The Structural Dimensions of Mentoring Conversations and how they Relate to Learning Outcomes of Student Teachers

By

A J M PRETORIUS

A minor dissertation submitted as partial fulfillment for the

MASTERS DEGREE IN EDUCATION

(Psychology of Learning)

in the

Faculty of Education

at the

University of Johannesburg

Supervisor:  Prof. G.J. van der Westhuizen

Co-Supervisor:  Dr. H.H. Tillema

2013

The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the NRF.
DECLARATION

I hereby declare that this minor dissertation, submitted for the MAGISTER EDUCATIONIS (Psychology of Learning) degree to the University of Johannesburg, apart from the help recognized, is my own work and has not previously been submitted to another university or institution of higher education for a degree.

__________________________________
A J M Pretorius
______ day of ___________________ 20____
Dedicated to Ruan and Leandri

SOLI DEO GLORIA
ACKNOWLEDGEMENTS

The following individuals and institutions are acknowledged for their role in making this study possible:

The National Research Foundation (NRF) and The University of Johannesburg, for financial assistance.

Prof. G. J. van der Westhuizen, University of Johannesburg, my mentor and supervisor. I thank you for your delicately balanced guidance towards my academic growth and for allowing and creating the academic space I needed to explore ideas and for the subtle guidance when I have lost track.

Dr. H. H. Tillema, at Leiden University, for acting as co-supervisor and for your valuable guidance; herewith, also, please accept my gratitude for allowing me to use your structural model of mentoring conversations as an integral part of this study.

The participating mentors and their students, for making the data possible.

Lecturers, Prof. G.J. van der Westhuizen, Dr. M. van der Merwe, Dr. D. Postma, Dr. R. Grobler for the theoretical foundation in the course work component of this degree.

The Post-Graduate Centre at UJ for their support services.

UJ library services, both walk-in and on-line.

Dr. Pieter. H. Pretorius, although in a different domain, for setting the highest of standards in professional and academic excellence. Your presence and guidance as an academic peer has been valued and your support as a spouse has been truly
appreciated. I sincerely thank you for the countless ways in which you have made it possible for me to further my post-graduate studies to this level.

To my children, thank you for your co-operation and adapting to my academic schedule. May you experience the same loving support on the journeys ahead of you.

To my parents, thank you for your moral support and for respecting the times when I had to isolate myself in order to complete this study.
GLOSSARY

Mentoring:

Guidance of a novice teacher or student teacher by an experienced professional in Education in order to make the transition from a theoretical knowledge base to competency in practice (Orland-Barak & Tillema, 2006).

Mentoring conversations:

Mentoring conversations are learning conversations between lecturers, or supervising teachers, and student teachers which mediate professional guidance and support towards teaching proficiency.

Conceptual artefacts:

Plans, Approaches, Schemes, Outlines, Recipes, etc. (Bereiter, 2002; Tillema, 2005), which can be used as ‘tools’ in teaching practice.

Retrospective concept maps:

A graphic representation of conceptions as it is revealed and constructed in the conversation. In this study, they map out what the mentee knows about a concept and how it is collaboratively constructed by the mentor and mentee (Novak, 2008; Kinchin, Streatfield & Hay, 2010).

Potential Learning Episode (PLE):

The conversations in this study are analysed by studying topics of discussion in the conversation, which could potentially yield learning. These topics of discussion are seen as episodes and used as units of analysis in this study.
Knowledge Productive Mentoring Conversations / Knowledge Productive Learning (KPL):

For the purposes of this study, effective mentoring is seen as mentoring which is knowledge productive to the extent that the knowledge which is produced shows potential to be used in the student teacher’s future practice. Tillema and Van der Westhuizen (2006) refer to Bereiter (2002) as they define knowledge productivity as a process in which ‘conceptual artefacts’ are created for professional practice.

Index of significance of conceptual artefacts (ISCA):

This is an instrument which indicates the potential significance of knowledge, which is constructed in the possible learning episodes (PLE’s) of the conversation, for the mentee’s future practice. The term ‘significance’ in this context does not refer to ‘statistical significance’, since this is a qualitative study. It rather refers to the potential ‘practical significance’ for the student’s future practice. Unlike statistical significance, which is mathematical, practical significance is rather subjective as it takes into account factors which relate to applicability in practice (Accessed 9 February 2014); Porter A.C. et al. (1978).

Issue/artefact ratio:

The number of conceptual artefacts which are constructed per potential learning episode (PLE), expressed as a ratio. For example, 1:3 means that one issue (or topic of discussion) yielded 3 conceptual artefacts.
LIST OF FIGURES AND TABLES

Figure 1  Macro context: The mentor conversation as complex genre 34
Figure 2  Micro context: Utterances as simple genres which make up the conversation as complex genre 34
Figure 3  Model of ‘climbing mount improbable’ in the mentoring conversation 41
Figure 4  Seven steps in the process of data collection and analysis in this study 63
Figure 5  Example of a Retrospective Concept Map, based on one PLE in this study 83
Figure 6  Three basic concept map structures 84
Figure 7  Sequential order of a combination of propositions for meaningful learning 128

Table 1  Summary of data analysis 124
ABSTRACT

Although mentorship implies expertise, such expertise in teaching is not sufficient for being an effective teacher educator and thus does not guarantee effective mentoring (Timperley, 2001:121). A number of researchers (Hoover, 2010; Kiggundu, 2007; Quick & Sieborger, cited in Kiggundu, 2007; Timperley, 2001; Weiss & Weiss, 2001, cited in Keogh, 2005) found that mentors need to enter mentoring encounters well prepared and they should be guided by more than intuition and expertise in their domain. They indicated that research based selection strategies and training programmes need to be developed since practicum arrangements for the selection of supervising teachers and mentors seem to be done on an *ad hoc* or voluntary basis and that, in general, training in mentoring skills and principles are non-existent or insufficient.

With Vygotskyan and Bakhtinian theories as basis, this study attempts to offer research based guidance for significant and meaningful mentoring conversations, since conversation is the vessel through which learning is mediated. This study investigates the structural dimensions of mentoring conversations and how they relate to learning outcomes of student teachers. The outcome of this study equips mentors with research based knowledge on how they can deliberately structure their conversations with mentees to optimize the learning outcomes of the conversation.

This study analyzes samples of mentoring conversations and engages in three levels of analysis. On the primary level, the structure of the conversation is determined, in terms of the structural model of Tillema (2011). A secondary level of analysis follows which identifies *conceptual artefacts*, a notion of Bereiter (2002), (cited by Tillema & van der Westhuizen, 2006), as outcomes of the learning conversation. A third level of analysis determines the quality of the learning by using two instruments which
supplement each other. Firstly, the construction of retrospective concept maps (Kinchin, Streatfield & Hay, 2010) makes the complexity of conceptions explicit in graphical format. Since some of the most complex maps in this study relate to prior knowledge and not to learning as a direct result of the interaction between mentor and mentee, a further measure is necessary. The index of significance of conceptual artefacts (ISCA) has been developed by the author for this study to further reveal the significance and meaningfulness of the student teacher’s learning as a result of the mentoring conversation.

Conversations are divided into potential learning episodes (PLE’s), as units of analysis, based on topics and issues under discussion. PLE’s are compared in terms of their structure, knowledge production in the form of conceptual artefacts, as well as potential significance of the artefacts for the mentee’s future practice.

Data analysis reveals that the structural ideal seems to be the use of a combination of all the structural elements in Tillema’s model, i.e. explorative, prescriptive as well as scaffolding propositions, in a certain sequential pattern. The study further finds that, prescriptive and scaffolding propositions, which constitute ‘high road’ propositions on the Tillema (2011) structural model, do not guarantee significant and meaningful learning. However, it seems to be a vital conversational ingredient if significant and meaningful learning is to be the outcome of a mentoring conversation. It appears that significant, meaningful learning is unlikely without high road propositions. Explorative propositions ('low road' propositions), and ‘other’ propositions such as compliments, expression of agreement with the mentee, expression of empathy etc., without any prescription or scaffolding ('high road' propositions), does not yield significant and meaningful learning. It appears likely that ‘other’ propositions such as empathy, agreement and compliments could contribute
to the building of a good relationship with the mentee which could form the basis of a productive mentoring conversation. Thus, although ‘other’ propositions probably do fulfil a function in mentoring conversations, it is not directly related to the construction of significant and meaningful conceptual artefacts.

This study further suggests that production of conceptual artefacts per se should not be considered as knowledge production without taking into account how significant or meaningful the artefact is for the student’s future practice.

Finally, this study produced a novel instrument for indicating the potential significance of conceptual artefacts for the mentee’s practice in the form of the index of significance of conceptual artefacts (ISCA) which makes this study replicable and provides an instrument for use and/or refinement in other related studies.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES AND TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ix</td>
</tr>
<tr>
<td><strong>CHAPTER 1: INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>1.1 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.2 BACKGROUND OF THE STUDY</td>
<td>1</td>
</tr>
<tr>
<td>1.3 RESEARCH PROBLEM</td>
<td>3</td>
</tr>
<tr>
<td>1.4 AIM OF THE STUDY</td>
<td>4</td>
</tr>
<tr>
<td>1.5 RESEARCH QUESTIONS</td>
<td>4</td>
</tr>
<tr>
<td>1.6 OBJECTIVES</td>
<td>5</td>
</tr>
<tr>
<td>1.7 THE RATIONALE BEHIND STUDYING THE STRUCTURE OF MENTORING CONVERSATIONS AND ITS RELATION TO LEARNING OUTCOMES</td>
<td>5</td>
</tr>
<tr>
<td>1.8 OVERVIEW OF THE STUDY</td>
<td>9</td>
</tr>
<tr>
<td>1.9 METHODOLOGY</td>
<td>10</td>
</tr>
<tr>
<td>1.10 THEORETICAL FOUNDATIONS</td>
<td>13</td>
</tr>
<tr>
<td>1.11 CONCLUSION</td>
<td>15</td>
</tr>
<tr>
<td><strong>CHAPTER 2: THEORETICAL PERSPECTIVES IN LITERATURE</strong></td>
<td>16</td>
</tr>
<tr>
<td>2.1 INTRODUCTION</td>
<td>16</td>
</tr>
<tr>
<td>2.2 THE MENTORSHIP ROLE</td>
<td>17</td>
</tr>
</tbody>
</table>
2.3 SELECTION AND PROFESSIONAL DEVELOPMENT OF THOSE WHO SHOULD FULFIL THE ROLE OF MENTORS IN EDUCATION

2.4 CORNERSTONES OF PRODUCTIVE MENTORING

2.4.1 Relationship as a cornerstone of mentoring

2.4.1.1 Reflection and trust in the relationship and its role in the mentoring process

2.4.1.2 Tensions and dilemmas in the relationship

2.4.2 The mentoring process as a cornerstone of mentoring

2.5 A THEORETICAL FRAMEWORK FOR THE STUDY OF MENTORING CONVERSATIONS

2.5.1 Conversation as dialogic engagement in mentor interaction

2.5.2 Dialogic engagement, the levels of conversational engagement and their implications for conversation analysis in this study

2.5.3 Dimensions of mentor conversations

2.6 THE OUTCOME OF PRODUCTIVE MENTORING CONVERSATIONS

2.7 A THEORETICAL EXPECTATION OF HOW STRUCTURAL DIMENSIONS OF THE MENTORING CONVERSATION COULD RELATE TO KNOWLEDGE PRODUCTION AS A LEARNING OUTCOME IN THIS STUDY

2.8 CONCLUSION

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

3.2 RESEARCH QUESTIONS
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 SUMMARY OF THE FINDINGS AND OUTCOMES OF THIS STUDY</td>
<td>134</td>
</tr>
<tr>
<td>5.3 REVIEW OF THE STUDY</td>
<td>140</td>
</tr>
<tr>
<td>5.4 RECOMMENDATIONS FOR FURTHER RESEARCH</td>
<td>142</td>
</tr>
<tr>
<td>5.5 LIMITATIONS OF THE STUDY</td>
<td>144</td>
</tr>
<tr>
<td>5.6 CONCLUSION</td>
<td>144</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>145</td>
</tr>
<tr>
<td>APPENDIX A - Letter for Reflection Reports</td>
<td>152</td>
</tr>
<tr>
<td>APPENDIX B - Evidence Based Content Analysis for Knowledge Productivity</td>
<td>153</td>
</tr>
<tr>
<td>in the Mentoring Conversations</td>
<td></td>
</tr>
<tr>
<td>APPENDIX C - Retrospective Concept Maps</td>
<td>165</td>
</tr>
<tr>
<td>APPENDIX D - Index of Significance of Conceptual Artefacts</td>
<td>178</td>
</tr>
<tr>
<td>APPENDIX E - Structure Summary of All Data Sets</td>
<td>180</td>
</tr>
<tr>
<td>APPENDIX F - Ethics Clearance for the Mentor Conversation Research</td>
<td>181</td>
</tr>
<tr>
<td>Project at the University of Johannesburg</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter introduces the study by contextualizing it as part of a larger collaborative research project between the University of Johannesburg, South Africa and Leiden University in The Netherlands. The contextualization of the study facilitates the understanding of its role, its contribution and the scope thereof in the context of the larger research project. The research problem is explained as a catalysing agent for this study. The chapter clarifies the aim of the study and how it will be achieved via specific objectives. The research questions, which guide the study, are formulated. This chapter offers the rationale behind the study and supports it with brief references to literature. The chapter concludes with a concise overview of the study, a brief outline of the methodology as well as the theoretical foundations which form the backbone of the study. Detailed discussions of the literature survey and the research methodology are reserved for chapters 2 and 3 of this dissertation.

1.2 BACKGROUND OF THE STUDY

Professional learning conversations are sensitive to, and dependent on, the context in which it takes place for, as Brown, Collins and Duguid (1989:34) postulate: “The activities of a domain are framed by its culture. Their meaning and purpose are socially constructed through negotiations among present and past members.” The authenticity of, and meaning making in, professional learning conversations are thus embedded in the practices of the culture in which it takes place (Brown, Collins & Duguid, 1989). As this study looks at professional learning conversations in the domain of education, these conversations are situated in a community of teaching
practitioners who are teacher educators or student teachers. Although learning conversations across various domains might have some basic elements in common, the conversations in this study are framed by the culture of contemporary pedagogy. The knowledge created by these conversations is what Tillema, Van der Westhuizen and Van der Merwe (2012) refer to as “contextual knowledge” which is “embedded in activity” and has specific cultural relevance for the domain of pedagogy.

This study forms part of a collaborative Mentor Conversation Research Project between the University of Johannesburg and Leiden University. The purpose of the main study is to clarify the role of knowledge in mentor-mentee interactions in order to recommend improvements for the preparation of students for their teaching practice (Van der Westhuizen & Tillema, 2011:1). It hinges on the assumption that mentor interactions often fail to produce the intended outcome, be it “gain in reflection, understanding, perspective shift” or “commitment to apply recommendations given” (Van der Westhuizen & Tillema, 2011:2). It is ascribed to a further assumption that the mentor often “does not match the three sided relationship between: a) where the learner is, b) where the learner needs to go and c) how to determine the gap between the two (Van der Westhuizen & Tillema, 2011:2). In other words, the mentor often fails to bridge the gap between the student’s current knowledge and the standard to be attained in teaching practice. In its quest to inquire “into the effectiveness of mentor-student interactions and the ways in which such interactions are shaped by the knowledge of good teaching” (Van der Westhuizen & Tillema, 2011:1) the larger project studies mentoring interactions in all their complexities, including structure, mentor knowledge, mentoring style, lecturer and student beliefs and relationships, and their relations to learning outcomes.
The research project at Leiden University has produced a study by Gerretzen (2012), which includes several of the above mentioned aspects. The focus of this study, however, is narrowed down to the structural dimensions of mentoring interactions and how they influence student learning. As this study forms part of the larger research project, reference will often be made to the Leiden study, since this study draws on the same structural model for mentoring conversations. The Leiden University study uses Tillema’s (2011) structural model which is based on Ericsson’s model of deliberate practice (Gerretzen, 2012) and which employs the metaphor of ‘climbing mount improbable’ towards teaching proficiency. This study employs the same model but the difference between Gerretzen’s (2012) study at Leiden University and this study is mainly in the scope, the methodology and the approach in data analysis. The differences in scope, methodology and approach to data analysis flow from some of the limitations which Gerretzen (2012) indicates in the Leiden study. This study, subsequently, resorted to an evidence based approach as an alternative to the perception-based instrument (the knowledge productive learning (KPL) questionnaire) which is used in the Leiden study.

1.3 RESEARCH PROBLEM

Literature reveals that, in the training of student teachers and induction of novice teachers into teaching practice, mentors need to enter mentoring encounters well prepared and they should be guided by more than intuition and expertise in their domain (Hoover, 2010; Keogh, 2005; Kiggundu, 2007; Quick & Siebörger, 2005; Timperley, 2001). Although Hoover (2010) and Keogh (2005) indicate that careful selection and training of mentors is crucial and that research based selection strategies and training programmes need to be developed, the problem remains that it is not clear exactly what these training programmes should entail. Such
development programmes could include an array of elements to prepare the mentor for various tasks. Based on the theories of Vygotsky (1896-1934) and Bakhtin (1895-1975), which form the theoretical foundation of this study, as outlined in section 1.10 of this chapter, one crucial aspect underlies all learning in mentor-mentee interactions, namely, the notion that conversation is the vessel through which learning is mediated. Having said that, another question remains, namely, what exactly should the conversation entail if learning is to be optimally mediated? Research, as attempted by this study, is needed to target this area of uncertainty. By discovering how learning outcomes of student teachers relate to certain structural dimensions of mentor conversations, training programmes should include research based knowledge and training in conversational strategies to enhance the learning of the mentee in the mentoring conversation.

1.4 AIM OF THE STUDY
In order to address the research problem, as set out above, this study aims to analyze samples of mentor conversations in terms of structure and content and to explore its relation to learning outcomes of student teachers. This will shed light on whether and how mentors could deliberately structure their conversations with student teachers to be conducive to optimal learning.

1.5 RESEARCH QUESTIONS
This study was guided by the following core question: In which way can mentoring conversations be structured to optimize conversational learning outcomes for student teachers? The following sub-questions attempted to facilitate an answer for the core question: a) How does the structure of mentor conversations relate to the learning outcomes of student teachers? b) Drawing from Tillema’s (2011) structural model,
based on the model of deliberate practice of Ericsson (2002), what is the ideal in using prescriptive-, scaffolding- and exploring propositions?

1.6 OBJECTIVES

In order to find answers to the research questions, the study is designed around the following objectives: a) To analyze and describe the content of samples of mentoring conversations in teacher education in terms of mentor utterances and learning benefits of student teachers; b) to base the analysis on conversational evidence from transcribed mentoring conversations; c) to use the model developed by Tillema (2011), in the analysis of the structure of the conversations; d) to identify conceptual artifacts which are constructed during the mentor conversation (Bereiter, 2002 cited in Tillema, 2005; Tillema, 2005) as a base for description and analysis of learning outcomes; and e) to determine the significance and meaningfulness of learning for the student teacher.

1.7 THE RATIONALE BEHIND STUDYING THE STRUCTURE OF MENTORING CONVERSATIONS AND ITS RELATION TO LEARNING OUTCOMES

The hypothetical possibility of structuring learning conversations for optimal learning is a prospect which fuels this study. If the structural dimensions of mentoring conversations can be related to learning outcomes of student teachers and if an ideal structure can be determined, training programmes could be developed for mentors in the teaching profession which prepare mentors and supervising teachers in terms of conversational learning of their mentees. Although literature indicates the centrality of the mentor in learning conversations, it also indicates that such conversations are embedded in and, therefore, influenced by the broader contextual practices in which
they take place. The following sections provide a synoptic explanation of why it is necessary to study mentoring conversations between mentors and student teachers. A lengthy literature survey can be found in Chapter 2 of this dissertation.

Mentors usually determine the format and topics of the conversation (Strong & Baron 2004, cited in Gerretzen, 2012). Therefore, the outcome of the study could be used in research based guidance to develop mentors’ conversational skills in order to optimize the learning for student teachers and novice teachers as mentees.

A number of researchers have observed that practical arrangements for the selection of supervising teachers and mentors, seem to be done on an ad hoc or a voluntary basis, and that, in general, training in mentoring skills and principles are either non-existent or not sufficient (Edwards & Protheroe, 2004; Kiggundu, 2007; Quick & Siebörger, 2005 cited in Kiggundu; Timperley, 2001; Weiss & Weiss, 2001 cited in Keogh, 2005). Mentoring in teacher education, in general, seems to be an intuitive practice which is not sufficiently based on research and clear guidelines (Hoover, 2010).

Kiggundu (2007), suggests that supervisor teachers and mentors should be carefully selected and properly trained and that universities should share the responsibility to provide in-service support. Although mentorship implies expertise, such expertise in teaching is not sufficient for being an effective teacher educator (Timperley, 2001:121) and thus does not guarantee effective mentoring. Furthermore, supervisor teachers who are appointed as mentors often lack knowledge of, or do not support contemporary pedagogies (Keogh, 2005) and base their mentoring “on commonsense understandings derived from their classroom experiences, and rarely on research-based understandings of effective supervisory and mentoring practices” (Orland, 2001, cited in Keogh, 2005:5). This often causes tension in the mentoring
relationship because the mentees who are inducted into the teaching profession arrive with the knowledge of contemporary pedagogies (Keogh, 2005). Alred and Garvey (2000:271) recognise this tension in mentoring in the general organizational sense and points out that “there is a creative tension between learning from the past and unlearning for the future” and that this notion should be “exploited in a knowledge productive present.” This notion cautions mentors not to stagnate on the basis of their accumulated experience and expertise. It underlines the need for the continuous development of mentors based on contemporary theories and pedagogies.

Studies about formal standards for mentoring in the development of pre-service teachers seem to be limited (Sempowicz & Hudson, 2011), and it remains vague what exactly the development of mentors should entail. Even if mentors were to be continuously developed to stay abreast with contemporary pedagogies, they would need to be able to facilitate meaningful learning conversations. Literature shows that such conversations, which mediate in the mentee’s learning process, are embedded in various dimensions of mentoring.

As a vantage point, existing literature indicates relationship and process as two possible cornerstones of mentoring (Daloz, 1986; Hoover, 2010; Kwan & Lopez-Real, 2005). Although these two elements are intertwined, the focus of this study is on the process of mentoring while the relationship between mentor and mentee falls outside the scope of this study.

Tillema and Van der Westhuizen (2006) and Tillema, Van der Westhuizen and Van der Merwe (2012), postulate that in teacher education, mentoring is the development of knowledge and knowing. Exchange, dialogue and reflection are of central
importance in the production of knowledge in teacher education (Schön, 1983; Wenger, 2003, cited in Tillema & Van der Westhuizen 2006). Although this implies that both the mentor and mentee have a role to play in the production of knowledge in a learning conversation, the focus of this study is on the role of the mentor in the knowledge production process.

Edwards and Protheroe (2004:185) paid specific attention to feedback as part of the mentor interaction and found that 79% of the feedback which mentors give to student teachers focused on descriptive re-iterations of observed events which did provide the positive feedback which the student teachers wanted but it did not enhance the “organisational frameworks or schema with which student teachers interpreted classrooms and selected appropriate pedagogic responses while in the act of teaching.” Purposeful structuring could include, as Tillema’s (2011) structural model suggests, prescriptive, constructive (scaffolding) and descriptive (exploring) propositions by the mentor, aimed at guiding the mentee towards teaching proficiency. Tillema (2011), expects that prescriptive and constructive (scaffolding) propositions will guide the mentee gradually towards ‘higher ground’ and thus closer to teaching proficiency. These propositions differ from ‘lower ground’ propositions which merely explore or at least do not perturb or challenge the current practice of the student.

Gerretzen’s (2012:11, 26, 29) study which expected to confirm this relation, and which covers various elements of mentoring interaction, suggests that more research should be done. Her results indicate higher perceived knowledge productivity when descriptive (exploring) propositions dominate the mentoring conversation (‘low road approach’) but concludes that the relation is not significant (Gerretzen, 2012:27, 29,
She indicates limitations in the study and suggests areas for improvement in further research. This study, at the University of Johannesburg, notes, in support of Gerretzen’s hypothesis, that the results of the Leiden study are not in line with the theoretical foundations on which this study is built, namely Vygotsky’s notions that knowledge construction is gradually mediated and scaffolded (Kozulin, 2003). Nor is it in line with Tillema’s model which expects that a ‘high road’ approach of scaffolding and prescription should lead to higher knowledge productivity. This justifies further research as done by this study.

Furthermore, in order to further the research as suggested, this study attempts to shed light on how mentoring conversations could be structured to yield optimal learning outcomes. This study narrows the focus and inquires only into the structural characteristics of mentoring conversations in teacher education and the difference it makes to the learning benefits of student teachers.

1.8  OVERVIEW OF THE STUDY

Tillema (2011) and Gerretzen (2012:5-7) describe the learning of student teachers in mentoring conversations as ‘climbing mount improbable’, which indicates learning as a gradual process towards teaching proficiency. The metaphor is borrowed from the work of Richard Dawkins (1996), which describes evolution as a gradual process. Tillema’s (2011) experimental model takes elements of Ericsson’s (2002) model of deliberate practice and combines it with Dawkins’s (1996) metaphor of ‘climbing mount improbable.’ This combination resulted in Tillema’s (2011) model which suggests conversational learning to be a process of gradual evolving of the mentee which can be deliberately facilitated by the mentor by using either descriptive (exploring), directive (prescriptive) or constructive (scaffolding) propositions. Tillema
(2011) portrays professional growth through mentoring conversations as a route or a journey towards proficiency in teaching practice.

This study uses the experimental model of Tillema (2011). To establish whether knowledge production has taken place during mentor conversations, this study relates the presence of ‘higher ground’ (interchangeably used as ‘high road’) mentor propositions as well as ‘lower ground’ (interchangeably used as ‘low road’) mentor propositions in mentor conversations to knowledge production. Three levels of analysis are employed in order to arrive at conclusions while remaining sensitive to the question posed by Orland-Barak and Tillema (2006), whether the co-construction of artefacts through mentor conversations are simply a reification of existing artefacts and common practices or whether it truly induces learning and development of teaching practice.

This study attempts a different approach than Getrretzen (2012). It refines the research and it narrows down the units of analysis. It also explores new ways of analysing learning conversations. The methodology of this study is guided by these considerations.

1.9 METHODOLOGY

This qualitative study fits the broad paradigm of constructionist research as the focus is on the social construction of knowledge. The methodology revolves around deconstruction of text, textual analysis and conversation analysis (Terre Blance & Durrheim, 2006:6) in order to describe how the structure of mentor utterances relates to student learning. It studies what mentors say and it seeks evidence of learning in order to investigate whether the deliberate structuring of their utterances in a mentor conversation could serve as facilitation towards the professional growth of the
mentee. In essence, it investigates how conversational moves (Tillema & Van der Westhuizen, unpublished 2012) between mentor and mentee promote learning.

This study follows an *ex post facto* design, thus, non-experimental in nature (Mazabow, 2009:77), since the conversational structure as a variable will not be manipulated in order to monitor its effect on learning outcomes. Instead, recorded mentoring conversations will be analyzed as they will take place without manipulation by the researcher.

This study performs content analysis of the mentoring conversations, which is embedded in conversational analysis. Original texts, in the form of verbatim transcriptions of mentoring conversations, are deconstructed into potential learning episodes (PLE’s), as units of analysis, which each deals with a specific topic or issue from the students’ post-practicum reflection reports or topic and issues which flow from the conversation. These PLE’s within the conversations are then analyzed in terms of structure and content in order to determine the link between the structure of the mentor’s utterances and learning benefits of the student. Four pre-determined categories, which are based on the experimental model of Tillema (2011) and the work of Gerretzen (2012), serve as the basis for the structural analysis of potential learning episodes which make up the primary layer of coding and analysis of this study. This level of analysis reveals the conversational structure of each possible learning episode by expressing the frequency of each of the four categories within the episode as a percentage of all the mentor utterances which occurred in the PLE.

Instead of a cross-case comparison, as was done in by the Leiden study, this study does a cross-episode comparison. In other words, smaller units of analysis are used for purposes of comparison, to achieve a more refined and rigorous analysis. Hence,
instead of comparing entire conversations by looking at their overall structural characteristics, all the conversations in this study will be broken down into PLE’s which will be compared in terms of their structural characteristics and learning outcomes. The reason for the different approach is that one conversation could cover several topics, which translate to PLE’s, and it was noticed that the structure is often adapted from one topic or PLE to another, depending on the nature of the topic, the mentor’s perception of the topic, the needs of the student around the topic, or the mentor’s ability to see the potential for learning in the conversational episode, etc. Since this approach yields numerous units for analysis per conversation, it justifies the use of a relatively small number of cases (conversations) as each mentoring conversation will yield multiple PLE’s for analysis. These PLE’s are compared in terms of their structure as suggested by the model of Tillema (2011), conversational evidence of conceptual artefacts, and the complexity of the concepts as it surfaces in the conversation. The episode-artefact ratio (also referred to in this study as issue-artefact ratio) provides a simple, base line expression of evidence of potential learning that takes place in terms of knowledge production. In order to substantiate and understand the evidence of learning, in terms of the meaningfulness for the student teacher, a concept map is constructed for each potential learning episode by using the guidelines of Novak & Cañas (2008) and Kinchin et al. (2010). In order to further substantiate an understanding of the quality of the learning, an index of significance of conceptual artefacts (ISCA), which is inductively developed for this study, and based on existing literature, is used as a yardstick for estimating how significant and meaningful the conversational learning was for the student.

