. The design is summarised graphically in Figure 3.2, (p 113) to show the iterative nature of the research process. As described in Section 3.1 p.104 above, the research approach, based on Burrell & Morgan (1979, p.22) is a subjective interpretivist approach.

The methodology selected is a qualitative educational case study in which the methods employed are largely interviews, supported by observation and

informal contacts and the use of documents where necessary to verify data. Methods consistent with case studies include observation, semi-structured interviews and document analysis, whilst the researcher becomes a human instrument in the research.

Figure 3.2: Research design



Incumbent on the researcher is adaptability, responsiveness, knowledge, ability to handle sensitive matters, ability to see the whole picture, ability to clarify and summarise and to explore, analyse and examine atypical or idiosyncratic responses (Lincoln & Guba 1985, p.193-194).

The research took place over the following timeframe:

Thesis submitted by Mary Elizabeth Reynolds in partial fulfilment of the requirements for the degree **113** of Philosophiae Doctor (Computer Integrated Education) in the Department of Curriculum Studies, Faculty of Education, University of Pretoria, August 2009.

Table 3.3: Research timeframe

| Research process | Time span |
|-----------------------|----------------------------|
| Leadership interviews | November 2006, July 2007 |
| Teacher interviews | June 2007 – March 2008 |
| Transcription | August 2007 – July 2008 |
| Analysis & reporting | October 2008 – August 2009 |

The methods used will now be described in detail.

3.4.1 Unit of analysis

The educational setting in which this research was conducted is an independent secondary school for boys that draws most but not all of its students from a relatively high socio-economic suburban area in South Africa. The choice of school arose from my full-time involvement in the school rather than as a result of a quest for a research topic or the selection of the best school for the purpose. The school does not typify a South African school; rather it stands close to one extreme of a continuum that spans the full spectrum of the digital divide, thereby limiting local generalisability. However, it is typical of schools worldwide in which there is a high-end provision of ICT resources; in which physical access to ICT is theoretically not limited; in which teachers are expected to be competent ICT users; and appropriate use is made of ICTs in the curriculum. The study of innovation also requires that a school has the capacity to innovate although this does not imply that only high end schools have this capacity. Such conditions are necessary to the particular focus of this study.

Although I am an employee in the school, the research is a personal undertaking that I have conducted as an independent researcher, with the full support of the school and in terms of its research policy. No sponsorships have been involved. Whilst the research product is mine, the data also belongs to the school in terms of its policy and given my position within the school community. The research is intended to be of benefit to the school.

In this study the unit of analysis consists of ten teachers and three teacher-leaders from the school. The primary form of data collection was interviews.

Teachers were interviewed as participants in the study in order to establish the interactions that affected their ability to innovate in their practices, including innovating with ICTs.

Research in which people are targeted needs to pay close attention to the attributes of those people, why they are of interest and their degree of representativeness (Murray & Lawrence 2000, p.40). My initial approach was to introduce the fact that I would be conducting research in a weekly briefing (May 2007) for all staff, in which I invited all colleagues to participate. This was followed up by an email providing further details of the purpose of the research and including a letter of consent that could be signed and returned to me. I had intended to interview at least one person or group from each subject department, but I was advised that the volume of data would become unwieldy and require too lengthy a time to process.

Of an academic staff of 70 teachers I received 14 replies from teachers representing a variety of departments. However, I encountered two problems. Firstly, there was a short period between receiving consent and the planned interview time that preceded the month-long August holiday period. Secondly, I found it difficult to arrange the interviews due to the busyness of the teachers and the long hours that I am required to man the library which is my domain within the school. Although I am surrounded by my colleagues for each working day, access to them for private purposes is limited by the demands made on them (as the findings will later reveal). The only time slots I had available were late afternoon (after 16h00) whereas teachers had in many cases left school early as it was an examination period, were marking, or were busy with the myriad of activities that characterise a school with a highly demanding programme. The numbers of teachers/leaders interviewed would have been the same if I had managed to interview all those who had originally agreed to be interviewed, but the range of subject departments and individual patterns would have been different. The themes that emerged would likely have been similar due to the presence of dominating factors.

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Table 3.4: Table of representativeness of 2007 teachers/leaders by department in which they teach

| Department | Teacher cohort | Number interviewed | % interviewed | Working relationship with the library |
|--------------------------------|----------------|--------------------|---------------|---------------------------------------|
| 2 nd languages | 10 | 0.5 | 20% | 10 |
| Academic/psychological support | 4 | 0 | 0 | 3 |
| Accounting | 2 | 1 | 50% | 2 |
| Art | 2 | 1 | 50% | 2 |
| D&T | 1.5 | 0 | 0 | 1.5 |
| Drama | 2 | 0 | 0 | 2 |
| EMS | 1.5 | 0 | 0 | 1.5 |
| English | 6 | 0 | 0 | 2 |
| French | 1 | 0 | 0 | 1 |
| Geography | 4 | 1 | 25% | 3 |
| History | 4 | 0 | 0 | 4 |
| IT/CAT | 2.5 | 0 | 0 | 2.5 |
| Life Sciences | 4 | 3 | 75% | 4 |
| LO | 2 | 0.5 | 25% | 1 |
| Maths & Maths lit | 8.5 | 2 | 24% | 4 |
| Music | 3 | 0 | 0 | 1 |
| Physical Sciences | 7 | 4 | 57% | 7 |
| | 65 | 13 | 20% | 47.5 (73%) |

While some interviews were completed as planned, I eventually resorted to convenience sampling (Cohen *et al.* 2000, p.103), approaching colleagues on the off-chance that they might be available, usually when they came to the library for whatever purpose. Convenience sampling is a matter of choosing individuals to whom the researcher has access and continuing the process until the required sample is reached. The only way convenience sampling might have influenced the data is that the teachers may be more representative of those that make more use of the library and by default excludes the teachers who almost never use the library. Table 3.4 indicates the representativeness of the participants within the full staff complement across departments.

This process spanned a longer time period and although most interviews were completed in 2007, the last one took place in March 2008. Apart from this fact, the participants represent a relatively even sample of the school's teachers with regard to subject discipline, gender, length of service, age, home language and ethnic origin (see also Table 4.1, p.142).

My original intention was also to interview teachers in small groups, but for the same reason as outlined above, this proved impossible. However, three pairs of teachers, each from the same subject department, were interviewed together and the rest were interviewed as individuals.

Apart from the teachers, I also interviewed three members of the school leadership, all of whom were teachers as well (i.e. not purely administrators). In referring collectively to 'the teachers' in this study, I include these members of the leadership unless otherwise indicated. I use the term 'the management' or 'the leadership' to refer specifically to this latter group.

Of those interviewed, two members of management and one teacher have subsequently left the school.

3.4.2 Data collection

Qualitative research studies people in their natural settings employing multiple methods such as interviewing, observing and gathering documents. Collecting data is a "*deliberate, conscious, systematic process*" (Rossman & Rallis 2003, p.179). Interviews were the primary format used to collect data. Interview data was supported by informal observation in my day-to-day experiences within the context and by verification of factual data through the interrogation of documents where necessary. The interviews were a culminating rather than a starting point in that they provided the unique opportunity for me to obtain a detailed understanding of so much that is taken for granted in the school as a working environment.

One challenge that I faced in data collection was contextual data. To be useful, data need to provide thick rich descriptions, especially the details about the context (Rossman & Rallis 2003, p.68). Given that my focus is specifically on the context, the question arose of how much data collected sub-consciously through my experience was 'data' and how much was background. Gregory (2005, p.ix-xvii.) sheds some light on this dilemma in her introduction to her book in describing how deeply her family history was situated in her particular ethnographic context and how this influenced the path of her research. Taking this example as a precedent, I consider all the knowledge accumulated through my professional experience of this context as data.

3.4.3 Interviews

Interviews are conducted between the researcher and the participant in order for the researcher to achieve three purposes. These are: to access and measure the knowledge that resides "*inside a person's head*"; what that person values or prefers; and the attitudes or beliefs that the person holds (Tuckman 1972, p.213). The phenomenological interview (van Manen 1990, p.6) is a means of gathering narrative material from which a rich and deep understanding of a human phenomenon may be acquired. It may also serve to explore the meaning of human experiences.

The researcher needs to be aware of potential problems in the interview situation. Cohen *et al.* (2000, p.121) indicate possible bias might include the attitudes, opinions and expectations of the researcher; for the researcher to view the participant in their own image; a tendency to seek answers that support preconceived notions; misperceptions on the part of the interviewer of what the participant is saying and; on the part of the participant, of what the researcher is asking. In order to avoid these pitfalls, I needed to plan my medium of recording the interview, carefully follow an interview protocol, listen attentively and actively and ask for clarification where necessary. Using the chosen method of videoing the interview, meant that I could follow the conversation without having to take down more than the odd observational

note. Interviewing colleagues with whom I had worked for between six and twenty years meant that a relationship already existed and did not need to be established although my role changed for the purpose of the research.

The power relationship (Platt 1981, p.76) between the researcher and the participant is not a one-to-one correspondence in that the researcher who has designed the interview remains in control of the process (Smith 1975, p.190) and needs to be aware of any bias that they may bring in guiding the course of the interview. In interviewing peers the researcher does not have the advantage of superior knowledge (Platt 1981, p.118). Nevertheless, the participant holds the knowledge that the researcher wishes to tap into and the researcher needs to craft a way of extracting that knowledge whilst remaining within ethical boundaries and keeping the interchange at the conversational level.

Interviews have been variously described as “*a conversation with a purpose*” (Burgess 1984, p.102); as “*a conversational partnership*” (Rubin & Rubin 1995, p.11); as a social “*encounter*” (Gubrium & Holstein 2002, p.3) and as the “*ultimate context within which knowledge is to be understood*” (Rorty 1979, p.389). To balance the comfort of conversation with the purpose of the interview required that power relations be consciously addressed.

The power of the conversation worked on two planes in this study. Firstly, the conversations, in both formal interviews and informal interactions with the participants as colleagues in our everyday lives, revealed the interplay of contextual factors for which I was searching. On a different plane, the teachers as participants often referred to their conversations with each other and with their students as evidence of contextual factors. The fact that they could tie their insights to specific conversations was significant. Examples of these were in the interviews with Richard, Henry, Bronwyn and Ineke. It struck me that the interview conversations appeared to provide opportunities for the teachers to voice ideas that they may not otherwise have had the opportunity to express. In this sense the interviews, from my perspective,

became a reflective learning experience for the teachers and an example of socially constructed learning taking place that time pressures otherwise mostly preclude.

I used a standardised open-ended interview approach (Patton 2002, p.342-347) in which I asked of the teachers a series of pre-defined, but open-ended questions (Appendix 3.1) that derived from the research sub-questions and the conceptual framework. These open-ended questions allowed the teachers to develop and express their own point of view, and allowed me to further question their answers when necessary (Murray & Lawrence 2000, p.117). The set of teacher-questions were then adapted for the leadership interviews (Appendix 3.2) to account for their differing perspective. The questions were sequenced from the more general questions on the context to the more specific questions on ICTs. Each interview took approximately an hour except for one in which, I felt, the teacher needed to talk more and, in fact, carried on doing so for a further half-hour. The result was a set of interview transcripts that yielded in-depth data that could not have resulted from any other form of research. At the start of each interview I again explained to each colleague what the purpose of my research was without going into too much detail of the terminology but rather relied on them to ask me questions where necessary. The intention was to diminish any possible gap between their perceptions of my expertise and their own and to keep the interaction at a conversational level. I believe that I was able to achieve the necessary comfort levels and realise that I was privy to information on negative as well as positive issues that my colleagues were comfortable in sharing. In only one instance was I requested to keep a teacher's opinion on a certain matter confidential, but this did not deter the teacher from sharing their point of view. This matter is dealt with in an undisclosed Appendix.

Each interview was based on the subject discipline of the individual or pairs of teachers. Interviews were recorded on video tape for firstly, a purely pragmatic reason, in that the facility which is under my control was always available when interviews had to be scheduled at short notice. Secondly, I

had previously used video tape to record lessons at the request of teachers as well as for my own short research assignments in their classrooms, and colleagues accepted video as part of my tools of the trade. The interviews took place in a staff study facility attached to the library and with which teachers are familiar.

Possible disadvantages of interviews (Murray & Lawrence 200, p.119) include participants providing what they deem to be the answer that will most please the researcher; the interview descending into argument; language levels and wording; providing leading questions or having participants rephrase the question. I needed to be careful of these pitfalls and on the whole managed to avoid them, although, due to my participant-researcher role and the conversational atmosphere, I once or twice found myself using a leading question and needed to account for this in the analysis. Although four of the teachers have a language other than English as their home language, language did not prove to be a barrier as all are fluent in English. Another disadvantage is that my colleagues in a few instances, assumed my knowledge of a particular issue (Platt 1981, p.79). I left these assumptions largely unchallenged in order to not interrupt their train of thought, as either I knew about the issue or it did not appear to warrant interrogation at the time. Where necessary I asked them to explain further. One linguistic anomaly that struck me during transcription was the tendency for teachers to use the casual expression 'you know': in one interview it was generously interspersed no less than 78 times. This is a lax South African mannerism, and does not necessarily imply that the speaker is assuming knowledge on the part of the listener. On the other hand it may indicate a degree of familiarity or informality, or simply be a part of the teacher's natural thinking process, inferring 'I know' rather than 'you know'.

One observation that emerged during the interviews was how both my confidence levels and my objectivity changed. After the first interview I noted feeling quite strongly about certain points that had been made. These points countered what I believed to be 'the truth'. Despite theoretical warnings, it

took some time for me to register what was happening in my mind before the realisation of experiencing different realities, of not taking my views for granted, fell into place and gave me a benchmark from which to proceed in later interviews. It also confirmed for me the dissonance between one viewpoint and another. Also, I realised that, after a series of interviews in a short period of time, a degree of indifference on my part might have crept in. I therefore needed to pause to clear my brain before proceeding with the last few interviews. Griffiths (1985, p.200) recognises such difficulties for practitioners in conducting research alongside one's normal role and how tiredness can become a significant factor.

3.4.4 Observation

Whilst the interviews provided the majority of the data, personal observation was used to add to it. The personal observations consist of what I have observed in my day to day dealings with my colleagues whom I interviewed. Such observations include informal conversations, instances of co-teaching, and discussions around learning design, resource acquisition or ICT support. These observations have not been formally recorded but exist in my cumulative memory archive. These are drawn on to provide background and elucidation to the data contained in the interviews.

3.4.5 Document verification

I use the term document verification rather than document analysis in that I did not seek out documents in order to obtain primary data. In the same way that the interviews were supplemented by personal observation, I drew on documents to verify policy details and implementation dates, school events or other occurrences relevant to the context. External documents include Department of Education (DoE) and Independent Examinations Board (IEB) circulars. Internal documents include minutes of meetings, organisational charts, timetables, analyses of facility use and in-house research reports. The documents are referenced in text to the extent, where necessary, that they do not identify the school. Data verification by this means was part of my dealing

with assumptions which I had to consciously suspend (Merleau-Ponty cited in Ehrich 2003, p.46), particularly given my familiarity with the context as well as to counteract the vagaries of long term memory.

3.4.6 Data transcription

The use of video for recording the interviews proved to be a beneficial medium in the transcription phase as it made explicit not only the voices but also the body language and facial expressions as well as the subtle interactions and visual focus of the teachers. In the few instances where voices faded or words were indistinct the visual image assisted in identifying words or phrases and, when voices overlapped, it assisted in extricating one voice from the other. The transcription was done personally in order for me to derive the greatest benefit from the process as well as to preserve confidentiality.

I encountered one technical problem in transcription which was that, in one interview, the sound level on the camera had been turned down by the previous user and I had inadvertently forgotten to check the levels before the interview began. I tried various means to boost the sound signal but to no avail. I eventually managed to transcribe all but a few phrases of the data, but it took an inordinately long time.

Each interview was transcribed into a separate word document with the dates of recording, transcribing and analysis. Each segment was separated and numbered using a table format to facilitate the analysis phase. I developed my own system of notation to indicate speaker, pauses, body language and changes of tone. I retained the original names of the teachers until the final report stage in order for me to 'hear' the real voices and not those of the avatar that anonymity would create. The transcripts were emailed to the teachers involved in each interview for verification and each came back with their sanction.

3.4.7 Data analysis

The challenge of interpretive data analysis from interview transcripts is to maintain the integrity of the story rather than fragment it into meaningless data (Cohen *et al.* 2000, p.282). To borrow from Ehrlich's analogy of phenomenology as a web, I needed to understand and describe the cohesion of the web, not just the strands or the coils. In keeping with complexity theory I needed to be mindful of the importance of the whole, rather than the parts and the extracts from Chapter 3 in particular. These extracts are included in Table 3.5 below:

Table 3.5: Complexity characteristics

| Author | Characteristic of complexity |
|-------------------------------|--|
| Phelps & Hase 2002, p.510 | <i>Complexity theory does not try to understand the whole by understanding its parts; but rather aims to understand the interaction of its parts.</i> |
| Klein 2004, p.4 | <i>Phenomena may also display coherent collective behaviours which cannot be understood by reductionist analytical methods.</i> |
| Klein 2004, p.3 | <i>Knowledge itself is no longer divided and compartmentalized in a linear structure but in a network, web or rhizome structure (with infinite complex possibilities of interconnection and interaction.</i> |
| Davis & Sumara 1997, p.114 | <i>... a thorough understanding of each human organ will not help account for complex phenomena such as consciousness and identity, although each organ contributes to such phenomena. Each part is integral to the whole.</i> |

However, to understand the whole, I needed to understand what constituted the whole and I therefore employed inductive reasoning (Cohen *et al.* 2000, p.4) and descriptive coding to identify each theme within each segment of text. Coding is the translation of the text generated from the responses to the questions posed in the interview into specific categories (Kerlinger 1970 cited in Cohen *et al.*, p.283). The codes were developed on the principle of inductive logic, reasoning from the particular to the more general (Rossman & Rallis 2003, p.11), in which inherent relationships emerge from the data itself without the application of preconceived ideas or structures (Mouly 1978, p.9).

A sample of the coded data is included below in Table 3.6.

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The codes were derived systematically from each interview in turn. Some extracts had multiple codes as shown in the data sample in Table 3.6. I used highlighting as a guide to separate the various elements of the extract although there is not a direct correlation between the code and the highlight in every instance.

Table 3.6: Sample of coded data

| Extract from transcript | Codes | Memo |
|--|---|------|
| <p>XX: I think we've been given quite a free hand and been given a great deal of trust. They trust us to do the job and to do it well and that's good because it shifts the responsibility and we try to pass that on to the rest of the department. Um ... [long pause] ... I think they have tried to shield some of the blows that comes from official government declarations every now and again which are silly and then get reversed six weeks later and there you know a lot of people are very apt to ... to ... they under-react. I don't think they have with ... with this new LO. They've over-reacted a bit. That's my opinion. [wry smile, laughter]. I think generally they've been fairly supportive in an indirect fashion. Just provided the background and some of the resources, but not all of the resources we need. But the main resource we need actually is time... and that's the one that's got the most stretch on ... [chuckles]</p> | <p>headmaster</p> <p>professionalism</p> <p>communicating down</p> <p>mandated change</p> <p>LO</p> <p>accessibility of resources</p> <p>lack of time</p> <p>constraint</p> | |

To manage the coding process, codes were recorded in a spreadsheet at the point of first use (Table 3.7: Sample of coding spreadsheet) with an explanatory note to each to clarify in my own mind why I was using it. I also noted in which interview each code occurred. As the coding progressed further codes developed and I was able to return to earlier interviews to adjust or add new codes. Codes were assigned to categories as the patterns within the data emerged, and in turn, each category was identified within a broad area. The codes, categories and broad areas were refined throughout the coding process. Using spreadsheets enabled me to sort codes by code,

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category or broad area as well as "Used in" which sorted on occurrences by groups of interviews using the initials column. In analysing the coded data, there were many codes that I did not eventually use, because they did not appear to have a specific bearing on the phenomena for which I was searching i.e. convergence, mutuality and extensiveness.

Table 3.7: Sample of coding spreadsheet

| Code no. | Teacher initials | Code | Category | Broad area | Explanation of code |
|----------|---------------------------------|---------------------|----------|------------|---|
| 124 | ZZ | ICTs - power of PCs | T belief | teachers | acknowledgement/recognition of potential of ICTs - see also ICTs - impact |
| 125 | PP, QQ, RR, XXNN, ZZ, | ICTs - projectors | hardware | tools | generic comment on projectors |
| 126 | DD, LL, PP, QQ, RR, XXNN, ZZ, | ICTs - provision | ICTs | principles | providing ICT resources (see also equity) |
| 127 | AA, CC, LL, PP, QQ, VVTT, XXNN, | ICTs - research | ICTs | practices | using ICTs for research based learning |

These categories and broad themes underlie the description of the findings. Data from different interviews was compared code by code within each category and broad area. Similarities and comparisons were drawn using the themes derived from the codes. However, as described above, the complexity of the interactions for each individual teacher or pair of teachers resulted in the findings being described systematically by interview in order to retain the cohesion of each teacher's story. This was particularly important in looking for convergence, as that refers to the *common* occurrence of the interactions.

