

Teachers' Vocabulary Develops Educational Awareness by Constructing Practical Arguments

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Abstract:

Objective: As the teacher spends most of her/his career teaching inside the classroom it may be argued that much of their Continuing Professional Development takes place there. However, little is understood about how teachers develop understanding of their everyday practices, and how these experiences are reflected upon and articulated. This paper asks: How when teaching practices are initiated, tested, adjusted and articulated do teachers reflect on this experience? What happens if spaces are provided for dialogical reflection – with themselves and with other colleagues?

Research design: The research is based on a PhD project carried out with teachers of adults over an eight-month period in Denmark. The qualitative research used three main elements: individual journal entries, follow up observations in the classroom and reflective interviews with the teachers. The data in this paper relate to the procedures of constructing a 'practical argument' (Fenstermacher & Richardson 1993).

Main Outcomes: In times where curriculum reform is a norm in many educational systems, teacher agency is an important issue (Biesta et al. 2015). Findings demonstrate that teachers' talk – their vocabulary (how they talked about their reasoning and thereby develop educational awareness) – affects their ability to reflect pedagogically and their ultimate capacity to achieve agency in their classrooms.

Keywords: *Professional development; teacher knowledge; teachers' vocabulary; teacher agency; practical arguments*

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Introduction

From a perspective of teachers' Continuing Professional Development (CPD) this paper considers the importance of the influence of teachers' educational vocabulary in relation to their understanding and development of teaching practices. Although we acknowledge that teachers develop professional skills through formal teacher training, including pre-service and in-service training programs, we acknowledge that teachers also acquire knowledge about teaching through their teaching experiences (Darling-Hammond, 1999; Richardson, 1996). As the teacher spends most of her career teaching inside the classroom so it may be argued that much of their CPD takes place there. A wealth of research that explores teachers as learners suggests that teacher knowledge is constantly in the process of development (Merriam et al. 2007). Therefore, in many ways, teachers can be regarded as adult learners themselves. However little attention has been given to how teachers develop understanding of their everyday practices, of what works and what doesn't inside the classroom, and how these experiences are reflected upon and articulated.

Looking back at the professional development literature we note that it is more than two decades since there has been an interest in teachers' working with their reasoning by elicitation and further develop a practical argument (Morgan 1993; Vásquez-Levy 1993; Fenstermacher 1987a; Fenstermacher & Richardson 1993; Fenstermacher 1987b; Munby 1987; Morine-Dersheimer 1987; Pendlebury 1990). Recently Biesta, Priestley and Author-b (Biesta et al. 2015; Priestley et al. 2015) while they stress the importance of teachers working on their beliefs, have brought our attention to this issue again. (Biesta et al. 2017; Biesta et al. 2015; Biesta 2016; Biesta et al. 2016). This article urges a focus on the teacher's ability to act upon their reasoning by developing and

articulating their thinking and action. In relation to teacher development, this article further stresses the importance of an approach that turns away from measuring the teachers' ability to perform certain specific tasks or assessing teachers' performance. This is often related to students' grades/performance as in the research on school effectiveness (MacBeath & Mortimer 2001; Reynolds et al. 2002; Muijs & Reynolds 2001b; Muijs & Reynolds 2001a; Reynolds, D., Creemers, B., Stringfield, S. & Schaffer 2002). With an interest in research in teacher education, we stress the importance of teachers' development by looking at their way of giving an argument and how they justify their actions, their planning and intentions.

In this paper, we relate to Schön's metaphor on practice understood as a 'swampy lowland' (Schön 1983, p.42). The swampy lowland metaphor emphasises the situation where practitioners do not necessarily 'make effective use of research-based theory and technique' but, as leaders of the classroom they articulate and justify their choices through 'trial and error, intuition, and muddling through'. This swampy lowland is 'where situations are confusing 'messes' incapable of technical solution' (Schön 1983, p.42). Through an investigation of how teachers' reflection processes inform their professional growth we seek to deepen our understanding of the often invisible mechanisms that affect teachers' professional judgement. Of interest here is: How, when teaching practices are initiated, tested, adjusted and articulated, do teachers reflect on this experience? What happens if spaces are provided for dialogical reflection – with themselves and with other colleagues? Teachers are often charged with being agents of change and, in times where curriculum reform is a norm in many educational systems, teacher agency is an important issue. If teacher agency is understood as the teachers' ac-

tive contribution to shaping their work and its conditions – for the overall quality of education (Biesta et al. 2015; Biesta et al. 2016) then there may be a case for focusing on the development of teacher's vocabulary.