Chapter 3 provides a detailed discussion of the research methodology, as well as a schematic representation of the research design, in Figure 4.
1.10 THEORETICAL FOUNDATIONS

In order to understand why this study is done as a second attempt to confirm the expectation that ‘high ground’ (prescriptive and scaffolding) propositions will lead to meaningful learning for students, it is necessary to understand the theories of Vygotsky and Bakhtin, which are not only prominent in contemporary pedagogy, but which also serve as a theoretical foundation of this study. Relevant notions from their theories and related others will now be offered as backdrop against which this study is attempted.

As mentioned earlier, dialogue between mentor and mentee is the vessel by which learning is mediated. This study focuses on the conversational component of mentoring which makes the theories of Bakhtin (1895 – 1975) and Vygotsky (1896 – 1934) of particular relevance. Bakhtin’s most prominent notions include: “the relation between the ‘I’ and the ‘other’, the centrality of the word in this relation (and) the process of becoming” (Rule, 2006:79). This study follows in Rule’s footsteps (2006:80), by drawing on Bakhtin’s ideas in the mentor’s mediation of foundational knowledge and the student teacher’s practicum experiences as the two main components of: “a pedagogy of access and dialogue.” In such mediation, a learner-centred approach is most appropriate because of the attention to the learner’s needs and the integration of academic knowledge and practical knowledge, i.e. the integration of theory and practice (Rule, 2006). Rule (2006) points out that a learner-centred approach places the student’s experiences on the foreground and it positions the student as a creator of knowledge and a meaning maker. This approach is supported by Tillema, Van der Westhuizen and Van der Merwe (2012), as they favour collaborative learning of student teachers. The collaboration and co-
construction of knowledge cannot be possible without dialogue which makes Bakhtin’s notion of dialogic engagement of particular relevance.

The Vygotskyan notion of scaffolding, which features as one of the ‘high road’ categories in Tillema’s (2011) structural model for mentoring conversations, creates the hypothetical expectancy in this study that high road propositions could be positively related to higher learning outcomes. Vygotsky’s notion, that one first learns on a social plane and then on an individual plane (Kozulin, 2003; Offord, 2005; Wertsch, 2008), has relevance in this study as the mentoring conversation itself represents Vygotsky’s social plane of learning. Further, it is reported that activities are more complex when a learner finds him-/herself in an interactive situation with a human mediator (Kozulin, 2003:19), as opposed to individual learning. Kozulin (2003:22) also refers to Feuerstein’s ideas on mediated learning experiences (MLE) and his postulation that the quality of mediated learning relies on the following criteria: a) the intentionality and reciprocity of interaction (thus, it should be purposeful and involve the learner); b) the transcendent character thereof (which refers to significance beyond the here and now); and c) the mediation of meaning (which is socio-culturally constructed and derived). Although it is referred to in the context of child-adult interaction, Vygotsky’s notion that mediation is facilitated by adult guidance of a more capable peer (Chaiklin, 2003:40), renders the MLE criteria relevant in mentor-mentee interaction as the mentor would be in the position of the more capable peer. This study’s inquiry into the deliberate structuring of mentor conversations draws on the notion that the intentionality of the MLE in the mentor conversation could influence the quality of the learning. The collaborative intention of the mentor-mentee conversation draws on reciprocity which Feuerstein refers to as a factor which contributes to the quality of learning.
The above mentioned theoretical notions strongly support the hypothetical expectancy that deliberate structuring of mentor conversations should render positive learning outcomes for students. Based on this theoretical stronghold, this study serves as a second attempt in the main research project to confirm that there is a positive relation between the structure of mentoring conversations and learning outcomes of student teachers.

Chapter 2 provides a much more detailed discussion of how these theoretical aspects frame this study.

1.11 CONCLUSION

This introductory chapter served as an orientation. It briefly outlined the study by pointing out the aim, rationale, research problem, objectives and research questions. The background is discussed in order to contextualize the study in relation to a broader research project between the University of Johannesburg and Leiden University. An overview of the research is presented and a basic theoretical frame is described with reference to prominent theorists in contemporary pedagogy. The methodology is summarized in broad terms. Detailed discussions and descriptions of these elements of the dissertation are found in the chapters to follow. The next chapter reports on the literature survey for this study.
CHAPTER TWO
THEORETICAL PERSPECTIVES IN LITERATURE

2.1 INTRODUCTION

Although this study’s focus is exclusively on the conversational aspect of mentoring in education, these conversations are embedded within the contexts they take place and are, therefore, influenced by various factors in these contexts. For the purpose of contextualizing the conversational aspect of mentoring within its broader context, this chapter provides an overview of theoretical perspectives on mentoring in a broad sense by looking at aspects such as: the role of the mentor; the selection and training of mentors in education; who would be suitably positioned for the mentoring role in education; and the need for theory-based mentor development programmes. This chapter clarifies two possible cornerstones of mentoring, namely; relationship and process. Trust as well as tensions and dilemmas in the relationship inevitably impact on the conversation and is thus included in this chapter as part of the discussion of relationship as cornerstone. As part of the discussion of the process, of which the conversation forms part, approaches and conversational dimensions are included in the discussion. Various relevant approaches and models for mentoring in teacher education are discussed and the strengths and weaknesses of each are pointed out.

The discussion of these aspects facilitates an understanding of how the mentoring conversation is embedded in its context since the conversation does not happen in isolation. However, the conversational dimension itself will be explored in more depth as the focus of this study.
Since the goal of the mentoring conversation is ultimately knowledge production, the co-construction of knowledge in mentoring conversations is explored extensively in this chapter. The chapter concludes with a synoptic overview.

2.2 THE MENTORSHIP ROLE

The original mentor features in Greek mythology as wisdom, personified. As a trusted friend of Odysseus, he is appointed as a guardian and guide for Telemakhos, the son of Odysseus while Odysseus has to leave his family behind to attend to other responsibilities. Athena, the goddess of wisdom, speaks to Telemakhos at critical times in the form of a mentor. Transition and growth appear to be central themes in the mythological mentor with Telemakhos relationship as well as in the mentor-mentee relationship in modern day professional development.

From traces in mythology as well as from research it seems that mentors play an important role, particularly at the beginning of peoples’ careers as well as at crucial turning points therein (Daloz, 1986).

According to Daloz (1986:16-35), mentors are guides who encourage, offer vision, support, nurture, express disapproval when needed, advise, test, unveil new perspectives and challenge their mentees to ultimately learn to “see in a new way.” Daloz sketches an evolving relationship between mentor and mentee: At first they walk in single file with the mentor leading and pointing the way. It later changes to walking side by side. Separation follows when the mentee gains momentum of his/her own and when his/her pathway leads beyond the vision of the mentor. Although very rare, if the mentor can eventually let go of his/her power and allow the
relationship to become genuinely reciprocal, the relationship could extend into a lasting, respected friendship with fresh boundaries in which the mentee has become his/her own author.

It is clear from literature that mentoring implies commitment as well as relevant knowledge, skill and expertise (Daloz, 1986; Hoover, 2010; Keogh, 2005; Kiggundu, 2007; Luneta, 2011; Quick & Siebörger, 2005; Timperley, 2001). Such pre-requisites can certainly not be assumed to be part of everyone who finds him-/herself in a mentoring position, as pointed out in Chapter 1. (Timperley, 2001; Weiss & Weiss, 2001, cited in Keogh, 2005; Quick & Siebörger, 2005, cited in Kiggundu, 2007; Kiggundu, 2007; Edwards & Protheroe, 2004, Hoover, 2010). Thus, the concern of this study is especially aimed at those who are being placed in such positions as part of their vocational duties and those who are willing as volunteers but lack these important qualities. The next sections are spent on these concerns because conversational learning, as an important aspect of mentoring, would be influenced by the mentor's competence in the role as well as his/her professional knowledge.

2.3 SELECTION AND PROFESSIONAL DEVELOPMENT OF THOSE WHO SHOULD FULFIL THE ROLE OF MENTORS IN EDUCATION

The question is raised in literature whether school-based mentor teachers are appropriate teacher educators (Feiman-Nemser, 1993 cited in Timperley, 2001). Mentoring is often arranged on an ad hoc basis, and mentor teachers are often not given supplementary training or education for the role (Keogh, 2005). Teachers often volunteer or are being invited to act as mentors without the much needed guidance or development (Timperley, 2001; Weiss & Weiss, 2001, cited in Keogh, 2005).
Keogh (2005) further indicates that mentor teachers often draw on their own commonsense understandings which they get from their personal classroom experiences as well as from what they can remember from the days of their own teaching practicum as a basis for their mentoring role. Kiggundu (2007) suggests that professional competence of the mentors should be seriously considered and that universities should share the responsibility of mentoring instead of relying solely on school-based mentors.

Kiggundu (2007:35) quotes Maynard and Furlong (1993) in Quick and Siebörger (2005), to point out that: ‘effective mentoring is… a difficult and demanding task and the teachers performing the role need the time and in-service support appropriate to the increased responsibility being placed on them.’ Therefore, being a veteran and expert in a certain domain, does not guarantee effective mentoring. For the purposes of this study, effective mentoring is seen as mentoring which is knowledge productive (productive mentoring) to the extent that the knowledge which is produced shows potential to be used in the student teacher’s future practice. Hoover (2010:18) cites Carver and Feiman-Nemser (2009), as they too, advocate for “rigorous selection and training for mentors.” The argument that mentoring needs to be more formalized and researched has been highlighted by Kiggundu (2007) who researched student teachers’ experiences in the Vaal Triangle in South Africa. She advocates that the development of pre-service teachers can be increased if school-based mentorship is done effectively.

Timperley (2001) expresses concern that mentors and student teachers could be so practice-focused that only immediate issues of practical performance are concerned at the cost of theory. Despite being positioned as experts, tension is often created within the mentor-mentee relationship because mentor teachers might not support or
be exposed to contemporary schooling principles or contemporary pedagogies (Keogh, 2005). This tension could exist in the relationship even within a more contemporary collaborative approach to mentoring (Keogh, 2005). It appears that, although collaboration is a joint effort, the mentor is still in an authoritative role and thus cannot be respected as such without staying abreast with contemporary pedagogies.

University lecturers seem to be favourably positioned if mentoring is to be grounded in contemporary pedagogies and contemporary teaching practices. It is evident from the literature survey that such a ‘collaborative mentoring approach’ could extend beyond mentor-mentee collaboration to include mentor-mentor collaboration between school based mentors and university based lecturers (Kiggundu, 2007).

2.4 CORNERSTONES OF PRODUCTIVE MENTORING

The act of mentoring is a multi-faceted, complex encounter. In the foreword of Daloz (1986), Cross (1986) refers to mentoring as a ‘slippery concept.’ Although it is possible that this complex act could be underpinned by an array of fundamental facets, this discussion looks at two of its possible cornerstones, namely; “relationship and process” (Kwan & Lopez-Real, 2005:276). Hoover (2010:20) refers to “nurturing and nudging” which, in this researcher’s view, defines the essence of what Kwan and Lopez-Real refer to as ‘process.’ Daloz (1986:212) refers to “support and challenge” and then adds a third element: "providing a vision."

The nurturing relationship is what Kiggundu (2007:28) points out as having a profound influence on “the development of student teacher’s orientation, disposition, conceptions and classroom practice” (Farrell et al., 2000:35; Quick & Siebörger, 2005). Kwan and Lopez-Real (2005) further explain that the relationship provides the
caring and supportive environment in which the process of induction into the ‘community of practice’ (Wenger, 1998, cited in Kwan & Lopez-Real, 2005) can take place.

In the sections to follow, both the relationship and the process of mentoring are explored. Since this study focuses on mentoring conversations as part of the process of mentoring, it will be discussed in depth while the relationship between mentor and mentee will only be covered briefly, for contextual purposes, as it falls outside the scope of this study.

2.4.1 Relationship as a cornerstone of mentoring

Although a distinction is made between relationship and process, this discussion of the mentor-mentee relationship as one of the cornerstones of mentoring, will show that it is rather closely intertwined. Effective mentoring, or mentoring conversation for that matter, requires a secure personal relationship between the mentor and mentee, because, as seen in the work of Gerretzen (2012:8), the relationship affects the learning.

2.4.1.1 Reflection and trust in the relationship and its role in the mentoring process

Reflection and trust forms the basis of dialogue between mentor and mentee. Hoover (2010:20) cites Taylor (1998) as he notes that “trust is a cornerstone” in a mentor–mentee relationship and points out that it is obtained by addressing a mentee’s immediate concerns and by skilfully trying to find “critical entry points” into a mentee’s practice. One way of finding such entry points, appears to present itself in reflective conversation, which per se, forms the backbone of the mentoring process.
Deliberate reflection could offer an avenue for tapping into tacit knowledge (Schön, 1983; Wenger, 2003, cited in Tillema & Van der Westhuizen, 2006). When tacit knowledge is explicitly communicated and shared in a mentor conversation it has the benefits of collaborative review, critique and debate (Tillema & Van der Westhuizen, 2006). Such collaborative construction of knowledge is reached as a situational understanding in the context at hand (Tillema & Van der Westhuizen, 2006).

Trust could not only be developed by finding the critical entry points which Hoover (2010:20), refers to, however, it could also be influenced by the level of familiarity between mentor and mentee, which Tillema (2011) refers to, as well as the domain competence of the mentor. Johnson (2006) postulates that trust, in an inter-personal context in general, is not an element of an individual's personality but that it is an aspect of a relationship.

Trust in mentoring seems to be cultivated over time, during the process of reflection. Reflection in post teaching, practicum mentor conversations could be embarked upon via the deliberate structuring of the conversation by the mentor, as proposed by Tillema (2011) and explored in this study. He suggests the use of specific mentor propositions which explore, construct (scaffold) or prescribe. It is in the explorative propositions that the opportunity for reflection is possible. Tillema’s (2011) model is discussed in more depth later on as it forms the basis of analysis for this study.

The ultimate purpose of reflection is to explore uncertainties or difficulties and to arrive at new understandings, or conceptual artefacts which could enhance teaching practice. Reflection should thus lead to a progressive evolving from what Tillema, Van der Westhuizen and Van der Merwe (2012) refer to as moving from ‘knowledge’ to ‘knowing.’
In line with the broader research project, of which this study forms part, this study deals with reflection on two levels in order to move closer to teaching proficiency. It starts off with individual reflection in the form of a reflection report, as a base line for the mentor conversation, which eventually extends into collaborative reflection in the conversation.

### 2.4.1.2 Tensions and dilemmas in the relationship

Interwoven into the relationship between mentor and mentee, is also the reality of rather complex tensions and dilemmas. Tillema and Van der Westhuizen (2006:53), refer to the work of Katzenbach and Smith (1993), as they point out that “continuous tensions or dilemmas” occur in collaborative settings, such as: openness and closure; dialogue and withholding information; power and natural behaviour; stability and risk-taking; commitment and expediency. I perceive these dichotomies as being related to the relationship between mentor and mentee. In the light of the evolving journey which Daloz (1986) sketches, it could be expected that these tensions and dilemmas would find an appropriate balance as the mentor’s and mentee’s relationship grows to the point where they can walk ‘alongside’ one another in knowledge construction.

On the other hand, while Johnson (2006) notes that cooperation increases trust and competition decreases it, it is something that could be of value to a mentor to keep in mind as the mentee grows towards a level of knowing which could result in the truly reciprocal relationship between mentor and mentee which Daloz (1986) envisages. The mentor and mentee could potentially view one another as competition, only for tensions to increase towards professional defence mechanisms such as withholding information, clinging to a position of power on the mentor’s part, etc. (Johnson,
2006). There is little doubt that such tensions and dilemmas will directly influence mentoring conversations.

### 2.4.2 The mentoring process as a cornerstone of mentoring

This section offers an overview of approaches and models which feature in literature. The models which are most relevant to this study feature in more depth and in applied form later on in this dissertation. Literature reveals mainly two broad approaches to mentoring, namely; a directive- and a non-directive approach. These approaches are discussed as it could have an influence on the mentoring conversation, as will become clear in the next section which defines these approaches.

A directive approach is: "authoritarian, informing, critical, instructive, corrective and advising." It involves skills such as “assessing, appraising, instructing, confirming, expressing one’s own opinion, offering strategies and giving feedback.” A non-directive approach would be “reflective, cooperative, guiding and elicitive” and would include skills such as “asking questions, guiding to develop alternatives, reacting empathetically, summarizing and listening actively” (Hennisen, et al., 2008, cited in Gerretzen, 2012:5).

Although this study acknowledges the central role of the mentor, Daloz (1986:30) cautions that “no human being can be a source, and for either mentor or protégé to believe as much is to lead the journey dangerously astray or abort it altogether.” In other words, the mentor can be the embodiment of wisdom to a certain extent but he/she cannot be the sole source of knowledge throughout the entire mentoring journey. Reflection offers a valuable source for the co-construction of knowledge. In contrast to traditional approaches to mentoring, such as the apprenticeship model,
which is based on imitation (Simpson, 1992 and Tibble, 1971, cited in Luneta, 2011), and approaches where the mentee “reproduce(s) the professional knowledge and competence of the mentor” (Gerretzen, 2012:5) or in approaches where the conversation remains incident-based without reference to theory and general ideas, a reflective approach puts the novice’s learning at the centre of the mentor conversation while opportunities for reflection are created so that professional knowledge and skills can be developed (Gerretzen, 2012). Luneta (2011) cites a reflective approach in which the presence of the supervisor is not paramount and in which individual reflection is indicated. Tillema (2005:83), however, cautions that although deliberate reflection has enormous potential, knowledge productivity requires the challenging of implicit beliefs and conceptions in open debate. He cites critics such as Egan (1997) in pointing out that individual reflection, therefore, has its limitations in that it is “implicit and local, and may even lead to idiosyncratic knowledge that is not open to scrutiny and exchange” Tillema (2005:83). Knowledge productivity hinges on the central features of “exchange and dialogue, together with reflection” (Tillema, 2005:83). This notion is echoed in Schuck et al. (2008:224) as they cite Bullough and Pinnegar (2001); Lighthall, (2004) in postulating that “for teacher educators, self-study of practices can be challenging or it can simply be a way of rationalising existing practices. For the process to enable learning, the place of the ‘other’ is critical.” So, whether the student’s knowledge is constructed or whether the lecturer’s knowledge of mentoring is constructed, the role and input of ‘the other’ in reflection is crucial.

Hudson (2010), cited in Sempowicz and Hudson (2011), reports on a five-factor model which pays attention to: a) personal attributes of the mentor which include a supportive relationship, attentive listening, being comfortable talking about classroom
management, etc. b) system requirements which include a thorough understanding of curricula, policies and aims c) pedagogical knowledge which includes content knowledge and age appropriate teaching strategies, d) modelling which refers to the mentor modelling sound practice and e) feedback which includes a review of lesson plans, observation and advice. This model covers crucial elements of mentoring comprehensively but from Sempowicz and Hudson’s (2011) model it seems that it still leaves the mentor in a position of authority with no evidence of a collaborative partnership despite the elements of attentive listening and a supportive relationship.

The clinical supervision model (Luneta, 2011) offers a collaborative solution and consists of five stages: a) a pre-observation conference in which mentor and mentee discuss teaching plans and identify which areas will be focussed on during observation; b) observation, during which the mentor collects data on positive achievements and concerns for later discussion; c) analysis and strategy, during which both the mentor and mentee enter into data-based reflection, guided by the focus areas which were identified during the first phase; d) a post-observation conference during which constructive feedback is given by the mentor while achievements and concerns are emphasized and discussed; and e) a post-conference analysis which serves as an analysis of the process in order to decide whether the objectives were achieved and to decide if the lesson should be re-taught. Reflection on personal attributes is also covered during this phase (Goldhammer, 1980; Cogan, 1973; Sergiovanni, 1976, cited in Luneta, 2011). This model has also been referred to as ‘partnership supervision’ (Schratz, 1993, cited in Luneta, 2011). The supervisor or mentor works as a partner with the learner. The learner decides on the focus. Interaction between the two parties is central (Daresh & Playko, 1995, cited in Luneta, 2011). Due to the time consuming nature thereof, it

26
has been synthesized to only three stages by Achison and Call (1997, cited in Luneta, 2011), namely; planning conference, observation and feedback conference. Luneta (1990, cited in Luneta (2011:41) has found that in Southern Africa trends in practice, the planning conference is also often left out which boils this model down to observation and feedback only in the form of returning assessment results with “brief, authoritative and supervisor-dominated discussion.” This, unfortunately, robs the model of the partnership characteristic and thus does not create space for collaborative knowledge construction. In its original form, this model could be conducive to a healthy balance between directive and non-directive inputs by the mentor. Although each form of mentoring or supervision has its benefits, the founders of the clinical supervision model regard it as an effective form of supervision because the emphasis is on mutual assistance and not on evaluation (Luneta, 2011). It is important to take note of the dominant supervisory element in the traditional mentoring models. Mentoring goes beyond supervision. Mentorship in teacher education entails mediation provided to a novice teacher or student teacher by an experienced professional in education in order to make the transition from a theoretical knowledge base to competency in practice. Intervention in the form of a collaborative inquiry creates a situational understanding of practice through scaffolding and exploratory learning (Orland-Barak & Tillema, 2006). Although this model reflects partnership, it displays a strong element of supervision which is not necessarily a negative element. The success or failure of such models seems to depend on how rigid the supervision is. The notion of supervision supposes an authoritative positioning of the mentor who supervises that certain rules of practice are followed. The approach which is discussed next seems to be based on a shared responsibility for improvement and thus softens the supervisory element.
Timperley (2001), reports on a mentor training programme with four stages which strongly displays the principle of ‘co-inquiry’ (Maynhard & Furlong, 1993, cited in Timperley, 2001). Firstly, there is the agenda setting stage in which mentors were advised to raise issues for discussion and to invite dialogue form the mentee. Mentors should check that the agenda is shared by the mentee and they should offer support and share responsibility for improvement. During the second stage of disclosing and evaluating of observations, mentors should summarize what they observed and they should disclose their evaluations. This is also the stage where the mentee has the opportunity to react. Any differences could be explored and ways could be designed to test them. Once both parties agree on the concerns, the next stage (3rd stage) involves diagnosing the difficulties which is followed by a stage of working out strategies for doing things differently. A closure stage is recommended where the mentor asks the student to summarize what he/she has learned as well as to check if they have any outstanding issues. The mentor conversations in this programme are guided by the following: to base dialogue on observed data; to share responsibility for identifying strengths and problems; discussing why particular practices are strengths and problems; establishing which assumptions underlie the mentee’s practice; to give advice with reasons and to enquire about the consequences of the advice.

Up to this point, mentoring has been discussed in broad terms with specific attention being given to the process of mentoring. As this study’s focus is specifically on the conversational dimension of the mentoring process, this dimension will now be theoretically framed while reference is made to prominent ideas in contemporary pedagogy such as the theoretical notions of Bakhtin (1895 - 1975) with specific
reference to his ideas around dialogic learning, and Vygotsky (1896 -1934) because of his notion that learning happens in a socio-cultural context.

2.5 A THEORETICAL FRAMEWORK FOR THE STUDY OF MENTORING CONVERSATIONS

2.5.1 Conversation as dialogic engagement in mentor interaction

As previously mentioned, mentoring interaction is complex and the dialogue itself pivots mainly around, what Hoover (2010:20) refers to as ‘nurturing’ and ‘nudging’, or what Daloz (1986:30) refers to as ‘encouragement’ and ‘challenge.’ The theory of Bakhtin (1895 – 1975) has particular relevance for this study. Bakhtin’s most prominent notions include: “the relation between the ‘I’ and the ‘other’, the centrality of the word in this relation (and) the process of becoming” (Rule, 2006:79). This study follows in Rule’s footsteps (2006:80), by also drawing on Bakhtin’s ideas in the mentor’s mediation of foundational knowledge and the student teacher’s practicum experiences as the two main components of “a pedagogy of access and dialogue.” In such mediation, a learner-centred approach is most appropriate because of the attention to the learner’s needs and the integration of academic knowledge and practical knowledge, i.e. the integration of theory and practice (Rule, 2006). Rule (2006) points out that a learner-centred approach places the student’s experiences on the foreground and it positions the student as a creator of knowledge and a meaning maker. This approach is supported by Tillema, Van der Westhuizen and Van der Merwe (2012), as they argue for collaborative learning of student teachers. The collaboration and co-construction of knowledge cannot be possible without both parties being in dialogue.
Knowing goes beyond knowledge as far as teaching expertise is concerned and it unfolds as knowledge in action which is progressively and collaboratively built (Bereiter, 2002; Lipponen, 2000; Sfard, 1998, cited in Tillema, Van der Westhuizen & Van der Merwe, 2012). Hence, teacher knowledge could be conceived of in practice and in discourse (Tillema, Van der Westhuizen & Van der Merwe, 2012). Higher teaching proficiency, which is the ultimate goal of the mentor conversation with student teachers, could thus be cultivated through structured mentor conversations (Tillema, 2011), as a form of discourse in which mentor and mentee both actively partake. The teaching proficiency, therefore, grows out of the mentee’s ‘ideological becoming’ which is “the process of selecting and assimilating the words of others” (Bakhtin, 1981:341, cited in Rule, 2006:81). This notion places collaboration at the centre of the mentoring process. Collaboration is not possible without participation. Informed participation in collaborative conversations around teaching practice is a pre-requisite for building new knowledge and knowing (Tillema, Van der Westhuizen & Van der Merwe, 2012). However, Edwards et al. (2002) notion of ‘informed participation’ appears to be developed over time in mentoring interactions as it is “through successive participation in a community of practice” that the mentee “becomes better informed to act in ways which are suited and accepted by that community” (cited in Orland-Barak & Tillema, 2006:9). When one talks about informed participation, which reminds one of Bakhtin’s notion of dialogism which involves an interchange of the ideas of “two equally responsive subjects” (Mkhize, 2004:5-7), it is necessary to consider participants’ knowledge. For subjects, such as mentor and mentee, to be equally responsive, each must bring a voice to the table. The notion of ‘voice’ is what Bakhtin refers to as the expressive, evaluative attitude behind a participant’s utterances (Bakhtin, 1986, cited in Mkhize, 2004). It implies
the participant’s perspective, ontological stance and belief system (Wertsch, 1990, cited in Mkhize, 2004) and it is a condition for dialogue to exist, i.e. “an alternation of subjective points of view between partners” (Vasil’eva, 1985, cited in Mkhize, 2004:5-15). This process of developing one’s own ‘voice’ is what Bakhtin’s ‘ideological becoming’ refers to and is what will eventually carry a student teacher in his/her own teaching practice.

This underlines, once again, that individual reflection will not bring about the same growth or the finding of a personal-professional ‘voice’ as a collaborative reflection will do towards knowledge building. Teachers whose reflections are limited to individual retrospective accounts which merely rationalize their past experiences in action, is only ‘half the story’ (Kane, Sandretto & Heath, 2002, cited in Tillema, Van der Westhuizen & Van der Merwe, 2012:3). Tillema, Van der Westhuizen and Van der Merwe, (2012) view the ‘other half of the story’ to be the situational understanding which is construed by professional communication. This is why the dialogic engagement in the form of a collaborative mentor conversation is crucial in professional development of teachers. When such conversations are structured so that it is “practice solution oriented” (Tillema, Van der Westhuizen & Van der Merwe, 2012:) they are conducive to teaching proficiency in collaboration between two carriers of various professional ‘voices’, or a variation of a similar professional voice. It is in the participation and discourse between colleagues that knowledge acquires specific meaning to become knowing (Tillema, Van der Westhuizen & Van der Merwe, 2012).

It is vital to keep in mind as well, that conversation is not a one dimensional process. Conversations are influenced by experience (Baker et al., 2002). It is affected by the
experiential context in which it occurs (Baker et al., 2002). In this study, the student teacher’s experiences serve as a basis for reflection and discussion.

2.5.2 Dialogic engagement, the levels of conversational engagement and its implications for conversation analysis in this study

“The discursive process follows a linear time progression from pre-course, discourse to post-course. Pre-course is a manifestation of previous conversations, which sets up the assumptive frame of the discourse. In this sense, pre-course serves as ‘fore-structure’ of the conversation (Hans, 1989), or ‘prejudgments (Gadamer, 1989), that individuals bring into the conversation. Simply stated, in anticipation of joining a particular circle of conversation, individuals have assumptions and expectations about the experience they will embark on. These assumptions and expectations will ultimately influence and shape the discourse they are about to join and establish their positions in the conversation.” (Baker et al., 2002:13).