In analysing the data the temptation was to let the data speak for themselves as the eloquence and honesty of my colleagues' accounts as well as the depth and detail of their responses did precisely that. However, as Rossman and Rallis point out (2003, p.11) data requires interpretation and needs to be

my story about their stories. My dilemma was to retain the cohesiveness of each story. Although I attempted to report on the findings by category or broad theme, referring to each interview in turn, I eventually became so bogged down that I abandoned this and reverted to an interview by interview report and referred to the categories and themes within those. A further challenge was whether to include the incidental mentions of ICTs that teachers raised in response to questions on context with that response, or whether to combine the response mentioning ICTs with their answers to specific ICT-related questions. In the end I placed each response where it related best to the individual context.

There are three approaches to identifying analytic or thematic statements (Bassegy 1999, p.66; Ehrich 2003, p.57). These approaches have been described as holistic (or what phrase captures the meaning of the text), selective (what seems essential or revealing in the text) or detailed (line by line) by van Manen (1990, p.79). As I was searching for data that supported particular phenomena I relied largely on the selective approach. The analytical statements that arose from each interview were illustrated with graphics to show the interplay between convergent and disconvergent factors and my interpretations of the data were consolidated and added to the extracts that I chose to use quite liberally in order for the teachers stories to also 'speak for themselves'. In this way I attempted to get a balance between the sense that my colleagues made of what was going on and the sense that I made of it (Rossman & Rallis 2003, p.50), but based on the data itself.

3.4.7.1 *Illustration of the data*

The findings relating to the first three sub-questions were described sequentially by interview and illustrated in each chapter by figures that showed the interplay of convergent and disconvergent factors for each teacher or each pair of teachers.

In certain cases the relationship between convergent and disconvergent factors was found to have a direct one-to-one correspondence. These factors

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were illustrated in the figures by a pair of arrows as shown below in Figure 3.3. An example of this was in Francois' practice in which curriculum requirements and ICT policy met head-on with spiralling effects (Ch.6 Section 6.4.6.2, p.333).

Figure 3.3: Example of direct interplay of factors

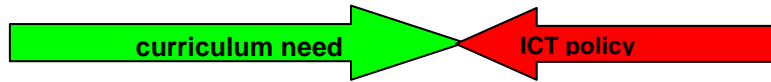
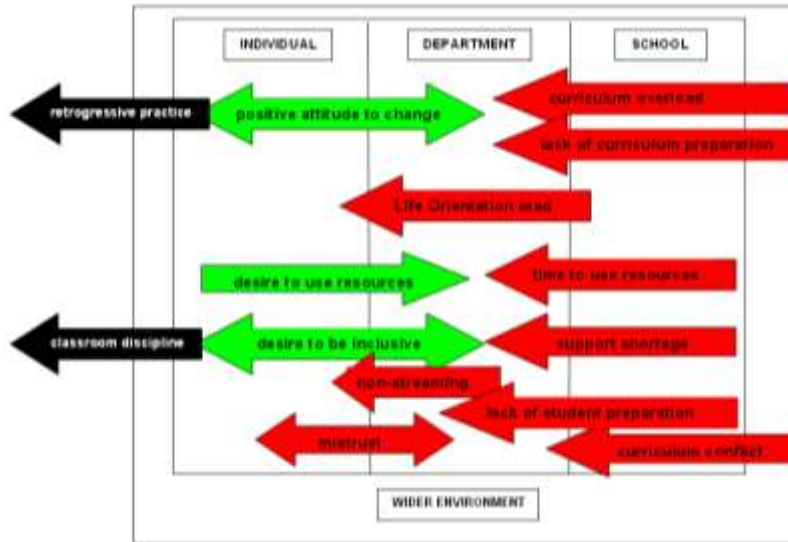


Figure 3.4: Example of indirect interplay of factors



In other instances the factors co-exist without a direct impact, but the overall effect is limiting as in the example in Figure 3.4. In this example, the desire to change is visible in the positive attitude and extends from the individual to the department, but curriculum overload and lack of curriculum preparation meet that attitude head on and retrogressive practice results.

A double headed arrow was used to indicate a mutual effect as in Figure 3.4: the positive attitude to change has a positive effect on both the individual and the department. Black arrows indicated retrogression and yellow arrows indicated the presence of a factor that appeared to have a neutral effect.

3.5 Trustworthiness

Positivist theory portrays validity as the understanding of knowledge as a map of an objective reality (Kvale 2002, p.300). Post-modern theory has discarded this concept against which to measure validity (Lincoln & Guba 1985, p.218; LeCompte & Preissle 1993, p.326; Bassey 1999, p.75) and replaced it with “*the social and linguistic construction of a perspectival reality where knowledge is validated through practice*” (Kvale 2002, p.300). Criticisms of this post-modern approach centre on the research interview. They challenge the possibility of leading questions, the number of interview subjects and the real meaning of what the interview subjects are saying (Kvale 2002, p.301). Kitwood’s counter argument (1977 in Cohen *et al.*, p.125) suggests that the greater the degree of control in the interview, the more reliability increases but at the expense of validity. The easier the degree of control, the more human the response is likely to be, thereby increasing validity.

Validity asks the question: “*Are we investigating what we think we are investigating?*” (Bassey 1999, p.75; Kerlinger 1973, p.457; Murray & Lawrence 2000, p.135). It is incumbent upon the researcher to record the details of the data collection and the process of analysis to the extent that others are able to judge whether the boundary between truth and non-truth (Kvale 2002, p.301) has been appropriately demarcated (Patton 2002, p.402). What is at issue is not the data themselves, but the inferences drawn from the words and actions of the participants (Hammersley & Atkinson 1983, p.191). Validity occurs at two levels: internal validity and external validity. Internal validity is the extent to which the research observes or measures what it is intended to observe or measure and external validity is the extent to which the findings can be generalised to other groups (LeCompte & Preissle 1993, p.348; Bassey 1999, p.75). The singular nature of case studies, in which the group is chosen for the uniqueness of its context (LeCompte & Preissle 1993, p.332), means that external validity in this sense cannot apply. Instead, the applicability comes with the use of a study when it is compared to other similar studies.

Traditionally, reliability is understood to be the extent to which a claim or finding can be repeated given the same circumstances (Bassegy 1999, p.75) whereas the qualitative concept of reliability focuses on “*the fit between what researchers record as data and what actually occurs in the natural setting that is being researched*” (Bogdan & Biklen 1992, p.48).

Alternatives to the traditional concepts of reliability and validity are trustworthiness (Bassegy 1999, p.129; Lincoln & Guba 1985, p.218; Kvale 2002, p.301); understanding (Maxwell 1992, p.280; Mishler 1990, p.129); fidelity (Blumenfeld-Jones 1995, p.25); dependability (Kvale 2002, p.301; Lincoln & Guba 1985, p.108-109; Miles & Huberman 1994, p.278); auditability, credibility and authenticity (Miles & Huberman 1994, p.278); comparability and translatability (Vidovich 2003, p.77). These terms rely on the integrity of the researcher to ensure the integrity of the procedures and therefore cannot be separated from ethical considerations (Kvale 2002, p.308). The qualities that constitute integrity are honesty, wholeness, coherence and a sense of moral principle (Rossman & Rallis 2003, p.63). Such trustworthiness is assessed by how well the study conforms to standards for acceptable and competent practice and whether it meets standards for ethical conduct with sensitivity. What are important are considerations of accuracy, balance and appropriateness at the research design stage (Cohen *et al.* 2000, p.115). Similarly, at the data-gathering stage, steps should be taken to minimise bias and at the analysis stage to minimize subjectivity, the halo effect, coding errors and selective use of data. As a participant researcher I need to be aware of fidelity, context and situation specific issues, authenticity, comprehensiveness, detail, honesty and depth of response. Actions such as respondent checks, prolonged engagement, audit trails and triangulation contribute to the trustworthiness of the study and enhance dependability. Comparability is facilitated by the use of standard terminology and clear delineation of the group studied. Translatability relies on explicit description of the methods, analytical categories and characteristics of the phenomena.

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For this qualitative study to be trustworthy, the onus was on me as researcher to be reflexive and to make all my purposes explicit. In keeping with the expectation of trustworthiness I used the criteria in Table 3.8 amalgamated from those of Bassey (1999, p.76); Miles and Huberman (1994, p.278); Richardson (1994, p.52); Wildy (2003, p.120-121); Kvale (2002, p.301) and Cohen *et al.* (2000 pp.108, 185).

Table 3.8: Criteria for trustworthiness

| Criteria | Actions |
|--|--|
| Is there evidence of prolonged engagement with the data sources? | I have been involved with the context for 20 years and work with the participants on a daily basis. |
| Is there persistent observation of emerging issues? | The observation has been ongoing – both prior to and during the research phase |
| Has the raw data been adequately checked with their sources? | Transcripts were sent to participants for approval. |
| Have emergent findings been shared with participants? | I met with the teachers and discussed the draft findings. |
| Has there been sufficient triangulation (multiple perspectives) of raw data leading to analytical statements? | I used data from different sources (management and teachers) to gain different perspectives. Documents were used to verify data where necessary. Informal observation was indicated when referred to. I used multiple theoretical perspectives i.e. complexity, innovation, ICT and teacher-librarian point of view. |
| Has the working hypothesis, evaluation or emerging story been systematically tested against the analytical statements? | The conditions of convergence, mutuality and extensiveness as well as disconvergence have been identified and described and evaluated against the literature. |
| Has a critical friend thoroughly tried to challenge the findings? | The final drafts have been evaluated by a critical friend. |
| Is the account of the research sufficiently detailed to give the reader confidence in the findings? | This chapter summarises the actions taken and the reasons for those actions. The case has been comprehensively reported in this full document. |
| Does the case record provide an adequate audit trail? | The case record has accumulated systematically and been preserved in paper, electronic and audio-visual formats. |
| Is the account authentic in reporting the situation from the participants' | I endeavoured to be fair, to balance each account and to provide a fresh view of the situation. |



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| Criteria | Actions |
|---|---|
| point of view? | |
| Comparability: is standard terminology used? Is the group clearly defined? | The group and the setting have been described in as much detail as ethical considerations will allow. |
| Are the methods and analytical categories explicitly identified? | The methods and categories are described in this chapter. The case record provides further details. |
| Is the data accurate? | Interview data was recorded and transcribed personally. Documents were used to verify factual data where necessary. |
| Language issues | All respondents were fluent in English, the language medium of the interviews and there were therefore no language issues. |
| Check for representativeness and for researcher effects. | The teachers interviewed are representative of the whole staff in terms of gender, age, ethnic background, home language and years of service. The researcher's perspective is described in detail. |
| Are extreme cases and surprises accounted for? | By reporting per interview each case retained its integrity and relevance to the phenomena. |
| Is the selection of data representative? | I have tried to include as much raw data as possible in support of my interpretations. |
| Look for negative evidence | The evidence for the three conditions spans a continuum from positive to negative. |
| Does the study focus on exploration and creative generation of new knowledge. | The study responds to various calls in the literature for research into contextual studies. |
| Ethical considerations | Described in the next section |

One particular condition that I had to be conscious of was the halo effect¹. As a participant researcher my colleagues are well known to me and I needed to address the conflict between knowledge of the teachers arising from familiar day-to-day interaction and knowledge arising from the data. In order to address this I separated my observations from the transcripts and acknowledged them as such when used.

¹ Halo effect: the tendency to make specific evaluations based on a general impression (from: Rosenzweig, P. (2007) *The halo effect*. New York: Free Press.)
Thesis submitted by Mary Elizabeth Reynolds in partial fulfilment of the requirements for the degree **132** of Philosophiae Doctor (Computer Integrated Education) in the Department of Curriculum Studies, Faculty of Education, University of Pretoria, August 2009.

3.6 Ethical considerations

This study has been conducted in terms of the school research policy, the university's ethic's policy and individual rights to privacy as reflected in the ethical clearance certificate (Appendix 1.2). Access to the school was given in principle and in writing and permission was granted for me to access whatever documentation I needed to access for the purpose. Potential participants agreed to participation in terms of the informed consent principle (Rossman & Rallis 2003, p.73) and signed written acknowledgement of their willingness to participate in the study. Whilst most of the documentation is in the public domain within the school, it was appropriate to seek this permission nevertheless. The terms of publication of this final report have been negotiated with the principal. The purpose of a study affects its sensitivity: a study that is for one's own enlightenment or for professional development purposes holds less threat than that which might be commissioned (Griffiths 1985, p.210). On the contrary, the participant researcher, as an integral part of the context, has more at stake than the outside researcher (Griffiths 1985, p.211).

The formalities of securing ethical clearance and permissions do not address the dilemmas that one faces as a participant researcher. Whilst this study is a private undertaking, it will be of benefit to the school and I consequently needed to be sensitive to any issues that might arise, at the same time ensuring that I did not compromise the trustworthiness of the report. Hargreaves suggests that such sensitivity issues are "*incapable of simple resolution*" (1967, p.199). In a similar vein to what Griffiths found (1985, p.203) the analysis of contextual considerations began to show a complex web of issues that needed to be unravelled. At the outset I planned to interview a sample of teachers and committed myself to securing their anonymity as well as the anonymity of the school. However, when the time came to report the findings it was nigh impossible to separate each individual from their specific context in terms of subject specialisation or rank (leadership, Head of Department or rank and file teacher) yet maintain contextual integrity. These aspects were crucial to what they had to say.

These factors also influenced decisions I had to make about sequencing the findings, whether by topic or by interview, and how this affected the so-called anonymity. Anonymity can often be a “*non-solution*” because if it is impenetrable the research does not provide feedback to those interviewed (Adelman *et al.* 1980, p.57). Given that within any context those that are familiar with the context may be able to identify individuals should they so wish (Rossman & Rallis 2003, p.191), I negotiated with my colleagues that they would not be named, but that the subject-relevant data would be used as such. For pseudonyms I used names linked to their gender, cultural background or both.

The issue of trust and betrayal (Rossman & Rallis 2003, p.77) is a sensitive matter. Rossman and Rallis state that “*people often tell more than they know they are telling*” and that the researcher often “*learns more than she wishes*”. I believe that there were instances when both these situations occurred. One section of one interview contained sensitive material which will be confined to an undisclosed Appendix. Reference to certain strategies employed by teachers that might also have directly identified them thereby heightening sensitivity was either referred to in generic terms or left out. However, such instances were few and far between and given the more public nature of the topic that I was investigating did not impact the study significantly. In one sense I was quite surprised by the overall frankness of my colleagues, yet it is in keeping with an atmosphere of open dialogue that I sense from experience does permeate the school.

In terms of procedural requirements, the transcriptions of interview data were emailed to the teachers for checking for accuracy and approved. Member checks and negotiations regarding the identification of subject specific data were discussed and agreed face-to-face.

3.7 Limitations

Limitations set the boundaries of what this study is and what it is not. The conceptual framework defines what this study is about: the interactions that affect teachers as they try to innovate and the role that ICTs play in these

interactions. However, there are certain limitations to this study. These limitations relate to generalisation; the sampling method; the predominance of the curriculum change factor; rapidly occurring changes; comprehensiveness; and the socio-economic status of the school.

- General limitations of case studies are that results may not be generalisable, it is difficult to cross-check data for selectivity or bias and that as a participant-researcher I become a human instrument in the research and my interpretations will always be subjective (Nisbet & Watt 1984, p.76). The question here is how the study may be generalised within the context. This study does not claim generalisation to the full context, rather it shows how the combination of factors affects each individual in a unique way.
- The fact that I used convenience sampling may be a limitation, albeit the sample of teachers as described above, and that were eventually interviewed was representative in a general sense.
- The study is not a longitudinal study conducted over a lengthy period of time although the period in which I have been involved in the school, as well as my role in the school, have influenced my thinking. The data collection was also a moment in time and not necessarily representative of what might be happening at the present juncture. While some more recent events are accounted for in that they have a bearing on the findings, there needs to be a limit and that limit is as much a practical limit as any other.
- The data collection occurred at a time when the teachers were pre-occupied with curriculum change which may have had a bearing on the focus on curriculum as the findings reveal. However, the new curriculum had been introduced informally in 2002 and then formally in 2004 in secondary schools and had not yet stabilised. In other words, curriculum change is an ongoing condition that schools have to contend with.
- The study may have benefited from further interviews that counter-balanced the data collected from the interviews that did take place.

- A potential limitation of this case-study may relate to the position of the school at the 'high end' of the scale of schools within South Africa. Nonetheless, it is a typical school in that it grapples with transformation issues as much as any other school. It is also a school that grapples with ICT integration as any other school in that it is not privileged by any benefaction or commercial support of its ICT infrastructure and endeavours. The demands made on the school are also relative to the socio-economic status of its client base and the 'value-for-money' expectations cannot be ignored. All these factors add to the complexity of the context. At the same time it is acknowledged that less privileged schools in South Africa are just as complex and deal with just as many demands, albeit different ones. However, privilege does not imply irrelevancy; on the contrary it is often from the privileged schools, particularly in South Africa, that education expects creative leadership and innovation. It is towards this effort that this study documents my experiences in such an environment through the stories of my colleagues in the belief that it may contribute to the larger picture.

3.8 Summary of Chapter 3

This chapter has described the approach to the study and my position as participant researcher. The development of the research design based on this approach and on the conceptual framework has also been illustrated and described. Details have been provided of how each stage of the research process unfolded and reference made to issues of trustworthiness, ethical issues and the limitations of the study. The following chapter/s will describe the data based on the interviews that formed the main source of data for the study and provide my interpretations thereof.

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Chapter 4

Findings: organisational interactions and their effect on teachers' practice

4.1 Introduction

The previous chapter described how the research design for the study evolved from the conceptual framework and explained how the methodology and process ensued from the research design. The research problem that this study addresses is to understand the effect of context on teacher innovation in secondary schools and on ICTs in particular. The study therefore explores the contextual interactions that affect teachers' ability to innovate and, in particular, to innovate using ICTs. This chapter will present an analysis and discussion of the findings on the first sub-question:

How do organisational interactions influence teachers' ability to innovate and to sustain innovation in practice?

The Chapter will look specifically at interactions between mandated changes and teachers' ability to innovate in practice in the face of such changes, seeking evidence of convergence or disconvergence. Whilst the term 'convergence' is used as defined in Chapter 1 for the convergence of positive factors, the term 'disconvergence' is coined to refer to the convergence of factors which were found to have a constraining effect on teachers ability to innovate. In order to describe these interactions, the chapter will briefly recount the argument for the relationship between innovation and context, introduce the school and the teachers that form the sample of participants for the study, introduce the main themes identified in the analysis of data, and then describe the effect of mandated changes on teachers' ability to innovate.

4.2 The relationship between innovation and context

In order to establish the influence of context on the teachers' ability to innovate with ICTs it is necessary to understand and describe the context in which they practice. According to the literature, understanding teacher responses to change requires understanding human experience within the complexities of context, to look at their social worlds holistically (Rossman & Rallis 2003, p.9). To understand context is therefore to understand the interactions and relationships between the teachers and their context, how they make choices, interact together and adapt to each others presence (Erickson 1986, p.121-129; Clarke 2000, p.55). Schools need to identify and understand their own contexts in order to identify curricular goals, evolve a common sense of direction and consider how ICTs might help them achieve their purpose (Beetham & Sharpe 2007, p.7-8). ICTs therefore need to be studied against their contextual backgrounds.

Innovations are context-dependent: what is new in one context may not be so in another. To be effective, an innovation needs to have a purpose and to have been implemented in practice to a certain extent, while its success will depend on how it is perceived. Change occurs in very small steps, evolving gradually, therefore innovations do not have to be on a large scale, but the "*continual flux and change*" of organisational complexity plays a role (Glatter et al 2005, p.386). Fullan and Hargreaves (1992, p.4) point out that schools not only implement one single innovation at a time but are typically required to manage "*multiple innovations simultaneously*" and that little is known or understood about the "*teacher's sense of purpose, the teacher as a person, or the context or conditions under which they work*". The broader context in which a teacher functions therefore needs to be described and understood before their ability or inability to innovate with ICTs can be understood.