This paper draws on an eight-month-long qualitative study of teachers, in the Danish context, teaching adults at an Adult Education college. The study explores the potential of learning through practice, examines how teachers reflect pedagogically and what these reflections tell us about the choices teachers make about future practice and how their capacity for agency develops. The findings and procedures will be discussed and combined with the theoretical construct of teacher agency.

The structure of the paper begins by first providing an overview of 'knowing' in teaching. This is followed by a short literature description about the important elements of teacher education and CPD. These elements are then related to recent research on teacher agency and teachers thinking and talking. The following sections briefly present the research design, methodology and background for the study. Finally, the findings are presented followed by a discussion in relation to the constructs given in the literature overview.

Teachers' 'knowledge' in teaching

The focus on teachers' discourses and vocabularies is often studied under the rubric of teachers' professional knowledge. This perspective can be traced back to Fenstermacher's (1994) distinction between different kinds of teacher knowledge referring to Schwab's (ibid.) interest in the role of practical reasoning and judgement in teaching (Fenstermacher 1994; Fenstermacher & Richardson 1993; Fenstermacher 1987a). Fenstermacher (1994) distinguishes between a narrower approach that focuses on teachers' propositional or theoretical knowledge, hard fact knowledge about teaching (*Teacher Knowledge Formal*) and a more embracing approach in which teachers' knowledge is

not only the knowledge *for or about* teaching generated elsewhere, but also the knowledge *of* teaching, their practical knowledge (*Teacher Knowledge Practical*).

Teachers' knowledge is identified as 'craft knowledge' by Leinhardt (Leinhardt 1990, p.18) who suggests that 'expert teachers possess a practical knowledge of their craft' which is 'contextualized knowledge'. However, it is not an easy task to assess craft knowledge, as the contexts are seldom clear but more likely to be foggy (Ibid.). Within adult learning it is stated that learning 'rarely occurs in splendid isolation from the world in which the learner lives; ... it is intimately related to that world and affected by it' (Merriam et al. 2007, p.5 quoting Jarvis, 1987). Consequently, it is not meaningful to separate *what* the teacher knows and *how* she performs what she knows. A teacher's practices and the contexts, in which she acts, are integral to personal cognition and learning (Greeno 1997; Putnam & Borko 2000). Therefore, viewing cognition as situated and social, helps us to understand that much of what we do and think is intertwined with the current contexts in which we act. Fenstermacher's (1994) definition of teachers' practical knowledge relates closely to Elbaz' (1983) construct of 'Practical knowledge' – which is the foundation for much of the research on teacher thinking – later developed by Clandinin and Connelly (1987). It describes how a teacher comprehends or knows a teaching situation in her classroom, which links back to Schön's (1983) notion of 'knowledge-in-action' and Fenstermacher's definition (1994). The sum of teacher knowledge results from teachers' thought processes *and* experiences. This is internalised and becomes 'tacit knowledge'. As we recognize this entanglement of knowing *and* knowledge *and* situation it calls on the perspective of embodied knowledge, which is more than cognitive; a kind of knowing inseparable from action and person. The topic of the next section contains these considerations in teacher education and CPD.

In this paper, we focus on the role of teachers' talk/vocabulary as a signifier of the potential to achieve agency and develop their educational awareness. We explore how, by focusing on the vocabulary they use, the construction of arguments and the relation to pedagogical practices, teachers are able to gain deeper understanding (learning) of everyday practices that lead to control over and develop capacity to change these practices.

Educational Awareness - a view on CPD

Our understanding of the construct 'educational awareness' in this paper relates to the literature on CPD and the ideal labelled 'educational rationality' by Dale (1998, p.256). Literature on teachers' CPD emphasizes the importance of teachers' opportunities to be well-informed critics of reforms by investigating, experimenting, discussing and reflecting on their own teaching through collaboration with fellow teachers (e.g. Atkinson & Bolt 2010; Hammerness et al. 2005; Woolhouse & Cochrane 2010). Reflection has long been considered a means towards emancipation and professional autonomy (Calderhead 1989; Zeichner & Liston 1987). This work builds on the ideas of Dewey (1910) and later Schön (1983), that argues that when teachers engage in research related to their practices, they develop professionally. In this kind of process the teacher is considered a reflective learner, exploring her own teaching and developing opinions and attitudes (Elliott 2004).