Within this linear progression, the mentor conversation per se, is thus part of a sequence or ‘chain’ which should be viewed in context. In this study, practical experience, prior knowledge and earlier professional conversations, form the first link of the conversational chain and is what this researcher perceives to be the ‘pre-course’ to which Baker et al. (2002), refer. The mentor conversation then follows as ‘discourse’ (Baker et al., 2002), in response thereto as the second link. It could be expected to be followed by a certain response in future practice and in further discourse which would be the third link in the chain and what can be perceived to be what Baker et al. (2002), refer to as ‘post-course.’ Due to the embeddedness of knowledge production (Tillema, Van der Westhuizen & Van der Merwe, 2012), the notions of ‘pre-course’, ‘discourse’ and ‘post-course’ are offered as backgrounds for
contextual awareness in macro-context in this study, as it has particular relevance for data analysis and interpretation.

Bakhtin (cited in Rule, 2006: 93), developed the notion of ‘speech genres’ to describe “relatively stable types of … utterances” which are characterized by certain common features. He distinguished between primary (simple) and secondary (complex) genres, which could be spoken or written. Complex genres are constituted by simple genres, for example, in the context of a mentoring conversation, the mentoring conversation is a ‘learning event’ in spoken form and is a secondary (complex) genre. It comprises of multiple, primary (simple) genres such as reflection, intervention in the form of prescription or scaffolding, various topics, introduction, conclusion, etc.

The above two notions, namely; ‘linear progression’ and ‘speech genres’ bring to the foreground that there are various components to be looked at in interactive learning and they suggest that these components are intertwined and should thus not be viewed in isolation.

Moreover, this study acknowledges that the mentor conversation as a complex genre is one component in a macro context of linear progression. It also acknowledges the primary (simple) genres within a learning conversation which could be complete speaking turns, topics within a conversation, moments of reflection, single utterances, etc. It is acknowledged that all these components are ‘context-sensitive’ and ‘context-dependent’ (Brown et al., 1989:32).
The acknowledgement of macro- and micro contexts of conversations has certain implications for this study. It provides the necessary awareness of context in determining units of analysis and it guides interpretation of data. Mkhize’s (2004) view on the theories of Vygotsky and Bakhtin serves as further clarification of which level of analysis would be appropriate for this study. Mkhize (2004), views Vygotsky’s (1896 - 1934) and Bakhtin’s (1895 - 1975) theories in relation to one another. Mkhize (2004:5-6), postulates that Bakhtin’s theory goes beyond Vygotsky’s. Vygotsky’s theory accounts for “what happens at the boundary or zone between the individual and his or her social and cultural context” (Mkhize, 2004:5-6). It is here where Vygotsky’s notion, that one first learns on a social plane and then on an individual plane (Wertsch, 2008; Offord 2005), has relevance for this study. I view
this as having relevance on the micro level of analysis, i.e. the structural analysis of the mentor conversation with specific reference to mentor utterances. It is in this conversational engagement on proposition level that one can see room for Vygotsky’s notions of mediation and scaffolding which are also evident in Tillema’s (2011) model of teacher learning through conversational interaction. However, as Mkhize (2004) points out, Vygotsky cannot account for the power that stems from social positioning. I am in agreement with Mkhize (2004:5-7) on the argument that Vygotskyan’s theory can benefit from Bakhtin’s ideas which are concerned with much “broader social and cultural factors on individual development.”

With the above as background, the researcher in this study is faced with the question of which level of analysis would be appropriate for a pragmatic approach to explore the relation between the structural elements of a mentor conversation and the learning outcomes for the student teacher. It necessitates a decision on the units of study. Despite the complexity and inter-wovenness of Bakhtin’s and Vygotsky’s theoretical notions in a mentoring relationship and structure of a mentoring conversation, the research questions should be answered in a theoretically viable, yet pragmatic way. If the scope of the study is too wide, i.e. on a macro-level, in an attempt to do justice to all the relevant theoretical notions of discourse and conversation analysis, the study will merely scratch the surface. An attempt to relate an entire conversation to learning outcomes of student teachers, thereby, engaging in an analysis on a macro-level, could possibly result in the sacrifice of an in-depth understanding of the relation between any one of the dimensions of the conversation and learning benefits of the student teacher. This study will thus focus only on the micro-context of propositional chains, with specific interest in the mentor’s propositions and its relation to learning outcomes.
This study attempts an in-depth investigation of the various types of mentor utterances, as proposed by Tillema’s (2011) model and its relation to learning outcomes for the student teacher. The question could arise at this point: ‘Why is the focus on the mentor’s utterances and not on the mentees?’ The reason is that the mentor’s contribution to the conversation is determinative of the course thereof (Gerretzen, 2012) because the mentor usually determines the format and topics as well as when the conversation begins and ends (Strong & Baron, 2004, cited in Gerretzen, 2012). Furthermore, because of the vital role of the mentor in the conversation, this study’s focus remains on the utterances of the mentor and how these utterances mediate theory into practice in order to be conducive to learning. It seems valuable to study these utterances according to Tillema’s (2011) model of mentoring conversations which displays Vygotsky’s notions of mediation and scaffolding. It validates an in-depth study on a micro-level in which the units of study will be mentor propositions, i.e. the ‘simple genres’ created by the mentor. If one adheres strictly to Bakhtin’s notion that utterances cannot be viewed in isolation but that it is to be viewed in a wider context (Bakhtin, 1986; Holquist, 1983; Shotter, 1993a, cited in Mkhize, 2004), then it might seem inadequate to view a mentor’s utterances on the level of single propositions without regard for the chain-like nature thereof. Although this study acknowledges the Bakhtinian notion of studying whole utterance chains (as in Figure 2), it specifically explores the effect and the power of the presence of certain types of utterances in the conversation on learning outcomes. The pedagogical functionality of the proposition types, according to Tillema’s (2011) model, is under scrutiny. This study’s inquiry into the relation between certain types of propositions of the mentor and the learning outcomes of the student teacher is still in line with the Bakhtinian idea that “learning is both social and personal, individual...
and collective” (Rule, 2006: 80). The broader context of utterances are acknowledged but not explored in this study. This study thus asks questions such as ‘What effect does the presence of certain propositions have on the learning outcomes?’ For this reason and purpose, it seems adequate to study the presence and weight of propositions as ‘simple genres’ in the conversation, namely; explorative/descriptive propositions, prescriptive propositions, constructive/scaffolding propositions (Tillema, 2011). A judgement is, however, made on the quality of the learning as a result of the mentor’s propositions, based on the conversational chains in the construction of conceptual artefacts which will be discussed later in more detail.

The above theoretical background serves as a basis for the research methodology of this study which is found in Chapter 3 of this dissertation.

For the sake of understanding the structural dimensions of mentoring conversations in the context of the complexity of such conversations, the next section will explore relevant dimensions of mentor conversations.

2.5.3 Dimensions of mentor conversations

a) Spatial dimensions of mentoring conversations

Baker et al. (2002:20) refer to ‘conversational learning space’ as they postulate that the making of space for conversation can occur in many of its own dimensions. In mentoring interaction, the ‘space’ making which Baker refers to, translates as follows: Making ‘physical space’ could be when the mentor gets up from his/her desk to join the mentee around a table, for instance. Making ‘temporal space’ would be when time is set aside to meet with the mentee. This could be time which is set aside by
appointment or by setting time aside for monthly or weekly sessions. Making ‘emotional space’ requires receptive listening. Of course, this ‘space making’ is to be done by both parties in mentoring interaction. Baker (2001:20) cautions that “it is so easy to get focused on the structure of conversation, on what is said and how speech flows from one participant to another that one fails to notice the bounded space that holds the conversation and allows it to occur.” The making of ‘conversational learning space’ is thus an important foundation which should be treasured in all its dimensions in order to ‘hold the conversation together.’ Here, in my opinion, allowing intrusion into any of the spatial dimensions, whether it is physical, emotional or a lack of time could derail or distort the dynamics of the conversation and ultimately jeopardize the learning. Once adequate and appropriate space is created, the structure and flow of the conversation can direct the conversation towards the desired learning outcomes.

The mentoring conversation itself provides an ‘interactional developmental zone’ in which knowledge is built by turn-taking, responding and exchanging of thoughts in which conceptualizations are shaped and adjusted (Mercer, 2000; Pike, 2010; Addison & Stone, 1993; Edwards, 1993; Lindfors, 1999; Rodgers & Raider-Roth, 2006; Magano, Mostert & Van der Westhuizen, 2009, cited in Tillema, Van der Westhuizen & Van der Merwe, 2012).

b) Structural dimensions of mentoring conversations

If collaborative mentoring conversations are deliberately and carefully structured, it can be more productive than informal encounters (Tillema, van der Westhuizen & Van der Merwe, 2012). In order for mentor conversations to be collaborative in the construction of knowledge, it requires input from both the mentor and mentee. This
could be promoted via creating a structure which invites the mentee to participate. The value of such collaborative conversations is mentioned by Tillema and Van der Westhuizen (2006), as they postulate in their study on knowledge construction in collaborative enquiry among teachers that this form of collaboration could result in a shift in teaching practice as well as the co-construction of knowledge. As in collaborative communities, collaborative conversation is expected to serve as a plane for discussion, studying and the germination of new work strategies for teaching practice (Nonaka & Takeuchi, 1994; Huberman, 1995; Bereiter, 2002, cited in Tillema & Van der Westhuizen, 2006).

Tillema (2011) offers a structural model for mentor conversations on which this study is based. As mentioned in Chapter 1, Tillema (2011) uses the metaphor of climbing a mountain in an attempt to describe what happens in a productive mentor conversation. He refers to the journey towards the ultimate goal of higher teaching proficiency as ‘climbing mount improbable.’

Tillema’s (2011) model of climbing a mountain artfully accommodates various elements of other models. He uses the “climbing mount improbable” metaphor to explain the process of mentoring through interaction and it is based on the book of Richard Dawkins (1996) with the same title. Dawkins (1996) explains evolution as a gradual process which is made up of small steps. Tillema (2011) similarly portrays mentoring as a process of gradual evolving for the mentee. The gradual ascending up the ‘mountain’ towards the seemingly complex goal of higher teaching proficiency can be achieved via many gradual, supportive steps (Tillema & Van der Westhuizen, 2012), and strongly reminds one of the Vygotskyan notion of scaffolding via mediation within the zone of proximal development (ZPD). Tillema’s conversational model for mentoring conversations postulates the provision of the gradual, supportive
steps which can be facilitated via conversational moves which place the mentor’s utterances in the following categories; a) descriptive or explorative propositions, which do not bring the mentee any closer to teaching proficiency but merely explores the mentee’s current practice. Tillema (2011) aptly refers to this component as ‘low-road’ propositions. He also refers to; b) prescriptive utterances, which seem to be rather directive and c) constructive- or scaffolding utterances which are data based and wherein the collaborative construction of knowledge is accommodated. Tillema (2011) refers to prescriptive- and constructive propositions as ‘high road’ propositions because it is these utterances which gradually guide the mentee closer to summiting ‘mount improbable.’ His model uses the elements of Erickson’s model of deliberate practice which postulates that the mentee starts off with a desired goal in mind and then creates a representation of how to get to the goal. This is then followed by monitoring the performance after which a new goal is set. Instead of the reiterative process of Ericksson’s model, Tillema’s model takes the same elements but views it as mentoring- or conversational- moves towards a desired goal (Gerretzen, 2012). Figure 3 offers a simplified depiction of Tillema’s model to highlight the possible conversational moves, with the arrows representing the hypothetical expectancy of this study, i.e that high road propositions will lead the mentee closer to the goal via knowledge construction.
Gerretzen (2012) cites Nespor (1987) as she explains that it could be counter-productive to overwhelm mentees with a learning curve that is too steep. She points out that guiding the mentee along a path of gradual growth would always ensure a connection between the mentee’s knowledge in action and theory. This notion is in line with Novak’s (1989) idea that previous knowledge plays an important role in meaningful learning (cited in Hay 2008:297-298).

Tillema’s model places emphasis on the notion that in order to reach the desired goal, ‘high road’ propositions are essential (Gerretzen, 2012). Although this model makes sense on a theoretical level, some indications are found in literature that mentors might shy away from high road propositions. Timperley (2001) found that mentors are often reluctant to engage in criticism because of a fear of damaging the relationship with the student. In Tillema’s model, criticism could occur in the high
road propositions. Mentors in Timperley’s study found, after a training session and a subsequent mentoring opportunity in which they could try out the guidelines, that, in fact, when they did voice their concerns about the student’s practice and accompany it with observed data, it had a positive rather than a negative effect on students. One mentor in Timperley’s study reported: “The damaging relationship consequences that I feared had not resulted, and in fact, the student teacher was happy to accept suggestions and criticisms as she saw this (as) an opportunity to grow as a teacher. Moreover, because the student teacher felt comfortable in the relationship, this meant that she was willing to take ideas and practical strategies on board, which resulted in increased learning opportunities for her. She said that she did not feel threatened by the data or the consequent discussion” (Timperley, 2001:119). This citation displays the complex inter-wovenness of various dimensions such as criticism and relationship in a mentoring conversation. Various forms of intervention may differ depending on the aims, methods and the group’s, or in this case, participants’ characteristics, and although different forms of intervention may yield different effects, the following ingredients seem to remain crucial in a productive mentoring conversation: “a) reflection or explication of beliefs, b) study or enquiry (collaborative or jointly) of a common concern, c) sharing or bringing together the results in order to scrutinize existing knowledge and gain new understandings” (Tillema & van der Westhuizen, 2006, cited in Orland-Barak & Tillema, 2006:8). With this as a basis, Tillema’s (2011) structural model for mentoring conversations makes provision for all three of these crucial ingredients (Gerretzen, 2012; Tillema, 2011). This model provides the opportunity for the scaffolding and prescription which is necessary to guide the mentee gradually towards teaching proficiency by incorporating three types of propositions, namely, descriptive
(explorative), prescriptive as well as constructive (scaffolding) mentor propositions. Descriptive (explorative) propositions explore the mentee’s teaching practice and current level of teaching proficiency. It provides the base line which the conversation is built on. It is within this dimension of the conversation where, in my opinion, the mentor could find the necessary ‘critical entry points’ (Hoover, 2010:20) into the practice of the mentee. The interaction could remain on this level which Tillema (2011) refers to as “low road.” However, Tillema’s (2011) structural model suggests that, for knowledge construction, the mentor gradually guides the mentee onto higher levels of knowing, (‘high road’) by deliberately using prescriptive and constructive propositions to guide the mentee. The ‘high road’ propositions challenges the mentee towards change. With the reassurance that Timperley’s study offers around criticism based on observed data and a healthy relationship, these ‘high road’ propositions become truly valuable. Prescriptive propositions instruct the mentee directly about what and how to act in a situation in practice. According to this researcher’s interpretation, this is where the Bakhtinian notion of ‘authoritative discourse’ which is a prior and given set of dogma (cited in Rule, 2006:87) is drawn from by the mentor. This is also where the traditional mentoring notion of the mentor as ‘wisdom personified’ plays out. It is in essence, knowledge transfer from mentor to mentee. Since various forms of intervention may be relevant, depending on the aims, methods and the group’s, or in this case, participants’ characteristics, as Orland-Barak and Tillema (2006) points out, this traditional form of intervention is not necessarily a negative element in a mentoring conversation. Finally, constructive propositions provide the opportunity for scaffolding. It is during this dynamic process that the mentee is invited to collaboratively reflect in order to grow towards higher teaching proficiency. In my view, it is in the gap which is to be bridged between
current practice and higher teaching proficiency (Tillema, 2011) where Vygotsky’s zone of proximal development (Kozulin, 2003; Offord, 2005; Wertsch, 2008) is relevant. One can also relate Tillema’s ‘constructive utterances’ of the mentor to Vygotsky’s ideas where, in my view, the constructive propositions mediate the transition from ‘other-regulation’ to ‘self-regulation’ (Wertsch, 2008) as it scaffolds the mentee towards higher teaching proficiency. Self regulation, in this context, translates to the point in the evolving relationship between the mentor and mentee when separation becomes inevitable. This is when the mentee gains his/her own momentum and vision (Daloz, 1986).

The value of Tillema’s model lies in the fact that it reflects root theorists in modern pedagogy such as Vygotsky and Bakhtin. It also displays an integrative approach which acknowledges the necessity to sometimes transfer knowledge in the form of prescriptive propositions in an authoritative way, to find appropriate entry points into the mentee’s practice via data-based descriptions of practice and to collaboratively construct knowledge by addressing concerns while working out strategies for improved practice.

The all important element of collaboration in the construction of knowledge will now be explored in more detail.

c) Collaborative knowledge construction as a conversational dimension and as a goal of mentor-mentee dialogue

Collaboration involves a relationship of ‘receptivity to the other’ in which careful attention is paid to the other’s voice (Supplement to the International Encyclopaedia of Research in Education, 1994, cited in Tillema & Van der Westhuizen, 2006: 54). In the same vein, Timperley (2001) postulates that mutual respect is crucial as a
basis for a collaborative conversation and that the mentor should be respected as someone who carries teaching expertise while the student should be respected as someone who is learning how to develop effective teaching strategies. Valid information should be shared openly as a basis for the conversation (Timperley, 2001). For co-construction of knowledge, it is vital that participants can challenge understandings in a non-threatening way (Orland-Barak & Tillema, 2006). This requires open relations, tolerance of different identities, mutual access to resources and equality in exchange (Zellermayer & Tabak, (2006); Somekh, (2006), cited in Orland-Barak & Tillema, 2006). Deliberate reflection, self-regulation as a motivational force and commitment as willingness to participate are building blocks for the co-creation of knowledge (Tillema, 2005). Baldwin and Austin, (1995), cited by Tillema and Van der Westhuizen (2006), identified an interplay of six dynamics which are crucial for collaboration: 1) The degree of joint-ness where roles are distinctive, yet responsibility is shared; 2) The definition of roles and responsibilities; 3) How flexible or rigid the roles are; 4) The similarity of standards and expectations which relates to uniformity versus difference in perspectives; 5) The proximity of partners which refers to the level of involvement; 6) The depth of the collaborative relationship which refers to whether the collaborative partners have a strictly work relationship or whether they are personally acquainted as well.

Different life experiences and different professional biographies, as sources of potentially destructive tensions, could lead to major differences which will not result in knowledge production (Somekh, 2006). Tillema and Van der Westhuizen’s (2006: 65) study lead to the conclusion that collaborative settings do not guarantee knowledge production, due to issues such as “mismatched beliefs, lack of individual
commitment, absence of conceptual change” etc. However, it does help to “put knowledge to the test” and can be a driving force for learning.

The main goal of collaborative inquiry is to co-construct knowledge, i.e. to make implicit knowledge explicit (Feiman-Nemser & Beardsley, 1997, cited in Orland-Barak & Tillema, 2006) in order to evolve form “knowledge to knowing.” (Nonaka & Takeuchi, 1994; Hofer & Pintrich, 2002; Mason, 2003, cited in Orland-Barak & Tillema, 2006), offer a few reasons why collaborative inquiry has been relevant in teacher research: knowledge generation is linked to the workplace, practical ideas and solutions are exchanged, teacher participation in inquiry is enhanced and because of the dynamics of knowing in teaching. Researching the partnership features of collaborative inquiry further emancipates teachers, or mentees in this study from, as Orland-Barak and Tillema (2006:5) put it: “The mere application of externally generated knowledge to their classrooms.”

No collaboration would be possible without dialogue. Dialogue is the vessel through which collaboration is generated. “The goal of dialogue is creative understanding.” Rule (2006:84). The creativeness is in the notion that understanding is created and not just transmitted and it can involve conflict which can result in “mutual change and enrichment” (Bakhtin, 1986:142, cited in Rule, 2006:84). Rule explains Bakhtin’s notion of co-creating understanding, by highlighting that it requires differences and ‘outsideness.’ This ‘outsideness’ could have various meanings in the mentor-mentee relationship. It could be applicable to the socio-cultural outsideness between mentor and mentee, such as language differences (Rule, 2006). The student can bring his/her outsideness of what was experienced first hand in teaching practicum to the theory behind the dialogue. On Bakhtinian grounds, the ‘outsideness’ should be embraced as an important part of the dialogue (Rule, 2006:84) in a mentor
conversation. The rich theoretical knowledge base of the mentor, as an outsideness for the mentee should be ‘presented as a resource rather than a barrier’ (Rule, 2006:86). Rule (2006), does not view the ideal as merely accepting differences to move on but rather as the creating of shared meaning to which both parties, in this case mentor and mentee, contributes.

The notion of the value of the ‘outsideness’ as a catalyst for negotiated shared meaning, brings one inevitably to Bakhtin’s notion of ‘internally persuasive discourse’ which refers to the process of ‘ideological becoming’ and involves assimilating one’s own ‘voice’ out of the words of others, as mentioned earlier (cited in Rule, 2006); the very nature of this notion points to the co-creation of ‘knowledge and knowing’ through conversation in the mentor-mentee interaction (Tillema, van der Westhuizen & van der Merwe, 2012). It is in this notion that Tillema’s (2011) model, once again, has value in exploring constructive utterances of the mentor which opens up the dialogue for further exploration and collaboration.

Assimilating one’s own voice via collaboration, however, does not rule out a valid place for the Bakhtinian notion of ‘authoritative discourse’ which is a prior and given set of dogma (cited in Rule, 2006). Teacher training involves an academic environment with a certain discourse which is founded by certain codes, rules and concepts (Manning & Cullum-Swan, 1998, cited in Van der Westhuizen & Van der Merwe, 2010). I view authoritative discourse in pedagogy as the Bakhtinian ‘super-addressee’ in a mentor-mentee conversation because the mentor and mentee are indirectly but actively ‘in conversation’ with pedagogically founded codes, rules and concepts of contemporary practice. In sound pedagogy, these ground rules are not negotiable and need to be adhered to and often transmitted in a prescriptive way to the student teacher who enters the world of professional teaching.
Stunkel (1999:424) highlights the value of authoritative discourse by stating that *the goal of authoritative instruction is to bring students to a point of independence and mastery from which they can proceed on their own.* Authoritative discourse should thus not be seen as an outdated, traditional approach which has no place in contemporary pedagogy. Used as a knowledge base and as a vantage point, it could still be of value. This stance is reflected in Tillema’s (2001) notion of prescriptive mentor propositions as part of ‘high road’ mentoring. Stunkel’s (1999: 424-425) stance on collaboration relates to the notion of ‘informed participation’ (Edwards et al., 2002, cited in Orland-Barak & Tillema, 2006) when he postulates that “collaboration implies there is something, rather than just someone, with which to collaborate; including accurate, relevant knowledge, a critical mindset, preliminary study, and personal discipline. Previously uninstructed students are not likely to have those assets in usable abundance.” True collaboration in knowledge construction is, therefore, only possible when mentees have some level of basic knowledge and experience, such as after initial instruction and after teaching practicum which would shape their initial professional ‘voice’. Where that lacks, prescriptive mentor intervention is then justified.

When the mentee is ready for collaboration in knowledge construction, the value of co-construction of knowledge via dialogue strengthens the mentees’ involvement in the process, it positions him/her in such a way that meaning can be negotiated and it enables him/her to make informed choices (Orland-Barak & Tillema, 2006). However, the study of Tillema and van der Westhuizen (2006), cited in Orland-Barak and Tillema (2006), cautions, as previously pointed out, that knowledge production is not always guaranteed in collaborative settings and that at least three conditions are needed for knowledge production: a) a shared problem understanding, b) the
willingness to change one’s perspectives, c) a commitment to participation. These conditions are used as indicative of knowledge productivity in Gerretzen’s (2012) study which will be discussed in the next section.

2.6 THE OUTCOME OF PRODUCTIVE MENTORING CONVERSATIONS

The purpose of a mentoring conversation is to be a knowledge productive event which facilitates the professional growth of the mentee. Tillema and Van der Westhuizen (2006) refer to Bereiter (2002) as they define knowledge productivity as a process in which ‘conceptual artefacts’ are created for professional practice.

Tillema and Van der Westhuizen (2006:53), discuss three building blocks of knowledge production in collaborative settings:

a) Conceptual exchange through reflective dialogue; the value of reflection for teaching practice is that the student or novice’s tacit knowledge can be accessed and contested in order to enhance practice. In this study on mentoring conversations, mentee’s reflection reports are used as a basis for the subsequent reflective conversation.

b) Self-regulation and motivation to learn; self-regulation via meta-cognitive monitoring and appropriate learning strategies play an essential role in directing and controlling one’s learning in order to arrive at one’s goals. New knowledge which is produced, fuels motivation in attaining one’s goals. It seems that a shared responsibility by mentor and mentee is necessary.

c) Participation and commitment to collaborate: the commitment to collaborate, i.e. the conceptual exchange and self-regulation is embedded in the interplay of the dynamics as identified by Baldwin and Austin, (1995), cited by Tillema and Van der Westhuizen (2006), the tensions and dilemmas which the work of Katzenbach and
Smith (1993) points out, cited by Tillema and Van der Westhuizen (2006:53), and the relationship between mentor and mentee as a whole.

Tillema and Van der Westhuizen (2006) used the study team approach as an intervention to reach knowledge productivity. Similarly, this study will look at the mentor-mentee team and the mentor conversation between the two parties as a possible form of intervention to reach knowledge productivity. This mentor-mentee team in teacher education could display the same elements which are found in a study team as set out by Tillema and Van der Westhuizen (2006), such as that they share a culture of learning, they arrive at their own self-determined issues which could be viewed from different perspectives, they could share existing knowledge and they work together to a shared goal of gathering new knowledge. However, in the mentor-mentee team, where the mentor is a lecturer and the mentee is a student, there is a distinct variance in the level of expertise. As the mentor fulfills the role of mediator, as the more experienced one in the Vygotskian zone of proximal development (ZPD) via scaffolding, there are very clear boundaries between roles and responsibilities of mentors and mentees. Although knowledge is created and situated solutions are found for problems, the mentor fulfills a leadership role and has ‘knowledge authority’ (Tillema & Van der Westhuizen, 2006) over the mentee. Thus, although knowledge production could be an outcome of a lecturer-student team’s interaction, the co-operative character might be more limited than in the case of a study team due to the variance in levels of expertise.

This study is interested in the opportunities for knowledge construction, created by the mentor via certain utterances due to his/her position of knowledge authority within the co-operative approach to knowledge construction.
2.7 A THEORETICAL EXPECTATION OF HOW STRUCTURAL DIMENSIONS OF THE MENTORING CONVERSATION COULD RELATE TO KNOWLEDGE PRODUCTION AS A LEARNING OUTCOME IN THIS STUDY

If Vygotsky’s theory of socio-cultural learning, with specific reference to scaffolding and mediation is taken into account, then Tillema’s model of taking the ‘high road’ approach in mentor conversations in order to ‘climb mount improbable’ should yield favourable learning outcomes. This has specific relevance to Tillema’s notion of constructive mentor propositions which provide fertile ground for collaborative knowledge construction and knowledge productive learning in the form of the production of conceptual artefacts such as plans, approaches, schemes, outlines and recipes for better practice, as they are outcomes of deliberate thinking which is argued and shared between professionals (Tillema, 2005).

Based on the literature survey, it is expected that mentor conversations within which the mentor leads the conversation onto a ‘higher road’ with prescriptive and constructive- or scaffolding propositions, will be related to evidence of, not only collaboratively constructed conceptual artefacts, but also evidence of deep, meaningful learning which is of potential significance for the mentee’s future practice.

2.8 CONCLUSION

The theoretical perspectives as summarized in this chapter form the theoretical framework against which this study is to be understood in the chapters to follow. It not only contextualizes mentor conversations as a vessel for the intricate interplay between relationship and process in mentoring, but it also considers dialogic learning as a focal point in the interplay and, thus, of this study.
By highlighting the centrality of dialogue in the mentoring process, significant weight is given to the value of studying mentor conversations in order to contribute to effective mentoring of student teachers. The influential nature of mentor utterances as part of dialogic engagement in learning, positions it as the specific focus of this study.

This chapter further pointed out that, since the outcome of mentoring is questionable when it is based on intuition and the mentor’s own experiences in practice without a contemporary theoretical base, it is crucial to select mentors carefully and to prepare them for the role by designing training programmes which are research based. The research in this study is aimed at providing theoretically sound and research based findings for the development of training programmes which will assist mentors.

The theory around dialogic engagement and the micro- and macro contexts of and within conversations has relevance for the design of the study, with particular reference to units of analysis.

With this chapter as theoretical background, the next chapter describes the research methodology of this study.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology followed in this study. First, the reader is reminded of the research questions which steer the study. Since this study forms part of a larger mentor conversation research project, as referred to in Chapter 1, and since it relates to the study of Gerretzen, some methodological aspects were already in place for this study, such as using the structural model for mentoring conversations of Tillema (2011) and the coding of samples of mentoring conversations. This chapter will describe this overlap in methodology between the studies but it will also describe and explain a parting of methodological ways in the analysis of data, regarding the measurement of knowledge productivity as an outcome of the mentoring conversation. In this regard, the use of evidence-based data analysis is considered as an alternative to perception-based analysis.