4.3 The school: Wilding College

Secondary schools are highly complex environments (Bloom 2000, unpagued, 2001, unpagued; Clarke et al 2000, p.160; Davis & Sumara 2005, p.453; Doolittle 2001, p.9; Eadie 2003, p.2; Hennessy, Ruthven & Brindley 2005, p.6;

Phelps *et al.* 2005, p.73). As a South African school, Wilding College is no exception. It has faced a range of political and societal changes, education policy changes, school driven changes, technology-driven changes and practice-driven changes (Appendix 4.1). Every individual has felt the effects, beneficial or adverse, of the political and societal changes that have occurred in South Africa over the past fifteen years. As a consequence of the political and societal changes, major educational policy changes had to be made to racially integrated schools, to an inclusive human rights culture and to an outcome-based curriculum. These affect every teacher and student at a fundamental level and determine changes in curriculum and practice. School driven changes add further complexity to the adaptations that teachers and students alike need to make. Environmental factors as well as systemic factors further determine teachers' need and ability to change their practice. Global technology changes, some of which impact via the socio-economic sector that Wilding College serves, place further demands on teachers. Such changes are more subtle and interplay with mandated changes in different ways for each teacher or department. All these factors interact dynamically at organisational, departmental and individual teacher and student levels. Hennie's opening comment on changes that might impact a teacher's classroom practice epitomises the dynamic nature of change in the school:

HJ5: 'It's forever changing ... as we go along.'

Wilding College is particularly complex, having also entered into a partnership with a group of schools and embarked on a programme of governance and internal policy specifications (e.g. Employment Equity Policy) over the past decade. It is a typical school in that teachers are required to deal with multiple innovations simultaneously (Fullan & Hargreaves 1992, p.4). In order to describe the context it was therefore necessary to gain an understanding of how the teachers had managed these multiple top-down simultaneous or overlapping changes and how the changes had impacted their classroom practice. As a participant researcher I am familiar with many of these

changes having experienced them myself over two decades (Appendix 4.1: Table of changes).

Of the teachers on the academic staff at Wilding College, thirteen were interviewed for this study. A description of the staff and the teachers follows.

4.3.1 The teachers

At the time of the interviews (2007) there was an academic staff cohort of 66 teachers. Of these 34 were male and 32 female. Ten teachers and three members of the leadership team were interviewed. The sample data is illustrated in Table 4.1.

Table 4.1: Table of teachers interviewed

| Age bracket | Gender | Home language |
|-------------|--------|---------------|
| 20-30 | Female | Afrikaans |
| 30-39 | Male | English |
| 30-39 | Male | English |
| 30-39 | Male | Afrikaans |
| 30-39 | Male | Sotho |
| 40-49 | Female | English |
| 40-49 | Female | Afrikaans |
| 40-49 | Male | English |
| 40-49 | Male | English |
| 50+ | Male | English |
| 50+ | Female | English |
| 50+ | Male | English |
| 50+ | Male | English |

The table indicates that most teachers are experienced. All teach through the medium of English although the incidence of home language varies. In the findings the teachers are given pseudonyms in order to preserve anonymity. For the same reason the colleagues which they refer to in interviews are also given pseudonyms.

The following section will describe the main themes identified from the analysis after which the findings of the data analysis from the interviews with the teachers will be described.

4.4 Main themes identified in the analysis

It was found that dynamic interactions that support or inhibit changes in practice as a response to mandated changes occur in nine broad areas: curriculum; inclusive education; professional learning; the nature of the subject; systemic factors; teacher beliefs; student beliefs and attitudes and societal factors (including parental beliefs). The final area is collegial and professional relationships.

This section will briefly introduce these eight broad areas and then take each interview in turn to describe how convergence or disconvergence results from these interactions that support or inhibit innovative practice. Collegial and professional relationships are dealt with separately in Chapter 5 and interactions involving ICTs in Chapter 6. The references to these broad areas are not separated out in the interpretations as it is the *interaction* between all factors that are described and in each case these interactions occur in differing and complex ways.

4.4.1 Curriculum change

Curriculum change is nationally mandated top-down change. The change to an outcome-based (OBE) curriculum was implemented in secondary schools over a period of five years between 2004 and 2008, preceded at Wilding College by two years of preparatory experimentation. The data for this study was gathered at the time that curriculum change reached Grade 11 and the first Grade 12 final examination of the new curriculum occurred in December 2008. The OBE curriculum requires teachers to redesign not only the content they teach, but how they teach it and how they support the learning process. This requirement is described in the IEB handbook, noting the essential need for teacher support, as follows:

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“The development of more appropriate curricula, forms of assessment, and teaching methodology for our school system is a central task of the IEB. The means of achieving this development is through ongoing exploration of improved ways of setting and administering examinations, as well as creatively developing school based assessment practices. User support is essential in this context as part of the national effort required to address changing needs in education” (IEB 2006, p.4).

The requirements of OBE include mandated changes to assessment practices. The first assessors course¹ for teachers at the school was underway as this study began and it would be another two years before all teachers had attended this practical course in which they were trained to design for formative as well as summative assessment of each individual learner. To become a certified assessor, which is compulsory, each teacher was required to complete a comprehensive assessment portfolio. Although almost all teachers have now completed the course, only three have managed to complete their portfolios. From a curriculum perspective alone, teachers were thus required to work with different and applied content; change from assessment *of* learning to assessment *for* learning (Black 2004, p.9); accommodate individual needs; and accommodate knowledge, skills and values simultaneously. Curriculum change has thus dominated the context of this school for an extensive period, including the full period of this study. All interviewees therefore referred to curriculum change although it affects each teacher's practice to varying degrees and in various different ways as the analysis shows.

4.4.2 Inclusive education

The principle of inclusion (Ainscow 2005, p.118) is accepted internationally as a reform that supports and welcomes diversity amongst all learners (UNESCO 2001, p.3). Inclusion is a natural consequence of the democratic dispensation in South Africa and is nationally mandated as part of the change to the OBE curriculum. The *White Paper 6: Special Needs Education* (DoE 2001) provides a framework for systemic change for the development of inclusive

¹ Wilding College contracted consultants through the IEB to run this 5-day professional development course during term time for teachers in batches of 10-15 at a time. Each teacher has had to complete the course in order to become a certified assessor.

education. Independently of these developments, the school desired to implement the practice, consciously moving away from its previous practice of selection for admission on academic merit. The initial impetus arose from a conference at Harvard University (USA) attended by the principal in 1999. From the start, the focus of inclusion was not only the small number of students with special educational needs, but the range of individual needs manifested by all students (Ainscow 2005, p.118; Baggott la Velle 2003, p.196; Mioduser et al 2003, p.26; Clarke et al 2000, p.7), requiring a differentiated approach to learning (George 2005, p.185). Whilst student-centred learning does not necessarily imply individual support, student-centred learning is at the heart of inclusion and individual support because it focuses on how students learn rather than how teachers teach.

This change has significantly influenced teaching and learning practices over the past decade at Wilding College. Inclusion has resulted in certain systemic changes. Where classes were previously streamed, streaming in most subject areas was dropped in favour of mixed ability classes and the exclusive connotations of being superior 'in the top set' or inferior 'in the bottom set' fell away². One adaptation that the school has made is offering Business Studies for boys who cannot cope with Physical Science which previously was compulsory. Another is the opportunity for boys with specific difficulties to follow an independent learning programme (ILP). An Academic Support department was established and initially two academic support specialists were appointed to work with the teachers and assist individuals with specific needs in some or all of their classes as well as through afternoon tutorials. However, although the number of students requiring support for specific difficulties was small³, their numbers were not necessarily evenly distributed across the classes, either before or after streaming was abandoned. Thabo and Magriet describe the impact on their classes:

² With a cohort of 140-160 students per grade there could be up to seven sets per grade in some subject areas.

³ The school theoretically accepts 6-8 students with identified learning difficulties per grade but further cases requiring support are often identified within the cohort group after admission to Grade 8.

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TL18: *I think it has changed, because if like you had to look way back then, we had sort of smaller classes, especially if you were taking inclusion. Your class will be generally small: you'll find that you've got maybe fifteen boys – maximum. And there you could like ... do the one on one, try to OK push them like that, show them how things are done. But now its twenty five, and, you know, things have really changed ... since then.*

TL20: *Ja⁴, I think that the inclusion boys ... OK, inclusion is fine, but the class ... that class should not be as big. You know, if maybe I've got a class of fifteen and I've got three inclusion boys, then its fine, I can take care of them. But if I've got a class of 25 and some inclusion boys inside, so it's ...*

MD21: *So, it's for example in my class that's got the most inclusion boys, the biggest problem boys, it's a class of 28. You can't ... you can't ... it doesn't work.*

Apart from changes in practice that inclusion requires, teachers have also to adjust to the presence of a second teacher in their classrooms and learn to work collaboratively with these academic support teachers.

In line with inclusive practice, but not necessarily as a direct result of it, there has been an increased focus on the pastoral needs of each individual student. The house system, which was previously only manifest in inter-house sporting or cultural events, evolved over the past ten years into a rigorous system of pastoral support through tutors and house directors. Over and above their other duties, every teacher in the school tutors approximately fifteen students, monitoring and supporting their progress from Grade 8 to Grade 12. Tutor groups operate within houses of 70-80 students under the leadership of a house director. Tutors and house directors oversee the academic, sporting, cultural, community service, leadership and disciplinary aspects of each individual student's school life and communicate with parents on their progress or lack of it.

⁴ Ja (Afrikaans) = Yes.

4.4.3 Professional learning

With curriculum change, teacher professional learning occurs on different levels. Firstly, teachers at Wilding College are provided with print materials and electronic access to resources that inform them about the content and the mechanics of the OBE curriculum. Secondly they are learning about the realities of implementation in practice. Thirdly, and most significantly, they are learning on a personal level about themselves and what they are capable of achieving. Personal development is encouraged in the form of courses (such as *Investment in Excellence*⁵). Mandatory in house workshops conducted by outside consultants are offered during the one or two professional development days preceding the start of each term. Content of the workshops is determined by the school leadership and deals with broad policy issues at a strategic level rather than a practical level (e.g. transformation and diversity, professionalism). One recent presentation dealt with classroom discipline. Lastly, two voluntary one-hour sessions are held each term to workshop ideas around the Jim Collins concept of “*good to great*”⁶ with the intention of dispelling complacency about how good the school might be and stimulating and extending teachers to strive for excellence over and above current levels. These workshops do not cover curriculum issues nor do they provide opportunities to develop pedagogical approaches (Beetham & Sharpe 2007, p1; Dede 2000, p.282; Looi et al 2004, p.92; Rowan et al 2005, p.22; Fogelman et al 2006, p.186). A mid-year planning day for the following year provides the single opportunity for teachers to share curriculum direction and practice. This day was held in 2007 and 2008, but in 2009 the day was given over to a general workshop with a consultant. From observation, although the teachers enjoy the workshops, comments on general workshops include ‘*I could have been doing ...*’ or ‘*Not at this stage of the term*’, indicating the time pressure that teachers are under and where their priorities lie.

Apart from the above, there are no further in-school opportunities for professional development that cover practice-related topics e.g. cognitive

⁵ The Pacific Institute's *Investment in Excellence* professional development course is offered to all teachers. It includes refresher courses and is also offered in an adapted format to Grade 10 students.

⁶Collins, J. *Good to great: Why Some Companies Make the Leap ... And Others Don't* Random House 2001

development, constructivist methodologies, ICT integration, differentiated learning or learning design.

The nature of the subject was also identified as a factor that affects practice.

4.4.4 The nature of the subject

The nature of each subject area differs significantly according to different factors. These include the balance between practical and theoretical (content) components, the degree to which the subject area is established within the school, whether it is a compulsory or optional subject, the demand for the subject if it is optional and the relative size of the staff complement. A further influence on practice is the reason why a particular subject is chosen, sometimes linked to student learning factors and at other times to socio-economic pressures or both. In this example Richard explains how student learning factors affect his attempts to introduce an innovation:

RL76: Because we do allow [students] to choose from Grade 10. They can then choose. I introduced that because of this high level. There's always some kids that are just ... never going to get it. And I think that opens up the ... particularly the kids with sort of special needs. So what I did, I started with them. That was the way I tried to cope ... Ok, this is a tool now that these students are really struggling with ... its giving them pain. So I would then have Alena now teach them something else during that time. So it opened this little door. So now we took our special needs students and put them with Alena. Now she was meant to give them extra art lessons because they were struggling with that, as well. So they need this extra time, I felt. And I felt this is a good way. But it opens this little door and this is where ... now what we have is they choose. As they feel that they can't cope with the computers, those ones filter off and go up to Alena in grade 10 [laughs]. That's the technique that's used at the moment.

The implication for an optional subject is that there needs to be a minimum number of students choosing that option to make it viable. As a previous Head of Department (HOD) who has since left the school commented to me in an attempted discussion on potential changes to the approach in his subject:

"It's a matter of bums on seats."

In this particular case the HOD was not prepared to take the risk of losing students from his option by trying out new ideas and was reticent to enter into a discussion on the matter.

Balancing class numbers according to options adds a further complication. As soon as a class size reaches a certain number (ideally 28, but often 30 students) a second class is required which doubles either teaching time or teacher numbers. In either case, larger or smaller classes impact class sizes in other options. This balancing of choices and numbers creates tension between departments and lessens co-operation:

AS193: [It did not continue ...] it was time-table and personal[ity] ... mainly time-table. The person involved was very keen to continue. Also, we were slightly over-resourced in [our subject], so that was the main reason. So that was a real thing.

Each of these aspects of the subject area affects individual teachers in different ways. Apart from these factors, systemic factors also play a part.

4.4.5 Systemic factors

Systemic factors or the "*grammar of schooling*" factors (Tyack & Tobin 1995, p.453) include the systems on which the school operates: classes within grades, annual and term calendars, daily and weekly timetabling of subjects and teacher time, the broader curriculum, the provision and allocation of physical and human resources, hierarchical structures, relations with the partner schools and the underlying administrative system.

The school runs according to a traditional '*grammar of schooling*' model:

- The school day runs from 07h30 until 14h35 and sports run from 15h00 until 16h30. There are between 9 and 11 30-minute periods per day, most of which are doubled to provide a one-hour slot.
- Each teacher is time-tabled for a minimum of 32-36 30-minute periods per week and an HOD or House Director for 28-32 periods.

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Over and above this, each teacher is expected to be involved in at least one sporting or cultural extramural activity, act as tutor to a group of boys, teach either Life Orientation (LO) or in the leadership programme, attend school religious services and attend all compulsory school functions such as parent evenings and some optional ones.

- Students are divided by grade and within grades by classes according to their optional subjects. Students have no free periods and are expected to partake in at least one sport each season after school hours. They are also encouraged to be involved in cultural activities and community service.
- Structures are hierarchical from the partnership through the principal to deputies, HODs and teachers. Separate departments run the maintenance and financial operations of the school. Communication routes are formalised through line management although a few cross-hierarchical committees (e.g. the Footprint environmental committee and Staff Forum) exist.

The structure of the school is therefore traditional and rigid, with almost no leeway to accommodate other extra-curricular events without disruption to the rest of the school.

The next section will outline the effect of teacher beliefs on context.

4.4.6 Teacher beliefs

Teacher beliefs around a range of factors significantly influence both their thinking and their practice. In some cases teacher beliefs are contextualised within areas such as curriculum change, inclusion or ICTs; in other cases they are broader. Self-belief emerges as a strong factor in the teachers' predominantly positive attitude towards change and innovation. It is sometimes expressed as self-belief and sometimes as self-doubt as the following examples show:

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BK2: *We were talking about that today because Ineke was saying, because Ineke set up the Grade, the change in the Grade 10 last year. I wasn't teaching Grade 10. So I said to Ineke, "you're doing the most amazing work". "No, terrible." We had the most terrible time in Grade 10 last year. Even in a public announcement Darryl said in Grade10 we never got it right. Now, we're going through the same work, the same way, and I keep saying to Ineke, this is the most amazing work. So, there's no benchmark for us.*

IG3: *Yes ... it's hard ...*

BK4: *The same is happening to us in Grade 11. I keep saying to Ineke, I said "Ineke, I don't feel like we're on the same track or on the right track" but Ineke said "remember how we felt about Grade 10 last year. It's the first year. Give it a year". We're like first year teachers, Mary.*

IG5: *So you just have to give yourself time to ...*

BK6: *... hard on ourselves ...*

IG7: *... work through things, iron through things and then when you run them the second time you make little changes here and there ...*

MW6: *because you feel, or I sometimes feel that I'm not doing all the children justice in my classroom. I have an hour ... and I'm picking that up especially in Afrikaans. So, I have an hour where I see them, but you don't, I just feel I don't get to all the kids who need the individual help*

Self-belief is also a critical tenet of the *Investment in Excellence* course which most teachers have completed. Self belief has a strong positive effect on teachers' ability to cope with change. In addition to teacher beliefs, student beliefs and attitudes were identified as contextual factors that affect teachers' practice.

4.4.7 Student beliefs and attitudes

The majority of students at Wilding College are drawn from the highest socio-economic level and residential areas in the country as described in Chapter 3

Section 3.4.1, p.114. As such they bring specific demands and attitudes that have a bearing on classroom practice as illustrated in the following extract:

HN15: It's just exposure to the negatives of a technological society. The amount of time and energy that goes into computer games and into Mxit and into I-Pods. You know, I mean, I find it scary as a runner that most runners now run with I-Pods in their ears. So they don't talk to anyone around them. You know, they're all cyclists at heart. That kind of thing. And this is all part of our society. We've become much more isolated as human beings. So, with all the pastoral care and trying to make them react with each other and work with each other in so-called group work we do, they're actually pulling apart.

Generally, the students aspire to high academic, sporting and cultural standards of achievement. They have ready access to digital technologies. South African teenagers have the highest incidence of mobile-technology ownership in the world⁷ and Wilding students are no exception. Their expectations of digital resources are therefore high. Student beliefs as they enter secondary school are also influenced by their exposure to learning principles and processes at preparatory school as described by Henry:

HN27: Now, if you take that into the classroom, if you start saying "Well, now you do group work" when you're 9 years old, they don't begin to understand the concept. Whereas, you say to a team of Grade 10s and this is where the prep school is going now with Roger's thing. Have you seen it? It is very clever.

HN29: It's a real world ... um ... Sims, basically.

HN31: And that involves group activities, individual activities. How does society work? And it's pitched at exactly the right level. They [???]. They're exactly the right age to learn the rules of the game. So that's the kind of thing that works well, but on the other hand, they're doing a lot of content at too high a level

Although the school serves a high socio-economic sector generally, not all students come from the same socio-economic background and, while it is possible to generalise about the student population and their beliefs, it is

⁷ Sunday Times 13 June 2009

recognised that the exceptions are very real and that each individual student is unique. Societal and parental factors are closely linked with student factors.

4.4.8 Societal and parental factors

Societal and parental factors are closely interlinked with student factors. As a fee-paying independent school parents expect good returns on their investment in their children's education. Parental demands for excellence and their beliefs regarding the value of tests and examinations can be in conflict with curriculum intentions and marks still predominate as their singular measure of achievement. However, what is evident from the data are teacher perceptions of parental perceptions, although experience confirms that this parental perception might be common:

HN11: I think it's actually because OBE is being subverted by marks. That, you know, the reaction in the education community and I include parents in that, was that we're now just getting fuzzy reports that don't define my child in terms of marks. That's why I use the phrase dinner table. I think the kids are picking that up from the parents.

All of the above factors interplay in different ways within the context of Wilding College and each combination of factors has a different bearing on each individual teacher as the findings that follow show.

4.5 How organisational interactions affect teachers' practice

Interactions within and across these broad areas differ from one department to the next and between individuals. Hence, to establish the effect of these interactions and to determine not only where convergence occurs but how it influences innovation, the following section will describe the dynamic interactions within and between these broad areas discussing each interview within the context of the individual or pairs of teachers. The section will describe how the interaction of factors relating to mandated changes have converged with and impacted on the requirement for teachers to change their practice as well as how the convergence of negative factors interplays with

positive factors. The first pair of teachers who were interviewed together is Bronwyn and Ineke.

4.5.1 Organisational interactions and their effect on Bronwyn's and Ineke's practice

Curriculum change, professional learning and the nature of the subject are the predominant factors affecting Bronwyn and Ineke.

