

Mentoring for Learning

“Climbing the Mountain”

Harm Tillema, Gert J. van der Westhuizen and
Kari Smith (Eds.)



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INTRODUCTION

OVERVIEW OF THE BOOK

“What is mentoring all about”? Being Telemachus’ guide and resource person Mentor’s prime role was to “help” the young and unskilled son of Odysseus to become a proficient and self-regulated learner, able to cope with the demands of life. This ‘helping’ process (Cox, Bachkirova, & Clutterbuck, 2010) was accomplished through conversation. Mentoring’s typical characteristic is talk, i.e., the communicative interactive exchange between persons. This exchange is considered to be the vehicle of learning and professional development. Therefore, to tentatively answer our opening question, mentoring is about learning in conversations. For mentoring to be of any help its process (i.e., conversation) and its result (i.e., learning to become a professional) need to be carefully appreciated and scrutinized by mentors – i.e., “reflected upon” – in order to warrant a mentor’s role and position as a “helping” agent.

It is precisely this appreciative inquiry into the role of conversations as a vehicle for learning, being skillfully used and placed in the hands of a ‘good’ mentor that lies at the heart of this volume. Moreover, a prime intention behind offering this collection of chapters is to enhance the learning potential of mentors. An observation might elucidate a concern we have:

In evaluating student teachers’ practice teaching period regarding their mentoring experiences we used the Rose Ideal Mentor scale (2003) to test appraisals with regard to: Guidance, Integrity, and Relationship in mentoring. The evaluations by students of their mentor were high (usually 4.5 of a 5 point scale). However, at a later moment, we conducted an evaluation regarding the students’ appraisal of professional preparation they received through their mentoring conversations. The Kirkpatrick four levels of evaluation used were: satisfaction, learning, performance change, and sustained impact. The results of the last three evaluation levels were meager, to say it friendly. (with an average 2.5 on a 5 point scale and having a significant drop for sustained impact on professional life)

This observation meant to illustrate that although both mentors and mentees may find their conversation high in relatedness and autonomy (Decy & Ryan, 2008) the competence and insights gained from it may be less forthright. This raises a concern about the learning potential of mentoring conversations – the topic of this book.

The purpose of this book is to draw attention to the peculiar divergence or even possible divide between on the one hand the relational understanding and mutual agreed upon acceptance of support offered through conversational interaction and on

the other hand the end result of professional competence development that may have fallen behind in outcomes and achievements. We feel that in positioning mentoring as a vehicle for learning mentors as guides and resource persons have a prime responsibility not only to be aware of this possible divide but also to use agency in bringing mentoring conversations up to the level of a genuine learning event.

To illustrate our position a bit further it can be referred to a comparative study by Smith, Tillema and Leshem (2011) in which mentors and students of teacher education from three different countries were asked to evaluate their communicative talks with regard to their attained learning outcomes. The main finding was that mentors believed they gave relevant feedback and guidance on professional preparation to students while students indicated a clear lack of support and absence of any strong structuring of their practice experiences.

To link process and outcome, i.e., conversation and learning, the concept of knowledge productivity will be introduced in the book. The concept of knowledge productivity (Tillema & Van der Westhuizen, 2006), as adapted from Peter Drucker's work (1999), is meant to convey the importance of building knowledge for professional action. Ultimately, learning needs to mount up to agency, at least as is the case for mentoring in the professions (Bereiter, 2002). The notion of Knowledge Productivity captures this process by identifying three elements to be present in conversations as criterions for learning: problem understanding: i.e., has insight occurred on part of the learner; perspective shift: i.e., has conversation added to change in beliefs and ideas (with regards to the content of conversation), and commitment to apply: i.e., is there a willingness to adopt advice for future action. These three criteria can act as building blocks for mentors to arrange their "learning conversations". "Mentoring for Learning", therefore, can be viewed as an agenda for highlighting both the pedagogical and accountability issue in mentoring; to ensure productivity of conversations that will surpass the basic needs for guidance, integrity and relatedness in conversations and aim for attainment of competence. The collection of chapters presented in this book provides a story line to express the promotion of enhancing knowledge productivity. Firstly by grounding the concept of knowledge building for professional preparation, and subsequently widening the arena to account for:

(1th part) Learning from mentoring conversations

(2nd part) Mentoring conversations – a two hearted affair in professional education

(3rd part) Mentor Professional development

The book is intended, in the first place, for mentors and all those involved in preparing apprentices for practice. The book draws heavily on the context of teacher preparation and teacher education although not exclusively confined to this particular context. Also, students involved in a mentoring process may find the collection of works supportive to enhance their learning experience. Additionally, the book may be of interest to teachers and instructors in conducting learning conversations (be it in the case of teaching or professional training and in-service education).

The storyline told has a strong research orientation. We feel that empirical grounding is needed on the positions taken in the subsequent chapters; it adds evidence to our argument.

THE CHAPTERS AT A GLANCE

Introductory Chapter

1. Knowledge building through conversations

Harm Tillema, Gert J. van der Westhuizen, & Martijn P. van der Merwe

This introducing and grounding chapter for the book offers a review of different perspectives on professional knowledge development and develops a case for a distributed, i.e., shared and collaborative knowledge building in professional interactions. In this sense, mentoring conversations exemplify our position on “Mentoring for Learning” as a way to share and endorse learning in the professions (as we relate it in this book mainly to teaching). The review challenges three competing views about teacher knowledge building: i.e., the individual reflective view, the situated cognition view, and the distributed knowledge view, as different ways to bring about knowledge productivity in learning conversations/mentoring interactions. We defend and explore knowledge building in the professions as a deeply discursive and interactional activity and offer an outlook on possible conversational analytic principles that can be deployed in interactional settings for learning among professionals.

Part 1: Learning from Mentoring Conversations

2. Mentoring conversations and student teacher learning

Harm Tillema & Gert J. van der Westhuizen

This study analyzes ways in which mentoring can enhance the quality of learning conversations in teacher education. The specific focus is on the conversational strategies used by lecturer mentors and the expected and actual impact they have on student teacher’s learning. Using a case-design, 12 conversations between a student teacher and his/her mentor were analyzed in depth with regard to interactional moves by mentors to help students attain learning goals. The findings of this study suggest that: There is an overall positive effect of different conversational moves on student teacher’s learning outcomes. However, we noted that almost 60% of conversational talk was non-learning goal related, but could more easily be interpreted as relational talk. Closeness in the relationship was found to positively influence student teacher’s learning outcomes. No direct relation was found between specific mentor conversational moves and perceived knowledge productivity, although higher scores were found for a ‘low road’ approach, i.e., moves that explored and stay with the student’s current learning experiences. The implication for the quality of professional (teacher) education are discussed.

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3. Eliciting student teachers' practical knowledge through mentoring conversations in the practicum

Juanjo Mena Marcos & Anthony Clarke

Mentoring is being promoted as a key component in “learning to teach” because it gives student teachers an opportunity to learn for the profession under a practice teacher’s guidance. Research on mentoring in teaching has largely focused on the process of mentoring (i.e., studying topics as active listening, satisfaction, reflection or classroom management) but little attention is given to the outcomes of mentoring as a tool for professional learning (i.e., building practical professional knowledge for action). This chapter calls for research attention to the content of learning conversations in mentoring (i.e., what kind of proficiency is to be acquired during conversation – labelled as *issue of substance*). The “substance” is being discussed during learning interactions (i.e., mentoring dialogues of a mentor with a learner) using a variety of methods, and leading to varied interpretations (*issue of perspective*). This chapter elucidates how these two criteria can afford mentors and students alike to focus on what is gained from conversations for professional agency.

4. Feedback in the mentoring of teacher learning

Siv M. Gamlem

Advice giving and feedback provision lie at the heart of mentoring, and when provided in the right manner it has high potential for learning. Advice and help is meant to give students ‘tuned’, i.e., adapted guidance respective to their needs and mastery level, and is meant to bridge the gap between current performance and goals to be achieved. Effective feedback provision in mentoring, therefore, is a) more than “telling” students what criteria there are to be met (goal orientation) or b) more than relating to a common ground and mutual agreed experiences (relatedness) but also to appraise (current) and display (future) performance. Mentors are in a position to give proposals for course of action to take to bridge performance and goals through feedback they give. The potential of feedback and advice becomes real when student accepts the feedback and is following recommendation. This chapter relates to the mechanisms involved in mentoring conversations that operate in taking advice. The primary purpose for this chapter lies in its focus on feedback and its impact on the mentee. The importance of feedback, how to give it and how it is perceived by the mentee will be addressed. How six teachers in lower secondary school taking part in an intervention study perceive external feedback as useful for developing higher levels of proficiency is analyzed.

5. Feedback provision in mentoring conversations

Bettina Korver & Harm Tillema

This chapter explores how diverging perceptions of mentors and mentees on the nature and content of feedback will have impact on learning from conversation. The study presented gauges whether different approaches to mentoring conversation promote

congruency in perceptions on feedback. The focus of this research is to explore differences in mentor and student perceptions on the usefulness of feedback. For that purpose, this study compares typical mentor approaches to feedback provision across different settings. Feedback to students (Teaching assistants) in vocational education having a strong performance orientation is contrasted with a reflective oriented feedback to students in teacher education. Mentoring conversations on teaching internships of these students were analyzed. Approaches to mentors' conversation styles were identified with an observation instrument categorizing mentoring into four types. Teaching assistant students predominantly recognized their mentor's approach as having an Emperor (supervising) style, while the Teacher education students identified it predominantly as an Initiator (engaging) style. Teaching assistant students expressed a higher degree of acceptance of feedback, as compared with Teacher education students. Differences in perceptions between students and their mentors on feedback provision were found to be significant. Our findings point to the importance of mentoring approach as it impinges on the feedback acceptance in mentoring conversations.

Part 2: Mentoring Conversation – A Two Hearted Affair in Professional Education

6. The role of knowledge in mentoring conversations for learning
Gert J. van der Westhuizen

This chapter is about the institutional character of mentoring conversations where professors advise student teachers about their teaching practices. The purpose is to use analytic principles from Conversational Analysis Research to develop an understanding of the complexities of epistemological access, primacy and responsibility. Analytic principles were derived from studies on epistemics in interaction, on turn organization, on epistemic stance and authority, on sequencing and repair, on inter-subjectivity and shared knowledge, and on displays of understanding and knowledge in interaction.

The analysis zooms in on interaction sequences where assessments are made by mentors of access and depth of knowledge, and with recipients responding with extended accounts and explanations. Findings indicate that institutional norms seem to prioritise mentor access and inhibit stances of openness. Some evidence was found of questions which allow mentees their right to tell and explore their own depth of knowledge. These actions indicate how mentees assert themselves and claim authority of knowledge. Findings are discussed in terms of the management of knowledge congruence in mentoring conversations.

7. The structural dimensions of mentoring conversations.
Annatjie Pretorius & Gert J. van der Westhuizen

Although mentorship implies expertise, such expertise in teaching is not sufficient for being an effective teacher educator and thus does not guarantee effective

INTRODUCTION

mentoring. This chapter attempts to offer research based guidance for significant and meaningful mentoring conversations, since conversation is the vessel through which learning is mediated. The chapter clarifies the structural dimensions of mentoring conversations and how they relate to learning outcomes of student teachers.

The study presented analyzes samples of mentoring conversations and engages in three levels of analysis. On the primary level, the structure of the conversation is determined. A secondary level of analysis identifies conceptual artefacts, 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 which makes the complexity of conceptions explicit in graphical format. Secondly an index of significance of conceptual artefacts (ISCA) has been developed to further reveal the significance and meaningfulness of the student teacher's learning as a result of the mentoring conversation.

8. The learning potential of mentoring conversations

Guido van Esch & Harm Tillema

Mentoring is an important vehicle to make 'practical knowledge explicit'. It can be maintained that mentoring conversations need to be a) supportive in 'pushing' mentees forward in maintaining (goal) direction; b) while at the same time promote learners to reflect on past performance; as well c) scaffold the necessary steps to explore or gain insights in their recent learning accomplishments. The study presented explores different patterns in conversations viewed from the perspective of student learning, asking to what extent patterned speech acts in mentoring conversations do influence the regulation of (professional) learning.

In an explorative, mixed method study mentoring conversations were video analyzed to identify episodes in conversations. Patterns were distinguished with regard to goal orientation, reflection and scaffolding of action. The conversation analysis data were linked to questionnaire data on professional learning beliefs and ideal mentor beliefs of students as well as criterion variables: student learning outcomes, and student satisfaction with mentoring conversation. The findings indicate a high variety of patterns in mentoring conversations. A predominant preference was found for a reflection oriented pattern of mentoring on part of the mentors which however was not positively related to student satisfaction or student learning outcome. For this to happen mentees preferred a pattern of talk directed towards scaffolding of action while also giving attention to goal attainment.