Dale (1998) suggests that there are three levels of competence in a professional school in the context of what he calls 'educational rationality' – understood as the communicative act of teaching. This teaching gives 'priority to goal-setting, planning and evaluation' (ibid. p. 256) Dale describes the three levels of competencies as follows (1998, p.256).

- C 1. The carrying out of teaching – teaching in the classroom
- C 2. The construction of teaching programmes – preparation outside the classroom
- C 3. The meta discussion on educational issues. Communicating and constructing a theory of teaching plans, the acts of teaching itself, and the pupils' process of learning

All of these competences are required and seen as an ideal and necessary for educational rationality. While investment must be made in both C1 and C2 the time for reflection and dialogue at C3 must be incorporated. At the third level the importance of joint reflections with peers and understanding of the synergy between the *why* and *how* in teaching and education is required. Equally Dale stresses that it is important not to let the *how* take the lead and solely look for teaching concepts as the solution to a better teaching situation. As Biesta (2009) states, it is important that teaching and education do not only involve measuring learning in terms of student outcome, but that the *why* in education is not always predictable and is therefore open to constant negotiation. Therefore, the incorporation of the third level of meta-discussions and thinking is significant to develop educational awareness. However, this level may not be easy to achieve as it requires time, space and collegial sparring. This paper contributes further to recent research into the conditions that are necessary to support and enhance teacher agency (Biesta et al. 2015; Priestley et al. 2015).

Teacher agency – a contribution to CPD

Following the ecological approach to understanding teacher agency (Biesta et al. 2015) we interrogate one of the premises that support teachers to become agents of change by focusing on how the development of their practices is understood, reflected upon, and articulated, in the form of new practices and dialogues about learning. We seek to understand how teachers construct 'knowledge of practice' and how this is knowledge used to inform and shape future practice. In the literature on teacher agency we propose

that teachers make decisions anchored experiences in the past (*the iterational dimension*), towards a potential outcome, aspiration if you will, (*projective dimension*) that is placed in the context of present conditions, structures, relationships, resources and expectations (*practical-evaluative dimension*) (Emirbayer & Mische 103AD). When considering how teachers achieve agency it is the combination of these elements that makes up the ecology of agency, and which is different for each individual. Exploring and interrogating the ecology of agency is only possible if we can access not only what teachers do, and say they do, but also how they think and reflect on their actions – past and present.

Teachers build a body of knowledge from beliefs, experiences of ‘being a learner’ from their own experience as well as from ‘being a teacher’ – as professionals with responsibilities for their charges, to their colleagues, and to the profession as a body – as well as from a range of sources that are political, structural, organisational and even inspirational. This body of knowledge is articulated through practice itself but also through narratives – teachers talk. Narratives, talk, discourses, conversations, and so on, are all mechanisms that we use to make sense of what is going on around us (Biesta, Priestley & Author-b, 2017). With respect to teaching and learning our communication is through the verbal based in and on an embodiment of knowledge. The language we use shapes what is possible, and what is not, what we seek to achieve, and strive for, what we expect, and what is required. As our understanding of agency is both temporal and relational at the same time, the dialogues and reflections that teachers make are central to their potential to achieve agency. Going back to Dale’s three levels of competences one might suggest that there are competences produced from routines of practice, from judgements about practice and reflection on the meaning or purpose of

these practices. Emirbayer and Miche (1998) describe agency in terms of a dynamic interplay between routine, judgement and purpose. This description of agency links to Dale's (1998) understanding of educational rationality in that there is a need for all three levels in order to achieve this ideal.

Teacher Thinking – Beliefs as Predictors of Actions

Research on teacher thinking provides strong evidence for a robust connection between teachers' actions in the classroom, and their beliefs which sometimes are defined as knowledge (summed up in: Craig et al. 2013; Richardson 1996). The majority of scholars regard beliefs to be the foundation for action and major determinants of behaviour. Studying thinking processes leads to an understanding of the processes that guide teacher behaviour, judgment, decision-making and planning (Ibid.; Biesta et al. 2015). Even when teachers accept information from others 'they filter it through their own personal belief system, translating and absorbing it into their own unique pedagogies' (Kagan 1992, p.75). Teachers lean towards their prior 'implicit theories' and beliefs and experiences when learning to teach (Clark & Yinger 1977, p.295). Increasingly, teachers' own histories – both personal and professional – are thought to play an important role in what they learn from professional development experiences (e.g. Ball & Cohen, 1999).¹ Research show that experiences and reflection on action may lead to changes in