In order to facilitate an understanding of the research design, this chapter first offers an overview of the design which includes a diagrammatic depiction thereof, before it describes the design in detail in which the data collection process and the subsequent data analysis is discussed as seven steps. Three levels of data analysis are also discussed. The description of each step, where applicable, contains a detailed description of the instrument/s used in that step. The issue of reliability in data collection and processing is addressed in the description of each step.
3.2 RESEARCH QUESTIONS

As pointed out in Chapter 1, this study is guided by the following core question: In which way can mentoring conversations be structured to optimize conversational learning outcomes for student teachers? The following sub-questions will attempt to facilitate an answer to the core question: a) How does the structure of mentor conversations relate to the learning outcomes of student teachers? b) Drawing from Tillema’s (2011) structural model, based on the model of deliberate practice of Ericsson (2002), what is the ideal in using prescriptive, scaffolding and exploring propositions?

3.3 METHODOLOGICAL OPTIONS IN THE RESEARCH DESIGN

The research questions, as set out above, pivot around two components, namely; the structure of the conversation on the one hand and the measurement of learning outcomes of student teachers on the other hand. The structural model of Tillema (2011) already provides the platform for the part of the methodology which will be used in the first component. The second component, the measurement of learning outcomes, however, poses a problem. How can it be known that learning has taken place during the conversation? This study is thus confronted with a vital methodological consideration: How should student learning be measured in order to indicate whether there is a relation between the structure of a mentoring conversation and knowledge production as an outcome? Since knowledge production seems to be indicative of conversational learning (Tillema & Van der Westhuizen, 2006), how could the researcher tap into the knowledge which is produced as a goal of the conversation?
This dilemma made it necessary for this study to consider two options which will now be discussed.

3.3.1 The option of perception based measurement – The knowledge productive learning (KPL) instrument

The broader mentor research project at the University of Johannesburg and the University of Leiden included the completion of a knowledge productive learning (KPL) questionnaire in the data collection phase. This instrument is a self-assessment measure which indicates the student’s perceived knowledge productivity. It is completed after the mentor conversation. It consists of three categories: a) Problem representation, which consists of seven items and is aimed at measuring whether the problems discussed in the mentoring conversation were authentic and real; b) Perspective taking, in which the seven items in the category explore whether the mentee’s perspectives changed due to the contributions of the mentor and c) Commitment, a category consisting of six items, exploring how committed the mentee was to participate in the conversation. The questions, in the University of Johannesburg study, had to be answered with either ‘yes’ or ‘no’. The more ‘yes’ answers, the more perceived knowledge production is indicated and the opposite applies to ‘no’ answers. Without exception, all participants in the Johannesburg study assigned relatively high proportions of ‘yes’ answers to this instrument.

Gerretzen (2012), who used the same instrument at Leiden University, reports that the items were answered on a five point Likert scale where the scores ranged from ‘not true at all’ to ‘very true.’ Gerretzen (2012:32) reports that the Leiden study too, yielded a relatively high mean score of 4.16. Gerretzen (2012:32) considers several reasons for the high scores on the KPL instrument: That respondents could be
influenced by the fact that they know they are being studied and that they wanted to give a positive impression of their knowledge productivity; that sampling bias could be the reason for the sample not being representative of the population of student teachers in that the sample’s high satisfaction with the mentors (which was also measured) could be higher than that of the average student teacher. In my opinion, based on being familiar with the conversations which took place at the University of Johannesburg, another possible cause could be that because the KPL instrument is a perception based instrument, it could yield favourable responses when the mentee experienced the interview as pleasant, regardless of how much knowledge was actually constructed. Here, this study will focus on a concern for the instrument itself. My problem with the questionnaire is that some of the statements in the questionnaire are probably more indicative of pre-requisites for knowledge production than they are indicative of knowledge production itself. The following statements in the questionnaire have reference: “I found the problems being discussed authentic and real”; “I felt that we dealt with problems that really mattered”; “I was cognizant and aware of the issues being discussed”; “I had the opportunity to speak out my ideas”; “I experience great satisfaction partaking in the discussion”; “I had interactive communication of a high level”; “I think it is important to be understood in the discussion.”

It could also be that students value the individual attention which is given in the mentoring conversation and thus perceive it as learning, while the actual learning could be questionable. It is also possible that mentees misunderstood the focus of the questionnaire by not reading the instructions carefully and by starting to answer the questions straight away. They could possibly score the items according to their perceived learning that happened during their teaching practicum (because the
questionnaire was completed after the interview which focused on learning during practicum), instead of scoring the questions as pertaining to the mentoring conversation itself.

Due to the above concerns, it became necessary to consider a different approach in measuring knowledge productivity. Using perception as a way of tapping into knowledge production seems too vulnerable to other variables and influences. For this reason, an evidence based approach is considered for this study, as will now be discussed.

3.3.2 Evidence based analysis – an alternative to perception based analysis of knowledge productivity

The consideration of an alternative approach in this study, as an attempt to move away from the perception based KPL instrument to a more evidence-based approach to data analysis, echoes what Entwistle (2009:2) reports about his interviews with students. Students in Entwistle’s research experienced their arrival at personal understanding as ‘a feeling of satisfaction’ which varied in expression from an ‘aha’ experience, when confusion was replaced with insight, to less dramatic feelings which stemmed from noticing actual ‘meaning and significance’ in their notes. The previous section in this dissertation already pointed out how the feeling of satisfaction, as captured by the KPL instrument, could be flawed, based on subjective experiences in the mentoring interview.

This study thus considers tapping into the ‘less dramatic’ in search for evidence of learning with ‘meaning and significance”, as it is found in conversational evidence between the mentor and mentee. The only way to find conversational evidence of learning is to tap into the text itself, in the form of transcribed conversations.

57
Chapter 2 referred to Tillema and Van der Westhuizen (2006) as they cited Bereiter (2002) in defining knowledge productivity as a process in which ‘conceptual artefacts’ are created for professional practice. Based on this notion, this study will look for evidence of conceptual artefacts which feature in the conversation.

Finding evidence of learning calls for an inductive approach which would take individuals’ utterances and PLE’s as a vantage point when it comes to the selection or design of instruments for the purpose of finding evidence of knowledge production. The two instruments which are used in this study to indicate learning as a result of the conversation are both inductive in nature. Firstly, retrospective concept mapping Kinchin et al. (2010) provides a graphic representation of conceptions as it is revealed and constructed in the conversation. Secondly, the ISCA was inductively developed for this study in order to tap into the meaningfulness and significance of the conversational learning, based on evidence in the text. Both these instruments are discussed in detail later on in this chapter.

In essence, this approach moves away from the student’s subjective perceptions as an indicator of learning and instead looks for evidence of learning in the text (transcribed conversations) in the form of conceptual artefacts. It also considers the meaningfulness and significance of the artefacts for the student’s practice by looking for evidence in the conversation of co-construction thereof as well as acceptance or rejection of the conceptual artefacts. The value of this approach is that, if conceptual artefacts were produced in the conversation, it is uncovered and its potential significance is determined by the two instruments, regardless of the student’s subjective experiences, whether the experiences were positive or negative.
Appropriate units of analysis, within which these instruments function in this study, will now be discussed.

3.3.3 Considering units of analysis

This study could opt for either relating the structures of entire conversations to learning outcomes or it could break conversations down into smaller units. The Leiden study described the entire conversation’s structure as directed by the mentor, and summarized it as a mentoring style or approach, depending on the frequency of various utterances by the mentor. This overall style was then compared to perceived learning outcomes of the mentee.

This study considers smaller units of analysis to be more appropriate and of particular value, because it appears, from an initial overview of the data sets, that conversational style or structure could change from topic to topic within the same conversation, depending on the topic and the mentee’s knowledge, etc. It, therefore, seems sensible to experiment with smaller units of analysis for more rigorous analysis in this study. Chapter 2 acknowledged the micro-and macro-contexts of utterances and of conversations as units of meaning and this is still kept in mind, especially during interpretation of data. However, the smaller units of analysis in this study make room for the analysis on a micro contextual level (utterance level) to be interpreted in a more focussed context, namely; in the context of possible learning episodes (PLE’s) within the conversation, each with its unique characteristics. These PLE’s will be defined later on in this chapter, but in short, it supposes that each topic of reflective discussion in the conversation provides the possibility for learning and that, depending on the topic or the mentee’s needs, the structures of various PLE’s may vary within the same conversation. For example, one conversation might include
a discussion around the topic of note taking during lessons while it also includes discussion on poor class attendance. The student might need guidance in the form of scaffolding from the mentor to arrive at a perspective shift about note taking in class while the mentor might not see the need for the same level of intervention or the same type of intervention into the mentees’ conceptions and practical solutions for poor class attendance. The conversational structure around the two topics (potential learning episodes) will be very different and should thus be analysed and eventually compared as separate units in relation to structure and outcomes.

It should be clear at this point that, by summarizing the overall structural characteristics of the conversation as a ‘mentoring style’ or a ‘mentoring approach’, as done in the Leiden study, important variations due to topic and mentee needs might be overlooked. For this reason, instead of entire conversations, PLE’s will be related to one another in terms of structure and learning outcomes. In other words, this choice of units of analysis makes it possible for this study to do a cross-PLE comparison, across all data sets in the study, instead of a cross-case comparison.

To summarize, using PLE’s as units of analysis has specific value for this study: a) Smaller units of analysis are expected to achieve a more refined and rigorous analysis. b) The complexities of structure and of various concepts as they surface in the conversation, and as clustered around various topics of discussion (PLE’s), can each be studied in terms of the PLE’s unique character, based on the topic and the mentee’s needs, since mentees might need more and or different types of guidance on some areas of their practice than in other areas. c) This approach also justifies the use of a relatively small number of cases as each mentoring conversation can potentially yield multiple PLE’s for analysis and comparison.
With the considerations of approach in analysis and units of analysis, provided as background in the chapter so far, the options which seem most relevant for this study to take seat in the methodology which is included in the design of this study’s research and will be discussed in the rest of this chapter.

3.4 OVERVIEW OF THE RESEARCH DESIGN

This section provides a brief overview of how the research is designed to eventually answer the research questions. It serves as an outline so that the lengthy explanations of each component, later on in the chapter, are contextualized in terms of where it fits into the process and why it is part of the process.

Given the purpose of this study, the broad paradigm of constructionist research seems to be appropriate, as the focus is on the social construction of knowledge. Deconstruction of text, textual analysis and conversation analysis form the basis of the data analysis in this study (Terre Blance & Durrheim, 2006:6), in order to describe how the structure of mentor utterances relates to student learning. It studies what mentors say and it seeks evidence of learning in order to investigate whether the deliberate structuring of their utterances in a mentor conversation could serve as facilitation towards the professional growth of the mentee. In essence, it investigates how conversational moves (Tillema & Van der Westhuizen, unpublished 2012) between mentor and mentee promote learning.

Further, an ex post facto design is used for this study, which is non-experimental in nature (Mazabow, 2009:77), since the conversational structure as a variable will not be manipulated in order to monitor its effect on learning outcomes. Instead, recorded mentoring conversations are analyzed as they took place without manipulation by the researcher. Similar to Gerretzen (2012), this study starts out with content analysis of
the mentoring conversations, which is embedded in conversational analysis. A central question in the content analysis is: ‘*What does the talk do?*’ (Edwards, 1993). It is, therefore, not seen as a ‘window into the mind’ (Edwards, 1993) of the mentor or mentee.

In order to find answers to the research questions, this study is designed around the following objectives: a) To analyze and describe the content of samples of mentoring conversations in teacher education in terms of mentor utterances and learning benefits of student teachers; b) to base the analysis on conversational evidence from transcribed mentoring conversations; c) to identify potential learning episodes (PLE’s) within the conversations as units of analysis, in order to arrive at a refined and rigorous analysis of the content; d) to analyse the structure of the indentified PLE’s in each conversation, using the model developed by Tillema (2011); e) to describe the link between the structure of the PLE’s in the mentoring conversations and the learning gains of the students teachers. These objectives flow out into a research design which includes seven steps in data collection and analysis. *Figure 6* offers a diagrammatic depiction of the process of data collection- and analysis. The seven steps in data collection and analysis accommodate a primary level, a secondary level and a tertiary level of data analysis. Each of the seven steps is discussed in detail later on in this chapter.
**Figure 4: Seven steps in the process of data collection and analysis**

Recording natural speech in a mentoring conversation (step 1) serves as the collection of raw data. Thereafter, verbatim, transcriptions of the conversations (step 2) provide the texts which will be coded later on.

The structural analysis starts at this point in identifying propositions (step 3) in the mentor’s utterances, in the entire conversation. The next step categorizes these propositions by the four categories in Tillemann’s structural model (step 4). This is done for the entire conversation because the context of the proposition determines its function and subsequently which category it is assigned to. Only after this point the smaller units of analysis come into play.

---

**Step 1** Audio Visual Recordings

**Step 2** Verbatim Transcriptions

**Step 3** Identifying propositions

**Step 4** Primary analysis (Structural analysis: Tillemann)

**Step 5** Identifying potential learning episodes (PLE’s)

**Step 6** Secondary analysis (Conceptual Artefacts)

**Step 7** Tertiary analysis (Retrospective Concept Mapping & Index of Significance of Artefacts)

See Appendix B, C, D
Step 5 follows which breaks the conversation down into the units of analysis which will be used for the analysis of learning outcomes, namely, potential learning episodes (PLE’s). The benefit of breaking the conversation up into PLE’s after the structural categories are assigned preserves the meaning and function of propositions in the context of conversational chains where one topic in the conversation flows over into a new topic and thereby provides more accuracy in assigning structural categories.

The analysis of knowledge production, (steps 6 and 7), flows directly from the verbatim transcriptions, as prepared by step 2.

The summary for evidence based knowledge productivity can be viewed in Appendix B. It summarizes data analysis as per steps 5 – 7.

Table 1 offers a summary of data analysis which summarizes the structure of each PLE and the index of significance of conceptual artefacts in a way which makes it easy to interpret it at a glance.

Four pre-determined categories, which are based on the mentor conversation model of Tillema (2011) and the work of Gerretzen (2012), serve as the basis for the structural analysis of potential learning episodes which make up the primary layer of coding and analysis of this study, as found in step 4. This level of coding reveals the conversational structure of the conversation, and eventually of each PLE by expressing the frequency of each of the four categories within the episode as a percentage of all the mentor utterances which occurred in the PLE.

The episode-artefact ratio (also referred to in this study as issue-artefact ratio) provides a simple expression of evidence of the learning that took place. It expresses
the number of artefacts which features in the PLE, for example, a ratio of 1:3 indicates that the single PLE produced three conceptual artefacts. The episode-artefact ratio can easily be linked to the structure of the learning episode by comparing the ratio to the percentage of high or low road propositions that were used in the learning episode. However, in order to substantiate and understand the evidence of learning, in terms of the meaningfulness for the student teacher, a concept map is drawn up for each learning episode (step 7) by using the guidelines of Novak & Cañas (2008) and Kinchin et al. (2010). The rationale is to reveal the complexity or significance of the learning by mapping out the structure of the concept as it develops during the conversation. Kinchin, et al. (2010:55), indicate that the structure of the concept map reveals either a readiness for more learning, an understanding of clinical practices where sets of actions must be carried out in sequence or a scholarly understanding of the concept which includes alternative viewpoints or contradictory ideas. The analysis in this study is particularly interested in structures which show a readiness for learning and structures which display an integrated or extended understanding of the concepts under discussion. To further substantiate an understanding of the quality of the learning, an ISCA, which was inductively developed for this study, and backed by existing literature, is used as a yardstick for estimating how significant and meaningful the conversational learning was for the student (step 7).

The research design will now be discussed in detail and detailed descriptions of instruments are included.
3.5 THE RESEARCH DESIGN

3.5.1 Sampling

The qualitative nature of this study and the cross-episode comparison design, justify the use of a relatively small sample of mentor conversations because each conversation could produce a number of learning episodes. Although only three conversations will be analyzed, these conversations will produce sixteen PLE’s which will be analyzed as independent data units but interpreted with sensitivity within the context of the conversation.

Non-probability sampling is relevant, and more specifically, convenience sampling which is determined by the availability of cases, the availability of complete data sets in the larger research project at the time this study had to commence and participants’ willingness to participate (Durrheim & Painter, 2006:139). The convenience sampling for this study involves three lecturers (mentors) of the University of Johannesburg’s Faculty of Education and their students (mentees). As the author worked as a research assistant for the larger research project on mentoring conversations between the University of Johannesburg and the University of Leiden, before this study was embarked upon, she was familiar with the available data sets. The selection of data sets for this study is thus based on a thorough knowledge of the content of each conversation, technical problems of some of the data sets, ambiguity and unclear meaning in spoken language due to language proficiency of non-mother tongue participants and also the completeness of sets. The choice of data sets was narrowed down by withdrawing three of the possible nine sets. Two of the possible nine sets produced video recordings which were unusable due to problems with electronic files. A third set was withdrawn on the basis that the
conversation was not based on the practice of the mentee and the content was thus largely irrelevant. At the time of the final selection of samples for this study, three of the six remaining data sets were complete with video recordings, transcriptions and signed consent forms. It was also possible to clearly follow the lines of thought in these data sets due to clear speech. This was of particular importance for this study, as it worked with evidence in spoken language. Based on the knowledge of the content of these conversations, it was clear to this author that the three remaining sets would yield a variety of structural compositions, variation in complexity of concept construction and also mentees which varied in teaching experience from pre-service status to fifteen years of teaching experience.

3.5.2 Data collection and processing

As mentioned above, this study flows from an existing and ongoing mentor conversation research project at the University of Johannesburg. The video recorded mentor conversations of the main research project will be used as raw data. The mentor conversations will follow after 8 weeks of teaching practice at local schools. Each mentee will be requested to write a reflection report on his/her teaching experience (Appendix A). They will be requested to highlight the learning benefits which flowed from the practicum but also to point out key issues which needed clarification. Each mentor will work through the reflection reports prior to the mentoring conversation, from which he/she may identify certain issues to discuss.

In order to answer the research questions and to execute the objectives of this study, it will be essential to arrive at three core sets of coded or processed data. Firstly, the structure of the mentor’s utterances has to be determined. For this purpose, the raw audio visual recordings need to follow a process in which it will be prepared for the
primary layer of coding to reveal the structure of the mentor's contribution to the conversation. The preparation includes a verbatim transcription of each conversation as well as the identification of propositions in the conversations. The propositions will be then coded as per Tillema’s (2011) model. This made up the primary coding which revealed the structure of the mentor's contribution to the conversation. The secondary and tertiary coding procedures will reveal the knowledge construction in the conversation. The secondary coding procedure identifies conceptual artefacts which flow from the conversation. Artefacts were identified as plans, approaches, schemes, outlines, recpies, etc., (Bereiter, 2002; Tillema, 2005), which could be used as 'tools' in teaching practice. These artefacts cluster around the topics of the learning episodes and are linked to the PLE’s by sub-numbering them in relation to each topic.

In order to further clarify the learning benefits, the concept building within the construction of artefacts are depicted by concept maps, which form part of the tertiary layer of coding. This depicts the meaningfulness of the learning as it maps out the process behind the knowledge construction by colour coding the contributions of the mentor and mentee respectively as well as depicting the complexity of the conceptual artefacts as revealed in the conversation, by indicating how various components thereof are linked. Each contribution is placed in a text box and the related line numbers in the transcription are added, since this is constructed from actual utterances in the conversation (hence, evidence based analysis). While the retrospective concept maps were drawn up, it became clear that although some concept maps were complex and seemed to represent complex conceptions, the complexity of the conceptual understanding did not necessarily result from the conversation but pre-existed before the conversation. It became necessary to find a
way of expressing the meaningfulness and significance of the learning as a direct result of the conversation. This led to the development and implementation of the index of significance of conceptual artefacts (ISCA). This instrument considers how the conceptual artefacts came about in the conversation, whether there is evidence of it being newly constructed or expanded and whether there is agreement or intent to implement it in future practice.

The seven steps of data collection and analysis will now be explained in detail.

**Step 1: Video recordings**

As this study uses pre-recorded mentor conversations which form part of the data sets of the main mentor conversation research project at the University of Johannesburg, the author is unable to control nuisance variables. It is noteworthy that the person who records the conversations will be present in the room, as a third party, which could possibly be a distracting factor for participants as it could influence the dynamics of the conversation. It may happen that fellow students who are waiting their turns for their mentoring conversations will also be present in the room. This could influence the structure of conversation, for example, it could inhibit constructive mentor intervention in which critique would be necessary. However, the Hawthorne effect (Cook, 1962), could have been caused by the mere awareness of being video recorded anyway. On the other hand, because the conversations will be guided by the individual reflection report and notes of the mentor which could prompt constructive and prescriptive intervention in addressing issues from the report, whether there was a third person or not.

Further, the quality of recordings may not always be of equally high standard as the video camera, in some cases, may be placed in such a way that one of the
participants may be turned sideways towards the camera. It may be, in some cases, difficult to hear each word clearly. Where words are unclear, it will be indicated in the transcriptions and not taken into consideration for coding.

In conclusion, although the presence of the videographer and the presence of other mentees could have influenced the conversations, the use of reflection reports as vantage point for discussions ensures that the discussions remain in line with what was planned to be discussed prior to the interview.

**Step 2: Transcriptions**

The benefit of using raw video material in research is that the non-verbal context of the conversation is preserved. However, for this study, it is important to have the utterances of the mentor and mentee available in visual format such as transcriptions in order to divide it into meaningful units of analysis and to code the utterances.

In order to have the conversation in a format which would be best suited for coding, yet to preserve as much as possible of the conversational context, verbatim transcriptions will be made from the video recordings and Jefferson’s transcription conventions will be used throughout the transcription of natural speech. The transcription conventions makes it possible to indicate overlapping speech, incomplete sentences, where emphasis is placed on a word, where tone of voice goes up or down, etc. Where speech was unclear due to inaudible utterances of parts thereof, it will be indicated by the appropriate conventions and such utterances will not be used as propositions in later stages of data management.

Due to the challenges posed by audibility, speech tempo and accent of second or third language speakers, the transcriptions are cross checked for reliability and
corrected where necessary by a research assistant. Reliability of transcriptions is essential for the identification of propositions, which will be discussed in the next section.

**Step 3: Identifying propositions**

Researchers such as Tillema and Gerretzen used propositional analysis of the content of the conversation. This study follows suit because of the benefits thereof, which will now be explained.

Sullivan (2009:535-551) refers to propositions as “*the semantic contents expressed by sentences.*” Propositions in this study refer to units of meaning on utterance level, in context of the conversation or the essence of what is expressed by a sentence or an utterance. A unit of meaning can consist of one sentence or it could be constructed over a few sentences. A single sentence could also potentially consist of more than one proposition because more than one thought can be uttered in one sentence. For the purpose of accurate and sensible analysis, each mentor utterance in the verbatim transcription will be re-written as propositions in order to simplify the coding process later on. The structure of the conversation is based on the coding of these propositions as one of the categories in Tillema’s (2011) model and in Gerretzen’s (2012) work.

Reliability of the identification of propositions is maximized by a workshop session on propositions which was facilitated by Dr H. Tillema of the Leiden University during his visit to the University of Johannesburg in November 2011. The researchers and assistants who worked on the data of the main project at the University of Johannesburg, which included the author of this dissertation, worked together in
pairs during the workshop and directly thereafter to ensure accurate identification of propositions before they continued individually.

One of the data sets in this study will be divided between three persons for initial identification of propositions because of time constraints and spreading of work load, but it will be consolidated and revised by the author which serves as cross-checking of that particular set before including it into this study.

**Step 4: Coding of propositions**

Once propositions have been identified and written, or typed out, one proposition per line, each proposition will be interpreted in context and categorized as per structural analysis of Tillema (2011) and in line with the work of Gerretzen (2012).

A proposition can be categorized as either: exploring (E), prescriptive (P) or scaffolding (S). The latter category is also referred to as constructive. Propositions which do not fit any of these categories would be categorized as other (O) or not relevant (NR). The same coding criteria for each category apply according to Gerretzen’s (2012:15) work. As explained in Chapter 2, Tillema's (2011) model, as also used by Gerretzen (2012), refers to explorative propositions as ‘low road’ propositions because it merely explores current practice of the mentee. The function of these propositions is not to change the practice of the mentee. Prescriptive and scaffolding propositions are referred to as ‘high road’ propositions because their function is to take the mentee to higher levels of teaching proficiency by challenging the current practice of the mentee. The coding criteria for the structural model of Tillema (2011) will now be outlined.
‘High road’ propositions:

- Prescriptive; talking in which the mentor prescribes to the mentee how to act in a certain situation. He/she tells the mentee how to execute in order to reach the desired goal, for example: “The best option is to send him to his seat to reflect.”
- Scaffolding; talking in which the mentor scaffolds the learning process of the mentee by inviting him/her to reflect on situations in the classroom and on his/her own behaviour in order to reach the desired goal, for example: “What can you do to prevent this?”

‘Low road’ propositions:

- Exploring; talking in which the mentor explores the current performance of the mentee or a certain situation in the classroom, for example: “What is your view on discipline?”

Propositions not fitting the above criteria:

- Other; talking that does not fit into one of the above categories but is still relevant to the mentee’s teaching practice, for example: “I liked your lesson.”
- Not relevant; in the South African study, it was noticed that some conversations covered topics that did not directly relate to the mentee’s teaching practice. In order to cut them out of the data so that results would not be skewed, it was coded as ‘not relevant.’ Such topics included reflection on mentoring practices in general.

These propositions will be coded in the context of the original text. Due to the possibility that the author could misinterpret the meaning of the proposition and place it in an inappropriate category, each data set’s propositions are cross-coded by a
research peer of the larger project. Prior to the cross-coding of propositions, peer encoders were briefed on the criteria for each category in a mini-workshop which is based on the coding approach which was followed by the study of Leiden University, as seen in the work of Gerretzen (2012) and supervised by Tillema. Any discrepancies between the two rounds of coding will be revised and the final codes will be arrived at by ‘reasoned consensus’ which is described by Kelly (2006:379) as the “achievement of agreement between researchers on the basis of open discussion based on argumentation.” The coding of propositions provides the primary set of data which clarifies the independent variable, here, the structure of the conversation. As propositions are coded in the context of the conversation, the primary coding or structural coding will be done in the context of the entire conversation.

Step 5: Identifying potential learning episodes (PLE’s) as units of analysis

After the entire conversation’s mentor propositions are coded as per structural model of Tillema (2011), it is divided into learning episodes. In the samples of this study, a learning episode is typically made up of an issue or topic of discussion around the mentee’s own practice or observed practice of other teachers during practicum. The episode starts with talk that indicates or announces the topic or issue for the first time in the conversation. The span of the topic is made up of the conversational chain which flows from that point onwards, up to an utterance by any of the two participants, which indicates the end of the topic. It could also happen that the topic is exhausted and without indicating the end of the discussion on the topic, a new one is entered into. The topic is then cut off just before the utterance which opens up a new topic or issue. This is not uncommon in the conversations of this study because the reflection report serves as a semi-structured agenda for the conversation. If a certain topic surfaces again later in the conversation and is elaborated on, all the talk
around the topic it is seen as one learning episode and the lines in the transcription are indicated accordingly and it is analysed as one learning episode because it covers learning about one issue or topic. The structural analyses of such scattered segments are summarized as one structural footprint around the topic or learning episode.

To determine if the talk around an issue or topic is a potential learning episode or not, the following questions will be asked as a guideline: a) Does this topic of discussion relate directly to the mentee’s current or future practice? b) Could the discussion of the topic potentially influence the mentee’s current or future practice? c) Can the mentee have control over the topic as a variable in his/her current or future practice? d) If the topic is about observed practice and not the mentee’s own practice, could the observation or discussion thereof add value to the mentee’s future practice?

On the basis of these questions, issues or topics of discussion are either included or excluded from the data analysis. An example of a topic which is excluded is: discussions around the mentoring role and mentoring practice of supervising teachers because it focuses on the activities of the mentoring teacher or lecturer and not the teaching practice of the mentee. Another example of exclusion in this study is discussions around school curriculum. Although the discussed prescriptions around curricula of private schools versus those of public schools which could influence the freedom of mentees’ practice options, it is not in the mentee’s immediate control which is prescribed at the particular school so it would be senseless to reflect on it at this stage. Until the mentee’s career leads him/her to become part of the management at the school, it remains irrelevant for the purposes of the mentoring conversation in this study.
The decision on where a topic starts and ends or whether a topic is not applicable rests with the author of this study. Since the conversations will flow from pre-determined topics of discussion, in the form of student reflection reports which will be studied by the mentor before the mentoring conversations, the conversations will generally follow the pre-determined agenda, which makes the topics very clear in the conversation. There is, therefore, no need for cross checking of this step.

**Step 6: Identification and coding of conceptual artefacts**

The secondary layer of analysis involves the identification and coding of conceptual artefacts which serve as evidence of knowledge construction in the conversation. Each learning episode will be analysed to identify conceptual artefacts which result directly from the conversational moves within the episode and are aimed at future practice of the mentee. Since each learning episode is numbered, conceptual artefacts are sub-numbered to be identified as part of the specific learning episode. The number of artefacts per learning episode is expressed as a ratio, for example, 1:3 indicates one topic which yielded three conceptual artefacts. Although this ratio is based on evidence form the text, by means of content analysis, it does not indicate the meaningfulness of the artefacts or which category of propositions facilitated the construction of the artefacts. Conceptual artefacts will now be discussed as a product of collaborative knowledge construction.