9. Space making in mentoring conversations

Annatjie Pretorius

This chapter explores a particular conversational strategy which is used to reach a balance in the status-solidarity dialectic in a learning conversation where there is a significant difference between the knowledge and experience of the two participants.

This balance is facilitated through the use of utterances which display ostensible uncertainty. This strategy creates hospitable mental space in the conversation in which no fixed answers are expected or supposed. A mentoring conversation between a veteran in education and a pre-service student teacher is used as a case study.

10. Invitational conversations – a means to an end in mentoring
Martijn P. van der Merwe & Gert J. van der Westhuizen

In managing interactions in learning situations, it is important that mentors value people, knowledge and democratic relationships (Novak, 2010). According to Novak a critical condition for learning is that one should be invited and incited to realize one's untapped potential, and to engage meaningfully and unafraid in democratic practices. Mentoring interactions are therefore in essence dialogic and underpinned by the deepest belief and value systems of the participants. Invitational education is grounded in self-concept and perceptual theory. The focus on developing positive views of self, have been extensively researched by way of the Florida Key instrument. This instrument focuses on four areas of interaction, namely: relating, asserting, investing and coping to support professional development. This chapter investigates how mentoring conversation between mentors and mentees invite professional development within these four areas.

Part 3: Mentor Professional Development

11. Understanding teachers as learners: Considering teachers' possibilities for change when designing mentoring.
Emilio Sánchez & J. Ricardo García

A critical step in mentoring consists of collaboratively developing a shared goal orientation in conversation. However, in ensuring that goals are accessible and agreed, mentors need to take into account what teachers *usually do* before conceiving a potential goal. To explore these issues, a mentoring process on changing teachers' reading comprehension activities is analyzed. Fine-grained analysis of 34 whole-group reading lessons is offered based on four components: a) how lessons were organized, b) how teachers introduced lessons, c) how classroom interactions unfolded throughout a lesson, and d) what kinds of scaffolding were provided by mentors. Each component could be arranged from simple to complex, offering possible trajectories for professional development. This chapter highlights the importance of understanding possible trajectories in a mentoring process to bring about change in teachers' current practices, and, subsequently, to create accessible goals in mentoring in order to move current patterns to more complex ones. Our findings show different patterns of change by teachers, and indicate the challenges involved, both in professional development and in the mentoring processes.

12. Self-regulated learning and professional development: How to help teachers encourage students to use a self-regulated goal-setting process
Elena Ciga, Emma García, Mercedes I. Rueda, Harm Tillema and Emilio Sánchez

Self-regulated learning (SRL) has been advocated as a means of acquiring competence in an active inquisitive and self-determined way. However, the process that allows mentors to promote self-regulated learning in their learners is less known. Available models on SRL hardly specify (student) teachers' needs and activities when they are asked to teach according to SRL principles. This chapter attempts to understand what difficulties arise when promoting self-regulated learning in student teachers as learners as an outcome of a mentoring process. A fine-grained analysis of 32 sessions is presented from 10 mentoring processes to identify the generalizations and distortions learners make with regard to SRL teaching after being mentored on SRL. The mentoring process was aimed at learning how to help pupils in an SRL manner, i.e., (1) gaining awareness of performance; (2) finding gaps between performance and desirable standards, (3) generating goals to reduce these gaps. Subsequently, a structured mentoring intervention was designed in which student teachers were informed about the most common distortions and simplifications, and encouraged to adopt an active teaching strategy in overcoming them. Findings of the study show how important is to understand the (student) teacher learning needs in a mentoring process.

13. Mentoring – a profession within a profession
Kari Smith

The education of professionals is recently seen in a career wide perspective, consisting of three stages, initial, induction, and in-service education. In all three stages, mentoring activities are given a central role. During preparation for the profession, initial education, mentors have the responsibility of introducing the practice field to professionals-to-be. During induction, mentors become supporters and guides for the novice, whereas in the phase of in-service education, formal mentoring by appointed mentors and informal collegial mentoring within communities of practice are found to promote professional learning. In most cases mentors are chosen based on their reputation of being experienced and successful professionals, or, they are practitioners towards the end of their professional career whose work load is reduced, and mentoring is seen as a suitable activity towards the end of a long career.

The question raised in this article is if all experienced professionals can be mentors or is mentoring a different experience than practicing the profession? The claim made in this chapter is that mentoring is not the same as professional practice, it is a profession within the profession in which mentoring takes place. To illustrate and explain this view, the argument is situated within the professional education of teachers.

14. Emerging understanding of mentor's knowledge base
Kari Smith & Marit Ulvik

The concept of Pedagogical Content Knowledge (PCK) is most commonly used in the discussion of teachers' professional knowledge. In this chapter we will expand the PCK concept in our discussion of mentors' pedagogical content knowledge. In the previous chapter, *Mentoring – A Profession within a Profession*, a claim was made that teaching children and mentoring adults are different professional practices. As we see it, in order to practice quality mentoring professional education is needed, during which mentors-to-be are introduced to the PCK of the mentoring profession. However, till today, the literature does not discuss the PCK of mentors, most of the literature relates to the role of the mentor and the activities mentors perform without extending the discussion to the knowledge and skills required to practice quality mentoring.

An attempt to develop a construct of mentors' PCK has emerged from several studies conducted in a mentor education programme at the University of Bergen, Norway. The current article presents the mentor education programme, the context, within which the model has been developed, and a suggested construct of mentors' PCK.

15. Does mentor education make a difference?
Ingrid Helleve, A. G. Danielsen & Kari Smith

This chapter presents a study which seeks to understand the conditions under which mentors work in schools. We examine if there is a discrepancy in how mentors with and without mentor education perceive and practice their role. The findings indicate that most mentors have no mentor education and that, to a large extent, mentoring comes on top of the mentors' full job as teachers. Mentors with mentor education tend to perceive and practice their role as colleagues who are supposed to challenge the NQTs to critical reflection, while mentors without mentor education are more concerned with support and adaptation to the teaching context. All the mentors, with or without mentor education, claim that they enjoy mentoring, mainly because they take pleasure in seeing a colleague's job-confidence increase and because they, themselves, are stimulated to self-reflection .

REVIEW

16. So, how high has the mountain been climbed?
Maureen Robinson (University of Stellenbosch)

This chapter provided a critical appraisal of the work presented in this book and an evaluation is given on the notion of mentoring as "climbing a mountain". Professor Robinson points out the problematic relation that may exist between conversation (and conversational analysis) and learning; particularly when considering the

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dynamics between support and challenge. As such the appraisal offers important perspectives for further consideration.

17. It is not just the talk... A rejoinder by the editors of the book.

In response to the comments made some thoughts were explored as to the future directions in mentoring for learning. Especially the need for substantiation (tools) and professionalization (education) are considered paramount in bringing mentoring conversation up to learning events.

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1. KNOWLEDGE BUILDING THROUGH CONVERSATION

Mentoring is about meaning making ...

... we shall be able to interpret meanings and meaning-making in a principled manner only in the degree to which we are able to specify the structure and coherence of the larger context in which specific meanings are created and transmitted. (Bruner, 1973)

Three questions may guide our efforts to discover how people come to grasp conceptual distinctions

- A: How do people achieve the information necessary for isolating and learning a concept?
- B: How do they retain the information gained from encounters with possibly relevant events so that they may be useful later?
- C: How is retained information transformed so that it may be rendered useful for testing a hypothesis still unborn at the moment of first encountering new information. (Bruner: *Beyond the information given*, 1973:132)

Mentoring is an aid to go “beyond the information given” and to gain “knowledge”. Mentors, therefore, must have a conception of knowledge. This chapter explores prevalent conceptions of professional knowledge to appraise their relevance for mentoring. The chapter also lays the foundation for the rest of the book, given the centrality of knowledge in mentoring.

KNOWLEDGE AND KNOWING

The process of learning to become a professional unfolds typically as immersion into the shared knowledge among professionals, intensified by deploying agency in the personal adaptation and renewal of that knowledge in professional practice (Edwards, 2013). Knowledge therefore is the key to entry and retention in the profession. And mentoring is a way to gain access to and provide maintenance of that knowledge during professional practice. How then, is knowledge building for the profession looked upon, and learning for the profession manifested by means of mentoring? This chapter previews different conceptualisations of professional

knowledge and develops a case for looking at knowledge through the lens of professional conversation. Knowledge building is regarded as a discursive activity enacted in interaction between people, aiming for the construction of professional knowledge. Mentoring, then, is supposed to provide the opportunities for knowledge building to flourish.

Professional Knowledge: A Reconsideration

Differing views on the nature of professional knowledge have led to diverse interpretations on how professionals act in, and learn from their practice (Edwards, 2013; Stoll & Louis, 2007; Loughran, 2004). However, most of these views on knowledge fall short, as will be argued, in the recognition of the *distributed* and *embedded* nature of professional knowledge (Eraut, 1997). In our view, being a professional is to use knowledge to produce solutions *for* action, and to continuously build (i.e., renew and improve) knowledge *in* practice. This duality (i.e., “for” and “in” practice) governs the way knowledge is viewed and enacted upon by professionals. In certain views, however, knowledge and action are seen as distinct or disconnected entities, (i.e., in teaching, as described by Day, 1999) and, consequently, the building of expertise is being divided into different acquisition paths, i.e., as it happens in teacher education (Bromme & Boshuizen, 2003). These views typically foster an education or training for the profession recognized by a division between simulation (i.e., training, theory be’for’e practice), and participation (i.e. enactment later on “in” professional practice) (Grossmann, 2009; Tillema & Orland-Barak, 2006).

Although several important educational thinkers have stressed the importance of merging ‘*talk and walk*’, i.e., knowledge and action, for instance through advancing notions like: “wisdom of practice” (Shulman, 1987), “thoughtful teaching” (Clark, 1995), “reflection in action” (Schon, 1983) and ‘*situational understanding*’ (Bereiter, 2002), these viewpoints have nevertheless not conclusively resulted in a coherent and widely accepted understanding on how professionals become knowledgeable or develop their knowledge progressively. This inconclusiveness is especially worrying in the case of mentoring which is meant to be a space of professional learning and development. We contend therefore that in mentoring it is important for a mentor to take position on the nature of professional knowledge and to have a view on how it will be acquired in order to warrant one’s role as a mentor. It is also important for a mentor to take responsibility for the way in which the mentoring process is (conceptually) organized. We adopt here a view regarding mentored learning based on the understanding that knowledge in professional action is discursive, i.e., communicative in nature (Edwards & Potter, 1992, 2012; Lehrer, 2002). From this viewpoint we highlight the shortcomings of currently prevailing cognitivist/mental models of knowledge. A discursive or “distributed knowledge” position (Clark, 2004; Edwards, 2013; Bereiter, 2004) on knowledge building argues that knowledge in the profession is displayed and modified in interactional terms and responsive to the conversational setting in which it is being used (Heritage,

2008). *Knowing* instead of knowledge (Bruner, 1973) may thus be a more adequate label to capture the nature of expertise a professional holds. Knowing unfolds by way of a *progressive discourse* among professionals and is characterized by *informed participation* (as knowledgeable action in practice situations). Both features presuppose a collaborative building of knowledge in action (Bereiter, 2002; Lipponen, 2000; Sfard, 1998). This notion of discursive practice that coincides with ‘knowing’ (Edwards, 1997; Wiggins & Potter, 2008; Edwards & Potter, 2012) has vivid implications for mentored learning. The view may be best explicated by three axioms:

- Professional learning (or better called, knowledge building in practice) must be regarded as a collaborative enterprise in learning partnerships (Stoll & Louis, 2007) in which conversation acts as vehicle for learning (Tillema & Orland-Barak, 2006);
- Professional perspectives and personal theories (i.e., “meanings”) of individual professionals come into play in such a joint process of building knowledge, and act to embed the shared knowledge (Pajares, 1992), and
- To critically renew knowledge and knowing, professionals need practice- and solution-oriented ways of (mentored) learning which favor a progressive discourse and informed participation through conversation about practices.

(These three axioms represent our response to the three questions Bruner raises – see Introduction to this chapter.)

To further explicate our position, we would like to evaluate the prospects of competing prevailing views on the nature of knowledge and their implications for professional practice, followed by a more explicit account of our argument, that is: professional knowledge building happens in and through conversations.