4.5.1.1 Curriculum change

Curriculum change is the most significant factor for Bronwyn and Ineke. They ascribe the development of their innovative practice to a number of factors: their willingness to change; the need for Ineke as a new member of staff (returning to teaching after a career change period) to create new materials from scratch; the suitability of the new curriculum to boys learning needs; and their mindset. The new curriculum has, for them, been like starting again as 'first year teachers', and forced them to rethink their practice from ground upwards. The following extracts show how Bronwyn and Ineke have coped with curriculum change:

***BK2/4:** We were talking about that today because Ineke was saying, because Ineke set up the Grade, the change in the Grade 10 last year. [...] So I said to Ineke, "you're doing the most amazing work". "No, terrible." We had the most terrible time in Grade 10 last year. [...] We never got it right. Now, we're going through the same work, the same way, and I keep saying to Ineke, this is the most amazing work. So, there's no benchmark for us. [...] The same is happening to us in Grade 11. I keep saying to Ineke, I said "Ineke, I don't feel like we're on the same track or on the right track" but Ineke said "remember how we felt about Grade 10 last year. It's the first year. Give it a year". We're like first year teachers, Mary*

***IG5/7/9:** So you just have to give yourself time to [...] work through things, iron through things and then when you run them the second time you make little changes here and there ... and it's fine.*

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BK10: *And I kept saying to Ineke "But, look what we've done". [...] We've done lovely stuff, but it's just because you get so bogged down you don't see the big picture.*

BK12/14/16: *I think we were prepared to change. You see, a lot of the schools [...] and the secret is not re-hashing old material. It's developing new material. The other schools [...] they're re-hashing old notes, so they're not getting it right. So we've definitely thrown everything out ... I mean that's also thanks to Ineke. [...] and Ineke kept saying, "look at the date in the book. This is a 1975 book. That's absolute nonsense. Get the latest book."*

IG17/19: *I've been very strict on that. We have ... to be up to date with current trends. We have to go onto the Internet. We have to get the latest and greatest information. You can't rely on the stuff.*

BK23/25: *So it was a change of mindset. It was a mindset change [...]*

BK62: *But that you see ... I think that's where our strength comes from. We don't allow anybody else to pull us down.*

IG63: *Yes. We set high standards for ourselves and we, we work together ... as a team.*

BK27: *[...] We like the new syllabus. That's ... I think that's why we made the changes. Because it suits the boys, the activities, little bits of information suit the boys.*

IG28: *And lots of it also is about the human body and diseases and medical things which is very interesting ... for us to teach and for the boys to learn. Because it's giving them ... it's empowering them. That's what it's doing. They can't ever walk out of our classroom and say "but we didn't know about HIV. We didn't know," because they do know.*

BK30/32: *For their future. [...] But they even verbalised it. I had one of my Grade 11 boys who said "Ma'am, you know. Thank you for being so concerned that we must never contract HIV." So they also feel our urgency that they must be empowered.*

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BK34: *So that was quite interesting. I've never had that before. So it wasn't just, "Ag, you're just the teacher", but "thank you for caring and thank you for letting us know and how ... all the stats that we give them. Because, you know, they do it, I think, in LO, they're thrown ... but it's not personalised. And I think that's what Ineke said. The boys, they like the diseases, they like to know about themselves.*

IG35: *And I go and find all pictures on the Internet for them, of all vrot⁸ limbs and whatever, whatever and they say "Why do you show us such detail?" and I say, "Because then you can't say you didn't know".*

A striking point about the conversation between Bronwyn and Ineke is how they recount their conversations. The impression is that they are not only two people working in the same department, but two people working together in the same department. The alignment of their thinking is evident in the way in which the discussion switches between them, sentence by sentence and in the way in which they make use of the first person plural 'we'. To have an ally, to have someone to affirm what one is doing, is a positive factor in their ability to deal with curriculum change.

The process of innovation as adaptation and self-organising growth (Clarke et al 2000, p.157; Doolittle 2001, p.5) is illustrated in this response:

IG133: *We haven't thought of something and not gone ... we've tried everything we've thought of.*

IG137: *We can only really talk about Grade 10s, because that's the only one we've done for the second year running and we've done the same, but also added things to it like the model. We didn't do a model last year but we did one this year. But, everything else we did last year we've done this year again.*

BK138/140: *But, you know, like in Grade 11, I said in the meeting today, we will teach it very differently; because we will [...] we'll cut down. So, we're already planning what we're going to take out already.*

IG142: *Because we've maybe gone into a little bit too much detail this year.*

⁸ Vrot = rotten (Afrikaans; used colloquially in South African English)

For a unit of work on the HIV virus Bronwyn and Ineke describe how they would, under the old curriculum, have transmitted information about the virus to the students. With the new curriculum, their students had to use the Internet to investigate how the virus attacks the human body, build a model of the virus from the located information and explain the model to demonstrate their understanding. To accommodate the knowledge, skills and values requirements of the curriculum, Bronwyn and Ineke's practice changed to a student-centred constructivist, resource-based approach.

In order to cope with curriculum change, Bronwyn and Ineke both experienced a sharp professional learning curve, the result of a number of interacting factors.

4.5.1.2 Professional learning

Bronwyn and Ineke admit that they were open to change and prepared to develop new material. For Ineke, her return to teaching forced her to begin again by creating her own resources. She also had a strong influence in her department regarding the importance of working with current resources. Bronwyn's use of the word '*secret*' has a magical connotation about it. Finding the '*secret*' has allowed them both to make the breakthrough. The repetition and contrast between '*not hashing old material*' and '*developing new material*' reveals Bronwyn's confidence in being on the right track. Both are also realistic and prepared to admit when they do not get it right.

The intensity of their professional learning is summed up in the comment: '*We're like first year teachers*'. This admission is significant in that it is in reflecting on their practice that their success with the new curriculum appears to lie. In a separate undocumented informal conversation, a few weeks prior to this interview Bronwyn had commented in almost identical words. However, she had added that it was only once she '*started again from the beginning*' that she had really learnt to understand not only the new curriculum, but what could be done with it. Bronwyn had further commented that the context of student learning was '*everything*'. A paradigm shift had

occurred in her thinking and enabled her to make the necessary changes in her practice. Reflexive practice combined with their collegiality characterise these two teachers and enable their professional growth.

Bronwyn and Ineke realise that it is a matter of working through the material and making adjustments each year to improve their practice. This is clearly expressed in her acknowledgement that it is difficult to keep sight of '*the big picture*'. The effect of working with a new curriculum has resulted in the teachers doubting their ability at times. However, their lack of success is identified, acknowledged and addressed as shown in the statement '*we never got it right*'. Acknowledgement of their shortcomings opens the way for them to improve their practice.

The nature of the subject also contributed to their ability to change.

4.5.1.3 Nature of the subject

The nature of the subject matter has different effects in different departments on teachers' ability to bring about change in their practice. The Life Sciences teachers were positive about the changes in content in the new curriculum, recognised it as appropriate to boys and welcomed the opportunities it provided. Their efforts to empower their students by personalising the work is reciprocated in that the boys have provided positive feedback on the issues covered.

Bronwyn and Ineke draw two comparisons: the first with other schools' materials and the second with LO. They are sufficiently confident in their own innovative ability to be able to pass judgement on other schools attempts to implement reform by rehashing old notes. They also criticise LO for '*throwing*' impersonal material to the students (BK34).

There were few disconvergent factors that constrain their ability to innovate.

4.5.1.4 Constraints

One difficulty for Bronwyn and Ineke in implementing the new curriculum is that they started without a benchmark⁹ or established personal norm against which to evaluate their practice. However, after the first year a baseline or norm had been established, they are able to see the wider picture and they find it easier to progress with enhancing their units of work. Working through units for the second time thus enables their reflective practice (Baggott la Velle 2003, p.197; Beetham & Sharpe 2007, p.7-8). Despite the drawbacks they face, most teachers anticipate that each year will bring further improvements. Bronwyn and Ineke are confident in what they are doing, yet see room for improvement, anticipating further adaptations in the following year.

However, there is one serious threat to their ability to implement the new curriculum and that is the curriculum itself. Further proposed changes and the reasons behind the changes emanate from government school teachers and are perceived to be regressive:

BK310: *[big sigh] You know why [they want to go back to the old syllabus]? [...]*

IG313: *Because they're worried that there isn't enough Botany in these things.*

BK314: *And also they're not comfortable with this new curriculum. [...]*

IG316/318: *Government teachers ... [...]. Ja, that's where it's come from. And we're not sure yet whether the IEB is actually going to go with that.*

BK319/321/328: *Because we might say that we're going to stick to the changes we made, because in the User Group we're all so excited about this change and there's ... the last comment in the User Group was "We're having fun; we're having fun with our Grade 10s". [...] Why change and go back to the old-fashioned ... go through all*

⁹ Benchmark: a point of reference from which measurements may be made; something that serves as a standard by which others may be measured or judged; a standardized problem or test that serves as a basis for evaluation or comparison (as of computer system performance) (Merriam-Webster online dictionary <http://www.merriam-webster.com/dictionary/benchmark>. Standard, or a set of standards, used as a point of reference for evaluating performance or level of quality. Benchmarks may be drawn from a firm's own experience, from the experience of other firms in the industry, or from legal requirements such as environmental regulations.

<http://www.businessdictionary.com/definition/benchmark.html>

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the plants and go through all the animals again? Where you're putting more content back in. [...] [T]here's been a lot of opposition to going back in 2009. Books are being written, Mary. The authors have written all the new syllabus that we're using. They've done 10, 11 and 12. Next year Grade 12 is finished.

IG329: *And they're saying that from 2009 they're wanting to change from Grade 10 again.*

BK330/332: *So they'll have to rewrite all the textbooks again. [...] Ja, because, you know, you know it's a lot of work to change.*

IG333: *Ja. So they want to move away now with this new suggested ... the new, new one that they suggested for 2009 ... move away from all the stuff on the human body that we're doing, cut down on that and bring in more plants and more of the old stuff from the old, old syllabus.*

BK335: *So we're all opposing it ...*

IG336: *So we've just changed Grade 10 last year, 11 this year, 12 next year. Now they're saying the year after that we'll have to do 10 again and the year after that 11 again and the year after that 12 again.*

BK344: *So its ... we don't ... we don't want to go back ... because we feel this has been the best ...*

IG345: *We've done all this work ...*

BK346: *... and it's been ... I think it's been the best thing that has happened to Biology [Life Science] for years and years and years.*

The reversion to familiar content has implications for teachers and authors alike. Apart from the additional load for teachers, textbooks will have to be rewritten at substantial cost. Schools such as Wilding that are less dependent on textbooks and more reliant on electronic resources will still need to redesign all units of work around the different content. Instead of being able to expend energy and time in developing and refining units for the new curriculum in Grade 12, teachers will have to be fighting a political battle to retain the current curriculum. In this case it is contradiction and vacillation in mandated changes that add significantly to teachers' workloads, destroy

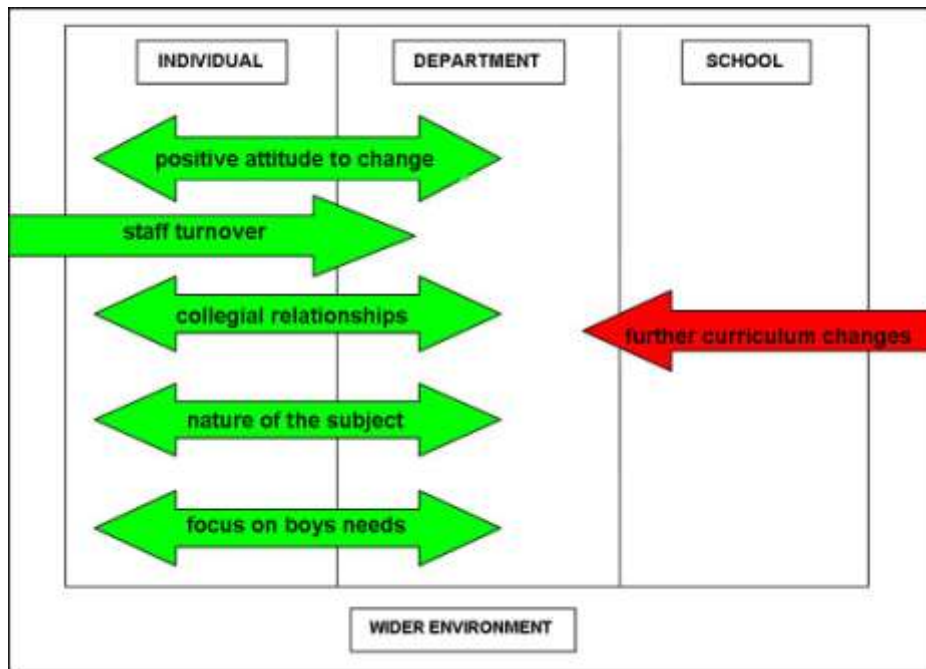
innovation and curb its sustainability. At the time of the interview a decision regarding the change had not been made, but was subsequently confirmed. This is an example of political push-back factors that can inhibit innovation (Mehan et al 2005, p.315).

4.5.1.5 Summary and preliminary findings: Bronwyn and Ineke

For Bronwyn and Ineke convergence is evident from the way in which they describe their experiences as well as the positive reaction that they report from their students. Factors that interact positively or converge are the opportunities that the curriculum provides; the focus on the individual needs of the students; their acknowledgment of their own learning; palpably harmonious and effective collegial relations; the nature of the subject in its ability to attract the interests of the boys; an alignment between teacher and student beliefs and attitudes; and the emergence of benchmarking through repetition and adjustment over time; access to resources and active pursuit of currency in such resources. The nature of the subject, their understanding of boys learning needs, access to resources and pursuit of currency in such resources have converged to enable a socio-constructivist pedagogical approach (Hokanson & Hooper 2000, p.543; Baggott la Velle et al 2003, p.190). Potentially negative factors are their initial self-doubt and getting bogged down, but these are acknowledged, addressed over time and consciously set aside. The workload is implied by their reference to the changes in different grades and to their getting bogged down but at no stage do Bronwyn and Ineke indicate an insurmountable load or an inability to cope with these factors. However, recent reversals in curriculum content threaten to undo much of what has been achieved.

Although complexity cannot be illustrated, the result of the complex interactions, i.e. the effect of context can be illustrated as convergent and disconvergent factors as in Figure 4.1 and in the similar figures that follow for each of the next sections. Figure 4.1 illustrates the pattern of organisational factors that affect Bronwyn's and Ineke's practice.

Figure 4.1 Organisational effects: Bronwyn & Ineke



Convergent factors enable individual innovation and positive collegial relationships ensure mutual benefit across the department (double headed arrows). Positive outside influences are those which Ineke brought from her previous corporate environment and which have pervaded the department. The single disconvergent factor, in this case a contradictory direction change in the curriculum, is represented by the red arrow.

In the next section two pairs of teachers will provide differing perspectives from within the same subject area.

4.5.2 Organisational interactions and their effect on Magriet's Thabo's, Hennie's and Arthur's practice

Two interviews, each involving two teachers, were held with the Physical Science department. The interviews included the HODs responsible for the two different secondary school phases (Grades 8 and 9 and Grades 10-12) and two regular teachers. As a result it was possible to contrast two differing perspectives within one subject department. Whilst there was agreement on the presence of certain factors, there was contrast in the responses to these

factors. The data from these two interviews is therefore analysed together. Curriculum change and inclusive practice were the predominant factors for the Physical Science teachers, with convergent and disconvergent factors intertwined in complex, but differing ways for each pair of teachers.

4.5.2.1 Curriculum change

The interviews revealed the differences in perspective on mandated changes and the varying effects on practice between the pairs of teachers. The effect of experience as well as overload became evident as these extracts show:

MD11/25: [...] and the fact that there is so much demand on our time. I mean, like, I used to mark their books every day. I can't anymore because I've got this to do, this to do, this to do. You don't have time for that extra bit you want to put in. So it's ... it's getting a lot, especially with LO also coming into this [...] Entering marks. Now they want ... [...] where it took you a day to moderate something ... it now takes you two or three days. Its ... I mean I moderated a Grade 11 paper with this LO¹⁰ nonsense. It's not nonsense, but it takes for ever. It takes forever. And now, when you make notes you have to specify what LO it is. When you set up a test, next to the test, the question, it should say LO this, LO this, LO this. It ... [sigh] ... [throws up arms].

TL26: Ja, I think, we're maybe not that prepared for the new curriculum, especially in Grade 11. I mean, I ... I find it sort of difficult for me to prepare even though I know the content, but to prepare and to present the matter in the way you're supposed to present. I find it to be very difficult. You know, there's so little time to do everything ... to prepare here, to do that.

MD40: I understand what they want to do and it makes sense. You know, implementing it into nature and our daily life. That makes perfect sense. But what they expect is unrealistic. And that's ... that's why we don't get time to do or to be with the kid anymore, because your time for prepping triples and your time for admin triples. Your hours in the day stays [sic] the same.

¹⁰ In this case Magriet is referring to LO as 'Learning Outcome', not the subject 'Life orientation'
Thesis submitted by Mary Elizabeth Reynolds in partial fulfilment of the requirements for the degree **163**
of Philosophiae Doctor (Computer Integrated Education) in the Department of Curriculum Studies,
Faculty of Education, University of Pretoria, August 2009.

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TL28: *Now I think its more of application ... and we're expected to explain ... and OK ... of course to show also the boys 'how does this affect us in every day life and how do we solve problems with these kinds of things?' It is no longer sort of those calculations where you get a formula, you plug in the values and then you calculate. No, that's gone. Now, now, it's more application.*

AS11b: *The new curriculum has had quite an impact because that's had the opposite effect [to inclusion], because the new curriculum is not well understood. The temptation is to withdraw and fall back on the old... a very directed style, so that we can sort of figure out what the syllabus is really saying as we go along. I think that's quite a common phenomenon because the [test ???] don't really understand the curriculum either even though they've written the curriculum.*

MD71: *Um ... and ... no matter how hard ... for example this Multi-media Science School on the computers. Excellent. But I can't remember when last I had time to go and physically work through it, make notes from it for my kids ... or something. I don't have time. And to find new things or a new way of doing it or going through the books, for example, to find a new experiment, I don't have time. That's unfair.*

In Physical Science, the HODs appear to take the change to the OBE curriculum in their stride and show less frustration with its shortcomings than their departmental colleagues for whom the expectations of the curriculum are 'unrealistic' (MD33&35). Magriet and Thabo identify a lack of time to implement the administrative requirements of the OBE curriculum and the extra load of having to teach LO as negative factors (Ch.5, Section 5.9, p.252). Specifically, Magriet is frustrated that Multi-Media Science School (MMSS), although available, cannot be incorporated in her practice because the constraints of extended preparation time prevent her from using it. To her, this is 'unfair'. However, as much as she would like to make use of this resource, Magriet refers to MMSS as a source from which to make teaching notes. It is not referred to for its interactive potential as a *learning* tool i.e. she does not express the wish to take the students to a venue where they can benefit directly from its interactive potential. She is still the intermediary between the students and the content.

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Magriet expresses frustration with the administrative aspects of the new assessment process, but also recognises its shortcomings, while Thabo concedes that the underlying problem is likely the lack of preparation for the OBE curriculum. He understands that OBE requires him to prepare and present in different ways, but whilst he accepts this mandated change in principle, he is unsure of how to implement it in terms of his classroom strategies and consequently, has not been able to change his practice. Magriet also acknowledges that with the OBE curriculum, the context or application of knowledge is essential, but this requires more preparation time. Together with the increased administration load, preparation is therefore a further factor in her inability to reach the individual student, as much as she desires to do so. The simultaneous introduction of the new curriculum and inclusive principles contradict each other. It would appear that whilst these teachers desire to change their practice from a teacher-centred to a learner-centred focus, systemic factors and lack of preparation for the OBE curriculum prevent them from making the necessary shift, resulting in overload, stress and regression rather than progress in the development of their pedagogic practice. Fullan and Hargreaves (1992, p.4) recognise this problem of multiple innovations being introduced simultaneously as a feature of complex environments.

Although Wilding College writes the Grade 12 IEB examinations, the OBE curriculum originates in the national Department of Education (DoE). At the time of the interviews there was general concern across the school as the curriculum reached the penultimate year of schooling (Grade 11):

AS11c: *[Those who have written the curriculum] certainly don't know what the final [???] product is going to look like, so that's created quite a bit of tension within me and within the classroom in Grade 11, less so in Grade 10 where [???] able to do.*

MD29: *[...] But if you want to bring the concept of momentum over and help them to understand it, its momentum. It doesn't matter if it's Grade 11 or 12, its momentum [shrugs]. And a Grade 11 kid isn't ready for it. I'm sorry. We've seen it in our marks.*

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They are not ready for it, which means we stress ourselves up even more because we can't get through to them. They, they can't, they can't do it.

TL30: Ja. It doesn't show really where we should stop when we are busy teaching. Remember now, that the Grade 12s, next year are going to write only the work that should be done in Grade 12. Now, when we are teaching Grade 11, we can see it overlaps but when we are busy teaching, we say "no, we shall stop here, we shall not go forward, we will do this next year". You know, and it just sort of leaves some gaps here and there and I also end up being confused as well. [...] I don't know, maybe we are not that well prepared to ...