An important consideration for this study is how knowledge productivity in a mentor conversation can be detected and measured. Bereiter’s (2005, cited in Tillema 2005) notion that, ‘knowledge productivity’ (Garvey & Williamson, 2002, cited in Tillema, 2005) is the creation of conceptual artefacts, provides grounding for how it is dealt with in this study. These conceptual artefacts are produced through deliberate
thinking and reasoning and could take the form of plans, approaches, schemes, outlines or recipes for enhanced professional performance which becomes ‘tangible’ through conversation (Bereiter, 2002; Winslow & Bramer, 1994, cited in Tillema, 2005; Tillema & Van der Westhuizen, 2006)

The notion that conceptual artefacts become ‘tangible’ in mentor conversations is used as grounding for the coding system which will point out actual construction of conceptual artefacts in mentor conversations. The identification of conceptual artefacts in this study will be done by content analysis of the text. Any plan, scheme, approach, concept, etc., which can take form in the mentee’s future practice or can directly influence the future practice of the mentee, as a ‘psychological tool’ (Vygotskyan notion, cited in Kozulin, 2003), is considered as a conceptual artefact, for example: Make use of leading questions in reading comprehension lessons; instead of copying notes from the board, let learners identify main ideas and construct their own notes during the lesson, etc. Psychological tools are “symbolic artifacts – signs, symbols, texts, formulae, graphic organizers – that when internalized help individuals to master their own psychological functions of perception, memory, attention, and so on… Each culture has its own set of psychological tools and situations in which these tools are appropriated.” (Kozulin, 2003:15-16). Psychological tools can shape either general or more domain-specific cognitive functions (Kozulin, 2003:16) of the mentee. This general description of psychological tools, in my opinion, translates to the domain of pedagogy as any conceptual artefact which is internalized by the mentee. Internalization is evident in the conversational context, here, as acceptance of prescribed conceptual artefacts or the co-construction thereof.
The identification of these artefacts rests on the discretion and interpretation of the author in this study as an experienced educational practitioner. It is done by intensive, qualitative content analysis of the conversations, and is based on the theoretical notions as described. The opportunity for disagreement on artefacts does, however, occur during the control of five randomly selected artefacts in step 7(b) which will be discussed in the next section.

Although conceptual artefacts can be identified in the conversation, the mere identification thereof does not reveal the quality and the meaningfulness of these artefacts. It relates to the internalization of the artefacts. For this, another layer of analysis is necessary, namely; retrospective concept mapping which, in this study, is based on the notions of ‘integrative understanding’ (Entwistle, 2009) and meaningful learning (Novak, 1998, cited in Hay & Kinchin, 2008) and the index of significance of conceptual artefacts. Both these notions are discussed in detail in the section to follow.

**Step 7: Determining the meaningfulness and significance of the learning**

To further substantiate the data analysis, which is aimed at finding evidence of knowledge construction in the conversation, the tertiary layer of analysis follows in the form of *retrospective concept mapping* as well as determining the potential quality of the learning on the “Index of significance of conceptual artefacts (ISCA).” Each will be discussed in terms of its role in determining how meaningful and significant the learning was for the student. Each has a distinctive function in the analysis of the data. The concept map focuses on the richness of the concept while the ISCA focuses on the conversational chain in which it was constructed. In other words, the concept map reveals learning readiness or the relative saturation of the
concept as well as to which extent conceptual change took place. On the other hand, the ISCA focuses on the potential of the conceptual artefact (the operative form of the concept) in the future practice of the student teacher.

**a) Retrospective concept mapping**

This layer of analysis graphically depicts the process of knowledge construction and the minimum extent of the conceptual construction, by using retrospective concept maps as in the work of Kinchin, Streatfield and Hay (2010). It is based on evidence from the original transcripts. It is done to explore the conceptual constructions within the conversational chain or learning episode. The rationale behind this analysis is to examine to which extent the conceptual artefacts are explored and contextualized for meaningful learning. It is adapted for this study to graphically represent the expansion or construction of knowledge, or the lack thereof, within the conversation. It indicates in which lines of the transcript the construction happens, which makes it possible to follow the trajectory of the construction in a broad sense. It also indicates who constructed which parts of the concept in the collaborative effort. It further indicates connections between the elements of the concept as inferred from the context of the conversation.

The concept map is constructed around a focus question and starts with a root concept which is placed at the top of the map as a starting point (Novak, 2008). For the purposes of this study, the focus question for all the concept maps is: “What is the mentee’s conceptualization of the root concept?” It maps out what the mentee knows about the concept and how it is collaboratively constructed by the mentor and mentee. All utterances of the mentee which contribute to the map conceptually are shaded and those which are contributed by the mentor are left unshaded. It is done
to indicate the collaboration, or lack thereof, in the construction of the concept. This will eventually aid in the understanding of the role of ‘high road’ and ‘low road’ propositions as structural dimensions of the mentoring conversation.

The value of the mapping out of the conceptual construction lies in the visual ease with which it can be interpreted at a glance. It depicts the contributions of mentor and mentee, the building blocks of the concept and how it developed or remained without change, as well as the inter-relation of the various elements in the concept. Unfortunately, because of its cryptic nature, there are certain limitations in its application to this study. Firstly, it fails to display sequences in the conversational chain in which the concept was constructed. Secondly, it does not explicitly express the concept in its operational form such as a conceptual artefact. In order to analyse the significance of the concept in its operational form, as a conceptual artefact, a further measure is added, namely; the ISCA which is discussed later in this chapter.

Retrospective concept mapping as an instrument

Concept maps were originally intended as graphical tools for organizing and representing knowledge (Novak & Cañas, 2008). Kinchin et al. (2010:52) explored the possibility of using retrospective concept mapping as a means of summarizing interview transcripts. The value of this method in qualitative research is in that “it differs from traditional methods of coding text of interviews by making underlying cognitive structures transparent and giving a focus to the sets of propositions by which individuals construct meaning” and that the structures of concept maps “correlate(s) with the perceived richness of interview data.” It provides “quick summaries of the interview quality and may help to identify topics for further probing to elicit new information.”
This method is developed around Ausubel’s assimilation theory of meaningful learning as well as constructivist learning perspectives (Kinchin et al., 2010:53). It makes implicit linkages between conceptual notions explicit. In this study, it is used to graphically and explicitly depict conceptual changes in qualitative ways in order to assess learning quality. This study acknowledges the notion of ‘deep learning’ as described by Entwistle (2009), who postulates that deep, meaningful learning has taken place when parts of knowledge can be interlinked to form meaningful wholes. Concept mapping, as used in this study, does not view talk as a ‘window into the mind’ (Edwards, 1993), but it is used as a method to graphically depict and explore the depth of the knowledge construction and how it evolves during the conversation. Edwards’s notion of ‘language as action’ is supported by this study as the retrospective concept mapping depicts how the interaction constructed the conceptual artefacts and facilitated conceptual change. Learning is indicated by individual change (Hay, 2007; Hay et al., 2008). Concept mapping is a powerful research tool which can be used to provide evidence of such change by indicating deep learning, surface learning or non-learning (Hay, 2007).

The author acknowledges that no concept map can be a complete representation of an individual’s knowledge because what is said in the conversation is unlikely to be a full description of the ‘information world’ of the individual (Kinchin, 2010:62). From an ethnographic perspective, knowledge is embedded within knowledge cultures such as communities of practice and communities of thought (Van Dijk, 2003). It could thus be that because of the ‘epistemic common ground’ (Van Dijk, 2003) between mentor and mentee that they might not explicitly verbalise all their conceptualizations. Part of what they assume or know about the concept under discussion could remain hidden for the researcher. This study accepts this limitation
of retrospective concept maps but it assumes that what is being said in the conversation reveals at least the minimum of what the mentee knows about the concept under discussion. Furthermore, it is interested mainly in the part which is collaboratively constructed anew between the mentor and mentee during the conversation and, therefore, focuses on the parts of conceptual construction which flows from, or could potentially flow from, what the mentee does display about his/her conceptualizations. As will be explicitly depicted by concept maps in this study, mentor propositions which explore the mentee’s current practice could reveal shortcomings in the knowledge of the mentee. In my view, it is from here where the mentor could find ‘critical entry points’ (Hoover, 2010:20) into the mentee’s conceptualizations around practice. This author thus supports the notion of Edwards (1993) that language as ‘action’ is particularly appropriate. In this study, it means that the language of the mentor and mentee serves as action to construct conceptual artefacts for the mentee’s future practice. The way in which concept maps are adapted for use in this study, will depict learning readiness of the mentee, how it is explored, or not, by the mentor, and how the mentor and mentee elaborate on the mentee’s initial conceptualisations, or not. Now that it is clear what concept maps are intended for in this study, their construction will be explained.

As Novak and Cañas (2008) describe the construction of these maps, a focus question is decided upon which will guide the arrangement of these concepts, which emerge from the original text, into a structure. For this study, a root concept is first identified from the conversational chain in the learning episode by looking at conceptual artefacts. Thereafter, the focus question comes into play. For the purposes of this study, the focus question for all root concepts would be: “What is the mentee’s understanding of this root concept?” Concepts are connected with linking
words as an integrative understanding is displayed in the text. Any two text boxes with a linking word between them form a meaningful statement about the root concept. Connecting lines are read in the downward direction and is clarified with arrows where it is necessary to clarify ambiguity. Figure 5 provides a simplified example of one concept map in this study.

Figure 5: Example of a Retrospective Concept Map, based on one PLE in this study.
Kinchin et al. (2010:55) and Hay (2008:301) describe three basic map structures and the properties associated with them (*Figure 6*).

![Figure 6: Three basic concept map structures (Kinchin et al., 2010:55)](image)

A single level, ‘spoke’ structure consists of additions to the root concept but does not interfere with one another. Links are simply connected to the root concept. Such a structure indicates ‘learning readiness.’ My interpretation is that it would represent loose standing facts or ideas around a root concept. A chain-like structure (which
has nothing to do with conversational chains) has more levels which are independent of one other. Each level can only be understood in relation to the previous or subsequent one. This reflects clinical practice where specific sets of actions are carried out in a set sequence. The third structure is a network structure which has several levels and is rich and complex. Concepts are inter-connected and reflect deep understanding. These network structures often include alternative views and could even accommodate contradictory ideas. It is important to note that these different knowledge structures (as depicted by the concept map structures) are associated with different propensities for change (Hay, 2008). Hay (2008:297) cites Novak’s notion that prior knowledge plays a role in learning and it becomes particularly relevant in the analysis of concept maps in this study, which is discussed in detail in Chapter 4 when the concept maps in this study are analysed.

One limitation the author expected of this method of analysis is that the more articulate the participants are, the easier it is to plot the map, based on evidence from the interview. This could be a problem in drawing up maps where participants are conversing in a second or third language, as is the case with participants in the data sets of the University of Johannesburg. Language proficiency in the language of the interview (English) is a factor to keep in mind: English language deficiency of some participants could make it difficult to follow what they mean due to grammatical errors, or incomplete sentences etc., and it will thus be difficult to capture the mentee’s conceptual understanding based on utterances. Another factor to keep in mind is that a person does not utter all his knowledge and that conversations take place with vast assumptions such as assumed conceptual common ground within the culture of the conversation (Van Dijk, 2003). Mentors and mentees in this study converse with certain assumed pedagogical common ground, as taught and
practiced at their university. As mentioned earlier, the concept map thus does not attempt to be representative of the complete knowledge base of the mentee but it does at least tap into a part thereof which is of relevance for mentoring. This study is interested in how and to which extent issues which arose from the student’s practice were addressed. The retrospective concept map thus depicts what happens with knowledge within the Vygotskyan ‘zone of proximal development’ (Kozulin, 2003; Offord, 2005; Wertsch, 2008), as mediated via various types of mentor propositions.

For this study, the value of the mapping out of the conceptual construction lies in the visual ease with which it can be interpreted at a glance. It depicts the contributions of mentor and mentee, the building blocks of the concept and how it developed or remained without change, as well as the interrelation of the various elements in the concept. Unfortunately, because of its cryptic nature, there are certain limitations in its application to this study. Firstly, it fails to display sequences in the conversational chain in which the concept was constructed. Secondly, it does not explicitly express the concept in its operational form such as a conceptual artefact. In order to analyse the significance of the concept in its operational form, as a conceptual artefact, a further measure is added, namely; the index of significance of conceptual artefacts (ISCA).

b) The index of significance of conceptual artefacts (ISCA)

This measure was developed by the author of this study, in lieu of the limitations of the retrospective concept mapping as the analysis of the study progressed. The need for this measure arose when the concept maps were analyzed and the researcher became aware that the mere presence of conceptual artefacts and the graphical depiction of the extensiveness of concepts would not be sufficient to indicate
learning. It can be noticed that some of the most complex web structures in concept maps are, in the conversational context, a depiction of prior knowledge of the student. Although these concepts are rich, complex and integrated, nothing in the conversation itself contributes to the formation thereof. Further, a closer look at the construction of conceptual artefacts reveals certain patterns in which artefacts are constructed in the conversation. By comparing these patterns with literature, the ISCA was inductively developed for this study in order to fill the void in the analysis.

The ISCA indicates the potential significance of the conceptual artefacts for the mentee’s future practice.

**The index of significance of conceptual artefacts (ISCA) as an instrument**

The ISCA is found in Appendix D. The use of the term ‘significance’ does not relate to statistical significance. It is used to refer to the meaningfulness of a conceptual artefact or the potential for its future application in the mentee’s practice with awareness of the mentee’s growth towards new conceptions or conceptual change. A closer look at the construction of conceptual artefacts reveals certain patterns in which artefacts are constructed in the conversation. By comparing these patterns with literature, the ISCA was inductively developed by the author for this study in order to fill the void in the analysis. Although categories may emerge from the data, the arranging of categories in order of degrees of meaningful learning will be based on certain theoretical notions. What follows is, firstly, a description of the patterns which emerge as possibilities in the process of constructing conceptual artefacts and secondly, the theoretical notions which relate closest to each pattern or cluster of patterns. The theoretical base as described, guides the arrangement of the categories on the index of significance of conceptual artefacts. These patterns are
used as categories on the ISCA which expresses the meaningfulness and significance of the artefacts on a scale of 1 to 4, which is described later on in this section.

The following patterns may emerge as possibilities where \( M \) indicates mentor and \( S \) indicates student, (✓) indicates agreement, (x) indicates disagreement/rejection and (−) indicates no expression of either agreement or disagreement. The first pattern is explained with an example, which should provide sufficient background to grasp the patterns thereafter:

\[ M + S: \] The mentor and the student could collaboratively construct the conceptual artefact, in other words, each could contribute some elements to result in the construction of the artefact. In the following example the mentor and mentee collaboratively construct the conceptual artefacts: ‘\textit{Instead of copying notes, use it as a learning tool and develop the skill of note taking while the lesson takes place}’ and ‘\textit{Let learners reason to identify main ideas and to decide what is relevant}’ (as seen in Appendix B, PLE 1, artefacts 1.3. and 1.4). Note that it is irrelevant whether the mentor has the outcome planned all along or whether it was a novel, unexpected outcome. What is relevant is that the mentee co-operated in the construction of the conceptual artefact. Relevant phrases will be highlighted so that the development of the artefact can be followed with ease:

\textbf{Mentor:} “So, \textbf{what would be better than just sitting and copying notes from the board}?”

\textbf{Mentee:} “\textbf{I think that the teacher could be more interactive with the children and get them involved}.”
Mentor: “I think you are right that the alternative is to be more interactive. The teacher could let the learning happen in the interaction. Where would note taking fit into such interactions, would you say?”
Mentee: “The teacher could first explain the work and then let them write down the notes, alternatively, they could first write down the notes and then she could explain it.” (The mentee’s answer does not reflect the notion of interactive learning which she suggested earlier on and the mentor responds by scaffolding).
Mentor: “But the notes could be used as a learning tool.”
Mentee: “Yes.”
Mentor: “Because note taking is a skill. How would it work if there is no copying from the board but the notes are written while the lesson is going on? Which skill would you teach them?”
Mentee: “To listen and to write at the same time.”
Mentor: “Yes, it’s listening and writing but it’s also identifying main ideas and distinguishing between what’s good and what’s not.”
Mentee: “It’s reasoning.”
Mentor: “Yes.”
Mentee: “It’s thinking about what you are writing and thinking about what you are hearing instead of copying.”

Although the notion of interactive learning has still not been fully developed in the response of the mentee, the idea of reasoned note taking as an integral part of the lesson, has replaced the idea of copying notes from the board.

M + S (✓) or S + M (✓): One of the parties could contribute the complete artefact and the other party could express agreement or acceptance thereof.
**S + M (x) + S (√):** It could happen that the student comes up with an artefact but that it is not accepted and changed by the mentee, after which the student then accepts the changed version of the artefact.

**S + M (x) + S (–):** The same could be the case as the previous one but the student does not indicate whether the changed version is accepted or rejected.

**M + S (–) or S + M (–):** One of the parties could come up with the artefact but the other one does not indicate agreement or disagreement.

**M + S (x):** The mentor could suggest an artefact, which is rejected by the mentee.

The above mentioned possible patterns in artefact construction are of importance as it will now be related to literature which indicates the degree of meaningfulness, depending on how it is constructed in the flow of the conversation.

Hay and Kinchin (2008:174) cited Novak’s (1998:19) view of meaningful learning and point out the following traits thereof: That the learner must have some ‘relevant prior knowledge’ which relates to the new knowledge which is learnt in a non-trivial way, that the knowledge to be learned must contain ‘significant concepts and propositions’ and that the learner must ‘consciously and deliberately choose’ to ‘learn meaningfully’ by relating the new knowledge to prior knowledge in a non-trivial way.

This reminds one of Entwistle’s (2009:11) ‘proactive, integrative understanding’ which refers to “making sense of academic material in a student’s own way through thoughtful engagement with the topics being studied.” Entwistle further indicates that the learning should ideally also be proactive which means that the student should seek “future development and application.” Entwistle (2000) indicates that the deep learning approach and the surface learning approach have their differences in the
level of meaning making. Although this study at first attempted to categorize a student’s learning as either deep, surface (Entwistle, 2000) or non-learning (Hay, 2007), the patterns of construction of artefacts, as set out previously, indicate a necessity to refine these three categories into a measure which would account for how the conceptual artefacts came about in the conversation itself. This study does not only want to analyse the student’s learning per se, but seeks to find a link between the mentor utterances and the depth or meaningfulness of the learning.

Since the mentoring conversations serve as a collaborative reflection on the student’s practice as part of teacher training which follows theory in coursework modules, all artefacts are considered as linked to prior knowledge. For learning to be meaningful in the context of this study, there must be some evidence from the conversation which indicates the other two traits of meaningful learning as Novak (1998, cited by Hay & Kinchin (2008:174)) outlines, namely; that the artefact construction must contain ‘significant concepts and propositions’ and that the learner must ‘consciously and deliberately choose’ to ‘learn meaningfully’ by relating the new knowledge to prior knowledge in a nontrivial way. It is thus of importance to find evidence of the student’s co-construction in the artefact or explicit agreement when it is contributed by the mentor. Learning is not assumed meaningful if the student did not show agreement. Further, any artefact which is accepted by the student and of which the student shows intention of integrating it into future practice, is considered as significant because it is in practice where the knowledge artefacts will eventually make a difference. Significance is, therefore, not an issue of quantity but rather an issue of quality in this study.
On the ISCA (Appendix D), the mentioned patterns in construction of artefacts represent certain levels of meaningful and significant learning, based on the theoretical discussion in this section. The index consists of the following categories:

The higher categories, 4, 3, 2, are considered as meaningful learning in corresponding degrees.

**Category 4 [M + S]:** An artefact is classified as category 4 if the conversational chain in which it is constructed shows evidence of collaborative construction. The collaborative effort from the student’s side is considered as a ‘conscious’ and ‘deliberate’ attempt to ‘learn meaningfully’, based on Novak’s ideas as described earlier. The mentee’s participation is seen as “active, thoughtful engagement with the topics being studied” and the notion that it is seeking future application views the mentee’s collaboration as “pro-active, integrative understanding.” (Entwistle, 2009:11)

**Category 3 [M + S (✓) or S + M (x) + S (✓)]:** An artefact is classified as category 3 if the artefact is either, contributed by the mentor and accepted by the student, or when the mentor does not originally accept the student’s contribution but changes it or suggests something else which is then accepted by the student. The author here places value on the contribution of the mentor because of his/her position as an expert or veteran and thus his/her position of ‘epistemic authority’ in the ‘asymmetries of knowledge’ which Stivers et al. (2011: 3-24). refers to as ‘epistemic asymmetry’ or ‘epistemic primacy’. Although both the mentor and mentee have ‘epistemic access’ to pedagogical matters as they arise from the student’s teaching practicum, the mentor remains in a position of epistemic authority as an expert or veteran in pedagogical matters. Even though it could be argued that the student has
epistemic authority of his/her own practice, the reason for and nature of the conversation is based on the asymmetries of knowledge between the two parties. The asymmetry in knowledge is the very reason for the mentoring conversation. The meaningfulness, however, is still subject to the student’s acceptance of the mentor’s contribution.

The issue of epistemic authority was the rationale of differentiating between contributions by student and mentor in creating categories 3 and 2, although both indicate epistemic ‘alignment’ (Stivers, et al., 2011:3-24) between the two parties.

Note that category 3 is considered to be of a higher level of significance due to the change in the mentee’s knowledge. Unlike category 2, which will be described next, it is not about pre-existing knowledge which is confirmed.

**Category 2 [S + M (✓)]**: This pattern is placed lower on the index of meaningfulness because it is assumed that the mentor still holds a position of more in-depth knowledge and that he/she could accept the student’s contribution as it is, although it could still be relatively immature in conception, in comparison to what the mentor might have produced. Knowledge in such a pattern could largely be based on pre-existing knowledge which is not produced as a result of the conversation.

It is important to note that, although the confirmation of pre-existing knowledge could be meaningful for the student teacher, new knowledge has not been produced and no conceptual change has taken place. This category is thus not considered as significant in learning as categories 3 and 4. For the purposes of this study, only categories 3 and 4 are considered as truly significant because of the element of newly constructed knowledge or conceptual change.
Categories lower than category 2 are not considered as meaningful or significant.

**Category 1 [S + M (x) + S (–) or M + S (–) or S + M (–)]:** This category makes provision for artefacts which are produced by one party and no evidence could be found in the conversation that it was accepted by the other party. Meaningfulness of learning could thus not be confirmed because there is no conversational evidence of either the mentor, who has epistemic authority, confirming the mentee’s contribution or the mentee’s accepting of the mentor’s contributions. Acceptance of the mentor’s idea is assumed to be a pre-requisite of application in practice. Further, if a mentor contributes conceptions which is new to the student but the student does not show any sign of accepting it or integrating it with existing knowledge, it is not considered to be meaningful or significant. This element of category 1 displays what Hay, (2007:43) and Entwistle (2000) refer to as ‘surface learning.’

**Category 0:** No artefacts were produced

**Category -1 [M + S (x)]:** This negatively scored category makes provision for patterns where the mentor’s contribution could be rejected by the mentee. It acknowledges that artefacts were created but it was not accepted and thus has no chance of being incorporated into the mentee’s future practice.

The assigning of these categories to conceptual artefacts involves an intensive process of tracing back the development of each conceptual artefact in conversational chains of each PLE. For the purposes of checking reliability, conceptual artefacts are cross-checked by the supervisor of this study who is an experienced researcher. Where discrepancies do occur, reasoned consensus, as earlier described, is reached.
This chapter described the research design and the instruments which have been created for this study. The seven steps in data collection and processing accommodate three levels of analysis, which include structure of the conversation, conceptual artefacts, retrospective concept mapping and the index of significance of conceptual artefacts. By executing all the methodological steps as explained in this chapter, it is possible to compare the structure of the conversation with the learning outcomes of the student with reference to meaningfulness and significance. This comparison facilitated by the data analysis as summarized and discussed in the next chapter.
CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter reports on the data collection and analysis and discusses the findings as produced by the seven methodological steps in collection and analysis, as explained in the previous chapter. Each potential learning episode (PLE) is discussed individually in order to substantiate the data analysis. Each PLE is discussed as follows:

a) Firstly, the mentor’s utterance structure of each PLE is summarized by indicating the percentage of ‘high road propositions’, ‘low road propositions’ and ‘other’ propositions featured in the PLE. It is accompanied by a small Table which indicates the percentages of each type of proposition.

b) Knowledge production is then indicated in terms of conceptual artefacts which featured in the PLE.

c) The structure of the relevant retrospective concept map is discussed in order to put the construction of artefacts into perspective.

d) Finally, the possible significance of the artefacts for the student (mentee) is discussed.

Appendix B (Evidence Based Content Analysis Sheet for Knowledge Productivity) as well as Table 1 in this chapter, paragraph 4.5 (Summary of data analysis), should be used with this chapter.
It is to be noted that although reference is made to line numbers of transcriptions, which are indicated in brackets in Appendix B, as well as on concept maps, the transcriptions of conversations are not included in this dissertation, in order to honour confidentiality as an ethical consideration. The line numbers are merely included in this dissertation to illustrate that the conversational context was taken into consideration.

This chapter is framed by the research questions. Paragraph 4.3 answers the question of how conversational structure relates to learning outcomes, while the consolidation and interpretation of findings in paragraph 4.6 provides an answer to the question of whether there is an ideal conversational structure for optimal conversational learning.

The chapter concludes with synoptic answers to the research questions in this study. What follows, is firstly a brief report on how the data collection and analysis was practically carried out (paragraph 4.2) as outlined and described in the seven steps in chapter 3. It is then followed by a detailed report back of the data analysis per PLE (paragraph 4.3) in order to clarify how the author arrived at the final answers on research questions. The lengthy, detailed description of the analysis in paragraph 4.3 serves as source of reference in order to help the reader understand the summary of analysis in paragraph 4.5. and the summary in Appendix B.

4.2 REPORT ON PROCEDURES FOLLOWED IN DATA COLLECTION AND ANALYSIS

The seven steps for data collection and analysis were followed as set out in chapter 3. The seven steps, set out as a semi-linear process, developed as data was
collected for the main project and as the author became more familiar with the content of data sets and the instruments which were available for the main project. The first four steps (recording, transcribing, identification of propositions and primary, structural coding) were done as part of the main project. This author took part in the process as a research assistant at the time and became familiar with the procedures, the content of the mentoring conversations, and also the pitfalls in data collection and potential shortcomings of instruments. Steps 5 – 7 developed in reaction to these perceived problems in an attempt to contribute to the main project by refining analysis, offering alternatives for methodological challenges and with the hypothetical expectancy to proof a positive relation between high ground propositions and knowledge production in mentoring conversations. The development of the ISCA for this study was added as a seventh step only during the late stages of the study, as the need for it arose.

Procedures for ensuring reliability, as described in chapter 3 under each step, were followed as described. However, due to the intensive process involved in tracing back the development of each conceptual artefact in each PLE, for assigning a category as per the ISCA (Step 7), which requires thorough knowledge of the content of the conversations, time constraints and the intensity of the process made it practically impossible to cross-check each of the 49 conceptual artefacts which were produced in the 16 PLE’s. Therefore, only five were randomly selected and cross checked by the supervisor of this study, as an experienced researcher, in order to monitor the author’s coding.
4.3 DATA ANALYSIS PER POTENTIAL LEARNING EPISODE (PLE)

This lengthy discussion is summarized in Appendix B as well as in Table 1 in paragraph 4.5.

This analysis attempts to address the core research question of this study, namely; in which way can mentoring conversations be structured to optimize conversational learning outcomes for student teachers? By analyzing each PLE in this section, in terms of structure, knowledge production and significance of learning, an attempt is made to discover exactly how structure relates to learning outcomes. It thus attempts to answer the first sub-question, namely: ‘How does the structure of mentor conversations relate to the learning outcomes of student teachers?’

Each of the sixteen potential learning episodes (PLE’s) are summarized and discussed in terms of the outcome of the seven methodological steps in data collection and analysis. This summary of analysis is presented in Table format in Appendix B. The discussion, serves to clarify any uncertainties which might be a result of the Table format thereof in Appendix B. It is advised that Appendix B be read first in order to obtain an overview and that the section to follow is read as clarification where necessary. Appendix B offers all data in this study, summarized as potential learning episodes (PLE’s), each with its topic of discussion, conceptual artefacts, how these artefacts were constructed as well as the potential significance thereof for the mentee as indication of learning.

All concept maps referred to, appear in Appendix C.
*Note: The following headings should be understood as follows: Data set 1/PLE1 and Concept map 1 – G1 should be understood as: Data set 1 will now be discussed in terms of its first potential learning episode (PLE1). Concept map number 1-G1 is applicable. The topic under discussion is, “Copying notes from the board without interaction.”

**Data set 1/PLE1: Copying notes from the board without interaction (Concept map 1 – G1)**

**Structure of propositions:** The prescriptive and scaffolding (high road) propositions make up a total of 59% of the total propositions in this learning episode. 36% explorative and 5% other propositions make up the balance.