THE NATURE OF PROFESSIONAL KNOWLEDGE

A View on Professional Knowledge as Individual(ly owned) Knowledge

To date, professional knowledge has been studied for the most part through the paradigm of the individual reflective practitioner (Schon, 1983). This position claims the professional to be a resource who ‘possesses’ personal, implicit knowledge which needs (and can!) be made explicit or less tacit through reflection. Individual reflection, then, is the main vehicle to express and build knowledge which can subsequently be distributed as ‘objects of knowledge’ through exchange and dialogue (or even training – i.e. Korthagen, 2002). Having this ‘objectified’ knowledge is a hallmark of being acknowledged as a professional (Loughran, 2004; Eraut, 1997).

This position on professional knowledge (and knowledge building by way of reflection) raises a number of concerns. For instance, although substantial research on reflection has been conducted over time, it is repeatedly being found that professionals hardly reflect, are even reluctant to do so; and training to reflect does

not seem to assist in developing professional knowledge (Mena Marcos Sanchez & Tillema, 2009, 2010). Studies that advocate reflection as a vehicle of learning are mostly restricted to retrospective accounts of individual professionals who rationalize their past experiences ‘on action’. These accounts constitute, as Kane, Sandretto and Heath (2002) argue, only ‘half of the story’. The other, ‘dark side’ (Orland Barak & Tillema, 2006), however, could disclose that professionals are embedded in real practice settings, and that is where they communicate and work together with their colleagues to construe situational understandings (Bereiter, 2004) of their practice and build these into professional “knowing”. Studies on reflection ‘in concert’, i.e., collaborative reflection in and on real settings (Engestrom, 2001) are rare and would be able to constitute an ‘untold story’ (Mena Marcos, Gonzalez, & Tillema, 2011).

This individualistic reflective perspective forwards the notion that professional knowledge is classifiable and ‘object’ified; that is, knowledge which can be explicated, generalized and transferred. In essence, this view claims that professional knowledge is capable of being transmitted and ‘transferred’ among professionals through telling, explaining and externalization (Simons & Ruyters, 2004). From a discursive or distributed perspective, the limitations of such a cognitivist view of knowledge have been criticized, mainly for not accounting for the collaborative and participative nature of professional life (Edwards, 2011; Van der Westhuizen, 2012).

A View of Professional Knowledge as Collaborative Practice

The view expressed in the reflective perspective, contrasts with the view which identifies knowledge as situational understanding (Bereiter, 2002), i.e., linked to the immediate activities a professional is engaged in (Gilroy, 1993; Edwards, 2011). Such a view accentuates knowledge building from direct practice activity by means of exploration, meaning seeking in context, and most of all, specifies a (re)searching stance to understand activity. Such a view regards knowledge as largely embedded within the situational constraints in which professionals act and from which they learn by informed participation. Through informed participation, a progressive discourse between colleagues becomes possible (Palonen, 2004; Tillema & Van der Westhuizen, 2006). In this way, knowledge is distributed, will acquire its meaning and becomes truly *knowing*. This position proposes that professional learning is collaborative, i.e., shared among professionals who work together. In this sense, the literature often refers to (since learning is occurring in) communities of practice (Wenger, McDermott, & Östman, 2002). The distributed view on knowledge, in opposition to the reflective perspective, highlights an understanding of knowledge as being embedded in practice and involving agency (Tillema & Van der Westhuizen, 2006; Edwards, 2013).

However, within this distributed viewpoint on professional knowledge an important distinction has to be made between two quite different interpretations regarding the nature of learning, having to do with how knowledge is acquired or ‘learned’, and how communities of practice really operate. One way of viewing is

that knowledge is acquired through distributed practice characterized by shared activities, along common goals, and supported by, that is embedded in, situational affordances (Lave & Wenger, 1996). This “situationist” perspective can be contrasted to a viewpoint which stresses a more deliberate and informed practice which perhaps is better labeled as “Communities of Inquiry (Baxton, 2004; Bereiter, 2004; Birenbaum, 2006). This interpretation of collaborative learning does not just look upon participants in knowledge building as “context-embedded” agents who look back on and learn from their work routines as (patterned) social behavior, but sees them act as researchers or designers of their professional environment who will build understandings of their situation to renew their practices (Huberman, 1995; Farr Darling, 2001).

The collaborative viewpoint(s) on professional ‘knowledge building’ (a labeling that exceeds the notion of ‘learning’ – see Bereiter, 2004) is in opposition to an individualistic picture of knowledge construction as reflective thinking, and stresses the complexities and embedded-ness of knowing one’s practice. But at the same time the two viewpoints differ with regard to the inquisitive and deliberate nature of learning entrusted to professionals, which clearly has implications for the nature of mentoring. An illustration with regard to mentoring conversations might show how different these implications are with regard to how each of these perspectives interprets learning, for example, when a mentor asks a mentee to look back on past performance. In a reflective paradigm, verbalizations as a result of reflection most often (Mena Marcos, 2006) resemble a kind of ‘rationalizations’, as participants in a mentoring conversation adhere to and refer back to prior beliefs and general impressions, with little or no mentioning of knowledge that actually occurred or was present at the time of action. As a result, mentor and mentee, while staying in their ‘comfort zone’ may only verbalize knowledge in terms of their own prior conceptions, i.e., “talking the talk” (Tillema & van der Westhuizen, 2006; Mena Marcos & Tillema, 2007). But when mentoring is considered as a collaborative activity, the participants most often have shared experiences as professionals about their own practice, and (afterwards in conversation) take part in a mutual activity to study and scrutinize their practice. Positioning such a joint inquisitive enterprise as a mentoring process would follow most often the specific patterns of research activity, i.e., “talking the walk”, that could specifically articulate and scrutinize current performance against goals or standards set by participants in conversation (Mena Marcos et al., 2009, 2010).

To explicate our position in a more refined way, a comparison is made between the mentioned perspectives on knowledge building in terms of a specific set of criteria which include the nature of professional knowledge, the prospects of developing such knowledge, and the conceptual concerns attached to adhering to each of these views. For clarity reasons we also added another viewpoint, the Transmission View of Knowledge (which was previously dominant but still to be found in professional training, and now heavily criticized conceptually in the literature – Cochran-Smith & Zeichner, 2005 – as an essentialist view – see Table 1). The more recent discussions

on professional knowledge favour a transformative, constructivist stance on learning (see Hakkarainen, Paavola & Lipponen, 2004; Fenstermacher, 1994). Table 1 summarizes the prevailing views about professional knowledge building:

Table 1. Perspectives on professional knowledge building

<i>Nature of knowledge</i>	<i>Knowledge development</i>	<i>Critical issues</i>
<p><i>Transmission view</i> Knowledge is objective and explicit, ‘out there’ – not constructed but real Knowledge can be made overt as content packages; to be codified in a knowledge base</p>	<p>transmission, and transfer by telling, in-service training, teaching by talking</p>	<p>Is there a fixed body of knowledge, is it value and context neutral; and cross culturally generalizable? How is knowledge transfer accomplished, or even possible between different settings and professionals?</p>
<p><i>A) Reflective knowledge</i> Knowledge is tacit, hidden and not easily articulated therefore it needs explication either (be)for(e) or after action (not “in” action) Knowledge is personal and individual and ‘owned’</p>	<p>Reflective activity on action either (be)for(e) or after action Going from implicit to explicit and vice versa Knowledge externalization is a key to learning</p>	<p>How can knowledge be reflected upon when it is hidden or tacit? And personal? Can knowledge be dependent on the quality of reflection? How can knowledge be reflected upon, and by what method How can explicit or articulated knowledge be used in action or stay connected to implicit direct, immediate action?</p>
<p><i>B) Contextual knowledge or situated cognition</i> Knowledge is embedded in practice, i.e., situated and social; it is being part of a community of practice. It is shared and therefore valid (only) among colleagues</p>	<p>Sharing of collective understanding, Convergence of implicit and explicit meanings among stakeholders. “Peripheral approximation and socialisation” (Lave), Critical illumination</p>	<p>How can knowledge that is shared become externally validated and accepted beyond the individual and situational realm i.e., beyond being local, relative, and subjective?</p>
<p><i>C) Distributed Knowledge</i> Knowledge is distributed or enacted through activity, i.e. not in the mind but rests in situational understandings and is embodied in tools of professional practice</p>	<p>Building knowledge through progressive discourse and informed participation Creating conceptual artefacts or tools for practice</p>	<p>Knowledge is embedded in tools and activity (“by doing”); but who possesses knowledge, who knows what? How ‘knowledge productive’ are conceptual tools i.e., different from routines</p>

(Adapted and modified from Tillema & Orland-Barak, 2006).

In order to appraise the above perspectives on professional knowledge building for mentored learning, and to advance an understanding of the limitations of these views in the practice of mentoring, we have constructed a framework for analyzing the prospects and possibilities of each of these perspectives for professional knowledge building in mentoring. For this purpose we use three criteria to evaluate the respective viewpoints, keeping in mind the overall purpose of mentored learning, that is “climbing the mountain”, or guiding and scaffolding the learner/mentee to become more proficient in his or her professional practice. The three criteria are specifications of the concept of Knowledge Productivity (Tillema & van der Westhuizen, 2006) which refers to an outcome measure of professional learning. By Knowledge Productivity we mean (Tillema, 2004): the competence of a professional to generate, adapt and renew professional tools (‘solutions’) for practice; which rests on the following abilities:

- ‘Problem understanding’ – The ability to attain and appraise relevant knowledge relative to the issue at hand.

As a criterion for evaluation, the question to ask would be: Does a viewpoint on professional knowledge explicate how an increase in knowledge of professionals is achieved? Concretely: Does the learner acknowledge that the issues spoken about during mentoring are relevant and adding to their insights?

- ‘Perspective shift’ – The ability to evaluate and scrutinize different points of view relative to the problem at hand.

As a criterion for evaluation, the questions would be: Does a viewpoint on professional knowledge clarify how perspectives and beliefs are modified and altered, so as to make a closer alignment with new ideas and knowledge possible? Concretely: Does the learner find the ideas, brought forward, acceptable and trustworthy?

- ‘Commitment to apply’ – The ability to utilize and commoditize understandings for professional practice.

As a criterion for evaluation, the question here is: Does a viewpoint on professional knowledge instigate involvement and adoption for a renewal of the learner’s practice? Concretely: Is the learner interested in actively following up recommendations?

These questions are congruent with the three questions put at the start of this chapter.

Using these three knowledge productivity criteria a characterization can be given of each views on knowledge building and in this manner appraise their “knowledge productive” position in relation to mentoring.

A. Reflective knowledge. The Reflective Practitioner perspective emphasizes building of *reflective knowledge*, and in this view it is noted that prevailing knowledge can be viewed as objects of articulation to be subjected to externalization

(Nonaka & Takeuchi, 1994). According to this view, explicit articulation of knowledge is needed, since this will initiate active study (i.e., reflection) on action and will support a personal process of deliberate thought. Articulation or explication (Ruyters & Simons, 2004) triggers the unfolding of what otherwise remains implicit. Tacit knowledge then can be cognitively reinterpreted and framed into a professional more objectified language. In this way, reflections are, in essence, reconceptualizations of action (Kane & Sandretto, 2003), and as such contributed to problem understanding, preferably nurtured by ‘theory’ (Loughran, 2004; Day 1999; Korthagen, 2003). A sharing of ideas among professionals, for instance, in a discussion with colleagues would be in itself not necessarily fruitful and can even be a cumbersome matter, since it easily leads to misunderstandings, and suffers from a likely incommensurability of perspectives and beliefs that the different collaborators hold. In mentoring, however, it is important that shared beliefs in a dialogue lay the foundation for a fruitful talk on learning about practices.

Applying, then, the three criteria on knowledge productivity to the reflective knowledge perspective, we conjecture that in terms of ‘*problem understanding*’, one would expect positive outcomes in mentoring because of the opportunities for deliberate articulation of expressed thoughts. Reflection can act contributive to an increase of individual knowledge. This is the kind of benefit often advocated in the reflective paradigm (Korthagen, 2002). In terms of ‘*perspective shift*’, however, it is highly questionable to what extent a reflective practice in mentoring brings about shifts in personal views; may be a gradual modification is more often the case (Mena Marcos, 2007). We would argue that only in cases of a close alignment of ‘talk and walk’, the existent knowledge might ‘change’. Moreover, no major shift in thinking, or for that matter in practice, is likely to occur in case of a mismatch between reflection and action. In effect, this would imply a conservative impact of reflection on knowledge development (Gilroy, 1993). In terms of ‘*commitment*’ or willingness to change one’s practice as a result of reflection, we could argue that sharing of thoughts, for instance during mentoring conversations, could potentially be beneficial under a reflective paradigm; yet this would largely depend on the fruitful input by those participating in a sharing of reflections on practice.