MD31, 33 & 35: [...] But it's what they expect of you – the kids – and of us. It's too much. I mean the amount of work we have to get over, to get done, it's ... it's ... it's unrealistic, because it's too much. [...] the curriculum we get says what? Just touch this, touch this. But when we get an exam from the government or the IEB now, they go into depth. [...] So we don't know ... what they are up to actually. [...] It is [a contradiction]. Because they just do this, just touch it. And then they go into so much detail. Neither of us knows ...

Thabo is concerned about the conflict within the curriculum itself, particularly in Physical Science, as identified in both interviews. Students' developmental levels appear to be in conflict with conceptual demands. The division of concepts over the two final grades as separate years rather than as two integrated years has negative implications for students and teachers alike. The volume of work to be covered is perceived to be too great. Lastly, there are contradictions between expectations as described in the curriculum documentation and the expectations manifest in the formal external assessments. As a result, teachers are confused and frustrated about the intentions of the curriculum. Arthur predicts that further changes will occur in the curriculum. The fact that the IEB examiners themselves do not know what the final curriculum will look like is an inhibitor to his confidence. All the teachers agree on the shortcomings of the Physical Science curriculum.

Apart from curriculum change, inclusive practice has had a predominant effect on the Science teachers.

4.5.2.2 *Inclusive practice*

Arthur compares the impact of inclusion with the impact of the OBE curriculum on his teaching practices, acknowledging that inclusion has had a bigger direct impact in that he has moved from teacher-centred to group facilitation approaches. However, his ability to implement such strategies is inhibited by the greater demands of coming to terms with implementing the new curriculum. As with Magriet and Thabo, the immensity of the mandated curriculum inhibits the personal desire to fully realise inclusive practices:

AS9/11a: I think [inclusion and OBE] have impacted in different ways. The emphasis on inclusion ... on teaching for every child ... has probably had the biggest impact I think. But ... it's made me go from ... fairly teacher centred to very group centred ... peer mediation teaching.

MD5/7: [???] It makes it hard. I see with my Grade 8s now. I've got so many inclusion kids and it's hard hey. 'Cause as soon as you've got the one, you lose the other one and then you have to restart and then you have to pull them all and as soon as you have them one kid falls off his chair and then they just laugh for half an hour. And it takes you forever to get them back. [...] No, [the Academic Support teacher] can't. She can't be in every class. She can't be in every class. She's only one person. And we've got [six] Grade 8 classes.

TL12/18/20: Ja. There's just no time to do ... to do everything all at once. And, you know, that one on one sort of taking care of this particular boy or boys has gone. We just teach generally. And in my Grade 9s for example, I don't even know whether I've got inclusion boys. I'm just teaching continuously and I find that some of the boys ... they might be inclusion boys, but I just continue teaching. [...] I think it has changed, because if like you had to look way back then, we had sort of smaller classes, especially if you were taking inclusion. Your class will be generally small: you'll find that you've got maybe fifteen boys - maximum. And there you could like ... do the one-on-one, try to OK push them like that, show them how things are done. But now it's twenty five and, you know, things have really changed ... since then. [...] OK, inclusion is fine, but the class ... that class should not be as big. You know, if maybe I've got a class of fifteen and I've got three inclusion boys, then its fine, I can take care of them. But if I've got a class of 25 and some inclusion boys inside, so its ...

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MD21: *So, it's for example in my class that's got the most inclusion boys, the biggest problem boys, it's a class of 28. You can't ... you can't ... it doesn't work.*

TL36: *And I think with those G11s. Their committed level is not the same as what the curriculum wants them to do.*

Together with curriculum change, the inclusion policy dominates the responses from Thabo and Magriet. They struggle with the presence in their classes of students with learning difficulties. Although academic support is offered, the academic support department is short-staffed and a support teacher is unable to get to all classes, particularly in Grade 8 and 9 Natural Science, where all six classes in a grade are taught concurrently. Magriet and Thabo are willing to implement the inclusive practices and desire to provide the individual attention that is required, but they are frustrated by two factors: limited time and class size. These systemic or grammar of schooling factors have not changed, whilst complex changes have occurred around them. Both Thabo and Magriet refer to not only a lack of positive change, but also acknowledge retrogression in their practice of supporting individual needs arising from factors which are beyond their control. With streaming, classes at the lower end were smaller, facilitating more individual attention. Without streaming, and with inclusion, class sizes have evened out and teachers have to cope with larger classes as well as wider ability ranges. The combination of these factors has had the opposite effect to what the school desires and one-on-one attention to the individual has thus diminished.

The emphasis on the teaching process (TL12/18/20: *'We just teach generally ... And in my Grade 9s for example, I don't even know whether I've got inclusion boys. I'm just teaching continuously ...'*) rather than the learning process is evidence that the pedagogical changes espoused by the IEB, i.e. *"the development of more appropriate curricula, forms of assessment, and teaching methodology for our school system"* (IEB 2006, p.4) have not been realised. Magriet's statement *'if you've got the one, [then] you lose the other one'* (MD5/7), indicates that she is not equipped with the necessary strategies or provided with the support necessary to accommodate attention-related

difficulties, hence the resultant breakdown in classroom discipline. Apart from the lack of preparedness on the teachers' part, Thabo reveals an apparent lack of preparedness for the expectations of the OBE curriculum on the part of the students as well.

As a consequence of these conflicting mandated changes Thabo and Magriet have been forced to abandon certain innovations that they have tried to implement:

MR139: *Is there anything new that you've tried that you've had to discontinue?*

MD140: *A lot. A lot. What I tried was ... putting them into groups and then giving each group a little thing to do. That doesn't work, because the bright kid in that group will do everything and the rest will just slop along and mess around. So then I said, "All right, I'm gonna [sic] give you time in class to do this work, so if you battle then ask, [???] to mess around [shrugs]. [...] But group work, I'm not a big fan of. I'm sorry, because I don't find it always working, especially with Grade 8s. They're too immature. They are too immature to work in groups. They can't. Pracs for example: I can't let them do that. For example, I light the Bunsen burner. I can't let them do it. They set each other alight. [Chuckles] No, seriously. They throw each other with a match [sic]. I can't. There are things which it's essential for them to learn which I can't do, because they're too stupid ... not stupid, but acting stupid [shrugs]*

TL141: *Ja. Ja. It's true. But when they're doing pracs, I think its better. I know with my Grade 9s, I mean, I give them a circuit board and the prac will tell them what to do. You know, boys will connect the batteries and they'll light the bulb and everything, you know. Which is fine, but by the time I tell them to do what we are supposed to do, those batteries are gone. Ja. [laughter] "No, it's not working" or "The bulb has gone". This and that.*

MD142: *Or, they've disconnected. There's the bulb, there's the other piece of the bulb!*

TL143: *I think ... but I think its best if maybe we can try to ... to see that actually boys learn by playing, you know. When they are playing, they are sort of learning.*

MD144: *Yes, I don't mind them playing, but I don't want to get sued for kids being set alight. That's different. I enjoy the playing thing, the whole idea, but no, no ...*

Their difficulties in implementing inclusive practice, attributed to the move away from streaming and larger class sizes, have already been described (Section 4.4.2, p.144). Magriet has also experimented with group work in an attempt to become more student-centred, but abandoned the efforts because of unproductive group dynamics. Although she does not rationalise the problem in the same way, her experience is similar to Henry's (HN15b, Section 4.5.3, p.179). Disciplinary issues arise from either her lack of experience or lack of understanding of co-operative techniques with the result that she abandons the practice. Magriet concedes that she also has classroom discipline issues in practical work. Thabo, a more experienced teacher, admits that difficulties encountered in practicals has much to do with the playful nature of boys and it can be deduced that he is able to turn boys' playfulness into an advantage in the classroom. Although Magriet subsequently concedes the advantages that Thabo highlights, she ends yet again on a negative note 'no, no', indicating her frustration. Mentoring, exposure to model classrooms, the repetition of a collaborative workshop¹¹ for staff, or classroom-based support for Magriet during this transitional phase could have helped sustain her willingness to experiment with new practices rather than write them off as unsuccessful, to the advantage of the students and teacher alike.

4.5.2.3 Professional learning

The nature of the subject has both a positive and a negative effect on the Physical Science teachers' ability to change their practice. In describing how they try to innovate, Hennie and Arthur refer to material in the curriculum that is not new. In contrast to Richard, whose creative subject appears to invite innovation (RL4a, Section 4.5.4, p.185) Physical Science appears to do the opposite as the following extracts show:

¹¹ A workshop for all teachers on co-operative learning and collaborative practices was facilitated by the first academic support director and myself in c.2001. In this workshop teachers were carefully assigned to mixed-subject groups in order to take advantage of their strengths and weaknesses. They were provided with a box containing straws, sand, stone, plastic containers etc. They had to construct a functioning wetland. Library resources were made available. It was a highly successful socio-constructivist learning venture in which collaboration was understood to involve questioning and listening.

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HJ41: Having said that, you know the current curriculum, from last year ... I think we're doing a good job because it's been done for so many years ... so it's OK if I just set the test and say "There's your standardised paper". Nobody fears or ... it's because we've been around it so many times. So the system does work even if it's in place.

Arthur and Hennie had faith in the old curriculum and believe that it was well-taught. They admit that it is therefore easy for teachers to fall back on old materials and, by inference, old ways. In their view it is preferable to teach the old ways well, than new ways badly. There may be any number of reasons for this lack of innovative practice, but clearly it is harder for teachers to change their strategies in a subject with more rigid content specifications. It would appear that with familiar material teachers continue to teach 'to the test' and that the process of formative assessment that underlies the new curriculum has not yet been integrated into their thinking and practice. Whilst it is incumbent on teachers to now implement new assessment practices, the reality is that within the classroom, this may not always be happening. Although teachers believe in what can be achieved by an innovation, their expectations are not always matched by reality (Rodrigo 2003, p.120).

There is cautious optimism that the situation will improve as the curriculum becomes more familiar in future years:

TL68/70: Ja ... ja. But I think, as time goes on, all of these things will unpack. [...] We'll have, we'll sort of have a better picture of what we are supposed to do. I remember, when we were in Grade 8 or 9 ... when we all started ... with all changing curricula and stuff like that, it was scary. You know, we really didn't believe that we'll ... you know ... we'd make it. But now we are sailing, sailing through and we know exactly what is expected.

MD71: But next year it will be easier for Grade 11, because we've done Grade 11, but the problem will be with Grade 12s. Same as it was last year with the Grade 10s. Now, I'm fine with my Grade 10s because I've done it. But, as soon as you think you've done with something, that hassle's away, something else comes. That's the thing. It doesn't stop. [...] And to find new things or a new way of doing it or going

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through the books, for example, to find a new experiment, I don't have time. That's unfair.

AS15/17: *A [the second year is a] huge improvement. Huge! [...] But it's not where it should be.*

HJ16/18: *Definitely! But compared to last year its just miles and miles ... because us as facilitators are much more aware of what is required ... how to handle this thing and we've got more confidence and it spills over as well. You can plan it better and you know that this is not as important and that this works very well; this does not work, so the second time round we've made a huge improvement.*

AS19: *We also know what the boys struggle with ... conceptually. We've got a much better idea of where they are conceptually. In terms of the demands ... so that's enables you to focus on fundamental issues and then ... then you address the problem [???] quite quickly, quite quickly.*

Thabo is optimistic that the situation will improve and believes that curriculum innovation in the senior grades will become easier each year as happened in the lower grades. Magriet, however, is more circumspect about the future. *'It doesn't stop'* indicates that she might feel she is on a relentless treadmill. With her last two words *'that's unfair'* she summarises her frustrations. Her comment epitomises the dilemma between her willingness and desire to develop and move forward but also her frustration at her inability to progress. Like their colleagues, Arthur's and Hennie's confidence in their own ability to implement the new curriculum increases year-on-year and they believe that their practice improves as they become more familiar with the OBE curriculum material and its demands. They also have a better idea of how their students handle the concepts. However, their practice is still not what they would like to be.

Arthur summarises their approach to the new curriculum in almost identical terms to his colleague in Life Sciences. This indicates an essential mindset characteristic: the willingness to learn:

AS38: *So it's a bit like being first year teachers again. We know what's going on, but we don't really know what's going on! [laughter]*

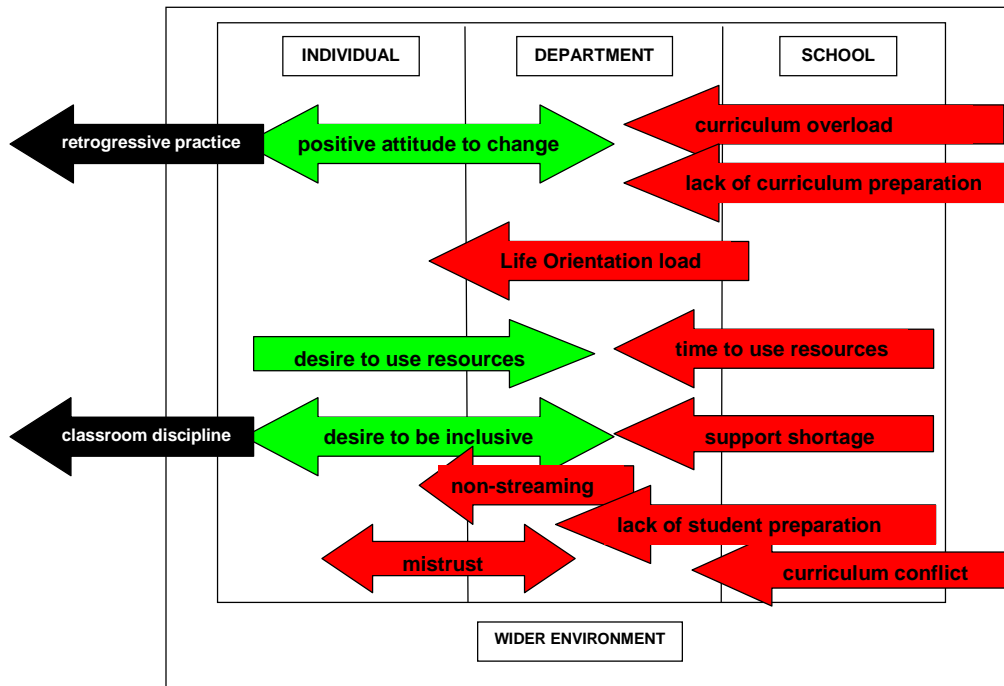
4.5.2.4 Summary and preliminary findings: Arthur and Hennie, Thabo and Magriet

In Physical Science, from Magriet's perspective, disconvergence overwhelms convergence. Although she and Thabo have a positive attitude towards change and towards being inclusive in their practice, their reality is that they are constrained by the host of negative interactions. Conflict between mandated policy and pedagogical practice occurs and Magriet's ability to support individual students has retrogressed (black arrows). Although Thabo is not as stressed, his situation is similar. Systemic factors such as concurrent classes, mixed ability classes, class size and a shortage of academic support staff impact on their practice and, at times, result in student discipline issues. Inadequate preparation for inclusive practice and for the OBE curriculum (and in particular assessment practices) constrains both teachers. Time, or rather the lack of time and its corollary, teacher overload, emerge as significant factors. Magriet and Thabo identify lack of balance and clarity in the OBE curriculum as well as contradictions between curriculum and external assessments as further constraints.

For Magriet and Thabo, as illustrated in Figure 4.2, student-related factors include lack of preparation of students for OBE and conflict between curriculum expectations and student developmental levels. The administrative aspects of OBE assessment together with compulsory teaching of an extra subject (LO) add to the overload of these teachers and subvert their morale. There is conflict between their personal desires to meet expectations and the reality of what they achieve: mandated changes demand practice that the teachers are willing and wanting to implement, but the interaction of the changes constrain Magriet in particular to a no mans land from which she appears unable to escape. Thabo and Magriet clearly want to do things the right way, but no matter the effort that they put in, they feel they are not achieving as they would want to in the classroom. The result is high stress levels and frustration which stifles their ability to innovate.

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Figure 4.2: Organisational effects: Magriet and Thabo



The issue of self-evaluation was raised in a recent meeting with the school principal¹². He felt that teachers often rated themselves higher than what he believed (and knew) them to be functioning. In pointing out the time pressure that these findings were revealing, but which is also common knowledge amongst staff, I suggested that teachers may be mistaking busyness for effectiveness. Teachers are not only kept busy with conflicting demands; rather they are so busy that they are not able to function effectively which is counter-productive.

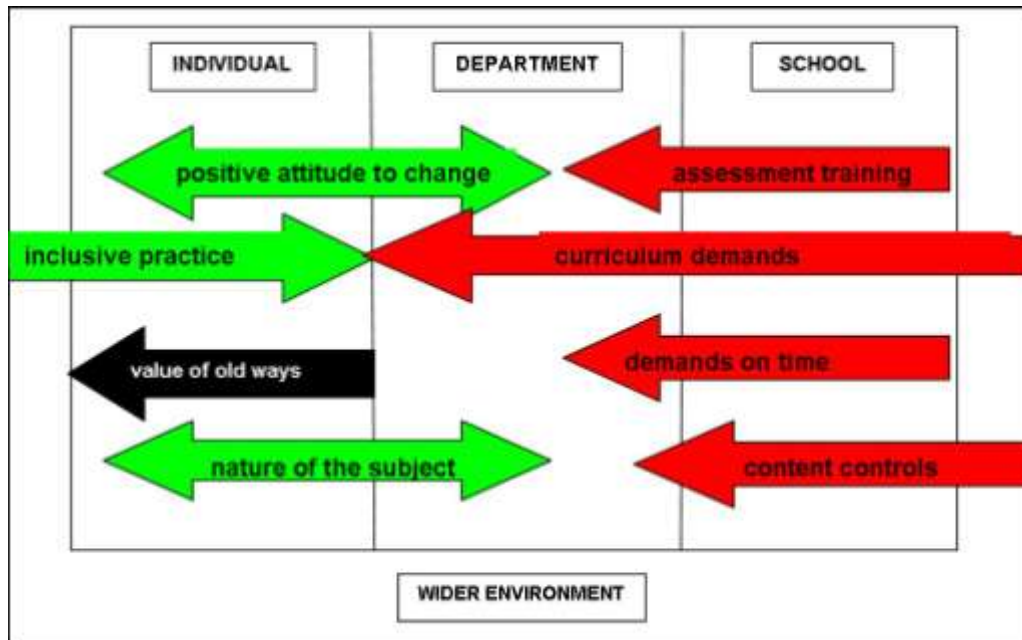
Abandoned innovations in practice inhibit teachers' ability to meet their own desire for and the schools' expectations of inclusive practice. Student characteristics, in this case boys' behaviour, in combination with the dangers inherent in the practical aspects of the subject, limit teachers' ability to innovate.

In contrast to the Life Sciences department in which positive relationships emerge as a convergent factor and are clearly evident from the interaction

¹² Diary entry – meeting 25th June 2009

and from the tone in the interview, in Physical Sciences good relationships were evident between each pair of teachers interviewed, but relationships were not raised as a factor affecting practice.

Figure 4.3: Organisational effects: Arthur and Hennie



Arthur and Hennie, as illustrated in Figure 4.3, are less overwhelmed by the challenges that curriculum change and inclusion present than their colleagues, which may be attributable to their role and their experience. However, the immensity of the simultaneous challenges of the changes inhibits even experienced teachers' ability to succeed to their own rigorous standards, although their confidence in their ability to implement the changes is growing. The instability of the curriculum is a significant constraint to their progress. There is a more even balance between convergent and disconvergent factors, but the disconvergent factors need to be addressed if Arthur's and Hennie's desires to meet curriculum and student needs are to be met. In particular, the head-on contradiction between curriculum demands and the tenets of inclusive practice need to be addressed.

The difference in experience has been illustrated as a factor in the case of Arthur *et al.* Experience also plays a role in Henry's case.

4.5.3 Organisational interactions and their effect on Henry's practice

In response to the question of how his innovations came about Henry draws on his considerable history in teaching. It was his nature as a divergent thinker, as a product of the sixties, that initially brought him into the profession and that has remained as a strong factor throughout his career. He is comfortable with innovation and shares instances of innovative practice. Henry's philosophy from the start was '*there's got to be a better way*'. He describes some of the innovations that he initiated at his previous school in which the influence of a 'like-mind' sparked their joint creative efforts. However, on arriving at Wilding College, he could not find a similar like minded teacher with whom to explore his creative ideas.

HN33c: [...] And when I came here I thought there would be ... I tried, but nobody was interested. [The school] at that point had a good work ethic, but ... um ... no imagination at all.

As a result, although remaining at Wilding College, he explored creative opportunities in partnership with corporate organisation. These projects also introduced him to ICT-based innovations, to constructivist methodology, interactive materials and the development of simulation games as early as the 1980s. These opportunities had a significant influence on Henry's thinking. He joined up with an American project which was the precursor of interactive ICT-based learning materials and also attended an American conference which exposed him to further ICT influences, particularly educational simulation games.