¹ We stress the importance of the complexity of the construct 'belief' as it has entangled connotations to the construct 'knowledge'. We find this aspect very important and have earlier discussed this aspect (Author-a 2011) referring mainly to (Pajares 1992; Richardson 1996). Knowledge is often viewed as something that changes while beliefs are more static. Knowledge is seen as facts whereas beliefs are regarded as opinions. Beliefs are stronger predictors of behavior and far more influential than knowledge in determining how individuals organize and define tasks and problems (Nespor 1987).

and/or additions to beliefs as the beliefs and actions are regarded as interactive (Mansour 2009; Richardson 1996; Calderhead 1996; Fenstermacher 1994). Further we know that when teachers engage in discussion with others related to classroom practices it helps them to evaluate and learn through the reflection process. The manner in which teachers use vocabulary is influenced by a whole range of factors and we must remember that there are current political discourses that colour the kind of language teachers use, the understanding they have of themselves as a profession and not least the purpose and importance of education and 'getting an education'. As these external factors shift over time teachers have to learn to adapt, not only their practices but also how they engage with the different discourses (Biesta, Priestley & Author-b, 2017). However, their educational beliefs and values will remain fundamental elements that ground each individual teacher in who they are and how they play their professional role. To some extent it is these elements, important to the achievement of agency, that are made visible in teacher reflections in this study. In the following section, we turn to the background and the research design for this study.

Background

This paper draws on empirical data from a Danish qualitative study carried out in Adult Education Centres (AEC) over a period of eight months (Author-a, 2015). In Denmark students at AEC's are young people and adults who are aged 18 and upwards. Therefore, students attending AEC's are considered to be adult. These students have attended compulsory school but may never have passed any exams. AEC's provide courses at lower-secondary, upper-secondary and post-secondary level. The classrooms are consequently characterized by a high degree of heterogeneity exhibiting a span in terms of life experiences, education experiences, personalities, backgrounds, learning styles and

needs, presenting a range of challenges for the teacher. In total ten teachers of adults became informants (three male and seven female). Between them, they had from 1-27 years of teaching experience.² They were characterized by their head teacher as eager to investigate and reflect on their own teaching (Author-a 2016c; Author-a 2015; Author-a 2016b; Author-a 2016a). See appendix 1 for details on informants, hours of recording, hours of observation, transcribed verbatim, and teachers' journal. The number of informants (N=10) from the key study (Author-a 2015; Author-a 2016a) prohibits me from making statistical generalizations but in line with others in the field such as Elbaz (1983; 2015), Conelley and Cladinin (Clandinin & Connelly 1987; Connelly & Clandinin 1990) and (Biesta et al. 2017; Vásquez-Levy 1993) the study's credibility is reached by saturations on the themes and constructs investigated.

Research Design

The study includes class observations, teacher's written reflection journals and semi-structured interviews that are grounded in the reflection journal.³ Initially the focus was on the way in which beliefs and values about education influenced the extent to which the teacher was able to articulate particular discourses.

Following Brinkmann's epistemic interview technique (2007) this approach involved structured discussions between the researcher as a critical friend and the teacher. This approach combines the process of fostering teachers' 'practical reasoning', to develop (elicitation and reconstruction) a 'practical argument' (following: Fenstermacher & Richardson 1993; Vásquez-Levy 1993), which points to a process of

² Details see appendix 1 - Data collection overview the teachers' subjects, experience of teaching, length of time in teaching etc.

³ Details see appendix 2 - Model of the metodological triangulation of the study

six premises: 1. *Value*, 2. *Stipulative*, 3. *Empirical*, 4. *Situational*, 5. *Logic*, 6. *An action or intention to act*. In the data collection and analysis of the teachers' vocabulary and reflections the basic elements of Toulmin's model of argumentation were used (described in: Horner 1988) as a framework for the six premises for a reasonable, warranted practical argument.

To understand the teachers' process of reflection on the *why* and *how* in education, the study was designed to combine the tacit aspects of teachers' often unspoken beliefs with their actual actions/performances and their way of thinking before, during and after teaching (related to all of Dale's level of competences). While the implications of this methodology are interesting they are not the focus in this paper. However, we describe the design briefly here for clarity. *Firstly*, the researcher focused on teachers' experiences related to specific situations (captured by teacher's journal writing)⁴ an approach that enables the researcher to combine the teacher's thoughts and actions/events. *Secondly* the teachers were interviewed using their answers from the reflection journal as an interview guide. *Thirdly* classroom observations were made which were followed by a second round of semi-structured interview with the teacher to include a dialogue about the classroom observation. The intention was to create an interaction between the teachers' practice (in C1 and C2) and their beliefs (often not articulated at C3 level) and to include the tacit and often unspoken way of knowing in teaching.