B. Contextual knowledge. The “situationist” view interprets professional knowledge as anchored and situated in *communities of practice*. Knowledge, according to this view, is embedded in activity which is inherently social (or socially construed). A deliberate exchange of knowledge between professionals through transfer of information would be external or alien to deep-rooted activity structures and in itself not particularly fruitful when separated or disconnected from the activity itself (it would be knowing *that*, instead of knowing *how*). According to the situated view, the more knowledge becomes detached from a setting from which it originates or in which activity is embedded, the less would be gained from it. Reflective articulation and exchange of knowledge ‘as such’ would be unfit for action and not particularly informative for practice. Explicit knowledge would be

classified as ‘codified’ “theoretical” knowledge which cannot be directly operated upon. Situating and enacting knowledge could indeed build an environment for interpreting events and give meaning to situations encountered, and would thus be rated in more favorable terms.

In applying the knowledge productivity criteria to this situated viewpoint, we could argue that *problem understanding* as a focus in mentoring would be less urgent or immediate and perhaps even unfavorably rated since most opportunities for learning in action remain implicit and dependent on affordances and space to attend to them. Situated learning thrives on setting-attached (i.e., directly work-related) processes of professional learning. Although “off work” discussion and exchange among professionals, for instance in a mentoring conversation, could prove to be helpful; it still entails the danger of being ‘talk’ instead of ‘walk’. In terms of *perspective shift*, real and lasting change in thinking (and action) would occur when mentor and mentee are working closely together on a regular basis, preferably sharing the same setting/practice since it provides a common ground for talk and would trigger conversation about jointly encountered problems (Engestrom, 2003). In terms of *commitment*, we would argue that working closely together under similar work-based conditions would lead to high involvement and raise interest in the outcomes of a conversation. In this respect, mentoring conversations can provide an authentic platform for raising the level of ‘situatedness’ and create an awareness for learning.

C. Distributed knowledge. The distributed knowledge view focuses on professional knowledge as being acquired through *progressive discourse and informed participation*. Characteristic is the importance attached to scrutinizing one’s practice for the sake of creating tools for (an improved) practice. Collaborative inquiry would be a valid route to generate, adapt and renew ‘knowing’ under the condition that there is a sufficiently grounded professional language or knowledge base available to help participants frame their thoughts and identify key issues for discourse and conversation. Aim of conversation and sharing is to build artifacts for improved agency which ultimately can be used for practical action. Articulation and inquiry are sources of knowledge building. The resulting success would vary depending upon the conceptual frames or constructs delivered throughout the exchange. Conversation, then, provides a crucial condition for discovering and exploring situational understandings that emerge from and prevail in the group. Conversation would primarily focus on seeking tangible solutions, and on finding a common shared core of interpretative concepts to understand or inform one’s practice.

In terms of the three knowledge productivity criteria, it can be maintained that *problem understanding* is facilitated through inquisitive collaboration and by working together. Mentoring would constitute an ideal setting to do so. Its conversational approach could enhance the creation of artifacts, i.e., solutions for practice. Conversation would, in addition, add to the attainment of new insights and create understanding of situations and problems encountered in

practice. *Perspective shift* would in this view be the primary target of a mentoring process. Mentors would, for example, select cases or instances which offer a clear or explicit structural problem or offer a framework to evaluate encountered problems, all meant as a source of mutual learning during the discourse. In the case of *commitment*, the distributed view would stress a real investment in mentoring in scrutinizing one’s practice and establish a critical involvement in solution oriented group discussions. In this sense mentoring conversations are the main vehicle for learning.

We then could summarize the way mentoring conversations are likely to contribute to the enhancement of professional knowledge in the following way (Table 2). In addition to the three outcome criteria of knowledge productivity we also gauge: adhering to prior knowledge and importance attached to interaction, as of interest to a mentoring conversation. It shows that the three views on professional knowledge differ in the way they would arrange mentoring conversations and value in distinct ways the interactional and implicit nature of professional knowledge.

Table 2. Appraisal of mentoring conversations based of different views on professional knowledge building

	Resulting evaluation on the three knowledge productivity criteria	Prior knowledge base of individual learner	Process of exchange and communication
A) Reflective knowledge	Problem Understanding (PU) = positive Perspective Shift (PS) = negative Commitment to apply (CA) =negative	<ul style="list-style-type: none"> ● helpful in looking back, making explicit what occurred ● articulation of what was considered ● valuable for clarification 	<ul style="list-style-type: none"> ● not particular useful, occurrence of misunderstanding, interpretation problems, negotiations
B) Situated, cognition	PU = negative PS = negative CA = positive	<ul style="list-style-type: none"> ● not helpful as it is disengaged, too far away from actual practice ● knowledge difficult to articulate; misunderstandings ● not particularly essential for practice 	<ul style="list-style-type: none"> ● important to clarify thoughts, needed for working towards a common understanding
C) Distributed knowledge	PU = positive PS = positive CA = positive	<ul style="list-style-type: none"> ● only relevant for creating mutuality in personal understandings ● focus on core ideas 	<ul style="list-style-type: none"> ● only when agreement on shared concepts, based on informed participation

Key: PU = problem understanding; PS = perspective shift; CA = commitment to apply

The abovementioned table distinguishes clearly the differing views on the nature of professional knowledge building and how it affects learning through conversations. Therefore, we like to explore in more detail what prospects a collaborative, inquiry oriented, and participative mode of learning, i.e., our position on distributed knowledge, has for mentoring as offering learning conversations.

KNOWLEDGE BUILDING IN COMMUNITIES OF INQUIRY

How professionals learn from each other through professional interactions can be understood by studying learning in communities of inquiry (Lipponen, 2000; Stoll & Louis, 2007; Birenbaum, Kimron, Shilton, & Sharaf-Barzilay, 2009). These studies on collaborative learning examine how conversations as vehicles of exchange, particularly those in which study and deliberate (re)search are used, scaffold a process of gaining insights from the challenges of practice (Palonen, 2004). Participants in such communities – and we like to see mentoring as such a community – typically engage one another with deliberate notions about improving practice and have thoughtful solutions in mind when they address challenges in their practice, all for the sake of developing and implementing tools and artifacts that can help to improve performance (Bereiter, 2002; Tillema & Van der Westhuizen, 2006). Evident from different approaches to collaborative learning (Stoll & Louis, 2007) is that the arrangement of conversations is crucial to lead to fruitful, tangible and prospective solutions, i.e. becoming knowledge productive (Lipponen, 2000).

The way, then, conversations are arranged establishes how participants will be brought to scrutinize and articulate their practice. Functioning as a community of inquiry, participants will develop among themselves multiple connections (Edwards, 2013). As conversations evolve, the ‘community’ members (e.g. in mentoring conversations the two members involved) adopt each other’s solutions to practices that become ‘distributed’, i.e., that reflect their joint personal connections. As a result, conversation in such communities mounts up to knowledge building from multiple perspectives. For this we coined the metaphor “Climbing the Mountain” (see Chapter 2).

We contend that this kind of professional knowledge building, i.e., mentoring as a community of inquiry, is particularly beneficial for the improvement of professional action; in that participants exhibit a strong drive to generate, modify and apply knowledge in practice, and to learn from each other (Tillema & Orland Barak, 2006). “Mentoring for learning”, as this may be called, is characterized by interactions in communities of inquiry that provide a physical or virtual space for scrutinizing practices (Stoll & Louis, 2007). Such mentoring also allows for exploring joint goals, providing availability for help and advice; creating encounters that bring about occasions for applying skills, designing solutions (tools for practice), making decisions, using creativity, and for developing collegial interactions in the larger professional community (Stoll & Louis, 2007; Birenbaum et al., 2009).

We could summarize, then, our position as follows:

Professional knowledge building is initiated and sustained through on-going, progressive discourse, developed by informed participation, and leading to knowledge productivity. We consider conversation to be the main vehicle for knowledge building in that it encourages professionals as learners (and mentors) to make their knowledge productive.

This position stresses the notion of ‘articulate’ knowledge, i.e., one of search and inquiry on knowledge ‘in use’, while at the same time attributing importance to the discourse on knowledge that is expressed through interactions and conversations with others. Specifically, emphasizing the role of conversation in knowledge building illuminates a number of critical elements that may open further thinking towards reconsidering some of the premises on mentoring for learning. We can ask, for example: ‘How does conversation generate productive knowledge?’, ‘Why is articulation of concepts and beliefs hard to specify and lead to change in professional work?’ ‘How does talk, i.e., advice, lead to following recommendations?’ And also address issues in mentoring like: ‘How does conversation put knowledge into action?’ or ‘match beliefs to practice?’.

To concentrate further on the critical role of conversation in knowledge building, we borrow the notion of *situational understanding* (Bereiter, 2002) to capture what professionals encounter during a process of mentoring for learning. In this notion, knowledge building in conversation is not interpreted as moving packages of objectified knowledge (i.e., transfer of explicit knowledge), but rather as an active search for and (de)construction of valuable meanings through inquiry and progressive discourse between colleagues based on experiences drawn from practice contexts. The notion of situational understanding helps to interpret more explicitly how professionals come to (re)value their work-related experiences (Wang & Odell, 2002). In contrast to the notion of situated cognition (see Table 1), *situational understanding* adds the idea of a *progressive inquiry of performance in situ*. This view aligns with Shulman’s notion of ‘wisdom of practice’ (Shulman, 1987), as ‘contextual understanding’: from which we conclude that professionals ‘know’ in an embedded and distributed sense. Based on this conceptualization, we look in more depth at the discursive nature of mentoring conversations.

APPROACHING MENTORING AS CONVERSATION

An appropriate entry point for exploring the discursive nature of conversations lies in the tradition of conversation analysis research. This tradition draws on social interaction theory (Goffman, 1974; Rawls, 1984) and contends that meanings are created through what Goffman (1969a) calls “interactional performance”. Meaning making, as for instance is the case in mentoring, is shaped by social and cultural resources in which professionals operate (see also Drew & Heritage, 1992). Such meaning making in interactions is dialogic in nature, i.e., negotiating meaning in

interaction. Participation in dialogue signifies the importance of a collective search for meaning. From this position we can pursue how professional knowledge building is developed in interactions with a mentor. This position states that conversation is the vehicle for knowledge building as well as the framework thereof. A closer conversation analysis look can reveal how meaning making and situational understanding unfold.

It is becoming clear from studies on Conversation Analysis (CA) that what participants say in conversations is not a mere reflection of internal mental representations, i.e., a virtual window into their cognitive state (Edwards, 1993: 211); rather, professional knowledge is displayed discursively (in communication), and demonstrated through concepts used during exchange that represents “flexible components of situated talk” (Edwards, 1993: 209). How knowledge building comes into play during interaction is a function of the actual setting and participants involved, and constructed and oriented to, in interaction, along the way (Wiggins & Potter, 2008: 79; see also Heritage & Raymond, 2005). In a discursive practice, discourse and conversational interaction have a meaning-construing nature (Edwards, 1997). As such, mentoring is a mindful process where, as noted by Edwards, 1997: 33, the apparently private process of learning and thinking of learners are realised in interaction and openly. Unfolding this argument further we draw, in particular, on five major insights from the conversational analysis literature to identify ‘knowledge productive’ learning conversations that, as is the case in mentoring, may help to structure talking together.

A) Talk in conversation are *open*, varied, and done in accountable ways – open in the sense of disclosing positions and recognizing roles; varied in the sense that each utterance is a response on what was said previously, and with participants responding in accountable ways to pursue the relevancy of talk at hand. As such, conversation is an inquisitive knowledge making procedure (Edwards and Potter 1992; Birenbaum et al., 2009). When mentors and mentees are in conversation about practices for example, they make their knowledge open by responding to what the other says, and by using the conversation as vehicle to articulate what they know (Engestrom, 1994).

B) Conversational interaction is *intersubjective*, and shared knowledge is a performative category, i.e, must lead to solutions for practice; be knowledge productive. This implies that talk is not just mediated interaction, but social action which involves assumptions, beliefs, understandings, that “are attended to, implied, made relevant, etc., as part of whatever business talk is doing” (Edwards, 2004b: 41). Intersubjectivity is a feature of talk characterised by turn taking, uptake, and how participants design their responses (Edwards, 2004a). Knowledge building in mentoring conversation should therefore be looked at as a collaborative and reciprocal enterprise, and conducted in what Engestrom (1994) called, their language of conversation.