Henry worked with a local project to develop curriculum-based simulation games at a time when ICTs were, relatively speaking, not ubiquitous in schools. A lack of funding limited the continuation of the project. The withdrawal of funding related to the political situation in the country at the time, resulting in the demise of the project although Henry believes that the materials may still exist.

Henry served on the Computers in Education working committee of the National Education Commission¹³ in the 1980s. More recently he has served on standards generating body, which has exposed him to disparities between 'university professors and industry people' driving the project and the thinking of practicing teachers. Henry comments:

HN41b: [...] so there was a lot of discussion there. That was an interesting time because I was the only practising teacher on the [...] And ... um ... I was the only practicing teacher on that group ... and I've been in that situation numerous times where the people driving all that stuff are university professors and industry people. And they just don't get to understand [...] And again, I'm the only practicing teacher. There are university teachers, but I'm the only practicing classroom teacher. And the consequences of that are scary as to what gets set as a standard, what level. They've got no concept as to what is appropriate to each level, thinking level and so on.

Curriculum change, for Henry, is relatively insignificant, whereas student, parental and societal factors, as well as systemic factors, predominate.

4.5.3.1 Curriculum change

Henry has no self-doubt in adapting to the new curriculum; on the contrary he is entirely confident in his own ability, attributing his practice to a natural affinity with OBE. He is dismissive of the '*ridiculous administration*' aspects of OBE assessment, but relishes the fact that the OBE curriculum focuses on application of knowledge rather than memorisation of content. Henry is comfortable focusing on individual student needs:

HN9: Then the pastoral care system, in terms of my classroom practice has helped because you're far more aware of the kids' individual needs [...]

¹³ Human Sciences Research Council (1981) The de Lange Report. The commission was set up to investigate education across all sectors of South African society. The report was the first official investigation into the potential of a new educational dispensation in South Africa.

However, despite his confidence in the new curriculum and comfort with student-centred learning and individual needs, Henry struggles with student, parental and societal attitudes towards the changes.

4.5.3.2 Student, societal and parent factors

Henry's ability to implement the requirements of the new curriculum is affected by the interaction between student, parent and societal factors. Henry believes that Wilding students have lost their curiosity for the world (HN11b) which conflicts with the applied knowledge focus of the OBE curriculum. Further, he believes that the swing of the innovation pattern at Wilding is currently retrogressive. His concern is that the momentum of the transition from a marks-driven curriculum to an outcome-based student-centred curriculum is not only slowing, but is in fact reversing. The evidence of this comes from the students themselves:

HN9a: [...] Ten years ago I was out on a limb. Vanessa and I ... and then when you came in ... we were the only people who were doing anything remotely different, child-centred ... um ... self-paced learning and all of that stuff. Everyone else was in marks and curriculum. And that pendulum swung strongly in favour about three or four years ago where I got a sense that there were far more people on board. But now I get a sense that we are going the other way. Because now I get far more of a reaction from kids when I do something slightly different: "But, is this for marks?" So that the marks ... I think we are still horribly marks driven and I think it's got stronger in the last two years or so.

HN9b/11a: [...] And this is ... you know, I think this is a reaction to dinner-table conversations that the kids hear ... how terrible our education system is. And it didn't use to be like that in the old days. [...] I think it's actually because OBE is being subverted by marks. That, you know, the reaction in the education community and I include parents in that was that we're now just getting fuzzy reports that don't define my child in terms of marks. That's why I use the phrase dinner table. I think the kids are picking that up from the parents.

HN11b: But, because there's a curios ... a curious ... a curiosity ... a curiosity there now in the kids' attitude to learning. They definitely - the Grade 8s and 9s - know less coming into the College now than the kids used to know. Definitely. There's

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absolutely no doubt about it. And I think that's a function of the sort of fuzzy OBE stuff that they got because people didn't understand OBE. I think it's a function of more time spent ... um ... on computer games and that kind of thing and not enough time being interested in the world. I think the kids are much less interested in the world around them than what they used to be. Um ... and I think it's ... we live in a canned society.

The fact that the students remain marks driven, Henry attributes largely to home influences and parents' negative attitude towards the OBE curriculum which in turn results from public perceptions at large of the failure of the current national education system. Henry's reference to 'a *canned society*' implies the high level of consumerism that predominates today and particular amongst the relatively wealthy, such as the Wilding community.

Henry teaches concurrently in the corporate responsibility programme (CRP) provided on Saturdays by Wilding College to some 600 students from less privileged backgrounds and is able to compare the attitudes of the two different student bodies. He also runs a co-educational extension group which provides an opportunity for gender comparisons:

HN15b: *[...] I got a sense this year that the boys would far rather just do their own little project and not have anyone else involved. [...] I think that is a reaction to group work which is not group work in primary schools. You know, group work which is sitting around a table and if you want to work some other guys disrupting you instead of genuine group work, you know involvement of co-operative group work.*

HN17a: *[...] and they don't, they don't refer to their classmates, which is interesting. Um ... the [CRP] school kids – which I think is ... it's an amazing situation I'm in at the moment to be able to compare directly – are much more willing to talk to each other about their [work]. And one of them actually said to me "This is the best thing" ... just voluntarily, I didn't ... I wasn't talking to him about it, voluntarily said to me just while we were driving. He said "You know the good thing about South Africa is Ubuntu. But," he said "You know what? We're losing it". I said "What do you mean?" and he said "No, people are becoming isolated".*

HN17b: *Well, it's interesting the ... the extension [...] lessons I'm giving. The girls do talk amongst themselves [...] more. Whereas ... you know, you'll see them talking*

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and then they'll ask the question, whereas the boys will just ask the question straight out. And they don't, they don't refer to their classmates, which is interesting. [...] You know, the whole process of course is that they do peer review ... what they've done in it. Peer review is absolutely critical to the success of that model and they're very unwilling to do it, partly because they on the one hand because they don't want to have their thinking critiqued and on the other hand because they don't want to have their thinking polluted by some lesser being. Their arrogance is huge in terms of the bright guys won't help the other guys and they won't listen to the other guys who are weaker. And there are rare exceptions.

Similar to Bronwyn and Ineke, Henry recalls and recounts conversations with his students, indicating that he uses discursive methodologies aimed at the social construction of knowledge. From observation and co-teaching with Henry, this approach is confirmed. However, Henry's account differs from that of Bronwyn's in that whereas she uses examples of positive student comments, Henry's interpretations of student attitudes are mostly negative. Bronwyn recounts student comments at face value, whereas Henry interprets student comments to self-evaluate his practice. Where Henry disagrees with students, the student view is negated. This point alone illustrates the diversity of contextual subtleties through interpretations of interpretations.

Henry believes that Wilding students with their high socio-economic status have become disinterested in pursuing knowledge: they appear to take it for granted, whereas the CRP school students actively seek knowledge. He suggests that a further socio economic factor is students' ready access to technologies such as computer games, i-Pods and social networking through mobile phones which corrupt student attitudes towards learning. Henry also believes that with the influences of the technological society and despite the power of social networking, a more isolated individualism has emerged that influences student attitudes towards learning. This developing isolation of individuals contradicts the assumption of a collaborative, networked society that characterises the 21st Century (Lewis & Romiszowski 1996; Steiner 2004, p.4).

The isolation of students also combines with their inability to work in groups. Henry's expectations of students' co-operative skills are similar to those of Magriet: he expects them to work in co-operative groups towards a common goal. However, he has reservations about the students' ability to work in this manner and suggests that it is lack of understanding of techniques of co-operation in primary schools that undermines group work in secondary schools. A second factor that Henry recognises as inhibiting co-operative learning strategies is the arrogant and self-centred nature of some boys, and 'bright' boys in particular, as opposed to that of the girls whom he also teaches. These characteristics combine with the isolation factor to retard the social construction of knowledge.

4.5.3.3 Systemic factors

Henry is one of the few teachers to raise the school partnership as a contextual factor. He comments on its potential to provide opportunities for innovative practice:

HN9d: [...] [T]he [partnership] model had a potential for huge impact in the early days. [...] The co-ed classes were so far ahead of the other two it was scary given what everyone says about co-ed. [...] So that side of it I'm totally in favour of ... of a much closer [partnership] model than we've ended up with. [...]

At its inception, the partnership allowed for some co-educational classes in Grades 10, 11 and 12, but this was later dropped for logistical reasons based on systemic factors. Secondly, extra-curricular events in each school led to perceived disruptions of curriculum delivery and the decision was made to drop co-educational classes, rather than pursuing alternatives. In order to maintain the benefits of this practice, Henry now offers co-educational extension classes after hours.

When asked for evidence of personal innovations that might have been discontinued, Henry points to organisational discontinuation rather than discontinuation by his own choice. He draws on the history of the school,

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describing how organisational decisions have affected his ability to sustain personal innovation. However, it was his considered decision to not specialise in ICTs, but to remain in his original discipline.

HN73: *Ja, um ... the way computers are being used in the school has gone backwards. You know, when we bought our first Apple computers we had a Computer Club that was building wind tunnels doing a whole lot of that [...] measurement and control ... something like that. So we had a computer club that did that and then when the IBM came out IBM was far less flexible than the Apple, so you weren't able to plug things into it as easy or you bought the ... you know, you bought the kit and plugged it in which didn't go down well with me. So that ... so that died a quiet death. [...] We were teaching computer literacy ...*

HN77a: *[...] Then the ... we did some integrated stuff with the History department when OBE first came out. And then when the revised curriculum came out and pulled History and Geography apart, we lost that. But the ... in fact, that is the biggest loss in the last ten years. [...]*

HN79: *And then [my methodology] and the Great Zimbabwe ... again, you know, separated History and Geography was destructive to that. They still sort of do it, but they don't do it [my way]. They just do it: "Go and research Great Zimbabwe"¹⁴. So, ja, those things fizzled because this is where I ... why I say the pendulum's swung back from some really exciting stuff we did ten years ago.*

HN77b: *[...] the integrated day ... what do you call it? The Subject Focus Day was my idea to get all the departments not wasting time on excursions. "So let's have a day when we go on excursions and then, you know, if the Geographers are going to Soweto and they include History in the worksheets, then we take everybody in that grade and we make sure that the Soweto trip includes History, Geography, English, Geology ... whatever". And it worked brilliantly for one year and then the Afrikaans department said they couldn't cope with a whole day. So I said to them "What about doing Fiela se kind"¹⁵ from scratch?" "Oh no, no, we don't do that kind of stuff". Then the Maths department hijacked Matric and Grade 11s because they needed more time and it died an ugly death. Um ... and that was very sad [...]*

¹⁴ This statement is partially inaccurate. The module is now designed to use a different method to Henry's. However, the design does not guarantee appropriate implementation. [informal observation]

¹⁵ Translation: Fiela's child – a former Afrikaans set work by Dalene Matthee (1990)

Henry describes the origin of the idea for one of the biggest school-wide systemic innovations: the subject focus or time-table free day. The concept arose out of seeming disruptions caused by curricular excursions. Groups of students in one subject being away from other classes limiting that teacher's ability to continue with their programme i.e. it impacted on the grammar of schooling. The subject focus day continued for a period of three years prior to the new curriculum reaching Grade 10 before being abandoned. It would appear from the evidence provided by Henry that content subjects fared better than Mathematics or second languages in subject focus days as they adapted better to integration of disciplines. Pressures from these areas forced the discontinuation of this innovation. Prior to focus days, individual teachers and their classes were adversely affected; during focus days overall teaching time was adversely affected. Eventually, negative impact of the focus days held sway over the positive benefits and the days disappeared from the programme without resolving the conflict which still continues. It appears that the integrated day was a contradiction: it remained essentially subject-focused rather than providing a broad cross-curricular opportunity, hence the clashes in priorities. The very name 'subject-focus day' indicates this fundamental flaw, whereas the original intention was an *integrated* day. The underlying issues are the reliance on the grammar of schooling and the leeway given to HODs to implement an organisation-wide innovation or not.

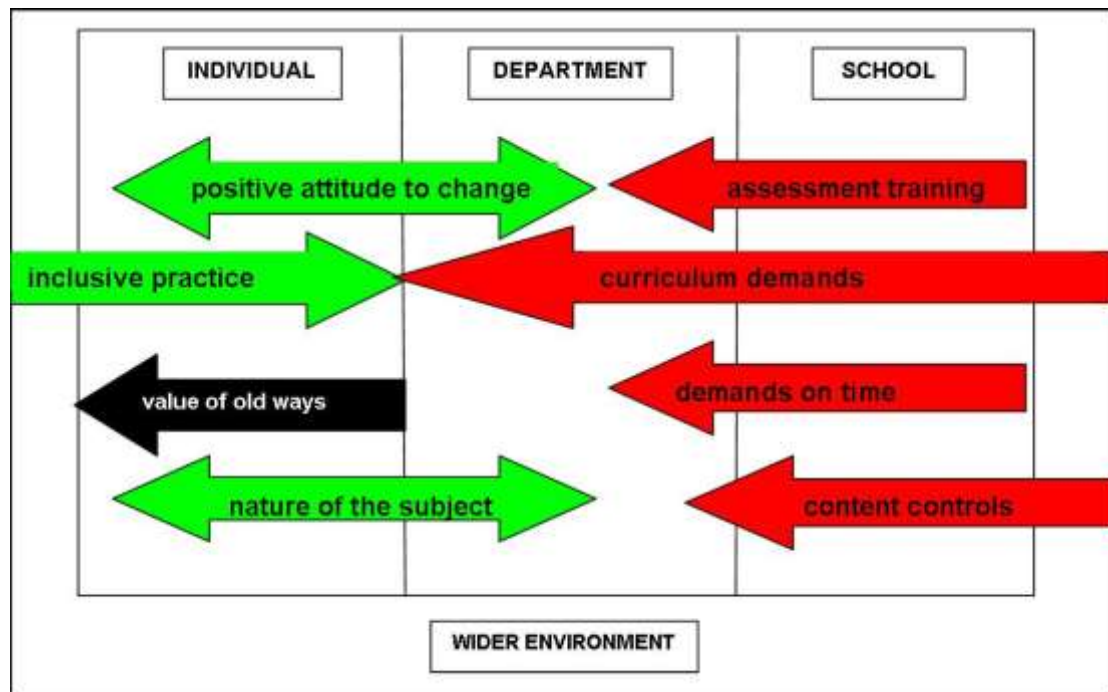
4.5.3.4 Summary and preliminary findings: Henry

First and foremost Henry, a product of the sixties, is a divergent thinker, an example of Hargreaves and Goodson's view (2006, p.24) on the creative thinking abilities of the baby-boomer generation as '*formidable forces of change*'. Most important to Henry was the presence of a like mind in joint creative efforts at a previous school, which he found significantly lacking on arrival at Wilding. However, the lack of a like-minded colleague worked initially as a positive factor in that he was forced into seeking a like mind elsewhere. In Henry's case, these long-lasting factors pre-dominate and have had a strong influence on his ability to innovate.

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On the other hand Henry's attitude towards OBE, his positive frame of mind about its aims (if not about its assessment processes) and absence of any self-doubt strongly influence his ability to implement changes in his practice. The experience and multiple perspectives of this particular teacher appear to have a significant influence on his or her reading and interpretation of the change situation and he reflects comfortably on his practice. Convergence between the pastoral care system and the inclusion policy enable him to become more aware of individual student needs and support these in his practice. The effect of organisational factors on Henry's practice is illustrated in Figure 4.4.

Figure 4.4: Organisational effects: Henry



Disconvergent student factors impact on his classroom practice and counter his pedagogical intentions. These student factors include lack of curiosity; arrogance and the self-centred nature of 'bright' boys in particular; and a lack of real understanding of the purpose of new assessment processes resulting in the students becoming even more marks focused. The student factors that emanate from the home environment include parental negativity arising from public perceptions of the national education system; parents own experience of mark-driven systems; consumerist results-based demands; access to

technology that corrupts student attitudes and leads to disinterest in the pursuit of knowledge; an inability to work co-operatively and individual isolation despite the present social networking climate. Whilst it is common knowledge that teenagers with access to social networking tools such as mobile phones and the Internet are connected socially, this does not, in Henry's view, converge with their attitudes to learning.

Simultaneous exposure to two contrasting groups of students raises issues in Henry's mind. According to Henry, whereas the Wilding parents' perceptions of what might be right for their children is based on their own experiences and conflicts with teacher intentions, it does not appear to affect the CRP school students in the same way. Henry attributes the Wilding students' attitude to the influence of the technological society and poor group practices in primary schools. Although collaborative and co-operative learning is a conscious intention of the school, according to Henry, the opposite is happening.

Student factors played a predominant role in Henry's case. Whilst they also play a role in Richard's case, it is the nature of the subject that is a predominant factor for him.

4.5.4 Organisational interactions and their effect on Richard's practice

In Richard's case, the nature of the subject has both a positive and a negative effect on curriculum change, his professional learning is strongly influenced by external factors and contributes to extensiveness, whilst student factors have a disconvergent effect on his ability to innovate.

4.5.4.1 Curriculum change

In answer to the question regarding the effect of mandated changes on his practice, Richard, an Art teacher, states that there is little mandated change either dictated by the school or that he needs to be concerned with. However, he concedes that at the moment he is trying to come to terms with the formalisation of curriculum changes and still needs to be inventive within

those changes. As explained in this extract, he believes that Art lends itself readily to creative practice and innovation:

RL4a: Um ... well I think art, in terms of the subject and the way its taught, and that its not content driven, I think its always been a bit in front of a subject that has content that drives the subject. [...] Um ... and the universities tried to limit it in a way, I suppose, on the one hand to make it more content driven and hence the emphasis on history of art. And when I say it's not so content driven I'm thinking particularly more on the practical ... side of the course. So there ... and that's where I think most of the innovation could take ... and I think that's where it was being driven towards a sort of outcomes based education anyway in a way so that's where a lot of the stuff comes in ... that's come in ... and the changes, the recent changes ... I think have already been in art, in place in art already, but it wasn't so formalised. So obviously, I think, in terms of accepting those changes in art, it wasn't ... its not been really difficult because a teacher ... you know it's like sort of ... it's what he can do anyway so let's move along. Seeing maths and science people struggle with it ... they get fear in their eye. [...]. So, I think that the changes in OBE haven't been really earth-quaking for me or shaking or hasn't put fear into what I do. [...] So, I think it applies to all the arts, I think really, that there's been that flexibility and that there has been this emphasis on 'we're not just marking a product which is an exam, we're marking a process'. And art, since I've been teaching art, I've always found that.

RL4c: Obviously, I'm trying to ... at the moment to just come to terms with the new system and the requirements I'm finding now, OK, its been formalised which always is a bad problem, it always is an issue which I believe is a bad thing when a thing gets formalised it sort of kills it. So I'm finding just the changes for me it's just like becoming a little bit ... making it a bit boring. But it's not so boring yet because I've still got to invent within those changes to try and understand what's ... what's the formalised solutions. [...] In terms of changes, I find its ... it's not ... I haven't found them really so scary or ... um ... I haven't really had to adapt too much to them because there's already been those processes in place. That's what I'm trying to say.

RL59b: [...] So, that's that part. We're not talking about theory again. Because then the content comes back again and I would get nervous again. Because I know that I've got to get through a certain content that's been given to me and now I've got to do it that way.

For Richard, the transition to OBE has been a gradual transition over the decade or more that he has been teaching owing to the nature of the subject and the natural approach to its practical side in particular. The nature of the subject also aligns well with OBE-based assessment and the changes in assessment requirements have not had much impact. On the other hand, the Art History or theoretical component of his subject, owing to its prescribed content, is less conducive to innovation than the practical component and he is much more limited in his options. Richard provides insight into the way in which he encourages students to meet the critical outcomes of the new curriculum in the practical component of the subject. However, for the more content-driven theory, the picture changes and Richard admits that his approaches are more traditional.

4.5.4.2 Professional learning

Richard's admission that he still teaches the theory traditionally reveals that even for a creative person who is comfortable with practical innovations he faces the same dilemma as teachers in other subjects in changing his practice in the theory component. Apart from the theory component, the challenge for Richard has been that of teaching creativity. He describes his approach as one that encourages dialogue and reflection. In recounting how he approaches the challenge of teaching creativity, Richard reveals the importance of the social construction of knowledge in this aspect of his subject: learning occurs through dialogue between teacher and student. This is illustrated in the following extracts:

RL18a: Well, I think that's always been the change, I mean the challenge in art ... is how do you teach creativity? And there is no solution, as far as I know, how to teach it. Basically its through challenge ... um ... the way, I think, well through challenge-posing problems, the way problems are posed ... um ... and trying different techniques almost um ... that are like spontaneously. For me, it's like making an art work, you come to a problem and you try and solve it creatively. So it's like doing ... making an artwork. That's sort of how I see it.