This approach involved structured discussions between researcher and teacher to examine the teachers' 'practical reasoning', to develop (elicitation and reconstruction) a 'practical argument' (following: Fenstermacher & Richardson 1993), which points to a process of six premises, described in detail in a hand-book for teachers in professional

⁴ Details see appendix 3 - Reflective journal writing questions

learning communities (Author-a 2017a), and the approach is further described in detail by Author-a (2017b).

The model of argumentation (described in: Horner 1988) is a method of reasoning. It involves the *fact*, *claim*, and *warrant* of an argument. The *fact* is the evidence used to prove something (maybe to argue for the teachers' tacit beliefs). The *claim* is what you are proving with the fact (data that convinces the other). The *warrant* is the principle or assumption that connects the fact to the claim. All three elements of an argument are regarded as necessary to support a good argument (described in: Horner 1988). This is a way of performing level C3 – defined by Dale earlier in this paper – to get insights on the thoughts and beliefs the teachers which are often held implicit or unspoken.

Teachers' Educational Awareness

In the data analysis, different categories of reflection were investigated for the use of different pedagogical vocabulary, among teachers about their practice. These were all data-driven and have been categorised:

- A. 'Unreflected Educational Justification'
- B. 'Superficial Educational Justification'
- C. 'Educational Premised Justification'.

These categories offer important insights into teachers' educational awareness. The following sections provide an example from the data to illustrate each, followed by a description of each category of reflection.

A. Unreflected Educational justification

The interviews illustrate that some teacher's reasoning was random, articulating un-reflected educational justification where effective routines were developed through repetition. These teachers used phrases such as, "I usually do this", "a bag of experiences", "habit", "routine" and "my own gut feeling." Also, predominant in this vocabulary were emotive words such as "sweating," "crying," "anxiety," "frustration," "stress," "tension," "feeling," "awareness," and so on. Furthermore, they used emotionally charged phrases such as: "I constantly keep my ear to the ground," "I feel and sense the room and the students." Teachers warranted their reasoning by explaining that they relied mostly on what they labelled as *gut feelings* and their own *learning styles* and referred to their learning experiences both as children and in teacher training. Below is an example from Tom (new graduate) describing his own experience as a pupil when he makes an argument for his use and choice of teaching methods described in his reflective journal writing.

Tom (male teacher, social science):

"About working from the blackboard, presenting something, then reading a text then group work – that is probably because that is the way I was taught myself. Maybe and maybe also because I expected that they needed to see examples first – and then I found out that they didn't really need that anyway. They had made their own examples..."

Really when I think about it the way we were taught ourselves has a strong influence as the things I remember well which I learned in a particular way. I often use that. And I guess I just copy that way of teaching.

It seems to be based on that experience, I mean that experience from being in school and actually also from teaching college. I have always been a good student

and wanted to get good grades and the like. And I quickly found out that the best understanding comes when I explain something, what it is about”.

Another teacher, Ivy with 13 years' experience, reveals relatively little consideration when planning her teaching.

Ivy (female teacher, English):

“I just do something (ask the students to work with the material) because I often think, oh, what are we going to do, how should we do this, give them something to prepare, and then I don't really think how they work with it. I don't think about that until later maybe, in the morning when I am lying in bed I think how are we going to do this and then an idea pops up and we do that”

Yet another experienced teacher, John (11 years of experience), does not use educationally warranted claims when talking and justifying his approach to teaching:

John (male teacher, social science):

“It is often never more than for example when I am cycling home or maybe when I am sitting at home and the ads are on the TV and then suddenly something comes up. Really I don't sit down and start thinking deeply about (how teaching went and what to do differently next time)”

In the illustrations above the teachers are giving explanations of their approaches to teaching. When the interviewing process starts to ask critical epistemic questions the researcher probes for the warrant behind the belief or experience based fact. The next step is illustrated below, using the interview with the social science teacher, Tom. The interviewer questions Tom in response to the journal entry:

Interviewer:

“Why is it important to you that the students are talking and that it’s not you who is primarily are talking in class?”

[investigating the teacher’s claim about the importance of the students elaborating and articulating about the topic in class. Investigating his underlying fact and warrant behind his claim].