C) During conversations, participants do not simply draw on and exchange “predetermined categories of speech” (Pike, 2010: 164) but engage in an *advancement*

of knowing or a ‘progressive discourse’. This means knowledge building happens gradually in terms of turn-by turn interactions; ultimately to climb to higher levels of understanding. Learning is contextualised in the mentoring setting, a joint activity that relies on presuppositions participants have of utterances made by the other in the interactional development zone a mentoring setting constitutes (Mercer, 2000; Pike, 2010: 164; Addison Stone, 1993). In such zones, knowledge becomes apparent as essentially embedded in unique episodes of interaction. Knowledge building draws on these sequences of verbal interactions – i.e., turn-taking, responding and exchanging utterances – not simply to duplicate experiences and conceptualisations, but taking the form of constructive and reconstructive rich understandings shaped and adjusted by participants (Lindfors, 1999; Rodgers & Raider-Roth, 2006; Magano, Mostert, & Van der Westhuizen, 2010).

D) Knowledge building through conversation entails a *moral domain* with clear implications for conversational relationships among participants (Stivers, Mondada, & Steensig, 2011). Specific moral dimensions of knowledge in conversations can be identified (Stivers et al., 2011):

- *epistemic access*; that is: who owns knowledge (described in terms of who determines what constitutes knowing vs not knowing; by what degree of certainty are solutions for practice adopted; who provides knowledge resources; what is accepted as knowledge);
- *epistemic primacy*; that is: who decides on goals or direction of talk (described in terms of relative rights to know; relative rights to claim; relative authority of knowledge); and
- *epistemic responsibility*; that is: who concludes about the relevancy of talk (described in terms of what is knowable to act upon, how recipients design their actions and turn-taking).

Epistemic access is about ‘gate-keeping’ the information that will be talked about. By eliciting and claiming knowledge entries in a conversation and it presupposes willingness to interact (Stivers et al., 2011). In knowledge building, this plays out in the engagement of participants to interact for example working together in mentoring as a study team, (Tillema & Orland-Barak, 2006). Epistemic primacy in conversational interactions involves allowing recipients their relative rights to tell, inform, assert or assess something, and acknowledges asymmetries in the depth, specificity, or completeness of their knowledge (Stivers et al., 2011). In mentoring settings this would mean that conversations are shaped by prevailing norms of alignment and affiliation. In practice this may be observed in the ways in which professionals account for what they know, how certain they are about their knowledge, and how they exercise their right and responsibilities as contributors to the knowledge conversation (see Stivers et al., 2011: 9). Epistemic responsibility refers closure and opening; to conclusion and prospects of a talk, which entails a recognition of the fruitfulness and productivity of conversations for further action.

Advice and guidance offered in mentoring need to be recognized as such in order to follow recommendations.

E) Conversation creates a *participative* ground for sharing knowledge. Drew's analyses of cognitive states in interaction offer evidence for the ways in which individual knowledge comes to the "interactional surface" (Drew, 2005: 176). In conversational interactions, utterances may be associated with recurrent and systematic patterns of merging 'cognitive states'. In professional interactions this means participants would use the conversation to stay tuned to the shared understanding, and allow for confusion to be clarified. Participation requires following the flow of communication in an attentive manner.

To abridge these highlights from Conversation Analysis research into a kernel characterization it can be posited that knowledge productive 'learning' conversations are constituted by:

- a. a progressive discourse (have A, B, C), and
- b. an informed participation (have C, D E).

To recognize such conversations additional analysis is needed (and one of the main purposes of this book and following chapters). Edwards' (1997: 45) notion of "analytical moves" may guide a more detailed and analytical inquiry into how mentoring conversation are conducted and how interactions evolve. Such moves in talks would involve for instance: identifying a topic of inquiry; allowing for explication; moving towards another theme. Studying knowledge building in mentoring conversations also would call for questions such as: What are the typical discourses in mentoring settings? How do they unfold? What patterns occur? How is a higher level in understanding attained? An inquisitive look at mentoring conversations as learning conversations (i.e., those which 'climb the mountain') would require for example detailed analysis of: What are the practices discussed? Where or when do they occur in a conversation? How do they vary across episodes, how are they organised in interaction, as part of participant accountability for participation in discourse? Analyses of moves in conversation might help (a mentor, for instance) to screen interactions and to focus on how utterances are constructed in a course of a conversation, and how it relates the practices under scrutiny (Edwards & Potter, 2012).

CONCLUSION

This chapter explored how knowledge building develops through conversation. Although differing views exist on the nature of knowledge building for professional practice, we put forward that the discursive nature of knowledge and 'knowing' is pertinent to understanding how professionals use conversations for building knowledge. Mentoring conversation is a vehicle for creating such a situational understanding. We have attempted to establish that knowledge building in mentoring

practice is interactional and collaborative, responsive to situational context, takes professional beliefs and perspectives into account, and need to be knowledge productive, i.e., solution oriented. Knowledge productivity appears not to be an innate individual's possession, which is reflected on and transferred through merely by telling, explaining and externalization. On the contrary, professional knowledge building leading to knowledge productivity is a function of the situated talk occurring in an actual setting between participants, i.e., in our case, between mentors and mentees, who should be intent on responding in varied and unique ways in creating professional knowledge. Ultimately, the knowledge built is framed and constituted through the way the participants manage and design and execute the conversation (Stoll & Louis, 2004). Mentors and mentees engaged in knowledge building through conversations are thus accountable to engage in constructing and reconstructing rich and meaningful conceptualisations that go 'beyond the information given' and shape unique episodes of knowledge productive interaction.

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PART 1

LEARNING FROM MENTORING CONVERSATIONS: DO WE?

Does mentoring make a difference? We know that knowledge construction in real contexts by engaged mentors can highly contribute to one's learning (from practice). But how is it accomplished? Reflection, for one, is said to be the effective tool.

But one could ask, then: is this reflective or "explicating paradigm" a sufficiently appropriate framework for interpreting what (student) teachers as (beginning) professionals actually learn from their practice or learn from the feedback they receive during mentoring sessions? Specifically, a number of critical elements can be noted inherent in the reflective paradigm on professional learning.

We could critically ask, for example:

- 'Does reflection generate useful knowledge (for practice) ?',
- 'Why is reflection at conceptual levels so hard to articulate/to tap by professionals?' and
- 'Why does not "talk" lead to "walk"? (Mena Marcos & Tillema, 2006).

The reflective rhetoric talks about matching beliefs to practice by starting with the beliefs. But on the other hand, how can practical knowledge emerge in (mentoring) conversation without (beginning) professionals deliberately having to enact and situate it first?

To take position:

The reflective premise holds that professionals as learners can or should articulate their knowledge as evidence of their learning.

But, findings suggest that participants in mentoring claim to have learned 'what really matters to them as professionals', by being able to enact them.

How then do we learn from mentoring? This is the overarching query of this part of the book.

TOWARDS PROFESSIONAL SITUATIONAL UNDERSTANDING

To address the above concern, an alternative viewpoint would be found in the concept of *professional situational understanding* which states that professionals grow on what they encounter in and from their daily action. In this vein, knowledge is not viewed as distributable and objectified knowledge to be exchanged during mentoring (see the position taken in chapter 1), but rather as actively constructed in and from

contexts through continuing and progressive discourse between “colleagues” who interpret and (re)value work-related situations.

The notion of situational understandings is further explored in the current part of the book. The question to be addressed in the upcoming chapters is how mentoring conversation and discourse could function to foster an improved understanding of practice. Chapter 2 by Tillema and Van der Westhuizen explores the knowledge productivity of mentoring conversations. Chapter 3 by Mena and Clarke critically review the reflective paradigm and stress the importance of validity of practical knowledge. Chapters 4 by Gamlem and 5 by Korver and Tillema take up feedback as the informative tool that provides the content in learning conversations.

2. MENTORING CONVERSATIONS AND STUDENT TEACHER LEARNING

To foster a mentee's learning, mentoring comes to aid as a 'helping' process to attain higher levels of proficiency but... the main lesson is that the high ground can not be approached hastily. Even the most difficult problems can be solved and even the most precipitous heights can be scaled, if only a slow step-by-step pathway can be found. Mount improbable can not be assaulted; gradually, if not always slowly, it must be climbed. (R. Dawkins (1996:365) *Climbing Mount Improbable*. New York: W.W. Norton Company)

Knowing how to proceed is one thing. Knowing what to address another....

Think of what a small proportion of thought becomes conscious, and of conscious thought what a small proportion gets uttered, what a still smaller fragment gets published, and what a small proportion what is published is used. (Campbell, 1987, p. 105 "Blind Variation and Selective Retention in Creative Thought as in Other Knowledge Processes". In: Radnitzky, G./Bartley, W. W., III. (eds). *Evolutionary Epistemology, Rationality, and the Sociology of Knowledge*. La Salle, IL: Open Court, 91–114)

Mentoring conversation is the mechanism through which both mentee and mentor get to know. We need therefore to understand how the mechanisms of conversation work.

INTRODUCTION

This chapter focuses on the mentor's conversational strategy during mentoring and its impact on what student teachers learn. The notion of knowledge productivity is put forward to highlight the nature of exchange between a mentor and a mentee as one of preparation for the profession and attainment of high(er) levels of proficiency. Using a case-design in the context of teacher education, twelve conversations between a student teacher and his/her mentor were video-analyzed with regard to the conversational moves of the mentor. An instrument for the description of conversational moves is described. Conversational moves were contrasted with respect to their resulting knowledge productivity (i.e., analyzed as behavioural intentions to change one's practice). The findings suggest that:

- A mentor's conversational approach consists of different conversational moves, signifying different strategies in conversation.
- Conversational moves, per se, do not significantly influence the student teacher's perceived knowledge productivity. We noted, however, three dominant types to occur in conversations: a scaffolding and prescriptive one, which in combination we called a 'high road' approach, and an exploring one which we called a 'low road' approach.
- Student teachers who were having a regular, closer and positive relationship with their mentor were associated with higher knowledge productivity.

Our findings indicate an overall small effect of differing conversational moves on student teacher's learning outcomes. To position this finding we have to bear in mind that almost 60% of conversational talk consisted of non-learning or goal related, but instead of relational remarks. Markedly, closeness in the relationship was found to positively influence student teacher's learning outcomes. Although no direct relation was found between specific mentor moves and perceived knowledge productivity, higher attainment scores were found for the 'low road' approach. This is discussed in relation to the aim of mentoring conversations as learning conversations.

Mentoring for Proficiency

Mentoring plays an important part in the professional education of a student teacher. It refers to the collaboration of a more experienced teacher with a novice teacher to provide 'systematic and sustained assistance' to the learner (Huling-Austin, 1990). Mentoring is believed to support and facilitate the professional development of student teachers (Loughran, 2003). Research suggests that mentoring is a highly effective method for supporting and facilitating student teachers in their professional development (Tomlinson, Hobson & Malderez, 2010; Orland & Yinon, 2005).

To a large extent, student teacher's professional knowledge is developed and framed within conversations with a mentor (Edwards, 1995; Hobson, 2004). The mentor's approach taken during mentoring conversations therefore might influence the learning outcomes profoundly. In a mentoring conversation a mentor can use different approaches to help the student teacher in his/her learning process (Huling-Austin, 1990; Smithey & Evertson, 1995). Analysis of mentoring conversations shows that a mentor predominantly determines the format and topics of conversation, its start, finish and flow (Strong & Baron, 2004). In the literature several ingredients of successful mentor conversational approaches have been outlined. According to Daloz (1986) support and challenge are key ingredients. Franke and Dahlgren (1996) point out the benefits of a reflective approach to mentoring. Edwards (2004/1995?) stresses the importance of relational and interpersonal skills in conversation. Garvey (2011) acknowledges the significance of meaning making and relevancy of conversation.

In their review Hennissen, Crasborn, Brouwer, Korthagen and Bergen (2008) constructed an explicit framework to categorise different approaches (styles they called them) that mentors may use in conversations. They distinguish especially between directive and non-directive approaches. A directive approach is characterized as informative, critical, instructive, corrective and advising. Its constituting conversational moves are: assessing, appraising, instructing, confirming, expressing one’s own opinion, offering strategies, and giving feedback. An opposite non-directive approach is defined as reflective, cooperative, guiding and eliciting. The corresponding moves in the non-directive style are: asking questions, guiding to developing alternatives, reacting empathetically, summarising and listening actively.

Conversational moves, also known as speech acts (Seedhouse, 2004) serve the essential purpose of mentoring, that is, “systematically and sustainably assist” the learning and expertise development of the mentee. Mentoring comes to aid in the attainment of higher levels of proficiency. In line with Ericsson’s (2002) theory on developing expertise, a mentor may accelerate the attainment process by giving feedback on the basis of knowing what aspects of performance are ‘ready’ to be improved at a next level of proficiency (Ericsson, 2007). Ericsson’s work states that such deliberate practices lead to enhanced improvement in performance. A “mentored” deliberate practice in essence builds representations of desired performance goals, knowledge on how to execute the performance, and provides monitoring of performance. This interactive process is depicted in Figure 1.