<table>
<thead>
<tr>
<th>Proposotions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>2</td>
<td>9%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>11</td>
<td>50%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>8</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

**Knowledge production:** PLE-artefact ratio of 1:5. Evidence from the transcription reveals five conceptual artefacts which the student could apply in her future practice. Each of the artefacts in this PLE relates to high road mentor propositions. The transcription of this PLE, in proposition form, reveals that artefact 1.1 was constructed after one prescriptive proposition while artefacts 1.2 – 1.5 were constructed after several scaffolding contributions by the mentor. It is noted that the mentor’s propositions follow a distinctive pattern. He starts by exploring, then scaffolds where necessary. He repeats this to give the student various opportunities to make conceptual changes but when the student’s contributions are not sufficient,
he follows up with prescriptive propositions. From there, further exploration and scaffolding is done until the need for prescription arises again.

*Retrospective concept mapping:* The concept map (Appendix C, Concept map 1 – G1), reveals that the student’s initial conception about note taking in class was limited to a simple spoke structure which can be interpreted as ‘learning readiness’ (see Chapter 3, step 7 (a)). The concept map also depicts how the conceptions around note taking developed during the conversation from a simple structure to a web structure as a direct result of propositions of the mentor. The map displays new concepts which link to the student’s prior knowledge of note taking.

These findings could thus be interpreted as indications of meaningful learning. The student has collaborated in the enrichment of the concept which indicates that she shares ownership of the new conceptions. For this reason, it seems likely that it is of potential use for her future practice. The student’s conception of notes in class expanded from the idea of copies, explained by the teacher, to the notion of reasoned notes.

*Significance of conceptual artefacts:* Three of the five artefacts were rated category 4 (see Appendix D), which indicates collaborative knowledge construction and is thus interpreted as of potential significance to the student.

Apart from the collaborative construction of three of the five conceptual artefacts, the concept map indicates significant development of the student’s conception of note taking and notes in class. It is further important to note that the change relates directly to the mentor’s ‘high road’ utterances.
Data set 1/PLE2: Poor reading level (Concept map 2 – G1)

Structure: In this learning episode too, more high road propositions are seen, as the prescriptive and scaffolding propositions make up a total of 70% of the total propositions in this learning episode.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Knowledge production: PLE-artefact ratio of 1: 5. Artefact 2.1 is connected to 2.2 and 2.3. This means that used together, across all domains, as artefact 2.5 suggests, it has the potential to contribute significantly to the students’ future practice. The mentor used scaffolding to open up collaborative exploration of solutions for poor reading level but where the student’s attempts to contribute to knowledge construction did not seem sufficient, he followed up with prescriptive propositions which enriched the knowledge which this conversation yielded. This pattern is seen in the construction of artefacts 2.3 and 2.5. It is similar to the pattern noticed in the previous PLE.

Retrospective concept mapping: The concept map (Appendix C, Concept map 2 – G1), has a simple web structure. This simple structure should be interpreted in context though. It shows how the mentor’s propositions enriched the student’s concept of reading. He provided a link across domains to incorporate reading into all domains instead of it being the sole responsibility of language teachers. Concepts such as interaction around notes, identifying main ideas and summarising, which
featured in the previous PLE, were repeated in this PLE and made applicable to reading comprehension skills too. This indicates an integrated conceptualization. As the new notions, which are introduced and repeated by the mentor, link well with existing displayed knowledge of the student, the learning in this PLE is considered meaningful.

*Significance to conceptual artefacts:* Three of the five conceptual artefacts are categorized as 3 or 4 which is viewed as of potential significance to the student.

**Data set 1/PLE 3: Discipline (Concept map 3 – G1)**

*Structure:* The higher ground propositions in this PLE totals 33% while exploring low road propositions make up 43% of the total mentor propositions.

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td>Explorative</td>
<td>9</td>
<td>43%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1: 6. The student displayed a sound understanding of discipline as care. Even after prompting the student by scaffolding propositions, the student came up with meaningful contributions to the knowledge production process. This might explain that there was no need for more high road intervention by the mentor.

*Retrospective concept mapping:* The concept map (Appendix C, Concept map 2 – G1), indicates a simple web structure which consists mainly of a conceptions displayed by the student which, in context of the conversation, can be interpreted as an existing, thorough understanding of the topic. Although some of the mentor’s
propositions display a scaffolding nature, it does link to notions which the mentee vaguely indicated before the mentor’s utterances. The mentor solidifies these vague notions in his prescriptive and scaffolding propositions. Thus, because no new concepts are added which has not been already vaguely suggested by the mentee, this episode is considered to be of less significance.

Analysis of this PLE indicates knowledge production even though a higher percentage low road propositions featured in the conversation. However, the artefacts which feature in this PLE are made up of mainly of existing knowledge of the student which is either accepted by the mentor or not opposed by him (see possible patterns as described in chapter 3, step 7 (b)).

This topic was discussed in broad terms and dealt mainly with general principles of discipline. The lack of attention to more practical application of the principles is interpreted as potential learning opportunities which slipped by. The mentor could have found entry points into the students’ practice by focusing on specific disciplinary solutions for issues mentioned by the student such as homework not being done or absence from class without a valid reason.

Significance of conceptual artefacts: Only one of the six artefacts was categorized on a significance level 4 because of the collaboration in its construction. This, nevertheless, still means that significant learning has taken place in this PLE. However, the remaining five artefacts proved to be of lesser significance because it was either existing knowledge of the student which was verified by the mentor (see category 2, appendix D) or to which the mentor did not respond (see category 1, appendix D).
Data set 1/PLE 4: Teaching spelling (Concept map 4 – G1)

Structure: High road propositions make up 63% of this PLE while low road propositions make up 36%.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>2</td>
<td>18%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>5</td>
<td>45%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>4</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Knowledge production: PLE-artefact ratio of 1: 4. The student looks critically at an ineffective spelling method she encountered during teaching practicum. The mentor prescribes and scaffolds her conceptions to arrive at practical solutions. He also makes the link between spelling and communication. The mentor, once again, highlights cross domain application. He highlights that spelling can be taught across domains and that spelling forms part of communication. The same distinctive pattern as in the first two PLE’s, is noticed in this one, as the mentor first explores and scaffolds. He prescribes when explicit enrichment of the concept is needed. It is followed up by further scaffolding to involve the student in solidifying the ideas for her.

Retrospective concept mapping: The concept map (Appendix C, Concept map 4 – G1), illustrates the mentee’s progression to an integrated understanding of the teaching of spelling. Some practical solutions were constructed.

It is the view of this researcher, as an experienced educator, that more could have been explored by the mentor, such as phonics, spelling rules, teaching of high frequency words in various domains, etc. However, although the learning in this PLE
is not extensive, that which had been covered, is interpreted as meaningful in terms of the index of significance of conceptual artefacts (ISCA) because of its link to prior knowledge and because of the collaboration in its construction, which, indicates the student’s ownership of the knowledge and thus its potential for use in her future practice (see appendix D). Analysis of this PLE indicates a positive link between high road propositions and student learning.

*Significance of conceptual artefacts:* All four artefacts are considered to be of potential high significance to the mentee, as two were categorized as 4 and two as category 3 (see appendix D). Conversational evidence shows that the mentee came to an understanding that spelling forms part of communication and that teaching spelling can incorporate meaning making and dictionary skills as well. Her conceptions about the teaching of spelling are, therefore, considered to be significantly expanded and enriched.

**Data set 1/PLE 5: Poor class attendance (Concept map 5 – G1)**

*Structure:* This learning episode had at total of 33% high road propositions and 17% low road propositions. ‘Other’ propositions made up 50% of the structure.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>2</td>
<td>33%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>1</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>3</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1:2. The discussion around poor class attendance was very brief. Both artefacts were contributed by the student and agreed upon by the mentor. The topic was thus not extensively explored. In the author’s
view, the mentor could have used the broad nature of the artefacts as entry points towards constructing more specific and practical solutions. He could have explored and scaffolded the notion of creating a safe emotional classroom environment by asking how this could be achieved in pragmatic terms. The potential of this learning opportunity was not seized.

*Retrospective concept mapping:* This concept map (Appendix C, Concept map 5 – G1), has a very simple web structure. Indications are that the topic could have been explored more extensively, as previously mentioned. Although the artefacts in this PLE link to existing knowledge, it is doubted whether the learning was meaningful because the student’s suggestions lack specificity and it is not clear how the student plans to facilitate a safe emotional space in class, nor is it clarified how she plans to address failure to attend class without a valid excuse.

*Significance of conceptual artefacts:* Both artefacts are rated category 2 (Appendix D). The transcription and concept map reveal that these artefacts are vague and lack specificity, which renders the application value thereof doubtful.

*Data set 2/PLE 1: Administrative tasks interfering with teaching time (Concept map 1 – J3)*

*Structure:* This potential learning episode had only one mentor proposition which is classified as 'other'.
**Propositions**

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Explorative</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Knowledge production*: PLE-artefact ratio of 1:0. This PLE did not yield any knowledge production. The student clearly states that this issue under discussion annoys and frustrates her. She also elaborates on why urgent administrative requests from school management during contact time with the learners are problematic and that it has a negative impact on her teaching practice. The mentor expresses empathy which is classified as ‘other.’ The response in the form of empathy does not explore the matter any further, nor does it attempt to find solutions via high road intervention. It is noted that the student mentions elsewhere in the conversation that she has learnt to multi-task. This has value for interpreting his response. It could be possible that the mentor considered the student’s multi-tasking as coping with the problem and could thus not see the need for further exploration. However, regardless the reason behind simply offering empathy, instead of attempting further exploration, it is the interpretive opinion of the author that a potential learning episode slipped by without any trace of knowledge construction around the issue.

*Retrospective concept mapping*: This map (Appendix C, 1 – J3), is a classic example of a spoke structure which indicates learning readiness according to Kinchin et al. (2010), cited in step 7 (a) in chapter 3.
Analysis of this PLE brings the author to the interpretation that without exploration, scaffolding or prescription from the mentor, learning is unlikely if not impossible during a mentor conversation.

**Data set 2/PLE 2: Poor parental involvement (Concept map 2 - J3)**

*Structure*: This potential learning episode had one proposition which is classified as ‘other’.

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>1</td>
</tr>
</tbody>
</table>

*Knowledge production*: PLE-artefact ratio of 1: 0. The single mentor proposition in this potential learning episode is classified as ‘other’ as it is a re-phrasing of the student’s utterances. No knowledge construction took place.

This was once again, in the opinion of the author, an opportunity for the mentor and student to co-construct possible ways in which parental involvement could be encouraged. Although parental involvement is not something that teachers have direct control over, this issue could have been explored further.

*Retrospective concept mapping*: This concept map (Appendix C, 2 – J3), has a very limited structure which only slightly resembles a spoke structure. Yet, this too is interpreted as learning readiness in context of the conversation.
As is the case with the previous PLE, analysis of this PLE brings the author to the conclusion that without exploration, scaffolding or prescription from the mentor, learning is unlikely if not impossible during a mentor conversation.

**Data set 2/PLE 3: Discipline (Concept map 3 – J3)**

*Structure:* This PLE contains no high road propositions. Exploration makes up 33% of the propositions, while “other” propositions made up 67% of the structure of the mentor’s input.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>2</td>
<td>33%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>4</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1:3. It is noted that mentor propositions in this PLE, which were classified as “other”, did not relate to the student’s own practice. It referred to general tendencies in teaching.

The first artefact (artefact 3.1 of this PLE, as seen in Appendix B) was the contribution of the student. It was not opposed by the mentor. It was mentioned after the mentor wanted to know in which areas the mentee has experienced professional growth. There is no conversational evidence that this artefact added any new concept to the mentee’s knowledge. The other two artefacts (3.2. and 3.3) were the result of the mentor’s contribution by explorative propositions. Since the mentor contributed the link between discipline and engaging pedagogy, which was accepted by the student, and linked well with her existing conceptions of discipline and teaching practice up to this point in the conversation, this could be seen as
meaningful. However, there was no need to scaffold the mentee towards this link. The artefacts were offered as questions for exploration after which the student answered “Yes, definitely.” and in one case elaborated on it which displayed that she not only agreed but also understood it meaningfully without needing any further support from the mentor on this topic. Furthermore, because these artefacts were already visible in the student’s practice, which is evident in the conversation, the artefacts cannot be viewed as significant learning.

*Retrospective concept mapping:* This concept map (Appendix C, 3 – J3), has a simple web structure which resembles a spoke-like simplicity.

Analysis of this PLE indicates that learning was not significant, even though the mentor explored the student’s practice. It also shows that, although learning episodes can be analysed as units of study, analysis should remain sensitive to the overall context of the conversation and other utterances in the conversation which relate to the particular PLE. The significance of the artefacts is categorized as 1 and 2 which, supported by the context of the conversation, and thus seems insignificant.

**Data set 2/PLE 4: Professional reflection (Concept map 4 – J3)**

*Structure:* This PLE contains no high road propositions while low road propositions make up 50% of the structure. Propositions classified as “other” make up the remaining 50%.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Knowledge production: PLE-artefact ratio of 1: 2. Both the artefacts offer very practical sources for reflection on teaching practice. Although the mentor linked reflection to discipline and self-knowledge, the student’s elaboration on these notions, after the mentor’s exploration, reveals thorough existing knowledge thereof as well as a pragmatic understanding of how and when to do professional reflection. This PLE has thus not yielded significant learning.

Retrospective concept mapping: The concept map (Appendix C, 4 – J3), displays a simple web structure.

Analysis of this PLE brings the author to the interpretation that although exploration has lead to conceptual artefacts in the conversation, it did not lead to significant new knowledge for the student. The mentor propositions which were classified as “other” referred to general tendencies in teaching practice and simply made the general statement that many teachers do not reflect on their practice to find solutions for ill-discipline. It, therefore, did not contribute to the student’s own teaching practice, since she already indicates self-reflection as part of her practice. Her conceptions are merely confirmed by the mentor, so the significance of the artefacts received a rating of 2.

Data set 2/PLE 5: Teacher knowledge (No concept map due to data saturation)

Structure: This PLE shows 60% exploring or low road propositions and 20% high road scaffolding.
<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>3</td>
<td>60%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Knowledge production: PLE-artefact ratio of 1:2. Although this PLE did contain one scaffolding proposition, it merely supplied the correct academic term for what the concept the student was describing. It is thus seen as contributing to her academic knowledge (jargon), but not to her practice. This became clear in the analysis of the conceptual artefacts. None of the artefacts occurred as a result of the single scaffolding proposition. Both came about after exploration by the mentor. However, once again, the student’s elaboration on each type of teacher knowledge revealed a meaningful understanding thereof which existed prior to the conversation. The mentor’s “other” proposition which confirms her contribution as “very important” confirmed her existing knowledge. For this reason, the artefacts are rated 2 and hence probably not very significant for future practice.

Retrospective concept mapping: No maps were constructed for the rest of the PLE’s in this conversation due to data saturation in terms of concept structures. It was clear from the text that there was no point in drawing up further concept maps for the rest of this conversation’s PLE’s because the conversation did not explore or discuss any of the further issues in depth, as is the case with the first four PLE’s and there are no signs of collaborative construction of new knowledge. There is thus no sense in repeatedly plotting out concept maps if it is clear from the text that it will not lead to any new insights. (This was later confirmed by scores of 1 or 2 on the ISCA which are not associated with significant learning. See Appendix D).
Analysis of this PLE indicates that high road propositions can contribute to a student’s academic knowledge but not necessarily to knowledge for practice. The explorative low road propositions revealed the student’s existing knowledge but did not contribute new conceptions. The “other” proposition confirmed existing knowledge.

**Data set 2/PLE 6: Engaging pedagogy (No concept map due to data saturation)**

*Structure:* This PLE had no high road propositions. It had 38% low road propositions. The rest of the structure consists of 63% “other” propositions.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Prescriptive</th>
<th>Scaffolding</th>
<th>Explorative</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>0</td>
<td>0</td>
<td>38%</td>
<td>63%</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1:3. Once again, evidence from the transcription indicates an existing, meaningful understanding of the concept which is substantiated with an example from the student’s current teaching practice. Although the mentor explores the link between engaging pedagogy and class discipline at the beginning of the conversational chain, the link is not explicitly confirmed during the rest of the discussion.

*Retrospective concept mapping:* No map was constructed due to data saturation as explained in the previous section, Data set 2/PLE 5.

Analysis of this PLE indicates that low road propositions and ‘other’ propositions such as expression of agreement and general remarks about education is not enough to lead to the construction of significant new knowledge. Although the link
between engaging pedagogy and discipline was explored by the mentor, no new knowledge was produced. The significance of the propositions are rated 2.

**Data set 2/PLE 7: Applying theory to practice (No concept map due to data saturation)**

*Structure:* This PLE had no high road propositions but 67% low road propositions. 33% “other” propositions made up the rest of the structure.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>2</td>
<td>67%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>3</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1: 2. The student’s lengthy discussion clustered around the two main artefacts. The mentor’s reply, which was categorized as “other”, was “That’s wonderful”, which seems to apply to the second artefact. From the context of the conversation it seemed that the student was merely giving an account of what already works for her in practice.

*Retrospective concept mapping:* No map was constructed due to data saturation as explained in a previous section, Data set 2/PLE 5.

Analysis of this PLE is in line with an emerging pattern in this data set. The low road exploration did not lead to any significant new knowledge construction.
Data set 3/PLE 1: Applying theory to practice (Concept map 1 - M1)

**Structure:** This PLE had no high road propositions but 83% low road propositions. 17% of the propositions were classified as “other.”

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>5</td>
<td>83%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>1</td>
<td>17%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**Knowledge production:** PLE-artefact ratio of 1: 1. From a conversation analysis (CA) point of view, the exploring propositions in this PLE seems to be an attempt by the mentor to indicate to the student that he “hears” what the mentee is saying. It also seems to fulfil a conversational ‘space making’ function, judged on the extensive elaborating on the part of the student. The student provides examples from his own practice to illustrate his conceptions about the practice-theory interface.

**Retrospective concept mapping:** Although this concept map (Appendix C, 1 – M1), has a spoke structure which would normally be interpreted as learning readiness as in previous sections, it seems that further concept enrichment is not necessary in this case because of the example the student offers. It reflects an understanding of the concept.

Analysis of this PLE indicates that explorative propositions can serve as ‘space making’ agents for the student’s ideas to be expressed. It can also indicate the mentor’s mental presence in the conversation. The student’s ideas were confirmed throughout the conversation. No significant learning is evident.
Datat set 3/PLE 2: Authentic learning (PLE 2, concept map 2 - M1)

Structure: The structure of this conversation displays an equal distribution of high- and low road propositions.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Explorative</td>
<td>E</td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Knowledge production: PLE-artefact ratio of 1: 6. Although 50% of the mentor’s propositions were classified as ‘high road’, the mentee acted upon them as if it were cues for further elaboration on his existing practice. The examples the mentee offers from his existing practice displays an integrated and meaningful understanding of topics which the mentor raised.

Retrospective concept mapping: This concept map (Appendix C, 2 – M1) has a very complex web structure. It displays the student’s deep understanding of authentic learning. It is also linked to two other concept maps which flowed from the conversation which displays the student’s integrated understanding. Although the presence of white text boxes, which indicate the mentor’s contribution, make this PLE look like collaborative knowledge construction, the mentee’s reaction on the mentor’s utterances displays evidence of thorough understanding which he already practices in school.

Analysis of this PLE leads to the interpretation that the discussion can hardly be seen as a mentoring event. The student’s integration of theoretical notions into his teaching practice is so thoroughly displayed that there is almost no need for the
mentor to intervene. The propositions which were intended to serve as scaffolding, prescription or exploring turned out to only prompt the student’s display of deep, integrated understanding of the issues and topics under discussion. This observation shows that the intended function of a proposition can either be fulfilled or compromised by the reaction of the student.

**Significance of conceptual artefacts:** Although this discussion yielded six artefacts, it was contributed by the mentee while the mentor merely indicated agreement. Five of the six artefacts were rated 2 and one was rated 1. Although the artefacts are significant in his existing practice, it does not indicate significant learning during the conversation.

**Data set 3/PLE 3: Adopting an engaging teaching style (Concept map – 3 M1)**

**Structure:** Although this PLE contains propositions from all categories, it contains more low road propositions as the latter make up 45% of the structure.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>1</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>2</td>
</tr>
<tr>
<td>Exploratory</td>
<td>E</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td>11</td>
</tr>
</tbody>
</table>

**Knowledge production:** PLE-artefact ratio of 1: 6. The mentee, once again, used multiple examples from his own practice to indicate his understanding of the topics under discussion. These examples display an integrated and meaningful understanding of topics which the mentor raised. Although the transcription shows evidence of six artefacts, it is clear from the context of the conversation that he did not learn anything new during this discussion. Even the single artefact which was
contributed by the mentor (3.4) was followed by an example from the student’s practice which displayed such a thorough understanding of the concept that it definitely did not contribute any new knowledge for the mentee.

*Retrospective concept mapping:* This concept map too (Appendix C, 3 – M1), has a very complex web structure. It displays the student’s deep understanding of authentic learning. It is also linked to two other concept maps which flowed from the conversation which displays the student’s integrated understanding. As is the case with the previous PLE, although the presence of white text boxes, which indicates the mentor’s contribution, make this PLE look like collaborative knowledge construction, the mentee’s reaction on the mentor’s utterances displays evidence of thorough understanding which he already practices in school.

Analysis of this PLE repeats the findings of the previous one.

**Data set 3/PLE 3: Incorporating technology into teaching practice (Concept map – 4 M1)**

*Structure:* The structure of this PLE contains 67% low road propositions and 33% high road propositions.

<table>
<thead>
<tr>
<th>Propositions</th>
<th>Proposition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>P</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>S</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Exploratory</td>
<td>E</td>
<td>2</td>
<td>67%</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

*Knowledge production:* PLE-artefact ratio of 1: 2. One of the artefacts followed after exploration by the mentor and agreement was indicated by the mentor. The second
artefact was contributed spontaneously by the student without any direct prompting by the mentor.

*Retrospective concept mapping:* This map (Appendix C, 4 - M1), has a web structure which indicates meaningful understanding despite minimum contribution by the mentor.

*Significance of conceptual artefacts:* These artefacts were categorized as 2. Artefacts were contributed by the student and confirmed by the mentor.

### 4.4 BACKGROUND OF THE MENTOR-MENTEES PAIRS AND SUMMARY OF THE DATA SET WHICH EACH PAIR PRODUCED

**Data set 1:**

This mentor-mentee pair is made up of a male professor in education, with many years of experience, while the mentee is an under-graduate, female student. They both engage in English, which is a second language for them both, for the purpose of the conversation. It is also the language of instruction at the university.

The student’s experience is limited to a few weeks of teaching practicum, which makes this mentoring conversation fertile ground for learning with plenty of opportunities for utilising ‘high road’ propositions. What is of importance, however, is not how many such opportunities presented themselves, but that the mentor seized the opportunities as they presented themselves in the conversation.

The structural analysis of this conversation reveals a strong structural pattern across its five learning episodes. As soon as the mentor discovers entry points into the practice of the student teacher from her responses to his explorative propositions, he follows up with scaffolding and prescriptive propositions which leads to significant
knowledge construction, as is evident in the corresponding retrospective concept maps.

This data set is the only one which yielded artefacts with a significance index of 3 and 4 and in which the context of the conversation confirms significant learning. It is also the only data set which yielded PLE’s which contains more ‘high road’ propositions than ‘low road’ propositions or ‘other’ propositions. This strongly indicates a possible positive relation between high road propositions and significant learning outcomes.

Data set 2:

The mentor in this pair too, is a male professor in education with many years of experience. The female mentee is a PGCE student and a practicing teacher. She did not enter the conversation as a novice, which makes this conversation different from the first one. The mentor in this conversation predominantly used ‘other’ propositions which consisted of compliments, agreement and general statements about teaching. The only two PLE’s in this study which had 100% ‘other’ propositions and thereby no high or low road propositions, yielded no artefacts at all. The mentee’s teaching experience might be the reason why this conversation only produced two PLE’s.

What is once again of importance, is not how many or how few opportunities presented it self, but that these two PLE’s were not seized as learning opportunities by the mentor. This indicates the significance of high and low road utterances in a mentoring conversations. From the context of the conversation, it seems that the mentor viewed the problems raised by the student, namely; an overload of administrative tasks and a lack of involvement of parents as day-to-day challenges which are part of the teaching profession.
None of the PLE’s in this data set had structures which were characterized by mostly high road propositions and it also yielded no artefacts on the 3rd and 4th levels of significance. This data set indicates that exploration (low road propositions), and ‘other’ propositions such as empathy, expression of agreement, re-phrasing, compliments and general statements on education, is not associated with significant learning.

Data set 3:

This mentor-mentee pair is made up of a male lecturer in education with a PhD degree in education and a male student in the PGCE programme. He has been involved in teaching for 15 years. This student had a way of speaking about his own practice with an undertone of prescribing to other teachers “out there” how authentic learning and engaging pedagogy should be practiced. This conversation differed significantly from the other two sets as it resembled two professionals in conversation about education, rather than a mentee looking for guidance by the mentor. It seems as if the mentee merely tested his ideas and practice by awaiting approval from the mentor. The mentor seemed to have the authority of approval or rejection of the insights of the mentee. Overall, the mentee was the one doing the prescribing while the mentor was the one who listened and expressed his agreement throughout the conversation. The mentor’s attempts at prescribing and scaffolding seemed almost unnecessary in view of the many years of teaching experience of the mentee. The mentor’s explorative propositions and expressions of agreement fuelled the student’s spontaneous, almost prescriptive talk. This is a good example of informed participation but it also indicates that a student with so many years of teaching experience does not have the same mentoring needs as a pre-service teacher. The low road dominance in this data set yielded similar learning outcomes as data set 2,
which confirms the findings of data set 1, namely; that high road propositions is necessary to contribute to significant learning. However, it is noted that the intended high road attempts by this mentor were compromised by the student’s existing experience in the sense that the mentor’s intended prescription and scaffolding proofed to be only confirmation of the existing practice of the student because it was greeted by examples of how the student already implements modern pedagogical concepts into his practice. The notion that propositions, which are intended to perform a high road function to yield more meaningful and significant learning, might only apply to novice teachers and pre-service teachers who are in need of guidance.

4.5 SUMMARY OF ANALYSIS

Table 1 offers a summary of the data analysis in a format which makes it possible to compare each PLE in terms of structural footprint (percentages of ‘high road’, ‘low road’ and ‘other’ mentor utterances) and significance of the learning as per the ISCA. The detailed analysis appears in Appendix B and the ISCA found in Appendix D. The reader is reminded that artefacts which are assigned to categories 3 and 4 on this index are considered to be of potential significance to the mentees future practice. (Step 7 (b) in Chapter 3 and Appendix D explains these categories in detail). The summary in Table 1 indicates the frequency of artefacts in the various categories of the ISCA.
4.6 CONSOLIDATION AND INTERPRETATION OF FINDINGS

The following interpretation of the data analysis as featured in the previous sections, will answer the second sub-question which steered this research, namely: ‘Drawing from Tillema’s (2011) structural model, could a mentor structure the conversation in a certain way, in order to optimize the learning benefits for student teachers? In other words, is there an ideal structure for optimal learning?’

So far, this study attempted to describe the relation between the structure of potential learning episodes in terms of mentoring conversations, based on the mentor’s propositions, and the learning gains of the students. All data and its analysis were based on conversational evidence from transcriptions.
The analysis of data, as summarized in Table 1, yields two key findings for this study. Firstly, the analysis finds a positive relationship between the use of ‘high road’ propositions and significant learning outcomes and secondly, it provides a deeper insight into the dynamics in a mentor conversation in terms of the functionality of propositions and sequential power of propositions. These findings and insights are discussed in the rest of this chapter and explained with reference to Table 1.

Firstly, the positive relationship between the use of ‘high road’ propositions and significant learning outcomes is evident in a tendency which is observed in Table 1. PLE’s which did yield significant learning contained more high road propositions while PLE’s which did not yield significant learning often contained more ‘low road’ or ‘other’ propositions. However, the exceptions cannot be ignored. A closer look at this tendency and exceptions brings about the following insights. The only PLE’s which can truly be classified as significant and meaningful learning, are PLE 1/1, 1/2, 1/3, 1/4. With the exception of PLE 1/3, they all contained more high road propositions and they all (including PLE 1/3) share a distinctive sequential pattern in the use of a combination of propositions. This pattern is depicted in Figure 7 and discussed later on. The exception noticed in PLE 1/3, which is the only PLE in the data sets which still yielded significant learning, while it contains more low road than high road propositions, leads to the conclusion that quantity of high road propositions are possibly not directly related to quality of learning. What is indeed vital to note is that all PLE’s which did yield significant learning did contain high road propositions and shared a distinctive pattern in the sequencing of explorative, prescriptive and scaffolding propositions. Thus, as far as high road propositions are concerned, it seems that they do not guarantee significant learning, as can be seen in Table 1, PLE 1/5, 2/5, 3/2, 3/3, 3/4, but it appears to be an important requirement for the
production of meaningful learning. The most important finding here is probably that Table 1, PLE 2/1, 2/2, 2/3, 2/4, 2/6, 2/7 and 3/1 indicate that meaningful or significant learning is not possible without high road intervention.