Tom (male teacher, social science):

“We all know, if we think back in elementary school, then those students who did well or learnt most were the ones who explained to the others how to solve the assignments. Therefore, I think there is an enormous amount of learning value in explaining to someone else, because it may be that you have not understood it yourself, but when you have to consider the task over and over again until you understand it and then pass it on. That I think is really worthwhile”

[the teacher’s claim about the importance of the students elaborating and articulating about the topic in class shows that his underlying fact and warrant behind his claim is experience based from his own time as a pupil].

The findings showed that the teachers’ rationale was weak both in everyday practice and when discussing their practice outside the classroom. The findings showed that teachers’ educational vocabulary and reflections were sometimes only vaguely grounded in educational arguments. The teachers’ routine practices were learned through trial and error and were mainly based on gut feelings and unreflective testing in practice. As an example, when teachers were asked to describe an unsuccessful situation, two experienced teachers (11 and 7 years of teaching) each recalled a situation where experiences and trials did not generate answers to their classroom challenges.

John (male teacher, social science):

“The best I could think of was to try to discipline ‘let us try to...’ or ‘Peter, now you must listen’ etc.... The situation ended up with my throwing one of the guys [an adult learner] out. Then there was peace; it was as quiet as a morgue. The operation was successful but the patient died.... I felt taken by surprise, had no cards to play apart from showing who decides in the classroom”. (interview based on the teacher’s journal writings)

A female, language teacher, Sue, below shared a situation in a journal entry, describing her challenges with disengaged learners who prefer to play games at the computer during class, which annoyed other students.

Sue (female teacher, language):

“I hate to scold the students as I experience it as a kind of impotence. And basically, I feel a sense of powerlessness in relation to the actual class... I feel sort of helpless, both professionally because I do not think the students benefit from the lesson, but also educationally/ pedagogically because I do not like having to ask the students to close computers and put away cell phones and stuff. Without being able to put my finger on why, I have not found the right way to address this and I end up just letting myself be irritated”

These quotes demonstrate that the teachers’ practice does not, in itself offer an educational learning potential. This kind of educational dilemma emerged when teachers’ impotence becomes evident and their practical experience seemingly failed to provide educationally sound solutions. All participants described similar dilemmas and described situations where they failed to find solutions based on trial and error.

Summing up on category A: ‘Un-reflected Educational Justification’ we find that their vocabulary contains random non-educational justifications when they required to argue for their practices. Using Toulmin’s model of argumentation (referred to as warranty), their warranty at this level, is mainly based on feelings, personal experiences

as a learner or just unwarranted values. Their claims are therefore characterized as un-reflected educational justified facts. From that perspective, their practical arguments are based purely on a value premise. In category A, the teachers' educational vocabulary is largely non-existent.

B. Superficial Educational Justification

The study also revealed that teachers' talk included superficial reference to educational issues categorised as: Superficial Educational Justification. In the following data we illustrate how, for example, teachers might justify their teaching practice in relation to testing the curriculum. In an interview, the teacher Fie, was asked to elaborate on her answers in her journal where she wrote about her choice of content in the Geography home assignment.

Fie (female teacher, Geography):

“The type of exam they have is that they start with one of their own assignments. This means that their own assignments have to have a certain standard and quality because it is going to be what they start with in the exam. And that is really the main point of it and the requirements say that the assignments I use must cover the core curriculum or core areas”.

In this example, the teacher Fie's fact and warrant are related to the students' forthcoming testing/exam. Fie has the Ministry of Education as her warrant and the procedures for the testing is her fact and warrant when telling the class why they are given web based questionnaire. Notes from field journal:

“The teacher is saying that the class is doing a web quest on the specific topic and some experiments in the laboratory in order to prepare the students for the summer tests”.

In a number of scenarios teachers' arguments for the *why* in teaching is unrelated to the *how* of teaching. In category B the teacher's arguments for the *why* in teaching are often related to the official curriculum demands (testing/official exams), but the teachers rarely made connections between testing and their own choice of methods. In the example above one could have argued that the web questionnaire is not the best, or only way, of learning facts in geography as multiple-choice answers do not always generate the best way of understanding and developing deep learning.

In another example, an experienced teacher Eva (15 years of teaching), is in dialogue about creating a positive teaching climate. She herself does not reflect on whether or not she is performing her task the way she believes is the right way or not. Firstly, she elaborates on her answer in the written reflection journal where she described a successful teaching session.