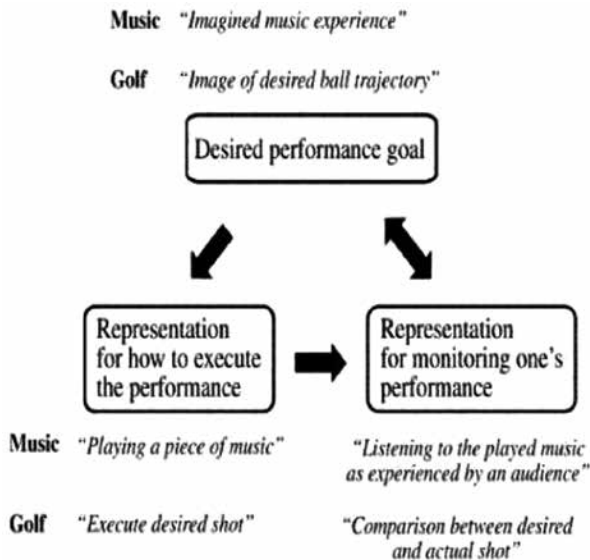
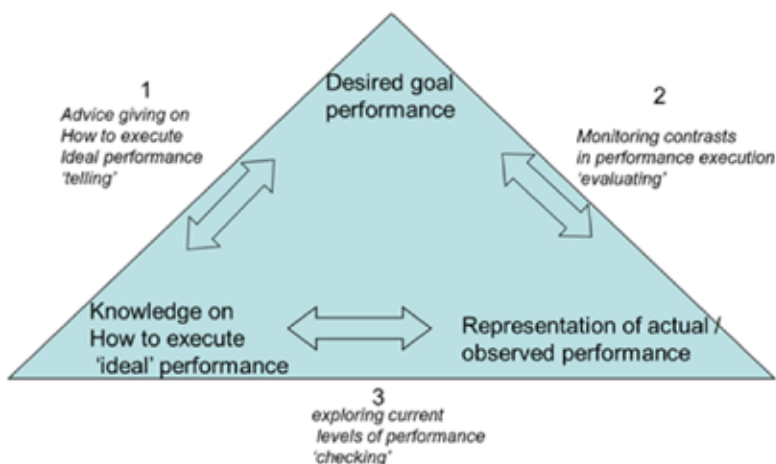


Figure 1. Model of deliberate practice by Ericsson (2002)

We can take this model of deliberate practice to gauge real mentoring conversations in order to establish what speech moves a mentor utilize to scaffold and support the learner in the attainment of high(er) levels of proficiency. In our view the purpose and function of mentoring can be depicted as “climbing mount improbable”, to paraphrase R. Dawkins (1996), in such a way that a “skilled mentor” as described by Crasborn and Hennissen (2009) will bring the mentee up to a level of attainment previously believed to be hard or difficult to reach. This view of “mentoring for learning” is represented in a slight rearrangement of the model on deliberate practice and shown in Figure 2 to capture in a concise way by the phrase “Climbing the Mountain”.



- 1=prescriptive move
- 2=scaffolding move
- 3=exploring move

Figure 2. Climbing mount improbable: relating three mental representations

The metaphor Climbing the Mountain stands for the idea that a seemingly complex goal becomes achievable by way of many, gradual, and supportive steps that point out the relevant paths to pursue which were most often previously unseen by the mentee. This metaphor may be of help to interpret mentoring conversations as vehicles of deliberate practice.

A mentoring conversation’s purpose is to help to bridge the gap between the prior beliefs, unfamiliar theoretical knowledge, and the still unattained states of proficiency of the student teacher; and guide the student through the necessary or requisite knowledge on action (Edwards, 2011). Moves in mentoring conversation can be of different kinds:

- Moves that stay at the level of exploring (focus on 3 in Figure 2) i.e., talking about personal tacit beliefs as they relate to the existing knowledge base to be learned for a student, or
- Moves meant to be accommodating and supportive (focus on 2 in Figure 2) to scaffold learning i.e., starting from the student's position (in beliefs or performance) and aligning it with a learning goal perspective, or
- Moves that deliberately guide the student toward the to-be-attained end result, i.e., providing directed feedback on relevant knowledge functional to the performance goal (focus on 1 in Figure 2).

Typically, these three moves taken together resemble an instructional orientation, as Sadler (1995) has put forward, which is constituted of: 1: knowing where you are, 2: deciding where to go; 3: specifying the steps to get there.

Especially in teacher education, the mentors' position and role is to raise the level of proficiency of their students with conversation as their main vehicle. We are interested to learn how mentors select the conversational moves to "climb the mountain", i.e., to attain learning goals. Is a mentor aware of the risks of guiding the student teacher on a path that is steep (focus on 2)? Or alternatively, select moves to reach a certain level of attainment too brisk and early (focus on 1)? Or stay at length on the low road (focus on 3) of exploring one's positions without any new learning occurring? To reach the desired goal performance: i.e., the summit of 'mount improbable', the mentor may need to take a 'high road' in conversation from time to time. That is, to push forward in the right (goal) direction as is typical for mentoring in the professions (Garvey, 2011) as it is, also, for sustaining Ericsson's (2002) deliberate practice (Strong & Baron, 2004). Or alternatively, stay, for some time, at the 'low road' of exploring to get acquainted with held beliefs by a mentee.

We position this framework as helpful in detecting and interpreting mentoring approaches in conversations. For instance: a mentor who intends to help the student teacher to 'monitor his performance' by scaffolding and guiding towards the end goals set and by asking persistent reflective questions about the student teacher's performance in reference to the desired goal is in our view combining moves 1 and 2 (Figure 2). This "high road" approach or 'challenging approach' (Daloz, 1986) can be compared with a 'reflective approach' as mentioned by Franke and Dahlgren (1996) and also be related to the non-directive approach as described by Hennissen et al. (2008); in contrast to a mentor who stays on the 'low road', to build acquaintance and comfort; with moves that consist of discussing and eliciting comments.

Learning as a Result of Conversation

Mentoring in the professions (Garvey, 2004), as is the case in teacher education (Hobson, 2004), is directed toward attainment of (higher) levels of proficiency. In teacher education, mentoring aims to support and facilitate the professional development of student teachers (Loughran, 2004). New insights in the professional

development of teachers (Edwards, 2011) point to the interactional and collaborative nature of teacher knowledge which is developed and modified through shared understandings and gradual approximations in performance (Orland Barak & Hinon, 2006; Tillema & Van der Westhuizen; Chapter 1 of this book). Ultimately, professional development and knowledge advancement in the profession rests on the ability to gain insight from past performance and learn to create (improved) tools/solutions for future practices (Tillema, 2006). In the study we report in this chapter, knowledge attainment for the profession, regarded as an outcome of conversation in mentoring, is analyzed from the perspective of knowledge productivity (Tillema & Van der Westhuizen, 2006). Knowledge productivity is defined as the creation of conceptual artefacts to improve professional practice (Bereiter, 2002). Conceptual artefacts (i.e., tools useful for professional practice) are the outcomes of shared understandings and (often) are collaborative approximations of practice that can be argued about and shared among professionals (Tillema & Orland Barak, 2006). These artefacts become productive (i.e., tangible and useful) through conversation (as laid out in plans, protocols and action schemes, for instance; see Tillema, 2005). Knowledge productivity is a notion which captures the ‘learning’ outcomes (see Bereiter, 2002). Challenging (or “climbing”) conversations (Farr-Darling, 2001) can stimulate knowledge productivity (Baxter Magolda, 2004) which means they can lead to learning outcomes that evidence themselves in conceptual artefacts. The notion of knowledge productivity is used in this study to appraise outcomes of conversations, and is in more detail specified by three evaluative (perceptive) criteria:

- Raising problem understanding. This criterion relates to an increased awareness, better understanding and insights gained as a result of collaborative exchange, i.e., conversation. The most important question of this criterion is: is the dialogue related to the practice of the student and does the student acknowledge the issues spoken about as relevant?
- Shifting perspective. This criterion relates to a conceptual change in the beliefs of the student by listening to the viewpoints of the mentor. Most important question of this criterion is: does the student find the ideas, brought forward during conversation, important enough to adopt?
- Commitment to apply. This criterion relates to how the student was involved in the conversation and showed interest in the discussion. Engagement and participative interaction with the mentor is regarded as important for a subsequent follow-up of advice given and recommendations made. The most important question is whether the student is interested in actively following up recommendations (Tillema, 2005).

The central question we like to pursue is: to which extent does the mentor’s moves in conversation relate to the perceived learning outcomes of the student teacher? More specifically:

- To what extent does the mentor's selection of three different moves during conversation relate to perceived "understanding", "perspective shift" and "commitment to apply"? Conceptually speaking: is taking a 'high road' approach in mentoring conversations leading to higher perceived learning outcomes?
- As a rival perspective: To what extent do student (prior experience based) expectations on (the mentor's approach to) conversations influence student teacher's learning outcomes? Conceptually speaking: do established relationships in mentoring have impact on the choice of conversational moves?

THE STUDY

Respondents

In the study we report on 12 dyads of student teachers and their mentors. Eight student teachers were enrolled in a teacher education program for secondary education and four attended teacher education for primary education. Students were between 18 and 28 years old and took courses in their first to their fourth year of education.

Four out of the 12 mentors were the regular mentors of the student teachers; both working together in teaching practice classes. Six mentors were involved as supervising teacher educators. They visited the students at their internship-schools and met for mentoring conversations. Two mentors were working as mentor coordinators; they regularly visit, observe, and evaluate student teachers at different sites. The twelve mentors differed in their experience and position as a mentor (on average 6.5 years). Relationships between a mentor and a mentee varied in closeness, i.e., the length or duration of the relationship. This circumstance was used as a framework for analysis.

Design of the Study

A comparative case design (Linn, 1998) was used in this study to explore within different school settings the nature of interaction in the dialogues between a mentor and a student teacher. In a case comparative design it is possible to explore framed contexts both in a qualitative and quantitative way (Druckman, 2005). The framing, i.e., selection of settings, consisted of varying the "closeness" variable i.e., the personal mentoring relationship established between the stakeholders over an extended period of time. The moderator variable in this study is the mentors' moves in the conversations, determined by analyses of propositions from the transcribed mentoring conversation, using content analysis methods (Bovar & Kieras, 1985). As outcome variable, student expectations with regard to the conversation as a learning event was measured using a questionnaire, as well as by in depth interviewing, using the Memorable Event method (Tillema, 2005). To determine the learning outcomes of mentoring the questionnaire on perceived knowledge productivity was used. (see Table 1 for an overview and instrument.)

Table 1. Concepts, variables, instruments, and research expectation in this study

<i>Concept</i>	<i>Variable</i>	<i>Instrument</i>	<i>Conjecture</i>
Mentor’s approach	Mentor’s moves	Content analysis coding on prescriptive, scaffolding and exploring propositions by mentor	Prescriptive and scaffolding propositions are related to high road approach and exploring propositions are related to low road approach
Mentoring relationship	Mentoring expectations	Adjusted Ideal Mentoring Scale (IMS)	High expectation is related to positive relationship
	Perceived Learning impact	Memorable events interview	High experienced effects are related to positive relationship
Learning outcomes	Knowledge productivity	Questionnaire on perceived knowledge productivity on – understanding, – perspective shift and – commitment to apply	High perceived knowledge productivity is related to high perceived learning outcomes

Procedure

The selected 12 pairs consisted of a mentor and a student teacher in a mentoring relationship. They were invited by mail to join the study and accepted on willingness to participate. Beforehand they received a short introduction to the nature of the study and its procedure. If both student teacher and mentor gave consent to the process, an appointment was made for videotaping their upcoming mentoring conversation. Before the mentoring conversation, students were asked to fill out the questionnaire on Mentoring Expectations. When the regularly scheduled mentoring conversation took place, the researcher visited the site (most often at the internship school) and gave a short repetition of the procedure and answered possible questions. With the camera was installed, the researcher left the room and waited outside during the conversation room not to interfere the process. After the conversation had ended, the researcher administered the questionnaire on perceived Knowledge Productivity and administered the Memorable Events interview.

Instruments

Student teacher’s mentoring expectations. Student teachers’ expectations represent the way a student teacher values a mentoring conversation as contributing

to his or her learning. For this purpose, a questionnaire was developed based on the Ideal Mentoring Scale by Rose (2000). The Ideal Mentoring Scale measures mentor abilities a student appreciates most in a mentoring conversation. Three scales evaluating the student's appreciation with the mentor are: Integrity, Guidance, and Relationship. The original questionnaire by Rose was adjusted to appraise the current expectations before conversation with the mentor took place. Therefore the opening question of the IMS was changed from 'My ideal mentor would ...' to 'What I would like to occur in this conversation with my mentor is ...'. The items of the original IMS were not changed. The adjusted instrument was used to measure student's satisfaction with the existing mentor relationship. Before the mentoring conversation, the student teacher filled out the questionnaire that consisted of 34 statements on a five point Likert scale (ranging from not true at all to very true).