The tendency is also seen in the data where PLE’s which did not yield evidence significant learning which either contained no high road propositions (Table 1, PLE 2/1, 2/2, 2/3, 2/4, 2/6, 2/7, 3/1) or contained more low road or other propositions (Table 1, PLE 1/5, 2/5, 3/2, 3/3, 3/4). This researcher is once again confronted with the issue of quantity of high-and low-road propositions in relation to quality of learning as some of the PLE’s which contained high road propositions did not yield significant learning as per the ISCA.

It seems as though extensive knowledge production (quantity) and meaningful learning (quality) should not be confused or attempted to be related directly. In other words, there should be a distinction made between quantity and quality of knowledge production. If one looks at retrospective concept maps in Appendix B, conceptual artefacts and the way in which these artefacts feature in the conversations, it seems that extensive conceptualization as reflected in the conversations do not necessarily constitute meaningful learning while some learning episodes which yield less extensive learning often still fit the definition of deep learning or meaningful learning and is interpreted as such in the context of the conversation. The mere presence of conceptual artefacts or large ratio’s of artefacts per PLE (Table 1, PLE 3/2 and 3/3) in a conversation does not necessarily indicate significant learning. Simply linking the number of artefacts which are produced in a conversation to percentages of ‘high’ or ‘low’ road mentor propositions, forces a quantified or statistical expression on the data which, in this case, fails to take the complexity and quality of knowledge construction into account. For a deeper understanding of the data and the link
between structure and knowledge production, it was necessary to assess the trajectory of how a conceptual artefact came about in the conversation. The Index of Significance of Conceptual Artefacts (ISCA), which was designed for this study, proved to be a useful instrument for determining the quality of learning by looking at the trajectory of how the artefacts were constructed.

As mentioned earlier, the use of high road propositions seem of only partial importance in significance of learning. The sequence, in which a combination of the propositions is used, seems to contribute to learning too. Tillema and Van der Westhuizen (2012) also noted that explorative propositions often precede scaffolding or prescriptive propositions. This study noticed a similar pattern. The ideal sequential patterns seem to be featuring along two distinctive structural chains: Firstly, exploration of the student’s practice in which the mentor must have the critical awareness of identifying entry points into the mentee’s practice and knowledge gaps. It appears crucial to then seize the opportunity with either further exploration or high road intervention by means of scaffolding until meaningful knowledge is constructed. If this attempt is unsuccessful, it seems ideal to then follow with prescriptive propositions and further exploration in order to expand the knowledge. Alternatively, after exploration and finding critical entry points, the mentor might choose to intervene with prescription which might be adequate or might choose to follow up with further exploration. Whenever exploration is used, this pattern is applicable, either at the beginning of sequential chains or as a repetitive pattern until a level of conceptual saturation has been reached. This sequential pattern seems to be successful in guiding a pre-service teacher to the construction of meaningful knowledge. Figure 7 summarizes this pattern graphically by depicting the two sequential chains.
Once conceptual change, or a perceived level of conceptual saturation has been reached, the need for further intervention stops. Conceptual saturation seems to be at the discretion of the mentor.

Secondly, with a closer look at how conceptual artefacts feature in the conversation, it seems that not all conceptual artefacts can be considered to be of equal significance for the future practice of the student. For example, artefacts which featured in the conversation by means of prescriptive propositions of the mentor but which were not opposed by the student teacher might be of value as a conceptual artefact per se, because it indicates knowledge production, but it is not certain to which extent the student personally values the artefact for future practical purposes, despite the fact that it is based on the mentor's expertise, experience and intellectual repertoire. It is thus not sufficient to identify artefacts in the conversation and then consider it as learning which took place just because knowledge was produced. The notion that not all artefacts are of equal significance for the student's future practice is clearly seen in Table 1, Data set/PLE number 1/5, 2/3, 2/4, 5/5, 2/6, 2/7, 3/1, 3/2,
3/3, 3/4 where all PLE’s produced artefacts but none of it could be considered as significant learning (categories 3 or 4) when compared to the criteria for the categories in the ISCA. All of them were artefacts which either already existed as part of the student’s knowledge and just surfaced in the conversation, or were offered by one party but no traces could be found of acceptance thereof by the other party (categories 1 or 2). Knowledge production in a conversation can, therefore, not be taken as indicative of learning unless it is supported by evidence of the significance it has for the student’s future practice. In other words, before knowledge production can be considered as indicative of learning, it should be viewed in context of the conversation in which it featured.

The shared-characteristics of PLE’s which displayed significant and meaningful learning:

a) All contained high road propositions and three of these four cases contained mostly high road propositions.

b) All ended in retrospective concept maps with web structures.

c) All displayed the same distinctive sequence in the use of a combination of high road and low road propositions, as depicted in Figure 7.

The shared-characteristics of PLE’s which did not display significant or meaningful learning:

i) With only one exception (see Table 1, Data set / PLE nr: 3/2), all PLE’s which did not display evidence of meaningful or significant learning, had higher percentages of ‘low road’ or ‘other’ propositions. The exception, which is seen in Table 1, Data set / PLE nr: 3/2, which had an equal percentage of high road and low road propositions, also revealed alternative functional qualities of prescriptive
and scaffolding propositions. In this case, the functionality of the propositions of the mentor, which seemed to be intended as prescriptive or scaffolding in nature, seemed to be compromised by the subsequent utterances of the mentee. The mentor’s scaffolding attempt was greeted by a lengthy reply of the student’s current practice which revealed meaningful understanding prior to the discussion. What was thus intended as scaffolding, turned out to have fulfilled nothing more than an explorative function or a cue for the mentee to elaborate on his own existing practice.

ii) These PLE’s had retrospective concept map structures which varied from spoke structures to complex webs and although the spoke structures revealed learning readiness (Kinchin et al., 2010), the mentors did not seize the opportunities which presented themselves to find critical entry points into the mentees’ practice or conceptual knowledge. Mentors’ utterances remained on low ground by means of exploring propositions or they offered agreement, empathy, etc.

**General remarks on PLE’s:**

It seems that the conversational structure of a PLE is guided by mentoring needs of the mentee. In cases where the mentee already displays a thorough understanding of concepts, there seems to be no need for the mentor to make use of high ground propositions. This seems to be the case with the more experienced post graduate students, as seen in data sets 2 and 3.

There was, however, evidence in the transcriptions where learning opportunities slipped by, even for the more experienced students, because the mentor either did not seize the opportunities for various possible reasons, simply did not realise that a learning opportunity presented itself, due to the natural flow of the conversation or
chose not to do so. Whatever that reasons, it is still of relevance to note that mentors remained on the ‘low road’ or used ‘other’ propositions which did not lead to evidence of significant learning. Since the mentors were not briefed about the use of various categories of propositions before the mentoring conversations, they had only their own theoretical knowledge and mentoring experience to draw from. However, all mentors were aware of the notions of Vygotskyan scaffolding which already offered the theoretical repertoire for the use of high ground mediation, even though it was not explicitly pointed out as an option for intervention before the mentoring conversations. There appears to be a need for the development of mentors with regard to conversational strategies and vigilant conversational and mentoring awareness.

The interpretation leads to the following answers to the research questions:

**How can the structure of mentor conversations be related to the learning of student teachers?**

- **High road propositions**, i.e. prescriptive and scaffolding propositions, used according to the needs of the student, relate positively to significant and meaningful learning for student teachers. Although it does not guarantee significant or meaningful learning, it is a key conversational ingredient if such learning is to be achieved. Most importantly, it seems that without high road intervention, significant learning is unlikely

- **Low road propositions**, i.e. explorative propositions, explore the current practice of the mentee and provide the opportunity to find critical entry points into the mentee’s practice. On its own, it is unlikely to yield significant and meaningful learning. Yet, it provides a base line for collaborative reflection and for identifying issues or topics for conversational learning
• **Other propositions**, such as offering empathy or compliments, expressing agreement with the student or making general statements about the practice of other teachers, could be of value for building the relationship between the mentor and mentee and thus also have a valuable place in the mentor conversation. However, data indicates that it does not contribute to significant and meaningful learning.

**Is there an ideal conversational structure for optimal learning?**

The structure of a mentor conversation should include all three types of propositions, namely; exploration, scaffolding as well as prescription. However, there seems to be in an ideal sequence in the use of these propositions, rather than an ideal proportion of these propositions in a conversation. Such a sequence, as seen in Figure 7, provides an ideal for structural flow, but leaves it flexible enough to fit the unique needs of each mentee in a conversation while it suggests an openness for interplay between the various structural elements and the needs as discovered through exploration.

### 4.7 CONCLUSION

This chapter offered a detailed description of the data analysis with reference to relevant appendices. It also presented findings and interpretations thereof in the form of answers to research question. The answers to the research sub-questions, as set out in this chapter, culminate to an answer to the main research question: **“In which way can mentoring conversations be structured to optimize conversational learning outcomes for student teachers?”** Based on data analysis, findings and interpretations in this chapter, it seems that there is indeed a relation between structural dimensions of mentoring conversations and the learning outcomes of student teachers. Firstly, high road intervention (prescription and scaffolding) is a requirement for significant
learning to take place and without it significant learning is unlikely. Thus, ‘low road’ and ‘other’ propositions on its own are not sufficient to facilitate significant learning. Finally, there seems to be a specific sequence in which all propositions, i.e. ‘high road’ as well as ‘low road’, are incorporated to be conducive to significant learning.
CHAPTER FIVE

SUMMARY, REVIEW AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter concludes the study by giving an overview of the findings as well as outcomes thereof in the form of answers to the research questions. It also discusses a specific contribution of the study in form of a novel methodology, namely the index of significance of conceptual artefacts (ISCA). The study is reviewed and recommendations are made for future research. The conclusion wraps up this study with a final synopsis.

5.2 SUMMARY OF THE FINDINGS AND OUTCOMES OF THIS STUDY

The outcome of this study provides answers to the research questions the study faced in Chapter 1. The main question wanted to know in which way mentoring conversations could be structured to optimize conversational learning outcomes for student teachers; this question was approached by two sub-questions which investigated how structure and outcomes relate and if so, what the ideal structure would be for optimal learning.

Based on data analysis, findings and interpretations as summarized in Chapter 4, it appears that there is a positive relation between structural dimensions of mentoring conversations and the learning outcomes of student teachers. Firstly, high road intervention (prescription and scaffolding) is required for significant learning to take place. Without it, significant learning seems to be unlikely. Therefore, low road (exploring) and ‘other’ propositions (compliments, empathy, and agreement with mentee) alone are not sufficient to facilitate significant learning. It is acknowledged
that low road propositions might have an important role to play in establishing learning needs and ‘other’ propositions might be important in relationship building as pre-requisites for productive learning interactions between mentor and mentee. Finally, there seems to be a specific sequence in which all propositions, i.e. high road as well as low road, are incorporated to be conducive to significant learning. What follows is a more detailed account of these findings in relation to the research sub-questions which facilitate an answer to the main question:

**How can the structure of mentor conversations be related to the learning of student teachers?** The following offers an answer by looking at each type of proposition:

- **High road propositions**, i.e. prescriptive and scaffolding propositions, used according to the needs of the student, relate positively to significant and meaningful learning for student teachers. Although it does not guarantee significant or meaningful learning, it is a key conversational ingredient if such learning is to be achieved. Most importantly, it seems that without high road intervention, significant learning is unlikely.

- **Low road propositions**, i.e. explorative propositions, explore the current practice of the mentee and provide the opportunity to find critical entry points into the mentee’s practice. On its own, it is unlikely to yield significant and meaningful learning. Yet, it provides a base line for collaborative reflection and for identifying issues or topics for conversational learning.

- **Other propositions**, such as offering empathy or compliments, expressing agreement with the student or making general statements about the practice of other teachers, could be of value for building the relationship between the mentor and
mentee and thus also have a valuable place in the mentor conversation. However, data proves that it does not contribute to significant and meaningful learning. In potential learning episodes (PLE’s) in this study where only ‘other’ propositions were used, no conceptual artefacts were produced which indicates clearly that empathy, general compliments or expression of agreement with the mentee does not lead to knowledge construction at all.

What could be an ideal conversational structure for optimal learning, in terms of explorative, scaffolding and prescriptive propositions?

It seems that the structure of a mentor conversation which produces significant learning for the mentee should include all three main types of propositions, namely; exploration, scaffolding as well as prescription, depending on the needs of the mentee. However, there seems to be in an ideal sequence in the use of these propositions, rather than an ideal proportion of these propositions in a conversation. The typical characteristics of this sequence, as seen in chapter 4, Figure 7, and again in this chapter for the reader’s convenience, provides a possible ideal for structural flow, yet, leaves it flexible enough to fit the unique needs of each mentee; it suggests an openness for interplay between the various structural elements and the needs of the mentee as discovered through exploration. The ideal structure appears to consist of a combination of all the structural elements in a certain sequential pattern, which starts with exploration and then uses scaffolding and/or prescription until the conception reaches a level of saturation. It is then followed by further exploration to form a repetitive process, as Figure 7, depicts, here as well as in chapter 4.
Apart from answering the research questions, this study yielded additional insights. It seems that knowledge production in a conversation can not be taken as indicative of learning unless it is supported by evidence of the significance it has for the student’s future practice. In other words, before knowledge production can be considered as indicative of learning, it should be viewed in the context of the conversation in which it featured. This insight led to a novel methodological contribution, namely the index of significance of conceptual artefacts (ISCA) (Appendix D). Although this author developed this instrument specifically for this study, it might be useful in future studies or refined in subsequent research methodologies.

**Additional insights which were gained in the attempt to answer research questions**

As retrospection, the author offers the following general insights into mentoring conversations:

Meaningful mentoring conversations depend on the mentor’s conversational awareness and ability to find and seize critical entry points into the practice of the mentee. When learning readiness presents itself in the flow of a conversation, the
mentor should be able to identify the lack of knowledge and seize the learning opportunity. Without the ability and vigilance to identify the learning needs of the mentee, knowledge of learning theories such as Vygotsky (1896-1934) and knowledge of structural elements, such as offered by the structural model of Tillema (2011), a mentoring conversation would not be utilized to its full potential. For this reason, mentors should be trained and prepared for their role with specific reference to conversational aspects. Such conversational aspects should include knowledge of structural elements in mentoring conversations, the function of each element, sequencing of these elements for optimal learning, and the all important vigilance of when to implement the elements in the conversation.

Mentors should further be vigilant in reflecting on their own conceptual assumptions in order to be creative and flexible in their mediation. Vigilance and an open mind to explore new solutions and options for old problems should allow them to see learning opportunities which they would otherwise miss. As an example, if a mentor views the large amount of administrative tasks in teaching as something the teacher has to simply accept as part of the frustrations of the profession, he/she will miss the opportunity to co-construct solutions for the problem, in conversation with the mentee. Mentors should constantly challenge the general discourse in their field of expertise such as the general acceptance that the teaching profession will always have urgent administrative matters to attend to and that a heavy load of administrative duties is inevitable. This could be the very reason why, in data set 2 of this study, empathy was offered instead of an attempt to co-construct options and strategies for incorporating it into practice so that it does not interfere with teaching time. Had the mentor not accepted administrative duties as a necessary nuisance himself, as is evident from the content analysis of the transcription, he might have
been able to see the potential for collaborative knowledge construction in helping the student find practical solutions to manage administrative tasks in such a way that they do not interfere with her teaching time.

It is acknowledged, that various factors could be at play when a mentor does not take up a learning opportunity. Such factors have nothing to do with not being vigilant or settling for the status quo. It could be due to time constraints or fatigue of either the student or the mentor. The mentor might see the mentoring relationship as not strong enough yet to challenge certain issues. The mentor might feel that he/she wants to build a stronger mentoring relationship with the student first, by means of exploration which is followed by empathy, compliments, etc. where they are appropriate, before challenging the mentee’s current practice. It could also be that positive appraisals are used for emotional and interactional alliance (Tillema & Van der Westhuizen, 2012) before the mentor takes on high ground intervention.

The reasons why mentors do not utilize learning opportunities as they present themselves in a mentoring conversation, could be explored in further research, as it falls outside the scope of this study.

It is to be noted that where no evidence is found of significant knowledge construction in a learning episode, it does not mean that the episode is ‘knowledge-poor’, a term borrowed from Bereiter (2009). The episode could be so rich in existing conceptual knowledge that there is no immediate need for further knowledge construction or conceptual change. To force more knowledge construction on topics in which the student teacher already displays a rich, integrated understanding could become frustrating or could turn the natural flow of the conversation into a superficial attempt to fit the conversation into a certain theoretical or structural mould.
5.3 REVIEW OF THE STUDY

Since one can never fully know the entire repertoire of knowledge of a person and how new knowledge is integrated into existing knowledge, it is impossible to know precisely how much learning has taken place, precisely how significant or meaningful the learning was or whether any learning truly took place at all. Asking the person directly might provide some answers to the question but they could also be clouded by various influences and subjectivity. The KPL instrument (as discussed in Chapter 2), is an empirical attempt at tapping into the person’s subjective view of his/her own learning. The limitations of this instrument as discussed in Chapter 2, made it necessary to find alternative avenues for determining the learning of an individual during a mentoring conversation. In an attempt to overcome the limitations of the KPL instrument, this study attempted to find alternative methodological solutions to this problem by adopting an evidence-based approach instead of an approach based on the person’s perception. However, it presented its own set of limitations. At first it seemed logical to simply look for evidence of conceptual artefacts. The data soon revealed that all conceptual artefacts might not have the same value for the student’s future practice. Developing the ISCA (Appendix D) became necessary and offered a novel solution to this problem by working with conversational evidence from the transcriptions. As a vantage point, patterns in the construction of artefacts were inductively drawn from the data. In an attempt to avoid subjectivity of the researcher, these patterns were grouped and formed the categories of this instrument which were based on existing literature. Yet, it remains an empirically based estimate of how significant the artefacts could be for the student teacher. Conversational evidence from the transcriptions was used, which was intended to make it as accurate as possible. This new instrument has value for similar investigations into
significance (meaningfulness) of the learning and could be used in other studies. It offers a foundation for indicating the meaningfulness of knowledge construction in a more objective way than the KPL instrument. It could also be used and/or refined by other researchers. It also makes this study and its methodology replicable in similar, longitudinal studies, which is suggested later on.

Due to a limited time frame, this study only accessed single, once off mentoring conversations between mentors and mentees which did not make provision for trajectories of learning over longer periods of time. The ideal would have been to include mentors’ follow up practicum visits and subsequent conversations in order to monitor the application of conceptual artefacts which were created in the initial mentoring conversations. This could serve as confirmation for the meaningfulness and significance of the learning as categorized in this study.

Finally, all mentors entered conversations without any training on the structural model of Tillema (2011), which was used as a basis for this study. Conversations were conducted as the mentors saw fit. The structural model was only applied to the data afterwards for purposes of analysis. The limited number of available data sets which existed as part of the broader mentor research project, which this study formed part of, ruled out options such as the option of clustering conversations into one group of trained mentors and a control group of untrained mentors. It also ruled out the option of making mentors aware of structural options for their conversations, which might have yielded more frequent use of the three types of propositions, which may have resulted in lower frequencies of propositions which were categorized as ‘other’ or ‘not relevant.’ This study, therefore, worked with mentor conversations as they occurred naturally without any intervention. On the other hand, using the available sets of data without training the mentors beforehand, eventually provided
valuable insight about the need for mentors to be trained in conversational strategies and conversational awareness, as it became evident how learning opportunities slipped by and how remaining on the ‘low road’ by sticking to the safety of explorative propositions failed to challenge the mentee’s current practice towards teaching proficiency.

The findings of this study provide guidelines for mentors in order to optimize the learning for their mentees. Furthermore, it outlines the value of the various types of propositions and the functional role of each in a mentoring conversation, it offers a possible ideal for sequencing these propositions in a conversation, it challenges the mentor to be aware of his/her own professional assumptions and it highlights the importance of conversational vigilance in order to seize learning opportunities as they present themselves in mentoring conversations.

5.4 RECOMMENDATIONS FOR FURTHER RESEARCH
The data analysis of this study produced a number of insights which were related to the study but which was not the focus thereof. These insights could be researched in more depth in order to contribute to the development of mentors.

Further research could be done on sequence patterns of propositions such as the structural dimension of the mentoring conversation and its effects on the learning outcomes of student teachers. The reason is that only one data set in this study contained the particular sequencing of propositions in its PLE’s which seemed to be related to optimal learning. This was an unexpected finding of the study since the focus of the study was not on sequencing of propositions. Future research could investigate in more depth the sequence in which prescriptive, scaffolding and
exploring propositions are used in relation to learning benefits. It could also be researched as cycles of mentor talk in conversational chains.

The functional characteristics of the various propositions could be investigated since it turned out that propositions do not always function as they were intended by the mentor, as noticed in the subsequent utterances of the mentee in data set 3. The mentor could perceive a gap in the knowledge base of the student, since it is impossible to know the entire repertoire of knowledge of a student, and attempt to scaffold, while the scaffolding utterance merely serve as a cue for the mentee to display his/her knowledge in more detail.

Further research could investigate intended function and actual function of proposition types in Tillema’s (2011) model. Longitudinal studies which collect data over a student’s entire four years of under-graduate training and teaching practicum could follow mentoring conversations over longer periods of time and across the development of the mentor-mentee relationship. It could shed light on the structure of mentoring conversations in context of various dynamics which could influence the conversational structure and outcome. Such studies could follow students’ learning trajectories and it could seek evidence of integration and application of knowledge which was constructed in the conversations.

Propositions which were categorized as ‘other’ in this study could be researched further. The functionality of these propositions could be investigated and it could be classified into sub-categories. It seems that these propositions could be of value in the early, as well as on-going, mentor-mentee relationship building phases.
5.5 LIMITATIONS OF THE STUDY

Relatively small units of analysis (PLE’s) were compared, which facilitated a more refined and rigorous structural analysis, as opposed to comparing entire conversations (3.3.3 in Chapter 3), which served the qualitative nature of this study. It is acknowledged that it resulted in comparing very low frequencies in utterance categories to learning outcomes. The conclusions in paragraph 4.6, however, refrain from claiming statistically significant relationships between variables. Further, because of the qualitative nature of the study, it focused exclusively on the professional development of student teachers at a single institution.

5.6 CONCLUSION

This study has found that the structural dimensions of mentoring conversations have an influence on the meaningfulness and significance of the learning outcomes of student teachers. High road propositions (prescription and scaffolding) by the mentor do not guarantee significant and meaningful learning but such learning outcomes are unlikely without high road propositions. It was also found that low road propositions (exploring) on its own, does not lead to significant and meaningful learning. The exclusive use of propositions which fall outside these propositional categories such as expression of empathy or paying of compliments did not yield any evidence of learning. Learning episodes which yielded significant and meaningful learning contained more high road propositions but it also included all the other propositional categories. It also showed evidence of a particular sequential pattern in the use of the various categories of propositions, which could contribute to the causality of the learning.


APPENDIX F

Ethics Clearance for the Mentor Conversation Research Project at the University of Johannesburg

ETHICS CLEARANCE

Dear Prof Gert van der Westhuizen,

Ethical Clearance Number: 2011-031

Re: The role of knowledge in mentoring conversations.

The FAEC has decided to

☐ Approve the proposal
☐ Provisionally approve the proposal with recommended changes
☐ Recommend revision and resubmission of the proposal

Sincerely,

[Signature]

Professor Alan Amory
Chair: FACULTY ACADEMIC ETHICS COMMITTEE

15 August 2011
Faculty of Education – Research/Education Project Information

The role of knowledge in mentoring conversations

Background to the study

Interactions between mentors (ie teacher educators, experienced teachers) and learners (ie student teachers, novice teachers) have been shown to be critical interventions in teacher professional learning (Tillema and Orland Barak 2006, Kwan Lopez-Real 2005). Such interventions in contexts of teacher preparation or continued professional development are seen as opportunities to transform practices of student teachers in significant ways (Tillema and Orland Barak 2006).

This inquiry is into the effectiveness of mentor-student interactions and the ways in which such interactions are shaped by the knowledge of good teaching. It is about understanding what knowledge the teacher educator as mentor has of the student, how such knowledge is used for the benefit of the student. The purpose is to analyze samples of mentor-student/novice teacher interactions in terms of content, beliefs and conversation in order to make recommendations about the role and use of knowledge in teacher professional preparation.

From literature, we have some understanding of the nature of teacher knowledge (see Tillema and Orland Barak (2006), Edwards (1997). We also know that teacher knowledge of good practice is dynamic and changing (Clark 2001), and socially co-constructed (Feldman 1999). What we do not know, is how such knowledge comes into play in mentoring relations, and to what extent mentor/teacher knowledge is congruent with student actual knowledge of teaching in mentoring settings. The argument is that incongruence may cause inadequate learning benefits for student/novice teachers which amount to ineffective mentoring.

We assume that mentoring strategies in conversations are aimed at eliciting and partly reconfirming what mentors know or assume about the learner. It is therefore of interest to gauge what mentor knowledge of the learner/student is reconfirmed or (deliberate or not) discarded within face to face interactions with the learner. We assume that teachers (=teacher educator as mentor) have representational knowledge of the student’s learning problems, learning needs, conceptual misunderstandings, and that they intentionally deploy conversations to partly acknowledge and partly search for new relevant learner knowledge to arrive at and determine possible learning routes and learner support.

The teacher educator’s task and aim in mentoring conversations therefore is to determine a) what the student needs to know, relative to b) what the student brings into the interaction, given c) reference to the standard to be attained (achievement as expected/conceived by the mentor). We believe there is a discrepancy or difficulty for teachers (mentors) to bridge the knowledge of what they think they know about the students and what students actually bring into such interactions as learners.
Intention of the project

Research associated with this project attempts to:

understand the role of knowledge in mentoring conversations, what the understanding is mentors have of a
students needs, and how the mentor uses his/her knowledge to help students meet learning needs related to
practice teaching. The project also attempts to use specific conversation analysis methods to describe the flow
and focus of the interaction between lecturer and student.

Procedures involved in the project

The research has been planned to involve UJ staff members and a limited number student teachers who will be
completing school experience during July August 2011. Students will be requested to submit a reflection
document of 2 to 3 pages to their lecturer, and then have a discussion meeting of not more that 45 minutes.
This is seen as a mentoring conversation between lecturer and student, to be video taped and transcribed.

Data gathering for the pilot project per participant will involve questionnaires, interviews and video recordings
of interactions. Lecturer/mentors will be requested to complete a questionnaire on mentoring styles and a pre-
interview about the student reflection report and a post-interview about the mentoring conversation. Students
will be requested to complete a questionnaire about the outcome of the mentoring conversation.

The research is being coordinated by prof Gert van der Westhuizen. He is based in the Dept of Educational
Psychology of UJ, APK Campus. [Office B421, tel 011 559 3332]. This study is parallel to a similar pilot project by
Dr. Harm Tillema based at Leiden University who will be conducting a similar pilot at the institution where he
works in the Netherlands.

Data analysis and reports will be written by the researchers of this pilot project which include prof van der
Westhuizen, Dr. Magano and Dr. Sedibe. Findings of the study will be published in an academic journal.

Potential Risks

The interaction between lecturer and student needs to be followed up so that the benefits of the mentoring
interaction may be taken forward.

Potential Benefits

For lecturers to understand their own practice of mentoring, and for students to gain from the actual feedback
and interaction.
Confidentiality for Research Projects

Every effort will be made to protect (guarantee) your confidentiality and privacy. I will not use your name or any information that would allow you to be identified. However, we are often identifiable through the stories we tell. Furthermore, if information you have provided is requested by legal authorities then I may be required to reveal it. In addition, all data collected will be anonymous and only the researchers will have access to the collected data that will be securely stored for no longer than 2 years after publication of research reports, or papers. Thereafter, all collected data will be destroyed.

Confidentiality for Educational Projects

While your name will remain confidential, the information collected for educational purposes can be made available to third parties. The confidentiality and privacy of all other individuals, such as learners in a classroom, will be protected, through the distortion of any audio and video recording.

Participation and withdrawal

Your participation in this study is voluntary. You may withdraw your consent to participate in the project at any time during the project. If you decide to withdraw, there will be no consequences for you. Your decision whether or not to participate in the study will not affect your continuing access to any services that might be part of this project.

Future interest and feedback

You may contact me (see below) at any time for additional information, or if you have questions related to the findings of the project.

Prof Gert van der Westhuizen
gertvdw@uj.ac.za
0722267709

Co-researchers:

Dr. Dinah Magano
dmagano@uj.ac.za
Dr. Mabatho Sedibe
mabathos@uj.ac.za
Informed Consent/Assent Form

Project Title:
The role of knowledge in mentoring conversations

Investigator:
Prof Gert van der Westhuizen

Date:

I hereby:

☐ Agree to be involved in the above research/education project as a participant.

☐ Agree to be involved in the above research/education project as an observer to protect the rights of:

☐ Children younger than 14 years of age;

☐ Children younger than 18 years of age that might be vulnerable*; and/or

☐ Children younger than 18 years of age that are part of a child-headed family.

☐ Agree that my child, ____________________ may participate in the above research/education project.

☐ Agree that my staff may be involved in the above research/education project as participants.