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RL40b: I also believe in ... that the process is a dialogue in teaching and that the dialogue is with the students ... um ... so, ja ... I try and ... how can I say it ... the student can ... we can give them advice and they can ignore it, do something else. And if they don't succeed then it's a case of like saying "Well, OK, try the way I suggested in the beginning". If they do succeed, then I believe in like really acknowledging them. "Hey, wow, you've really done something different." And I think that encourages them as well. I think that's how I try and emphasise their creativity as well. It encourages them then to challenge, not just accept what one says. So I think sometimes ... um ... in a more formal arrangement, people would think the student is being rude or arguing back. They think the student should just accept. I come from that kind of teaching and I didn't like it. So that's why I don't teach like that. So they are allowed to say and do and they can take their risk and I'm allowed to ... to advise them. [...]

Richard's innovations derive from his experience and from his deep involvement in the creative process as a practising artist. He lives what he teaches. He illustrates his point by describing in detail the example of how he introduced and used computer art not only to the benefit of his own students, but to eventually have it accepted by the IEB as an optional sub-discipline:

RL20a: Ja, well, I think if you ... I think if you're living what you're doing as a teacher then you're going to teach better. That's my basic ... what I put down to ... as a basic rule. So I mean I'm working making stuff and often the stuff I'm learning then I'm passing on to the children. [...] So when I decided at some point I was going to start working in computer art in my work I went and started investigating, learning through searching. And then I thought "Well, now I've got all this knowledge now I'll pass it on to the children". So then you start passing it and then I thought "How can you introduce that?" And then obviously at that stage there wasn't - when I started doing it - there wasn't much opportunity. Well, it wasn't part of the syllabus, it wasn't part of anything. Then I introduced it ... um ... and um approached ... eventually it was the IEB ... [...] um ... and said to them "This is what we need in the syllabus" and then, you know, they put it in and then I designed a teachers' course on how to teach it and that so, ja if you're living what you're teaching I think you're obviously going to be in a better ...

With this example Richard demonstrates the principle of extensiveness in which an innovation has extended to the IEB as the highest possible level. It has also extended to other schools through his development of a teacher's

course in computer art. Richard's natural affinity for ICTs and his personal experimentation has led to the introduction and use of ICTs as a formal option within Art. In this case, personal experimentation and the availability ICTs converged to spark a curricular innovation with widespread implications. Richard's personal motivation is driven by the need for ongoing change and he embraces change as an integral aspect of his professional life. He describes this interaction of change and innovation with humour:

RL22: And also, I think, you know teaching can be quite boring, so you've got to change all the time. So, I also like to have fun ...um ... changing teaching approaches. So, throughout teaching I've tried lots of different approaches just to see ... you know, until I get bored of it, just to see how it works and then I get bored, I get tired of it. Then I change to another one. So I think, you know, it comes from oneself, just to keep oneself occupied. [Laughs]

A further example of extensiveness or how innovations are diffused is indicated by Richard. Although he refers back to his previous post, he describes how he collaborated with a colleague who later also moved to Wilding, to develop a cross-curricular unit of general content combining Art and Science. This initiative, although undertaken willingly and successfully, was mandated by the school leadership. Richard perceived this experiment to be a precursor to LO and an integrated approach. He suspected that, because the innovation was mandated by the principal, principals are in league regarding new ideas. This concurs with the views expressed in the literature on the influence of school leadership (Breuleux 2002, p.10; Otto & Albion 2002, p.1; Sharma 2005, p.53; Staples *et al.* 2005, p.306). Innovations are diffused through interaction with colleagues beyond the school and conferences are ideal forums for this purpose. An innovation that is spread by school principals has diffused to the highest level:

RL8b: [...] I find like ... and I've worked in two private schools ... only, so it's very limited my ... I haven't changed many ... but I've found that programmes that are in place at this school were also in place at the other private school and I suspected that they all [???] the private schools around the country is what I suspected, because they were also saying its so new and what they're doing is so revolutionary and

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they're cutting edge, but I think it just comes from a general headmasters' conference ... is my suspicion ... conspiracy theory [chuckles] ... because working at [the two places] for quite a long ... nearly twelve years and seven years here and, as I say, the same things get said. [...] So, at that time, I remember I was designing a curriculum with the science teacher, Roger, and we were combining arts and sciences and in ... in a new way to ... how can I say it, in a new way trying to teach a new general content, which I think is now called like LO [chuckles]. So, obviously ... and we were instructed to do that ... as well ... but it wasn't called LO. We were calling it something else because there wasn't a name yet, but it came obviously from the management, so I think the management ...

4.5.4.3 Student factors

Richard identifies two student related factors that constrain his creativity in practice. These factors are firstly, student indifference to computer art which he ties to their lack of cognitive skills and secondly, the reasons why students choose to do art.

Student indifference to computer art disappoints Richard. He believes that, despite ready access to digital technologies, students have little ability to apply the tools and lack appropriate information literacy skills. Although he is able, in most cases, to influence learner interests by his own enthusiasm for a particular technique at a given time, he has not had the same influence with computer art, despite his pushing it as a technique. (This issue is discussed further in Chapter 6: RL77, Section 6.4.4, p.322.) Generally perceived expectations of the current generation of students are that they have a natural affinity for digital technologies. However, Richard believes that this is not the case: students have the practical skills to manipulate ICTs, but not apply them in a cognitive sense. To succeed with attracting students to computer art, Richard will need to do far more software instruction rather than rely on students' natural abilities which he would prefer not to do.

Students with academic challenges often manifest reading-related difficulties and therefore choose art as an option because of its large practical non-verbal component, rather than because they have a particular talent for the subject.

As a result, there is a disproportionate amount of students who take Art as an optional subject and these students usually avoid computer art.

In response to the question on innovations that have been discontinued Richard explains how he introduces new ideas randomly, related to how he perceives student needs. It is the student need that determines whether a new idea is introduced:

RL59a: Well, you know, I tend to ... I've stopped and started different techniques continually ... for different reasons. Sometimes ... so now I'm talking very cognitively here [wry smile]. When I say techniques, I'm meaning like physical plastic techniques like sculpture, computer art, certain software etc or printmaking and stuff or ceramics. I've stopped photography. I've stopped doing them ... um ... almost randomly. Because, when I'm teaching, I try and find the need of the children that I'm teaching and I try and find the technique that'll bring the creativity out of them. So that's where it's very flexible. What I was talking about – it's not content driven. So I can identify ... so that's why these things stop and start randomly by themselves ... um ... as the need ... So, for example, if there's a student that I feel that I can really get the creativity out of them [with a] certain technique, fortunately I have the expertise to then take it out of them. And I think maybe that's perhaps what stops people being creative in their teaching ... is that most probably might be limited in what they know. So, for example, if I was – because I've trained and studied for a long time so that I can get a broad understanding of the different art forms – so I studied and studied all different things, so I've got a large knowledge which is in different forms which is fairly rare in artists and most probably rarer in teachers. Um ... but so I can move from sculpture to screen painting, any technique I can move and I feel comfortable with it. I don't feel scared. And because I'm comfortable in so many, I can move to something I don't even know most probably ... and feel comfortable ... because I'm not interested in the content, I'm interested in how its applied, the context that its applied in and how to bring out something ... a way of thinking. [...]

In the practical component any discontinuation or resumption of a technique occurs in response to student needs at the time, not for systemic reasons or due to lack of sustainability. Critically important to this adaptability is Richard's personal knowledge and skills with different techniques. He suggests that lack of such wide variety of experience with the different techniques may well inhibit other art teachers' creative abilities.

Whilst many factors converge to enable innovation in Richard's practice, particularly in the practical component of his subject, disconvergent factors affect both the practical and theory components.

4.5.4.4 Constraints

For Richard, time emerges as a significant constraint with only one period per week to accommodate the theory component. Time is also a constraint in the practical component, limiting both the students' as well as the teacher's intentions.

RL32: And what's allowed me to do that is that it's not content driven. But I think also when I talk about art as well, we're talking about practical, not theory. The theory I don't teach like that because it's very content driven. So that's why I like, in the beginning when we started I was talking about prac and now I've suddenly realised the theory ... and its not like I'm contradicting myself because its almost like ... So now ... the theory though I must admit ... my techniques have been more traditional-classical in teaching it because the content in the course there that is really driven more than by ... most probably I suspect a like the normal ... like history. It's most probably equal to history except it's a ... a quarter of the time is dedicated to ... does that make sense? So history has about as much content but they've got four lessons of doing it, I've got one ... a week. To get through the same content they're using four so they can play a bit more there. I think there's a little bit more freedom even though its content driven and even, like I said: if a subject's content driven it is a struggle for them, a whole new approach. New factors ... the time factor's become quite difficult in the theory and so my techniques I've experimented there range from like lecturing ... to ... sort of self discovery, working through workbooks. So it's not as creative, more traditional kind of teaching ... um and ultimately ... um ... at the moment ... back to lecturing. So ... um ... I'm trying to introduce now a little bit more self-work, but not so successfully just yet ... not with the Matrics yet.

RL34: They can come in a bit more [prepared] ... and also they can do stuff ... giving them work discussions, group discussions in the class ... um ... whereas at the moment I find there is just not enough time in Matric particularly. In grade 10 that's where I've started trying it and ... actually I suppose that's also one change in ... also when I said like outcomes based I was also meaning practical only before. It was never the theory, whereas now I think because it's obviously ... that's one change in that the theory is brought more into the practical now. There is a greater mix ... um.

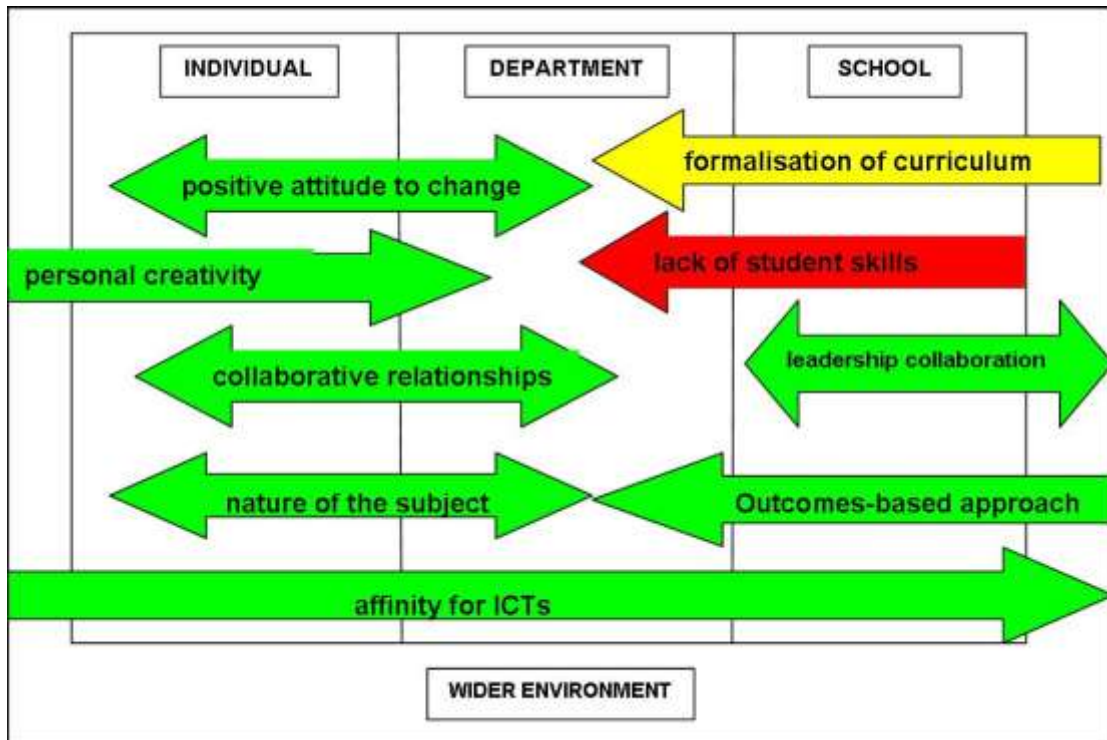
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So that ... that's where I will most probably start trying to work out ways of covering work in a new way that is not lecturing – theory work. But I haven't got there yet. Does that make sense?

4.5.4.5 Summary and preliminary findings: Richard

The pattern of convergent and disconvergent factors affecting Richard's practice is illustrated in Figure 4.5.

Figure 4.5: Organisational effects: Richard



While Richard admits that he struggles with adapting Art History to OBE practices, he is comfortable that the practical side of his subject aligns closely to OBE expectations. Any transition has been a gradual one over the extent of his experience rather than the paradigm shift that the new curriculum has required of other teachers. An ongoing but not overwhelming challenge that he experiences is teaching creativity, an expectation of all arts subjects. Dialogue with his students is an integral part of the creative process. Richard brings his experience as a practicing artist to bear on his classroom practice. He is also adept with ICTs and thrives on change. These factors have

converged to the highest level in that his influence has extended to the development of the IEB curriculum nationally.

Despite his success in practical art, the theory component constrains his creativity, and he gives the impression that he endures rather than enjoys this aspect of his subject. Students' inability to apply the tools required for computer art is a further constraint. In Prensky's terms the students lack digital wisdom (Prensky 2009, p.2). Richard's misgivings about student ICT skills match my own experience with students' information literacy skills.

Two of the teachers interviewed are from new curriculum areas. These are Maria in LO and Francois in Accounting.

4.5.5 Organisational interactions and their effect on Maria's practice

The OBE curriculum introduced four completely new subject areas. These areas are Economic and Management Sciences (EMS) and Arts and Culture (A&C), both of which are compulsory in Grades 8 and 9; Mathematical Literacy which provides an option to the more theoretical Maths Core in Grades 10-12 and Life Orientation, commonly known as LO, which is compulsory for all students up to Grade 12 and is Maria's responsibility. In her case, systemic factors and inclusive practice predominate.

4.5.5.1 Systemic factors

One serious systemic challenge that the school faced was to introduce LO as a nationally mandated subject area across all grades without significantly increasing staffing costs or reducing other optional subjects. At the same time, optional subjects such as Latin, which Wilding College previously offered, have disappeared¹⁶, although the subject can still be taken privately. With the demise of Latin as an optional subject, the decision was made by the school to redeploy rather than retrench the Latin teacher. Maria was thus appointed to oversee the development of the LO curriculum as well as

¹⁶ The demise of Latin relates to its no longer being a required subject for tertiary Law studies.

continue with a class of second-language teaching. The impact of these changes on Maria and her practice was therefore significant and multi-faceted. She describes the impact on her as follows:

***MW12:** It was a combination of ... of many things. Look, the Latin was ... I don't want to say dying out, but the numbers were very, very small. And they called me in and said, "You know, at least 15 boys otherwise it's not viable". So, in the light of that, I realised that I had to pick up something else. I was already busy with [the second language], but then they asked me about the Life Orientation and I'm really enjoying it far more than I thought I would. It's a big change [chuckles] but I'm really enjoying it as well. Hopefully, next year we'll move ... we'll get the senior level ... I don't think we'll get it sorted out in one year, but we'll move in the right direction to do that.*

As an entirely new subject the school had difficulty ensuring that all the necessary information was received, understood and channelled appropriately. It was believed initially that what the school offered in its leadership programme would cover the required outcomes for LO, but in mid-2006 Maria discovered, through attending a Cluster meeting (Ch.5 Section 5.3, p.214), that this was not the case. Although Maria was appointed to coordinate LO, she could not manage all 30 classes across five grade levels on her own. As a result, the whole staff had to be yoked in to teach LO in order to meet requirements. Each teacher had therefore to take on the responsibility for either one LO or one leadership class per term. Maria describes how she found out about the challenge she faced:

***MW59/63:** [...] So it, I think it was more structured than well, definitely than what I anticipated. I was ... I was amazed at what I heard at that Cluster meeting. They are so on track, it's unbelievable, Life Orientation. [...] Some of the schools have really been doing fantastically in Life Orientation.*

In contrast to teachers of established subjects, Maria was reliant on her Cluster Group for resources and ideas. Some colleagues in the LO group had apparently fared better and Maria was able to tap into their relative expertise, whilst others were similarly struggling to find their way. This transitional phase

was acknowledged and accommodated by the IEB although the challenges still remained.

MW65: Yes, yes. That was really ... I think that was one of the best conferences that I attended. It was very, very good. Maybe because I learnt so much. [...] And people had some fantastic, some fantastic ideas. And what was a relief was that I wasn't the only one [laughs] feeling that I didn't know enough or that I wasn't doing the right thing. At the same time, you know, schools were on track, but not everybody, not everybody was on track. But the understanding from the IEB ... you know, they said in as many words "Do not panic too much. If you do not have enough ... if [you] do not have everything we require we understand. We are in that transitional phase. That doesn't mean that you don't do anything now." But there is an understanding from the IEB side as well.

Maria has had to make considerable changes to her classroom practice to accommodate the change from a language to a content subject as well as to adjust to the newness of the subject and the situation. She is comfortable with the discussion approach but this in turn is impacted by discipline issues resulting from the larger class sizes that she is unused to.

MW36: I think to a certain degree ... yes [I have changed my practices]. I think so. But look, the Life Orientation. I don't know. We have ... I don't think we've always have ... if I say structured ... we don't have the chalk and ... whatever ... for Life Orientation. Its very much discussion, throw out ideas ... talk about religion and having responses from the boys. So, to a certain extent, unless they have some formal work to do... no, I think basically things stay the same. To a certain degree it has. I've just got more boys in the class now. I find it difficult at times because the boys are not um... they don't respect each other. You know, so ... we battle to get back to basics, be quiet when someone else is talking [???] etc. but we'll get there eventually.

4.5.5.2 Inclusive practice

Apart from the change of direction in her subject area, for Maria, inclusion has had the biggest impact. Providing individual attention is of concern to her particularly in teaching Afrikaans, but with classroom assistance, she is able to meet some expectations for providing individual support.

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MW6: [...] I think, for me, the biggest impact was the inclusion programme, because you feel, or I sometimes feel that I'm not doing all the children justice in my classroom [...] and I'm picking that up especially in Afrikaans. So, I have an hour where I see them, but you don't, I just feel I don't get to all the kids who need the individual help, so [an academic support teacher] has been joining me since the beginning of this term which is really a big help: it has been a big help. For me, that has been the biggest of all the things you mentioned.

MW20/22: ... and maybe, to come back to the inclusion, because I'm teaching Afrikaans, I see it ... maybe I experience it more or at a high intensity ... many boys ... I just feel there are many boys who need attention ... individual attention, and that I can't do that in every lesson because the Afrikaans is not at the level where you expect it to be. [...] I've got a boy in my classroom who didn't do Afrikaans last year. Well, I've got two. One boy changed from Zulu and the other boy came from, I think its Crossroads¹⁷. They didn't really do Afrikaans. They've got nothing, they have nothing to back them up.

In this aspect of her dual role, Maria has not only to contend with students with learning difficulties, but teaching a second language to children who have difficulties with their first language creates an additional challenge. Afrikaans is a phonetic language and is therefore a big challenge to students with auditory processing difficulties. This situation begs the question of what specialised training teachers require in order to have the confidence to teach appropriately as well as to meet the needs of the students. Alternatively, a compulsory second language as a systemic requirement should be reviewed.

4.5.5.3 Professional learning

For Maria, given the newness of her subject, her professional learning has been significant. No information on courses was forthcoming from the universities at the time and she had to rely on on-the-job training herself. Maria describes her challenge and her learning curve in these extracts:

¹⁷ Crossroads is an independent primary school for children with severe learning and educational difficulties.

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MW16: [...] [for LO] you need life [experience], and that's it, you know. And after ... I don't know Mary ... I've been busy with the junior level now for three years ... actively. And it's only now that I feel you can start playing around with stuff. You know, you need to work through the stuff to know what the demand is, what you have to do. Do you understand what I'm trying to say? So, I don't want to leave the junior level when I move into the senior level next year. I don't ... I still want to be involved in the Grade 8s and 9s. We're doing some very nice stuff.

MW18b: For me, for me ... maybe because I didn't have the formal ... I don't know ... the formal background to it. I just felt, I just felt it took me a while to ... [...] I think it's also to do with, you know, your confidence, because it's not your subject, you have to build up a bit of confidence. So that was a huge impact, yes.