- Integrity consisted of 14 items (e.g. 'What I see in my mentor is that he values me as a person').
- Guidance consisted of 10 items (e.g. 'What I see in my mentor is that he helps me plan a timetable for my research').
- Relationship consisted of 10 items (e.g. 'What I see in my mentor is that he helps me realize my life vision').

The internal consistency for these items in three categories was measured with Cronbach Alphas: for integrity $r = .87$, for guidance $r = .75$ and for relationship $r = .78$.

Interview: Memorable events. After the conversation took place students received an open interview format with nine evaluative questions pertaining to their satisfaction with the conversation as a learning event. The interview questions asked to specify (by writing) the "memorable events" during conversation as instances of what was said that matters most or was highly relevant to the student on three aspects (with regard to the knowledge productivity of the conversation):

- Problem understanding: three questions evaluating whether the student teacher accepted and learned from the messages expressed in the discussions (e.g. 'what have you learned and gained from the examples your mentor expressed?').
- Perspective change: two questions evaluating whether the conversation led to insightful new knowledge (e.g. 'how the talk you had have changed your way of approaching matters in teaching?').
- Commitment to apply: four items evaluating whether the student teacher took active part in the process (e.g. 'what kind of consequences would you draw as a result of the mentoring conversation?').

The answers of the student teachers on each question were coded as positive, negative or neutral. The reliability of this instrument was tested by an inter-rater reliability test. This resulted in an agreement of 89%.

Questionnaire of perceived knowledge productivity. Knowledge productivity represents the valuation of learning outcomes by the student teacher, i.e., did the mentoring support my professional practice? This variable is measured using a questionnaire developed by Tillema (2005; Orland Barak & Tillema, 2006). The questionnaire was administered to the student teacher after the mentoring conversation and consisted of 20 evaluation questions with respect to three categories on a five point Likert scale (ranging from not true at all to very true).

- Problem representation: seven items evaluating whether the student better understood the topic under discussion and gained insights from the conversation (e.g. 'I found the problems being discussed authentic and real').
- Perspective taking: seven items evaluating the ideas the mentor expressed that contributed to learning (e.g. 'my thinking changed during the discussion').
- Commitment: six items evaluating whether the student teacher was actively involved in the conversation (e.g. 'I took ideas to practice further').

The internal consistency for these items in the three categories was measured with Cronbach Alphas: for problem representation $r = .71$, for perspective taking $r = .64$ and for commitment $r = .97$. To increase homogeneity of the scale Perspective taking one item on the scale is deleted (I was able to grasp interesting ideas), rises Alpha to $.71$.

Data: Content Analysis

Mentor's moves during conversation were measured with a self-developed coding instrument. The instrument is used for a propositional analysis of the transcribed video registration of the conversation. The propositional method in a conversational analysis (Goodwin & Heritage, 1995; Holsti, 1968; Mazur, 2004) was chosen to increase rater reliability in scoring the unit of analysis, i.e., moves. Moves are speech acts used by the mentors during conversation which, following our conceptual framework, is categorized as either:

1. Prescription: a move containing a reference to the present or referenced knowledge base and directed toward a performance goal. Speech acts can be: explanation, referencing, guiding, remarking. A prescription is intended to give an advice based on previously taught or instructed content knowledge to warrant a recommendation for future action.
2. Scaffold: a move referring to present student performance linking it to a performance goal. Speech acts can be: giving hints, providing examples, prompting. Scaffolding is meant to monitor and highlight actions taken by the student in reference to possible improvements that could be made.
3. Exploration: a move referring to a knowledge base relating it to present student performance. Speech acts can be asking for explication, acknowledgments,

invitation. Exploring is meant to investigate actions performed and provide perspectives for future action.

A fourth category contained miscellaneous comments. A guideline was developed for raters to support a reliable scoring (Mazur, 2004). Definitions and examples of scoring are;

- Prescription: statement in which the mentor tells the student teacher how to act in a certain situation, how to execute, in order to reach the desired goal (e.g. ‘the best option is sending him to his seat to reflect’).
- Scaffold: statement in which the mentee by is invited to reflect on classroom behaviour in order to reach the desired goal (e.g. ‘what can you do to prevent this?’).
- Exploration: statement in which the mentor explores student teacher performance in a certain classroom setting (e.g. ‘were all pupils focused on your instruction’).
- Other: statement not typically fit into one of the categories (e.g. ‘I liked your lesson I saw today’).

The unit of analysis we worked with, is a proposition, i.e., a subject – predicate relation (Holsti, 1994). In case of unfinished sentences (because of interruptions or pauses), a group of adjacent propositions were used as unit of analysis. The video registration was transcribed into a meaningful enumeration of units of propositions in order to establish (i.e., score) whether a category has occurred in that particular unit. Only one category was assigned to one proposition.

Example:

To give an example on the coding of mentoring conversations in this study, part of a mentoring conversation’s coding is shown step by step.

Step 1: transcribing the conversation

Mentor: ‘How could you prevent that for instance? You now say: at the start of the lesson I did not wait for the class to be quiet. You did not check if it was completely clear to the students what your intention was. What your goal for the lesson was, what you expected from the students’.

Step 2: dividing the conversation into propositions

- How could you prevent that for instance?
- You now say: at the start of the lesson I did not wait for the class to be quiet.
- You did not check if it was completely clear to the students what your intention was.
- What your goal for the lesson was, what you expected from the students.

Step 3: coding the propositions

How could you prevent that for instance?	Scaffolding (question to help the student reflect on the situation)
You now say: at the start of the lesson I did not wait for the class to be quiet.	Other (citation of the student teacher by the mentor)
You did not check if it was completely clear to the students what your intention was.	Exploring (exploring the current performance)
What your goal for the lesson was, what you expected from the students.	Exploring (exploring the current performance)

Step 4: assigning a category

The number of specific codes under each category is counted after coding the conversation. The frequency count for each category provides the ‘footprint’ of the conversation. This footprint indicates how many propositions in the conversation are prescriptive, scaffolding, exploring or other. In the above example the footprint of this little part of the conversation is: prescriptive: 0, scaffolding: 1, exploring: 2, other: 1.

The reliability of coding was tested by multiple raters. Initial coding agreement on 50 propositions was 46%. Raters then received training; two raters were employed afterwards resulting in inter-rater reliability of sampled transcripts of $k = .86$.

Data Inspection

Scoring of propositions of mentor moves consisted of frequency counts of the three categories to arrive at a ‘footprint’ of each conversation. A footprint consists of categories: scaffolding (n); prescription (n), and exploration (n).

Scores on questionnaire of Mentoring Expectations were obtained by calculating the mean scale score on the three questionnaire scales: Integrity, Guidance and Relationship.

Scores on Memorable Event interview are obtained by counting the amount of positive answers on the nine interview questions. Twelve student teachers answered the scale Problem Understanding with a positive instance of 30 out of the 36; Perspective Change were answered positive in 10 of the 24 cases, for Commitment to Apply the positive instances were 25 out of the 36 answers. In overview, student teachers answered more than half of the questionnaire items positively

The scores on perceived Knowledge Productivity are obtained by calculating the mean score on the three questionnaire scales. The questionnaire consists of scales: Problem Representation, Perspective Taking and Commitment to Apply. There were no missing values.

Analysis

To answer the first question on the relation between mentor's conversational moves and knowledge productivity, the knowledge productivity scale scores are compared on type of 'footprint' i.e., the combination of categories of mentor moves. Especially we were interested in the effects of a 'high road approach' or footprint and a 'low road' approach. A high road being dominated by prescription, and/or scaffolding vs a low road being dominated by exploring moves. Taking into account the small amount of conversations (n=12) a Mann-Whitney U-test was used.

To answer the second question on the relation between mentoring expectations and knowledge productivity, two analyses were conducted. Firstly, scores on knowledge productivity are compared for the high and low expecting students and analysed with a Mann-Whitney U-test. Secondly, the influence of 'closeness' in mentoring relationships on knowledge productivity is contrasted for dyads that are unfamiliar or familiar in their relationships. The scores were analysed with a Mann-Whitney U-test.

RESULTS

Description

A descriptive account of findings shows the following findings:

Conversational moves. Content analysis of the 12 conversations indicates that there is considerable variation in selected moves by the mentors; grouping them under footprints or type of approach it reveals that 3 conversations are considered to have a 'high road' approach and 9 are considered to have a 'low road' approach. Table 2 shows the frequencies for coded categories of all 12 conversations.

Mentoring expectations. The questionnaire on student teacher's Mentoring Expectations contains three scales. The scale Integrity has a mean of 4.14 (N = 11, SD = 0.49), the scale Guidance has a mean of 3.55 (N = 11, SD = 0.50) and the scale Relationship has a mean of 3.27 (N = 11, SD = 0.61). The total mean is 3.71 (N = 11, SD = 0.46). Taking a scale mean of 3.50 to be high on expectations indicated that 7 out of 11 respondents had high expectations.

Knowledge productivity. The Knowledge Productivity questionnaire contains three scales. The scale Problem understanding has a mean of 4.35 (N = 12, SD = 0.43), the mean of Perspective taking is 3.94 (N = 12, SD = 0.59) and the Commitment to apply scale has a mean of 4.23 (N = 11, SD = 0.40). The mean score on all of the scales is 4.16 (N = 12, SD = 0.37).

Table 2. 'Footprint' for all conversations

Conversation	Prescriptive	Scaffolding	Exploring	Other	High or low road
1	87*	64	118	155	High
2	64	8	84	240	Low
3	13	20	38	60	Low
4	13	43	65	122	Low
5	56	19	132	127	Low
6	23	11	11	50	High
7	23	18	89	320	Low
8	10	15	36	112	Low
9	2	5	27	53	Low
10	16	16	39	25	Low
11	47	32	66	54	High
12	27	15	61	46	Low

* Table contains frequencies of propositions

Conversational moves and knowledge productivity. To answer the first question student teacher’s scores on knowledge productivity are compared under a ‘high road’ approach (n=3) and ‘low road’ approach (n=9). Median score in the ‘high road’ approach was 3.94 and median score in the ‘low road’ approach was 4.03. The distributions in the two groups did not differ significantly (Mann–Whitney $U = 8.00$, $n = 12$, $p = .31$ two-tailed). There is no significant difference in knowledge productivity for students who had a ‘high road’ conversation or a ‘low road’ conversation.

Mentoring expectations and knowledge productivity. Based on their expectation score, student teachers are divided (around the scale median score) into two groups: high and low expectations. The knowledge productivity scores were compared for these two groups with a Mann-Whitney U-test. Mean score in the high group was 4.37 and mean score in the low group was 3.82. The distributions in the two groups differs significantly (Mann–Whitney $U = 3.00$, $n = 11$, $P = .04$ two-tailed). Student teachers having high expectations have higher perceived knowledge productivity.

With respect to closeness in the mentoring relationship, student teacher’s scores on Knowledge Productivity were compared for a high closeness relationship (n=6) and low closeness (n=6). It was expected that students under a high closeness relationship would perceive higher knowledge productivity. For this analysis a Mann-Whitney U-test is executed. The median score in the high closeness group was 4.52 and the median score for low closeness was 3.92. The distributions in the two

groups differs significantly (Mann–Whitney $U = 5.00$, $n = 12$, $P = .04$ two-tailed). Student teachers under high closeness perceive higher knowledge productivity. Both analyses related to mentoring relationship indicate a positive relationship with higher knowledge productivity.

DISCUSSION

This study meant to explore the relation between mentoring conversation and student teacher's learning, taking into account the student's relationship with his/her mentor.

Mentoring Relationship and Learning Outcomes

Using a comparative case design we found support for the influence of student – mentor relationship on learning outcomes. The student's learning in a mentoring relationship was gauged with respect to: student teacher's expectations, and perceived knowledge productivity of the conversation. When knowledge productivity is compared for student teachers with high and low expectations our analysis showed a significant difference. Student teachers who were satisfied with their mentors had a higher mean perceived knowledge productivity. The same applies when comparing student teachers having a close (i.e., extended) relationship with their mentors.