I have read the information sheet pertaining to this research/education project and understand the nature of the project and my role in it. In addition, I have had the opportunity to ask questions about my involvement in this project and to receive additional details I requested. I understand that I may withdraw from the project at any time.

☐ Please allow me to review the report prior to publication.
Name: 

Phone or Cell number: 

E-mail address: 

Signature: 

If applicable:

☐ I consent/assent to audio recording of my/the participant’s contributions.

☐ I consent/assent to video recording of my/the participant’s contributions.

☐ I consent to the use of audio and video recordings to be used for educational purposes under the proviso that I am the only one who can be identified in these recordings.

Signature: 

* Vulnerable children refer to individuals at risk of/exposed to harm (physical, mental, emotional and/or spiritual).
### APPENDIX E - Structure Summary of All Data Sets

<table>
<thead>
<tr>
<th></th>
<th>CM 1 G1</th>
<th>CM 2 G1</th>
<th>CM 3 G1</th>
<th>CM 4 G1</th>
<th>CM 5 G1</th>
</tr>
</thead>
<tbody>
<tr>
<td>raw</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>9%</td>
<td>20%</td>
<td>14%</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>Raw</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>%</td>
<td>50%</td>
<td>50%</td>
<td>19%</td>
<td>45%</td>
<td>33%</td>
</tr>
<tr>
<td>raw</td>
<td>8</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>36%</td>
<td>20%</td>
<td>43%</td>
<td>36%</td>
<td>17%</td>
</tr>
<tr>
<td>raw</td>
<td>1</td>
<td>10%</td>
<td>24%</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>5%</td>
<td>10%</td>
<td>50%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>10</td>
<td>21</td>
<td>11</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>CM 1 J3</th>
<th>CM 2 J3</th>
<th>CM 3 J3</th>
<th>CM 4 J3</th>
<th>5 No map</th>
</tr>
</thead>
<tbody>
<tr>
<td>raw</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Raw</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>raw</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>33%</td>
<td>50%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Raw</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>20%</td>
<td>60%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>raw</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>100%</td>
<td>100%</td>
<td>67%</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>Raw</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>100%</td>
<td>100%</td>
<td>67%</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>CM 1 M1</th>
<th>CM 2 M1</th>
<th>CM 3 M1</th>
<th>CM 4 M1</th>
</tr>
</thead>
<tbody>
<tr>
<td>raw</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>40%</td>
<td>9%</td>
<td>45%</td>
</tr>
<tr>
<td>Raw</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>40%</td>
<td>9%</td>
<td>45%</td>
</tr>
<tr>
<td>raw</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>50%</td>
<td>18%</td>
<td>67%</td>
</tr>
<tr>
<td>Raw</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>0%</td>
<td>50%</td>
<td>18%</td>
<td>67%</td>
</tr>
<tr>
<td>raw</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>83%</td>
<td>50%</td>
<td>45%</td>
<td>0%</td>
</tr>
<tr>
<td>Raw</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>83%</td>
<td>50%</td>
<td>45%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>10</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>
### APPENDIX D - Index of Significance of Conceptual Artefacts

<table>
<thead>
<tr>
<th>Index</th>
<th>Patterns of conversational contributions to artefact construction</th>
<th>Description of index</th>
<th>Underlying theoretical notions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Artefact construction considered as meaningful learning in various degrees</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M + S</td>
<td>Collaborative construction of artefacts as an indicator of student’s active knowledge construction and collaborative knowledge construction. The collaborative effort from the student’s side is considered as a ‘conscious’ and ‘deliberate’ attempt to ‘learn meaningfully’.</td>
<td>‘Proactive, integrative understanding’; ‘deep learning’ (Entwistle, 2000, 2009:11); <em>Meaningful learning, conscious- and deliberate learning</em> (Novak 1998, cited by Hay &amp; Kinchin 2008:173; Novak, 2011); “active, thoughtful engagement with the topics being studied” Entwistle (2009:11)</td>
</tr>
<tr>
<td>3</td>
<td>M + S (✓) OR S + M (x) + S (✓)</td>
<td>Mentor’s conceptual contribution accepted by student OR Student’s contribution adjusted by mentor and subsequently accepted by mentee (alignment) (Assimilation of new knowledge OR Conceptual change)</td>
<td>‘Epistemic authority’, ‘asymmetries of knowledge’, ‘epistemic asymmetry’, ‘epistemic primacy’, epistemic ‘alignment’ (Stivers, 2011:3-24) Ausubel’s assimilation theory (cited in Kinchin, 2010), Novak (2011)</td>
</tr>
<tr>
<td>2</td>
<td>S + M (✓) OR If context of conversation proves that artefacts have been successfully used in student’s practice and is accepted by mentor</td>
<td>Student’s conceptual contribution accepted by mentor (student’s existing knowledge ‘aligns’ with the knowledge of the mentor) Knowledge possibly not new. No conceptual change.</td>
<td></td>
</tr>
<tr>
<td><strong>Artefact construction in which meaningfulness of learning is not confirmed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>S + M (x) + S (–) OR M + S (–) OR S + M (–)</td>
<td>Conceptual change/adjustment/‘alignment’ not confirmed Artefacts proposed but not confirmed</td>
<td>Surface learning (Hay, 2007:43), Entwistle (2000)</td>
</tr>
<tr>
<td><strong>Non-learning</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No artefacts proposed</td>
<td>No knowledge construction</td>
<td>Non-learning (Hay &amp; Kinchin, 2008:173 )</td>
</tr>
<tr>
<td>-1</td>
<td>M + S (x)</td>
<td>Knowledge constructed by mentor but rejected by mentee</td>
<td></td>
</tr>
</tbody>
</table>
### Key:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Mentor</td>
</tr>
<tr>
<td>S</td>
<td>Student</td>
</tr>
<tr>
<td>Bold print</td>
<td>Indication of who proposed the artefact</td>
</tr>
<tr>
<td>✓</td>
<td>Accepted or confirmed</td>
</tr>
<tr>
<td>–</td>
<td>Neither accepted nor confirmed</td>
</tr>
<tr>
<td>✗</td>
<td>Rejected</td>
</tr>
</tbody>
</table>
APPENDIX C – Retrospective Concept Maps

Concept map 1 – G1 (Transcription lines 12 – 97)

Focus question: What is the mentee’s concept of note taking in class?
Concept map 1 – J3 (Transcription lines 42 – 43 and 160 – 174)

Focus question: How does the mentee view administration as part of the teacher’s tasks?

Teacher’s tasks (42-43)  Multi-tasking (42-43)

Admin

Frustrating (163), highly annoying and irritating (173-174)

Interfering with teaching time (169-173)

Important (168)

A lot (163)

Controlled by management (167)

Often Urgent (168-169)

A general problem

Univ of Johannesburg
Focus question: What is the mentee’s concept about applying theory to teaching practice?

- Applying theory to teaching practice
  - Piaget became real during practicum (237)
  - Grade 9’s differ from Grade 12’s on:
    - Cognitive ability, reasoning ability, reasoning skills, social skills, moral development
  - Practice - The longer you are busy with learners, the more the theory becomes real (227 – 250).
  - Apply one theory to the entirety (217-218)
  - Apply elements of each theory (209, 219 – 220)
  - difficulties to:
    - easiest to needs
Focus question: What is the mentee’s concept of reading in school?

- **Reading**
  - Reading levels (102)
    - Assumed on the basis of the school grade (137-138)
  - Influenced by First/Second language (106)
  - Teacher’s role / responsibility (114, 117-118)
    - Across All domains (130-135)
      - Reading skills (114, 117-118, 130-135)
        - By Reading classroom notes / worksheets together (119-123)
          - Interacting around the notes (126-128)
          - Identifying main ideas (130-131, 147-148)
          - Summarizing (147-148)
Focus question: What is the mentee’s concept about parental involvement in teaching practice?

Parental involvement

is a

Big issue (196)

Uninvolved generation of parents (197)

not related to

economical status (200-202)

Some parents who are involved—help and ask how they can help their children (203-208)

Teachers deal with
Concept map 2 – M1 (Transcription lines 253 – 402)

Focus question: What is the mentee’s concept about authentic learning?

**Authentic learning**
- Requires
  - Action based (362)
  - Interaction with/around real life issues or challenges (332-335)
  - Projects of real life significance (338)
  - To contribute to real life solutions (339-344)
  - Addressing community needs (344)
- Involves
  - Real cases/studies – facts & figures based on research (347-350)
  - Through
    - Classroom based (305)
    - Excursion based (364-372)
    - Technology (253-287, 352-359)
    - Extended resources (305)
    - Basic level

**Teacher’s preparation** (372, 374, 381-382, 394, 396-397, 401-402)

**Teacher’s domain competence** (372, 384-385, 401-402)

**Resources**
- Study guide (396)
- Extended resources
  - Technology (253-287, 352-359)
  - Basic level
- Depth of understanding (305)
- Depth of engagement (305)

**Achieved by**
- Being relevant (290)
- Excursion based (364-372)
- Classroom based
- Being real (332-333)

**Higher (next) level** (330-331)

**Study guide (396)**

**Being real** (332-333)

**Technology** (253-287, 352-359)

**Classroom based**

**Excursion based** (364-372)

**Extended resources**

**Basic level**

**Depth of understanding** (305)

**Depth of engagement** (305)

**Higher (next) level** (330-331)

**Involves**

**To contribute to real life solutions** (339-344)

**Projects of real life significance** (338)

**Addressing community needs** (344)

**Involving community leaders eg. local councillor** (346)

**Interaction with/around real life issues or challenges** (332-335)

**Teacher’s preparation** (372, 374, 381-382, 394, 396-397, 401-402)

**Teacher’s domain competence** (372, 384-385, 401-402)
Focus question: What is the mentee’s concept of discipline after teaching practicum?

Discipline

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Punitive (196)

- Physical punishment (hitting) (163, 176, 178)

- Sit outside class (153, 157)

- Continuing the practice of scolding (190)

- Not doing work (154)

- Not showing up for class (154-155)

- Shouting (168)

- Abuse at home (184)

- Not being listened to (185)

- Abuse at home (184)

- Not being listened to (185)

- Discipline as care (185-186)

- Finding reasons for behaviour (174, 169)

- Discipline as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably

- Punitive (196)

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Constructive (positive response) (192-194)

- Finding reasons for behaviour (174, 169)

- Disciplinary as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably

- Punitive (196)

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Constructive (positive response) (192-194)

- Finding reasons for behaviour (174, 169)

- Discipline as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably

- Punitive (196)

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Constructive (positive response) (192-194)

- Finding reasons for behaviour (174, 169)

- Discipline as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably

- Punitive (196)

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Constructive (positive response) (192-194)

- Finding reasons for behaviour (174, 169)

- Discipline as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably

- Punitive (196)

- Destructive (158, 270)
  (student does not agree with this practice 183)

- Constructive (positive response) (192-194)

- Finding reasons for behaviour (174, 169)

- Discipline as care (185-186)

- Contextual knowledge of children: (183)

- These children are probably
Focus question: What is the mentee’s concept of discipline?
Concept map 3 - M1 (Transcription lines 403 – 507)

Focus question: What is the mentee’s concept about adopting an engaging teaching style?

Factors to keep in mind

- Knowledges transfer - Learners listen (410, 412)
- Collaborative knowledge construction / exploration - Learners share opinion / talk (410, 412)
- Develop a connectedness with learners on all levels (435-439)
- Social justice (common sense and humanity must prevail above rules) (452-472)
- Contextual knowledge about learners (457-469)
- Relates to authentic learning (map 2 – M1)
- Relates to an using technology in teaching (map 4 – M1)

Adopting an engaging teaching style

- If it is done right (with respect to the kids)
  - Becomes a stimulant and motivator (418)

- If it is done wrong
  - “burn your fingers” (418-420)

- Respecting differences (481)
- Tackle controversial issues (417)
- Develop a connectedness with learners on all levels (435-439)

is not

is

by

by adopting
devolve

by
Concept map 4 – G1 (Transcription lines 199 – 244)

Focus question: What is the mentee’s concept of methods for teaching spelling?

Teaching spelling

- Ineffective (214-215)
- Unprepared test (214)
- Constructive (218)
- Preparing learners (219)
- Finding meaning of words (221)
- Reading words in its context (238-239)
- Dictionary skills (242)
- Dictionaries (241)
- Language learning is about communication (228-229)
- Improving English ability (232)
- Using words in different settings (225-226)
- Words used in class (202-203)
- English (201)
- Part of communication lesson (233)
- Any class (other subjects) (234-235)
- Reading words in its context (238-239)
- Language learning is about communication (228-229)
- Improving English ability (232)
- Using words in different settings (225-226)

English (201)

Unprepared test (214)

Preparation learners (219)

Finding meaning of words (221)

Reading words in its context (238-239)

Dictionary skills (242)

Dictionaries (241)

Language learning is about communication (228-229)

Improving English ability (232)

Using words in different settings (225-226)

Words used in class (202-203)

Constructive (218)

Unprepared test (214)

Finding meaning of words (221)

Reading words in its context (238-239)

Dictionary skills (242)

Dictionaries (241)

Language learning is about communication (228-229)

Improving English ability (232)

Using words in different settings (225-226)

Words used in class (202-203)

Constructive (218)

Finding meaning of words (221)

Reading words in its context (238-239)

Dictionary skills (242)

Dictionaries (241)

Language learning is about communication (228-229)

Improving English ability (232)

Using words in different settings (225-226)

Words used in class (202-203)

Constructive (218)

Finding meaning of words (221)

Reading words in its context (238-239)

Dictionary skills (242)

Dictionaries (241)

Language learning is about communication (228-229)

Improving English ability (232)

Using words in different settings (225-226)

Words used in class (202-203)

Constructive (218)

Finding meaning of words (221)

Reading words in its context (238-239)

Dictionary skills (242)

Dictionaries (241)

Language learning is about communication (228-229)

Improving English ability (232)

Using words in different settings (225-226)

Words used in class (202-203)

Constructive (218)

Finding meaning of words (221)
Focus question: What is the mentee’s concept of professional reflection?

**Teacher knowledge (self knowledge) (67-78)**

**Reflection**

- **Sources**
  - learners' response (80)
  - assessments (86)
  - learners' non-verbal (facial) expressions (81-85)

- **What to change in order to address ill discipline (94-98)**

- **Can be done through**
  - such as
  - by looking at

- **Can reveal**
  - such as

- **Is necessary for**
Focus question: What is the mentee’s concept about the practical use of technology in teaching?

- Practical use of technology in teaching practice
  - New learning (254, 286-287)
    - Inviting participation of kids who would normally not participate (271-272)
      - Placing quiet kids on equal foot with others (275-276)
        - accent (278)
        - Not excluded because of home language (278)
      - Inviting participation of kids who would normally not participate (279)
    - Cell phones for teaching purposes (258)
      - has the benefit of
    - Television for teaching purposes (357)
      - by following relevant events on CNN news (357)
      - because It connects the subject (Geography) to ‘real life’ (358)
      - is pedagogically sound because questions are based on the text read in class (264)
        - by is pedagogically sound because has the benefit of
  - Means of communication (265-268)
    - is a Fun (257, 263, 270)
      - by
  - New learning (254, 286-287)
    - Inviting participation of kids who would normally not participate (271-272)
      - Placing quiet kids on equal foot with others (275-276)
      - accent (278)
      - Not excluded because of home language (278)
    - Television for teaching purposes (357)
      - by following relevant events on CNN news (357)
      - because It connects the subject (Geography) to ‘real life’ (358)
      - is pedagogically sound because questions are based on the text read in class (264)
        - by is pedagogically sound because has the benefit of
  - Practical use of technology in teaching practice
    - New learning (254, 286-287)
      - Inviting participation of kids who would normally not participate (271-272)
        - Placing quiet kids on equal foot with others (275-276)
        - accent (278)
        - Not excluded because of home language (278)
      - Television for teaching purposes (357)
        - by following relevant events on CNN news (357)
        - because It connects the subject (Geography) to ‘real life’ (358)
        - is pedagogically sound because questions are based on the text read in class (264)
          - by is pedagogically sound because has the benefit of
  - Fun (257, 263, 270)
    - by
  - Means of communication (265-268)
    - is a
Focus question: What is the mentee’s concept about dealing with poor class attendance?

Dealing with poor class attendance

Destructive response (270)
- Such as hitting (physical punishment) (270)
- Such as focus on results only (257)

Constructive response (269)
- Such as focus on caring about the child (262)
- By finding out where the child was / why he missed the class (259-260)
- By creating the classroom as a safe environment (264)
## APPENDIX B - Evidence Based Content Analysis for Knowledge Productivity in the Mentoring Conversation

<table>
<thead>
<tr>
<th>Data set: 1 (G1)</th>
<th>Corresponding line numbers in transcription</th>
<th>Corresponding concept map</th>
<th>PLE nr</th>
<th>Potential Learning Episode (PLE) - description (topic of discussion)</th>
<th>Artefact nr</th>
<th>Description of conceptual artefacts which were constructed during the conversation (E - followed after mentor’s exploration, P - prescribed by mentor, S - After scaffolding by the mentor)</th>
<th>Clarification of how each artefact is constructed in the flow of the conversation (numbers in brackets refer to line numbers in transcription)</th>
<th>Index of significance of conceptual artefacts</th>
<th>Highest index of conceptual artefact significance in the PLE</th>
<th>Structure of mentor propositions in PLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 - 97</td>
<td>1 - G1 complex web structure</td>
<td>1</td>
<td>Copying notes from the board without interaction</td>
<td>1.1</td>
<td>P - Let the learning happen in the interaction</td>
<td>Mentor agrees with student’s initial idea (50) but prescribes in more specific terms (51) - student does not oppose or accept.</td>
<td>1</td>
<td>4</td>
<td>Low (36%)</td>
<td>High (59%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.2</td>
<td>S - Sequencing: First explain, then copy notes form the board or first copy notes and then explain</td>
<td>Student offers this artefact as option (54-58 and 76-78). Mentor does not oppose but offers other options for consideration. (61, 63)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.3</td>
<td>S, P - Instead of copying notes, use it as a learning tool and develop the skill of note taking while the lesson takes place</td>
<td>This artefact is constructed collaboratively but is based mainly on the mentor’s contributions (61, 63, 79-80, 82) which the student accepts (62, 64, 81, 83) and elaborates on (83).</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
<td>S - Let learners reason to identify main ideas and to decide what is relevant.</td>
<td>Mainly mentor’s contribution (91-93) but the student highlights the element of reasoning (94, 96-97) and it is accepted by the mentor (95).</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.5</strong></td>
<td><strong>S - Let learners learn how to write while they interact and listen</strong></td>
<td>Student’s contribution via scaffolding by the mentor (82-88). Mentor accepts (89). Student indicates that she favours the idea (90).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>98 - 149</strong></td>
<td>2 - G1 simple web structure</td>
<td><strong>2.1</strong></td>
<td><strong>S - Teacher should read through the notes with learners</strong></td>
<td>Student’s suggestion (119-123) as mentor probes for solutions through scaffolding (113-114, 117-118, 124, 126, 128). Mentor does not oppose but adds on to the idea to form further artefacts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Poor reading level of learners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.2</strong></td>
<td><strong>S - Use questions and answers to clarify the reading through interaction (discussion)</strong></td>
<td>Mentor’s attempt (124, 126, 128) to clarify previous artefact which was student’s idea and to further enrich concept by arriving at the notion of discussion around notes after assisted reading. Accepted by student (125, 127, 129).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.3</strong></td>
<td><strong>S, P - Develop (reading comprehension) skills by identifying the main ideas and by summarizing the content.</strong></td>
<td>When the student’s contribution did not yield a sufficient solution after the mentor’s initial scaffolding, he followed up with prescriptive propositions (130-131, 147-148) to enrich the concept. The mentor’s prescriptive proposition is pertinently accepted by the student (149).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.4</strong></td>
<td><strong>O - Do not assume reading level on the basis of school grade</strong></td>
<td>Student shares this knowledge which she gained from her practicum (136-138). Mentor does not oppose.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**High (70%)**

**Low (20%)**

**Other (10%)**
<table>
<thead>
<tr>
<th>150 - 198, 251 - 271, 279 - 307</th>
<th>3 - G1 simple web structure</th>
<th>3</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.5</strong> S, P - Promote reading skills across all domains</td>
<td>When the student's contribution did not yield a sufficient answer (113-129), after the mentor's initial scaffolding, he followed up with prescriptive propositions to add new insight (130-134). Student accepts (135).</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>3.1</strong> E, P - Approach discipline as care (caring) instead of using destructive punitive forms of discipline.</td>
<td>Student contributes this notion (183-187, 262) - mentor agrees (188, 263) and uses prescription to enrich the notion (190). Student agrees (191).</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>3.2</strong> P - Be present in the classroom.</td>
<td>Mentor prescribes (281-282) - student does not oppose nor accept - it relates to a remark the student made about teachers' absenteeism (279-280).</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>3.3</strong> S - Deal with learners individually regarding problems.</td>
<td>Student proposes this approach (287) - mentor agrees (289).</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>3.4</strong> E - Do not shout - speak in a natural voice.</td>
<td>Student's contribution (296-299, 301-303) - Mentor does not oppose or accept.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>3.5</strong> E, P - Have contextual knowledge about learners and take it into consideration.</td>
<td>Introduced by student (183-187) after exploration - mentor agrees (188).</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>3.6</strong> P - Let the discipline be constructive.</td>
<td>This prescriptive proposition summarizes and accepts the student's contributions to the other artefacts (270-271).</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>199 - 244</td>
<td>4 - G1 simple web structure</td>
<td>4</td>
<td>Methods for teaching spelling</td>
</tr>
<tr>
<td>251 - 271</td>
<td>5 - G1 simple web structure</td>
<td>5</td>
<td>Poor class attendance</td>
</tr>
<tr>
<td>42 - 43, 155 - 174</td>
<td>1 - J3 spoke structure</td>
<td>1</td>
<td>Administrative task interfering with teaching time</td>
</tr>
<tr>
<td>196 - 208</td>
<td>2 - J3 resembles spoke structure</td>
<td>2</td>
<td>Poor parental involvement</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------</td>
<td>---</td>
<td>---------------------------</td>
</tr>
<tr>
<td>29 - 40, 87 - 103</td>
<td>3 - J3 simple web structure</td>
<td>3</td>
<td>Discipline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High (0%)</th>
<th>Low (%)</th>
<th>Other (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>High (0%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low (33%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (67%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3.3</td>
<td>E - Reflect on teaching practice (engaging pedagogics) and be flexible in order to change what is not working</td>
<td>This notion is explored by the mentor (94-96,98,100-101) instead of prescribing it. It is repeatedly agreed and elaborated upon by the student (97, 99, 102-103). From the context of the ongoing conversation it is clear that this notion has been learnt before the discussion and not as a result there of (122-130). Existing knowledge confirmed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>E - Look at learners' response, for example, what they say or their facial expressions</td>
<td>The mentor explored how student does her reflection. She responds with this artefact (80-85). Mentor responds agreement and generalization (94-100).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>E - Use learner assessments for the purpose of professional reflection</td>
<td>The mentor explored how student does her reflection. She responds with this artefact (85-86). Mentor responds with agreement and generalization (94-100).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52 - 78</td>
<td>Data saturation reached - no map constructed</td>
<td>5</td>
</tr>
<tr>
<td>52 - 78</td>
<td>Data saturation reached - no map constructed</td>
<td>5</td>
</tr>
<tr>
<td>87 - 114</td>
<td>Data saturation reached - no map constructed</td>
<td>6</td>
</tr>
<tr>
<td>6.2</td>
<td>O - Include interesting facts to get their attention</td>
<td>The mentor brings up the notion by recalling an example of an engaging lesson by the student during his visit to her school (104-108). The student further elaborates on her understanding of the notion in practice (111-113).</td>
</tr>
<tr>
<td>6.3</td>
<td>E - Small parts of lessons can be enough to spark pupils' engagement in the lesson, for example an introduction which is &quot;in their faces&quot;</td>
<td>The mentor explores the previous notion and the student elaborates with this artefact (111-113). Mentor agrees (114).</td>
</tr>
</tbody>
</table>

| 118 - 149 | Data saturation reached - no map constructed | 7 | Applying theory to practice | 7.1 | E- Infuse "who you are" into what you are doing | Student suggests this artefact (130-131). Mentor's confirmation cannot be related directly to this notion. | 1 | 2 | High (0%) Low (67%) Other (33%) |
| 7.2 | E - Incorporate all theories into practice and use them when each is necessary. (Do not look at only behaviourism, etc in isolation) | Student suggests this artefact (130-147) and the mentor confirms it (149). | 2 |

Data set 3(M1)

<p>| 207 - 251 | 1 - M1 spoke structure | 1 | Applying theory to practice | 1.1 | E - Apply elements of various theories instead of one theory | Mentor exploration is followed by a lengthy discussion which produces this artefact. Mentor expresses agreement throughout the talking of the mentee (207-251). | 2 | High (0%) Low (83%) Other (17%) |
| 253 - 402 | 2 - M1 complex web structure | 2 | Authentic learning in practice | 2.1 | E, P - Make the content relevant | The student came up with this artefact by referring to his own practice (289,290). The mentor confirmed (299, 305, 307). Existing | 2 | 2 | High (50%) Low (50%) Other (0%) |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Knowledge confirmed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>P - Let learners engage with content</td>
<td>The mentor concluded the previous notion with a prescriptive proposition which consolidated the discussion. The student then took the opportunity to elaborate further and to report back on his own practice of how he engaged the learners (309-325). He also mention that the visiting lecturer commended him on his engaging teaching. Mentor does not comment any further on this topic.</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>S - Interact with/around real life issues and challenges</td>
<td>The mentor scaffolded by asking the student what the next level of authentic learning would look like. He responded with this artefact (332-373). His ideas were confirmed by the mentor throughout the discussion.</td>
<td>2</td>
</tr>
<tr>
<td>2.4</td>
<td>E - Involve learners in projects of real life significance by addressing community needs (in Geography class)</td>
<td>This artefact was suggested by the student after the mentor’s exploration of the previous one. The student then reported back in detail on a project he facilitated at school. It is then explored further by the mentor. He indicates agreement throughout the discussion.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2.5</td>
<td>E - Build domain competence/content knowledge by thorough preparation - engage with the content yourself and research the topics</td>
<td>The student contributed this artefact by reporting back on his own practice (364-386). The mentor indicates agreement throughout the discussion and consolidates with a prescriptive proposition.</td>
<td>2</td>
</tr>
<tr>
<td>2.6</td>
<td>P - Do not use the study guide as only resource but incorporate other additional resources as well</td>
<td>This artefact was suggested by the student by spontaneously elaborating on his own teaching practice after the mentor’s consolidation with a prescriptive proposition (390-402). The mentor indicates agreement throughout the conversation.</td>
<td>2</td>
</tr>
<tr>
<td>403 - 507</td>
<td>3 - M1 complex web structure</td>
<td>3</td>
<td>Adopting an engaging teaching style</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3.4</td>
<td>E, P - Connect with learners on all levels</td>
<td>This artefact is contributed by the mentor (435-439)-first as summary of what the mentee's utterance suggested but then followed up as prescription. Student indicates agreement and follows up with a supporting example from his own practice. This artefact is thus existing knowledge which is confirmed in the discussion.</td>
<td>2</td>
</tr>
<tr>
<td>3.5</td>
<td>E - Let common sense and humanity prevail by not being so determined to follow rules and regulations that it happens at the cost of the learner</td>
<td>The student's contribution (440-456) which follows after mentor exploration. Agreement indicated by the mentor's further exploration.</td>
<td>2</td>
</tr>
<tr>
<td>3.6</td>
<td>E, S - Be aware of social justice and respect differences between learners</td>
<td>This artefact is explored and scaffolded by the mentor. However, it is linked to an example from the mentee's practice which shows that he already understands and uses it in his interaction with learners (455-504).</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>253 - 287, 352 - 359</th>
<th>4 - M1 web structure</th>
<th>4</th>
<th>Incorporating technology into teaching practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>E - Use cell phones in class as an alternative way of interacting around the domain content</td>
<td>This artefact was the contribution of the student (257 - 287). The mentor acknowledged the appropriateness thereof by following with a prescriptive propositions which supports the notion (286-287).</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2</td>
<td>*Use television news broadcasts to follow issues/events which are relevant to domain content</td>
</tr>
</tbody>
</table>
1 August 2011

REFLECTION REPORT ON SCHOOL EXPERIENCE

Dear Student

Thank you for your willingness to participate in the Mentoring Conversation research project.

Please go ahead and write a 2 to 3 page reflection report on your school experience. This report is to be submitted to your lecturer for discussion.

The purpose of the report is to highlight the learning benefits from this round of school experience, and to provide the opportunity to you and your lecturer to have a discussion on key issues you need to clarify and learn more about.

In your reflection report, please include what the school experience was like for you personally, what you have gained/learned and the key issues you still have. The latter could include some points of clarification, some needs for further learning, etc.

Please submit this report to your lecturer on the date agreed, and then attend a meeting which will be called by your lecturer.

Any further queries about this assignment can be directed to Prof G. van der Westhuizen [gertydw@uj.ac.za] or 0722267709