MW48/50/52/57: [laughs] I can only give you the truth – you know - whether it was what supposed to happen or not! [laughter] It was those two files that Andrea – I don't know why she bought those [...] files – that was my starting point because I had no, literally, had no idea what to do. That was my starting point. And, I think, since then ... it's um developed ... since then it's developed into something nice. I still use those [...] files as my basic ... you know, that's the core that I work from. [...] So, for the Grade 8s and 9s I've worked from those files. Then, at the Cluster meeting I found out that they have these work books so next year we will most probably buy these work books for the Grade 8s and 9s as well. [...] So literally, that was my starting point. I have, as you know because you've put many of these books in my pigeon hole, all these from the different publishers, the different Life Orientation books. I've got and I read and I must and ... you know ... [...] I can remember the first year we still tried to find out from universities if there were any courses available that I could attend, but we never had any feedback and ... and we've just moved on since then, you know so, ja ...

MW70/72/74: I think it was a huge advantage. I have ... I have been challenged. Mary, I think I have grown tremendously in the last three or four years. Professionally, I think. I may be wrong. I don't know. But I have been challenged and you know, when you meet those challenges it makes a difference to you as a person. Yes, you do [feel good about it]. And ... and it goes back to what Investment¹⁸ teaches you as well, you know. It's really the advantages of ... I can't think of one disadvantage.

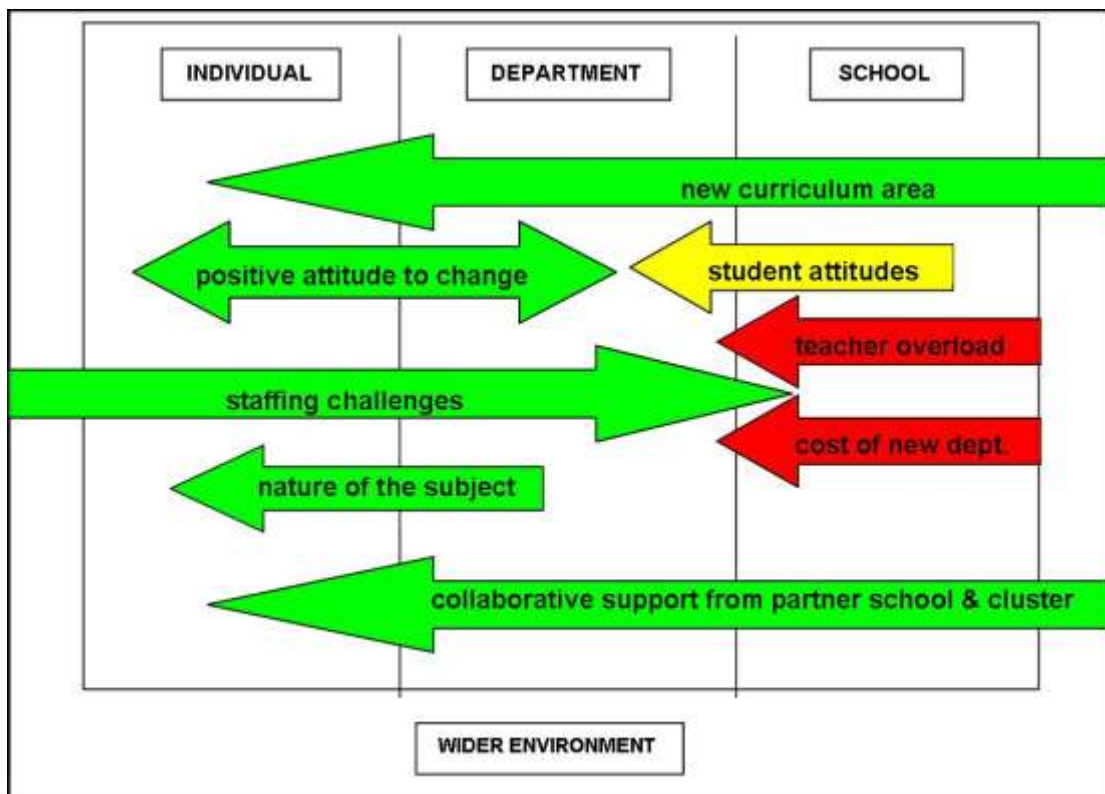
¹⁸ Investment in Excellence course (see footnote 5, p.147)

In response to the question of what sparked her change in practice, for Maria and her new subject, everything changed. With humour she describes what transpired whether intentional or not. It has taken three years of experimentation at GETC level for Maria to familiarise herself with the LO curriculum and reach a point of comfort with it. In this respect, her experience is similar to that of her colleagues in the Sciences. One reason for her lack of confidence is that, having been seconded into the subject and lacking formal training, she is on unfamiliar ground. Her comment indicates the time frame that is necessary for a teacher to change to a new way of working. Innovation and comfort with doing things in different ways is not a 'eureka' moment, but a process over time.

4.5.5.4 Summary and preliminary findings: Maria

The convergent and disconvergent factors in Maria's case are illustrated in Figure 4.6.

Figure 4.6: Organisational effects: Maria



Maria has had no option but to adapt, given that she transferred out of necessity from a redundant classic discipline to a new mandated subject area. Everything was new to her: the subject area, the OBE curriculum, moving from a language to content subject genre as well as new responsibilities for a school-wide department. LO thus brought logistical challenges at organisational level and an additional workload for all teachers who have to implement the LO curriculum. In parallel with the logistical challenges, the financial challenges of providing trained teachers for an extra subject to the whole school were prohibitive. The LO load is raised by other participants. Similar to her colleagues, Maria has adapted and refined the delivery of LO over the three years of its implementation. However, the overload on the other teachers is a factor that needs to be addressed.

Despite the overwhelming odds, she has turned adversity into opportunity. It has taken three years for Maria, an experienced teacher, to get to the point where she is confident with what she is doing and she wishes to continue to work with the junior grade levels because of what she has achieved there, in order to sustain the momentum of her efforts. The introduction of LO has had a positive impact on her personally and professionally. Dealing with the nature of LO with boys has its challenges, but she remains undeterred and sets her sights high, hoping that the school will eventually become influential in this subject area, i.e. she is driven by not only her personal motivation, but her overall ambition for the school as well. Like her colleagues in other departments, Maria anticipates further impact as the OBE curriculum reaches Grade 12 level.

Maria is positive about her own personal and professional growth through this experience. She raises only one negative factor, the attitude of some boys towards the subject, but is undeterred by it. Instead, she is driven by her personal motivation and loyalty towards the school. The advent of LO has provided mutual benefit to both herself and the school. Although she acknowledges that there is still a long way to go, Maria remains positive, giving the overriding impression of optimism that everything will work out. She

acknowledges the challenges, but is not overwhelmed by them, and does not raise any particular constraints other than her own knowledge level, which is growing exponentially. She specifically wishes to continue teaching LO at GETC even as the curriculum reaches the higher grades, in order to sustain the momentum. Inclusion has had the biggest impact on her practice generally. Her practices have changed largely due to the nature of the subject matter in her new subject area. She is reliant on support from more experienced colleagues in her Cluster Group, indicating a reverse extensiveness, with influences coming from outside.

Similar to Maria's experience in LO, Francois has to contend with teaching Accounting as a learning area that is new to the school.

4.5.6 Organisational interactions and their effect on Francois' practice

Francois faces a subject that is new to him as a teacher as well as the mandated changes of the OBE curriculum. Prior to 2006, the school did not offer Accounting, but conceded to introduce it following parental demand. Francois was appointed as the OBE curriculum at Grade 10 was introduced. For Francois personally, Accounting was also a new subject and Wilding College, a secondary school, was a new school level in that he had previously taught only a general curriculum at preparatory school level. He has one departmental colleague who is also part of the school leadership team and also new to the school. There are thus essentially 1.5 teachers in his department, so the onus for developing the subject falls largely on Francois. Further, both Accounting teachers had come from government schools so the IEB system was new to them both.

In Francois' case, systemic factors and curriculum change predominate.

4.5.6.1 Systemic factors

As a consequence of these changes, there has been a considerable impact on Francois' practice. He describes his experience in the following extracts:

Thesis submitted by Mary Elizabeth Reynolds in partial fulfilment of the requirements for the degree 201
of Philosophiae Doctor (Computer Integrated Education) in the Department of Curriculum Studies,
Faculty of Education, University of Pretoria, August 2009.

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FP4a: Um ... it's been very daunting, in the sense that I've come in with a new subject, new syllabus um ... and tried to get it off the ground. So, invariably, what we've had changes-wise [is] a hell of a lot of enthusiasm initially with everybody keen on Accounting, this fantastic subject, and then realising that there's so much more to it than what they thought. So, the interest has dwindled from this massive interest where, for instance, our current Grade 11 group is 55 boys to our actual intake for Grade 10s for 2008 which is actually 20-25 boys. Because they've come to the realisation that it's not as fantastic as everybody makes it sound and the content and the work is so much more, especially with the new syllabus so that's been very interesting, coming in that side of things.

The Hawthorne effect (Wickström & Bendix 2000, p.363) plays a role in the assimilation of Accounting into the optional choices available to students: first there is a huge demand for the subject and then student interest pendulum's in the opposite direction. Such fluctuations have significant implications for the whole school system: for managing optional subjects and proportional student numbers as well as allocating teachers and physical resources. Student perceptions of Accounting also present a challenge and may indicate why the numbers of students choosing the option have varied so greatly:

FP4b: And also now, with the boys being so computer-literate as they are, they can't understand why they've got to do written work. Their theory is that it should all be done on computer which is what happens out there. So ... so that's very interesting trying to incorporate the computer side and give them the foundations of ... 'cause computers ... you tell them the figures and it does it all for you automatically for you. You tell it it's an invoice and it gets put it in the right places. And that's what the boys don't understand. They need to understand why an invoice is put in those places not just assume that it's happened. So that's been a difficult one for them to get across.

4.5.6.2 Curriculum change

Francois teaches Grade 11 in a continuity vacuum owing to the fact that the Grade 12 curriculum had not, at the time of the interview (October 2007), been released. Planning between related sections over different grades was therefore impossible and only six weeks remained to plan for the following academic year. The effect of this was that Francois felt unprepared and was

concerned that his students would not be properly prepared for their Grade 12 year.

FP4c/8: Then obviously the content which has been so much. To incorporate that side of it has been pretty difficult. [...] For instance, we're doing 35% of our current Grade 11 syllabus [which] used to be Matric syllabus and they haven't lost any of the Grade 11 syllabus from before, so you've added 30% or 40% to the existing syllabus which was so much, without taking anything away. So it's just so much more work. I mean, there's two sections in Grade 11 which used to be Matric work.

FP10/11: Well, we're waiting for them to finalise the Matric syllabus at the moment. It's still coming through, ja. So we don't know what they've added or not. And you can't get ... we're in a position where you can't say "Well, let's leave these [???] sections and pick them up next year" because we don't know what they've planned. So, ja, it's a huge problem. So, I mean, we're battling. [...] We're scurrying ... trying to say "What do we leave. What can we give them for self-study", just to [get] through the syllabus. That's it. And not to mention doing the software packages.

FP14/16: [...]. I'm in the situation now where you're trying to push content and new things ... concepts ... but I'm so nervous now, because I don't think a proper foundation has been laid. So for next year I know it's going to come and it's going to bite me because I never covered that properly. We didn't have time to spend on it, work through it, practice it a bit. So, that's a huge concern. I'm nervous too that I haven't prepared the boys well enough. [...] So ja, it's definitely out of the comfort zones.

4.5.6.3 Professional learning

Francois is quite direct about his comfort levels with the curriculum and the learning curve that he is experiencing, clearly expressing his own shortcomings relative to his perception of the students' needs. He uses the term 'scurrying' to describe the time pressure that he is under and refers repeatedly to his nervousness or discomfort with matters over which he has no control. The workloads for him and his students are immense. Francois is modest and frank about his personal ability to be creative with ideas. However, the fact that he mentions trial and error indicates that he is trying out

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new ideas. These appear to come from within and are drawn from what he believes is relevant to the background of the students, coming as they do from a high socio-economic environment.

FP26: Well, I think ... you know ... well, some of them ... I think it's just trial and error, I suppose. From what I've used before, it didn't work, so let's try a different approach. Maybe I can connect with them that way. Generally, what I'm trying to do ... well, what I'm trying to do is ... if there's a lesson and it works and you know, you sort of see the lights going off, if I can put it that way ... then I try and make a mental note of it saying "Well, that approach worked with the boys. I seem to get a positive response. Let me try and store that one and use it again." But the idea is generally, you know ... as I said, I battle. I'm not the most innovative [guy] with these wow ideas etcetera, etcetera. I'm pretty much run of the mill; this is what we need to do so make it relevant to their situation for them. So for instance, they talk about a financial statement in the business world out there. I often refer to it [...] or, you know, their context of this is their target market, that sort of thing. Um ... also things that they relate to you know: going buying clothing, buying play stations. So I try and make it relative in their sort of ... what's of interest to them, what they shop for, that sort of thing.

MR17: And when you say you're having to work with different material and maybe find ... are you having to find new ways to deal with that material or is your delivery in this particular subject very similar to what you have been doing before?

FP18: No, the delivery is very different. You know, you try and make it as relative ... as relevant to their sort of situations as possible. Now, one of the criticisms is "try and make this subject more interesting" and its' very difficult, because the subject is black and white. There's no grey area. There's no ... there's a right or a wrong. And there isn't ... for instance, take Maths, where there are three formulas to work something out. There's only one way that it can be done. Ja. It's not negotiable.

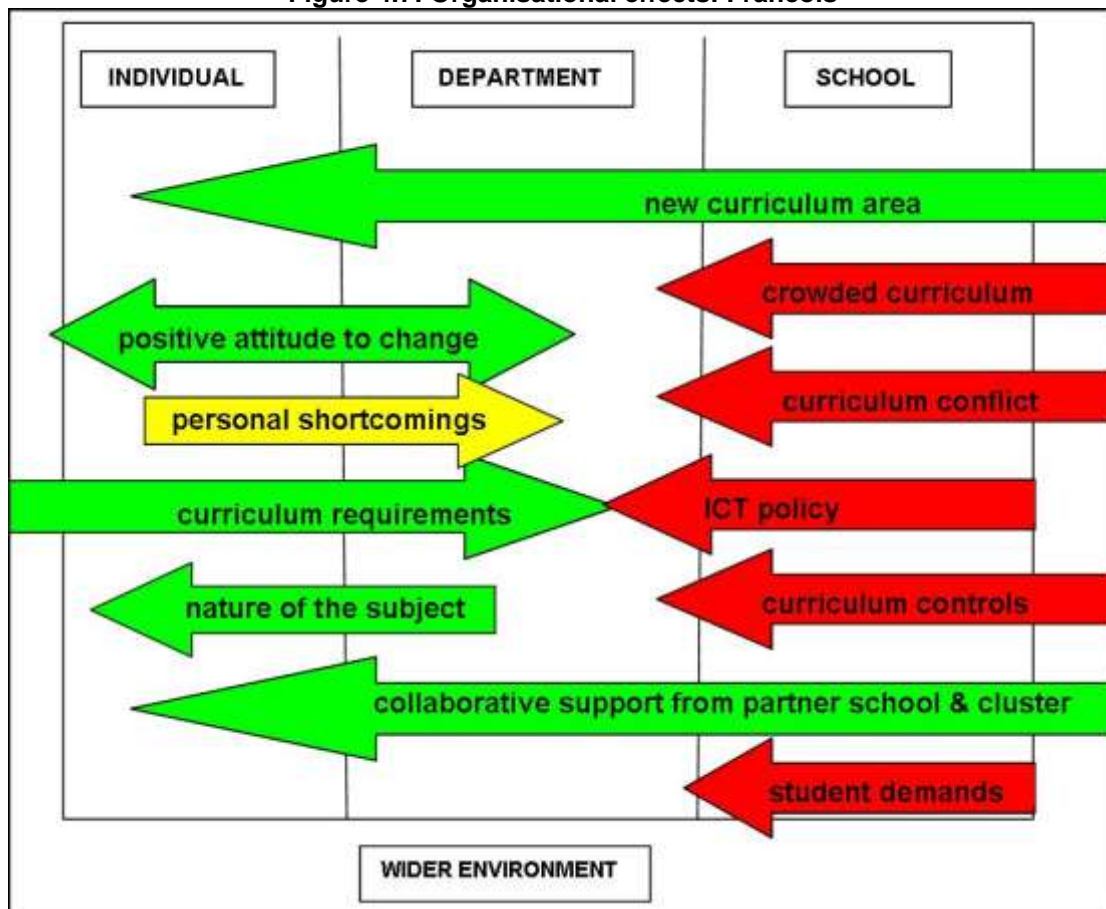
Francois believes that it is difficult to innovate within Accounting as it is a subject that does not readily accommodate creative outcomes-based strategies. In Accounting therefore, the nature of the subject has the opposite effect to the nature of arts subjects in which creativity is inherent. Francois is tasked to 'make the subject more interesting' but feels constrained by its

prescriptive nature. However, he tries to use case-studies to demonstrate the application of the subject.

4.5.6.4 *Summary and preliminary findings: Francois*

Enabling and challenging factors converge for Francois in implementing mandated changes and in integrating himself into a new environment. These are illustrated in Figure 4.7.

Figure 4.7: Organisational effects: Francois



Convergent factors are the opportunities created by the newness of the subject, the OBE curriculum, Francois' new position and the initial interest of the students. Over and above this are factors such as his willingness to learn and experiment and his openness to any support that is offered. Disconvergent factors are the uncertainty and lack of clarity in the incomplete curriculum, the volume of content, the waning interest and demands of

students and the prescriptive nature of Accounting which does not lend itself to OBE strategies. He has creative ideas he would like to implement, but curriculum overload restricts him from realising these opportunities. A factor not addressed in this section is access to ICTs. This will be addressed in Chapter 6.

4.5.7 Preliminary findings: Organisational interactions and their effect on teachers' practice

The variety and complexity of interactions that occur between mandated change and teacher practices in the context of Wilding College is evident from the above extracts and analyses. Whilst the teachers were asked virtually identical questions their responses to the question regarding how mandated changes had affected their practice provided as many different perspectives as the number of participants. The nature of the subject area, the size of the department, the degree to which the subject is established, the beliefs and attitudes of the teachers, their length of service and experience and the backgrounds from which they come all play a part in their responses to change.

Henry and Richard illustrate the dichotomy of personal responses to mandated changes. Henry attributes his acceptance of change to his own nature, whilst Richard attributes his to the nature of the subject. Bronwyn and Ineke have embraced change to the extent that they feel threatened by what they perceive to be retrogressive further changes in the curriculum. Thabo and Magriet have embraced the philosophy of inclusion and want to change their practice but are caught in a stressful cycle of conflicting changes that they appear unable to escape from. The experience of Hennie and Arthur helps them to rationalise change although they show some scepticism of how well the OBE curriculum is being implemented in their department. Henry is stifled by the lack of a like-minded colleague and intrigued by student factors that conflict with assumptions of a socially networked society. There is a paradoxical tension between Richard's creative nature and his realisation of socially-constructed knowledge in the practical component of his subject and

the traditional delivery of the theoretical component which he has no time to explore. Maria and Francois deal with the immensity of the challenge of the new with remarkable fortitude.

Common convergent factors are the collegial and professional relationships that are apparent both from observation and from what the teachers themselves recount. Collegial and professional relationships will be addressed in the following chapter in depth. The single factor that predominates and is a common concern to all teachers is the lack of time to meet the needs of their students. This may also explain why so few teachers have completed the assessor's course portfolio even though it is compulsory and fundamental to implementing the new curriculum.

Taken at surface level, the implementation of mandated changes has been systematic in that it has been incremental over one academic year at a time. However, in practice, the implementation process for the two major changes has manifested as much more ad hoc. Curriculum change in certain subjects has not proceeded in one linear direction, but first in one direction and then veering into another, sometimes reversing and sometimes without clear direction. Similarly, the change to inclusive practice, although more consistent in its direction, has not matched the reality of classroom experiences due to a combination of three factors. These factors are the dearth of classroom support, class size and a move away from streaming. Teachers have had to establish their own benchmarks, redesign their practice and manage their own professional learning in real time with little or no opportunity for planning workshops, peer demonstration, observation and critiquing to ensure iterative development of their practice.

Despite these challenges and limitations, positive convergence occurs to the extent that curriculum implementation is moving forward and academic standards are being maintained, although some teachers acknowledge that their practice has regressed or that they have not been able to sustain

innovation. Disconvergent factors are a reality that needs to be addressed at system, school and departmental levels.

Against this background, the next Chapter will explore and describe how collegial and professional relationships between individuals and between individuals and departments, the school leadership and entities beyond the school determine the mutual benefit of innovations in practice.

4.6 Summary of Chapter 4

Chapter 4 has introduced the school and the teachers that form the participant sample of this study, outlined the main themes identified in teacher responses to Sub-question 1 and described the findings that relate to this question. The interactions between mandated change and teacher's ability to innovate in their classroom practice have been described using evidence of convergent and disconvergent factors. Chapter 5 will describe collegial and professional interactions and their effect on teachers' ability to innovate, seeking evidence of mutuality.



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