Eva (female teacher, Danish as second language/second language teacher):

“I believe that the teaching situation was a success because there was a good atmosphere, lots of smiles and laughter. The situation was also a success I hear all around me the students helping each other with the questions. The amount of knowledge is better when the students work with a lot of people. It is easier to be unsure when you only have one person to work with than when you have the whole class who sit and listen quietly to each person or who ask questions”.

The interviewer provokes the teacher's fact behind her claim and asks for warrants to support the claim, thus illustrating her implicit theories.

Interviewer:

“Why is it good? Why do you think it is conducive to this situation - that there is a cheerful mood in the room?”

Eva:

“Because I think that the cheerful mood creates a good atmosphere and I do not think that learning happens unless you feel good about the situation – I think that often people are anxious but you can't feel like that if you are laughing or having fun, then it is easier to open up. I think too it is important to laugh at myself when I am teaching, like I laugh with them but also at myself – that way it is all much more relaxed ... I don't really think about it”.

Eva's response illustrates that she believes that the best learning environment contains a good atmosphere because (and here is her implicit warrant) the students learn best when they feel confident and or safe. When asked why she wants her (refugee status) students to give a lecture in front of the whole class, not in their mother tongue, even though she knows that most of them will not, will feel very bad about it she is unable to come up with a claim and warrant that actually make the situation safe for the students. She then wonders:

Eva:

“But what do I do to make them feel comfortable in that situation? I don't think I do anything actually, I have never thought about that before”.

Interviewer:

“It's only because you mentioned it before, we talked a lot about the fact that you thought it was important that they were in groups” [and Eva mentioned the importance of the students feeling safe and that there was a safe/secure climate and now the teacher tells about how she expects the students to perform alone in front of the whole class].

Eva:

“Yes, and now I just pushed them to do it (present in front of the class) that is right”.

As Eva elaborates, the interviewer tries to guide her critically to articulate her reasoning and construct a practical argument with a series of logics. She argues while she is analysing her own fact and underlying warrant:

Eva:

“So sometimes do you think that the groups should feel comfortable but on the other hand you put them in a different situation (like when she asks them to present alone) Yes, why do I do that?”

Eva is thoughtful and silent afterwards. The conversation goes on about why she believes that conversation, dialogue and group work in their second language is good for students. She speaks while she elaborates and seeks to analyse her claim by finding the evidence and the underlying warrant.

Eva:

“Really the sum of the knowledge is bigger that all the people together, the more people that are together. If I talk to you about football then it is not certain that you know very much but if there are more people in the conversation then the collective knowledge is bigger the more people there are”.

The interviewer provokes Eva to elaborate on her reasoning:

“Where do you think you have that kind of view from, is such common sense or ...?”

Eva:

“Yes, I don't know, experience, I don't know that is the way it is. I don't know it is just my experience which builds on many years of learning myself, the way I have learned things. It is probably something to do with research – getting information from others, I am not really sure.

I think that after many years I now know that I need to be more precise about what I want. I need to know more, what I want to achieve with what I do. It could be why I have chosen to be part of this (Research project) maybe I could be more clear in my head ... like when I meet colleagues who know why they do stuff, then I feel rather envious, really”.

Eva concludes that group work and a safe/secure teaching climate/learning environment is intervened in her point of view because it has something to do with her own experience of being with other people (her warrant behind the claim) and her learning style is also her warrant and she thinks she uses that point of personal warrant in the classroom.

We see that Eva finds out what has created her belief about that a safe/secure learning

environment is important. She tries to articulate a practical argument in this sense, but she cannot find an explanation that in her own optics is educational trustworthy.

Summing up on category B. where teachers used Superficial Educational Justification to support their reasoning. The practical argument contained one or more of the six premises for a practical argument but without a logical connection between the elements in the argument. For example, it is difficult for them to connect the why and how in their teaching. They do argue and find warrant in their choice of content in relation to the legislation from the Ministry of Education but how they approach this content is seldom connected. In this category, the teachers' vocabulary was articulated with more pedagogical argument than in category A demonstrating educational awareness to some extent. Returning to Toulmins model, facts were justified partly on educational grounds and partly on assumptions grounded in their experience. However, this was not carried out in a manner that connects the three C's described by Dale in his construct of educational rationality.