Conversational Approach and Learning Outcomes

A clear relation between specific mentor moves and student teacher's learning outcomes was not found. We particularly gauged a 'high road' approach vs a 'low road' approach taken by the mentor; expecting that prescriptive and scaffolding moves (i.e., 'high road' or 'pushing' approach) by the mentor would lead to higher knowledge productivity compared to exploring moves i.e., 'low road' or 'laissez faire' approach. In fact, the mean knowledge productivity was higher for conversations with a 'low road' approach, although no significant differences were found.

In interpreting our findings several reasons can be mentioned why taking a 'low road approach' in mentoring conversations has higher knowledge productivity. A conceptual reason is that prescriptions and scaffolding by the mentor may not have been adequate, or accepted as stepping stones towards the desired goal. Exploring current performance, on the other hand, may have been considered informative to the student to orient them towards the desired goal. The results in our case-study show that exploring current performance had a high frequency of moves as well as miscellaneous moves, indicating that the conversations provided less time for guiding or prescribing routes, but invested ample time in monitoring performance, i.e., "covering ground".

It is also possible that the identified moves are incomplete in responsiveness to the mentee's intent to use the conversation as a vehicle toward a desired learning outcome. A crucial factor in mentoring that was not included in our selection of

moves is the need of the mentee (Garvey, 2011). It can be claimed that student teacher's learning outcomes will be determined by their motivational needs (Deci & Ryan, 2004). In this respect a conversation with low knowledge productivity would not have sufficiently addressed motivational needs of students. In our study, we did not cover for mentor moves that address different motivational needs or "background states" of students (i.e., "prior knowledge" could have been another), but then again the moves we identified did show a different footprint (a specific combination of three constituting categories), indicating different patterns of conversation affecting learning outcomes. It would seem that in a mentoring relation a mentor's intent to arrange the conversation in a certain way would imply a deliberate connection to the learner('s motivation or background). This would constitute an interesting line of study to pursue. One way of looking into this, i.e., to satisfy the needs of students, would be to take into account or differentiate between the phase or stage of conversation as it relates to the progression in learning needs of the student (Ormond, 2011) since it might have a positive impact on learning outcomes; i.e., needs of a more experienced student teacher required a different mentor's approach to maximize the learning outcomes.

Another reason for our findings is the sensitivity of our 'model' i.e., detecting moves in conversations. The instrument we used to measure moves can be improved; not only by training to improve reliability, but also by improving on the content analysis that was used. A propositional analysis converts a conversation as a speech activity into a transcript, which might lose intent and purpose, as well as interactional cues (Mercer, 2004). In favour of a propositional; analysis speaks rigor and control of coding but may be at the expense of information and relevancy. In addition, a propositional approach analyzes the smallest units possible but in a conversational analysis larger, i.e., meaningful units might be a better frame of analysis. In support of this we found that the frequent occurrence of sequences of propositions with a common tread or pattern of moves i.e., a scaffolding or a prescriptive proposition is often preceded by several exploring propositions. The coding we used in this study, however, counts only the number of propositions in each category; not their sequence or pattern. It might be of interest to look for patterns, for instance we found that exploring propositions are often introductory for scaffolding or prescription moves (see further extentions in Chapter 7).

Another observation with regard to our analysis of moves is the high amount of propositions that could not be assigned to one of the three categories recognized by our model. More than half of the studied conversations had 50% or more 'other', miscellaneous propositions. Mena Marcos, Sanchez and Tillema (2010) who distinguished in their study between learning oriented moves such as rules and artefacts which were low in frequency of occurrence also found a high amount of 'other or non learning related propositions which could be characterized as "positive appraisals", i.e., comments of reassurance. This might indicate that a considerable amount of time in conversations is needed to provide for emotional and interactional alliance. The "high road" moves (which were more seldom) include giving feedback,

providing information and suggesting practical advice, which only constituted a small (but we believe essential) part of the conversations. Emotional support was more predominant and includes the explorative moves characterized by giving sympathetic and positive support, attention and empathy.

In fostering the vital function of conversation as a vehicle to promote learning (Van der Westhuizen, Van der Merwe & Tillema, 2012) a mentor's approach, in our opinion, will need to have an impact on students' personal setting of standards (i.e., by the mentor's expression of high expectations) and on reassurance of the fruitfulness of discussion (to achieve knowledge productivity). This could imply that mutual understanding and a common interpretation on goals and attainment levels are of key importance in a talk between a mentor and a mentee. Zanting Verloop and van Driel (2007) point to the importance of 'explicating practical knowledge' as a common understanding in mentoring and argue that (in our words) "taking a high road" can be advantageous to student teachers for four reasons: student teachers obtain new information about teaching; they understand the nature of teaching better; they understand their mentor's mentoring better, and integrate theory with practice. There may be several approaches in conversation but some of them are better suited to make knowledge explicit than others. Our study indicates that at least three 'moves' are useful in capturing a conversation and analyzing its potential for learning.

IMPLICATIONS

It is of interest to note that the results of our case analysis of twelve conversations indicates that student teacher's relationship with his mentor highly influenced perceived learning outcomes. If this result can be generalized, it would indeed be recommendable to pay more attention to the matching process of students and to their mentors. What seems common practice now is that most student teachers and mentors are matched based on circumstantial considerations, e.g. availability, group composition, distance or class membership. Investing in a proper matching between mentor and mentee, for example established by using the Ideal Mentoring Scale by Rose (2000), could benefit the learning process.

Our study further shows that mentor's moves in a conversation influences the learning outcomes of the student teacher, but not significantly. Students who experienced a low road approach in the mentoring conversation have higher perceived learning outcomes. This probably has to do with the relative proficiency already attained by these students (all were in their 4th year of the program). It could imply that 'experience' has an impact on the relevancy of a particular approach. It would suggest that our 'low road' is beneficial for those student who already possess sufficient knowledge for practice and that a 'withholding', i.e., non prescriptive mentoring approach in these cases would be more beneficial to facilitate learning. If this finding can be generalized to mentoring programs, mentors can deliberately select combinations of moves as an approach to increase student teacher's learning outcomes.

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Appendix 1. Scores on Measured Variables per Conversation

Conversation	Mentor's approach						Relationship			Learning outcomes	
	Content analysis						Satisfaction with mentor	Closeness	Mentor's social position		Knowledge productivity
	Prescriptive	Scaffolding	Exploring	Other	High or low road	M score					
1	87 (21%)	64 (15%)	118 (28%)	155 (37%)	High	No score	No score	1	High	3.94	
2	64 (16%)	8 (2%)	84 (21%)	240 (61%)	Low	4.53	Satisfied	1	High	4.67	
3	13 (10%)	20 (15%)	38 (29%)	60 (46%)	Low	3.53	Satisfied	2	High	4.75	
4	13 (5%)	43 (18%)	65 (27%)	122 (50%)	Low	3.88	Satisfied	1	High	4.00	
5	56 (17%)	19 (6%)	132 (40%)	127 (38%)	Low	4.21	Satisfied	2	High	4.72	
6	23 (24%)	11 (12%)	11 (12%)	50 (53%)	High	3.38	Not satisfied	3	Low	3.71	
7	23 (5%)	18 (4%)	89 (20%)	320 (71%)	Low	3.65	Satisfied	3	Low	3.98	
8	10 (6%)	15 (9%)	36 (21%)	112 (65%)	Low	3.38	Not satisfied	3	Low	4.13	
9	2 (2%)	5 (6%)	27 (31%)	53 (61%)	Low	3.09	Not satisfied	3	Low	3.86	
10	16 (17%)	16 (17%)	39 (41%)	25 (26%)	Low	4.09	Satisfied	3	Low	4.03	
11	47 (24%)	32 (16%)	66 (33%)	54 (27%)	High	3.94	Satisfied	1	High	4.37	
12	27 (18%)	15 (10%)	61 (41%)	46 (41%)	Low	3.15	Not satisfied	3	Low	3.78	

Instruments

Instrument: Questionnaire on Student Teacher's Satisfaction With His/her Mentor
 Please indicate your view by means of a number next to each statement. Choose on scale 5 to 1:

True for me 5 – 4 – 3 – 2 – 1 Not true for me

What I see in my mentor is that he/she:

Treats me as an adult who has a right to be involved in decisions that affect me	1	2	3	4	5
Values me as person	1	2	3	4	5
Respects the intellectual property rights of others	1	2	3	4	5
Believes in me	1	2	3	4	5
Recognizes my potential	1	2	3	4	5
Generally tries to be thoughtful and considerate	1	2	3	4	5
Works hard to accomplish his/her goals	1	2	3	4	5
Accepts me as a junior colleague	1	2	3	4	5
Inspires me by his or her example and words	1	2	3	4	5
Gives proper credit to students	1	2	3	4	5
Is a role model	1	2	3	4	5
Advocates for my needs and interests	1	2	3	4	5
Is calm and collected in times of stress	1	2	3	4	5
Prefers to cooperate with others than compete with them	1	2	3	4	5
Provides information to help me understand the subject matter I am reflecting on	1	2	3	4	5
Helps me plan a timetable for my reflection report	1	2	3	4	5
Helps me to investigate a problem I am having with my reflection report on school experience	1	2	3	4	5
Helps me plan the outline for my reflection report on school experience	1	2	3	4	5
Helps me to maintain a clear focus on my reflection report	1	2	3	4	5
Gives me specific assignments related to my reflection report	1	2	3	4	5
Meets with me on a regular basis	1	2	3	4	5
Is generous with time and other resources	1	2	3	4	5
Brainstorms solutions to a problem concerning my reflection report	1	2	3	4	5
Shows me how to employ relevant teaching methods	1	2	3	4	5
Relates to me as if he/she is a responsible, admirable older sibling	1	2	3	4	5
Talks to me about his/her personal problems	1	2	3	4	5

Is seldom sad and depressed	1	2	3	4	5
Is a cheerful, high-spirited person	1	2	3	4	5
Rarely feels fearful or anxious	1	2	3	4	5
Helps me realize my life vision	1	2	3	4	5
Has coffee or lunch with me on occasions	1	2	3	4	5
Is interested in speculating on the nature of the universe or the human condition	1	2	3	4	5
Takes me out for dinner and/or drink after work	1	2	3	4	5
Keeps his or her workspace neat and clean	1	2	3	4	5

Instrument: Questionnaire on The Experienced Learning Effect Of Mentoring

- 1.1 How do you evaluate your learning experiences in the mentoring conversation?
.....
- 1.2 What have you learned and gained from the examples of the things that you expressed?
.....
- 1.3 Can you identify some ideas expressed in the talk that you think contributed to your understanding of the issues in your reflection report?
.....
- 2.1 Can you think of examples of things that were talked about which challenged the beliefs about teaching you have?
.....
- 2.2. What experiences have changed your way of approaching matters and how have they influenced you?
.....
- 3.1. Have the points you mentioned above in 1 in any way affected your thinking? How?
.....
- 3.2 What kind of consequences would you draw as a result of the mentoring conversation?
.....
- 3.3. Describe what you regard as memorable in the conversation. Why was it memorable for you?
.....
- 3.4. If you were to think of a metaphor to describe the conversation you had with the mentor, what would you choose and why?
.....

MENTORING CONVERSATIONS AND STUDENT TEACHER LEARNING

Instrument: Questionnaire On Perceived Knowledge Productivity

Please indicate your view by means of a number next to each statement. Choose on scale 5 to 1:

True for me 5 – 4 – 3 – 2 – 1 Not true for me

Problem understanding

I found the problems being discussed authentic and real	1	2	3	4	5
I think the discussion was fruitful and interesting	1	2	3	4	5
I could recognize from my own practice the issues that were dealt with	1	2	3	4	5
I found the discussion productive and leading to conclusions	1	2	3	4	5
I felt we dealt with problems that really mattered	1	2	3	4	5
I was cognizant and aware of the issues being discussed	1	2	3	4	5
I could contribute to the discussion in a productive way	1	2	3	4	5

Perspective shifting

I was able to grasp interesting ideas from my mentor	1	2	3	4	5
I think there were a lot of thoughts that set me thinking	1	2	3	4	5
I often experienced being confronted with new ideas in the discussion	1	2	3	4	5
I often led my thinking change during the discussion	1	2	3	4	5
I enjoyed listening to my mentor's contributions	1	2	3	4	5
The contributions my mentor made were very important	1	2	3	4	5
There were a lot of important ideas generated in this talk	1	2	3	4	5

Commitment to Apply

I let my mentor have the opportunity to air ideas	1	2	3	4	5
I refrain from pushing my own ideas too strongly	1	2	3	4	5
I experience great satisfaction partaking in the discussion	1	2	3	4	5
I participated to foster a process of mutual understanding	1	2	3	4	5
I sought to encourage an interactive communication at a high level	1	2	3	4	5
I think it is important to be understood in the discussion	1	2	3	4	5