C. Educational Premised Justification

Interviews highlighted how teachers made educational justifications grounded in the how and why of education and a new level of reflection was found. Category C 'Educational Premised Justification' is categorised by the combination of each of Dale's (1998) three levels of competency (C1, C2, C3). In the following example a language teacher, Sue (seven years of experience), writes in her journal explaining her underlying thoughts about teaching. Sue comments on her frustration with students who expect to have the facts laid out for them and who were not interested in argumentation and discussion or developing a social and philosophical understanding of concepts. Her students were only interested in reciting facts on periods of literature and rote learning of models for text analysis. However, Sue did not believe that just focusing on facts was

appropriate for humanities students. Sue expressed this concern in her journal. In it, she described taking her class to visit an art exhibition at the museum. In it she recounted an incident where a student was negative, saying she did not understand what she could gain out of the visit. When asked to elaborate on this example during the interview Sue said:

Sue (female language teacher)

“If I had been a little more honest, I would have said to her: ‘This/it doesn’t matter at all, what matters is that we are in a process where we experience something’. But instead I said to her that ‘It’s true it’s hard, I want to help you with some more structures on the subject’. I think that Danish as a subject contains levels of abstractions that can be very high. And there is also a limit to how much I want to reduce art just to make it clear and understandable. So, I talked with the students about Bloom’s taxonomy and abstraction levels, and about being independent and to move away from interpreting the text closely and refer more to one’s own thoughts and even draw some independent conclusions. But whether or not the student got the point, I do not know. I think it takes some time to adjust and learn. Sometimes it’s just like a coffee machine where the coffee drips slowly through the machine. It may well be that the students have not got my point right now, but it could be that there will be a coffee production at some point because it simply works in the subconscious”.

Sue’s is able to reflect on and connect conclusions and facts. Her considerations demonstrate her capacity to consider performing, planning and justification in her teaching.

In category C teachers’ arguments contain explicit educational justifications where they are able to move between thoughts and practice, between the why and the

how in teaching. The teacher's facts are justified mainly on educational warranty. Moreover, the practical argument entails the main part of the premises for a practical argument. In this category, teachers demonstrate a mastery of educational vocabulary.

Teachers' Practices – A Space for Learning when Supported

One of the interesting findings from this study was the way teachers talk about their teaching using an educational vocabulary - such as how they talked about their reasoning and how this affects their ability to reflect pedagogically, and in the end, to be able to develop an educationally awareness. All the teachers in the study articulated the benefit of being forced to share their reflections with others, or even just with themselves, through the written work of the journal writing. This stipulation encouraged them to begin the process of reflecting on their planning, performance and their own assumptions and beliefs. Sue provided a powerful statement about the role of written reflection in her professional development, associating her experience to a litmus test.

Sue:

“When I've been writing this, it was amazing how much it's about myself ... You could suddenly see some things. Yes, some patterns and the moment you see them, then you start – you might be able to work a little with them ... Maybe something that has been developing gradually.... the moment you suddenly see that then things have a certain colour and then thinking, well, it's there, I have to work. So, in this way there will be a move in a new direction ... [like using] Litmus paper!”

Similarly, in response to the reflective journal question ‘what circumstances could have changed the unsuccessful situation for the better?’ Fie explained that focused questions encouraged her to think and act differently when faced with similar episodes in class.

She added that she would like to incorporate this form of reflection-on-practice into her daily routine.

Fie (female teacher, Geography):

“It is nice to be able to sit down quietly and point-by-point and then just write a little because I am not accustomed to ... It was especially the last question ‘what will you do?’ or the coaching-style question ‘what will you do differently next time?’”

Fie added that the journal writing exercise changed her perspective on her classroom and made her more aware of her actions. This awareness allowed her to make successful changes that addressed previously problematic situations. Her new vocabulary and ability to articulate her teaching experiences ultimately helped her tackle and meet students' needs more effectively.

Discussion – Teachers' Levels of Reflection

The study found that teachers' reasoning can be differentiated into three categories of educational reflection:

A. Un-reflected Educational Justification

- The argument contains random justification purely at a reasoning level.
- In relation to Toulmin's model of argumentation the basis for the claim: the fact is purely justified on an experiential warranty.
- The practical argument only entails the value premise for a practical argument.
- The teacher's pedagogical vocabulary is regarded as non-existent.

B. Superficial Educational Justification

- The argument contains pedagogical random justification behind reasoning level
- In relation to Toulmin's model of argumentation the basis for the claim: the fact is justified partly on pedagogical ground but still mainly on experiential warranty.
- The practical argument entails one or more of the premises for a practical argument
- The teachers' pedagogical vocabulary is regarded as articulated.

C. Educational Premised Justification

- The argument contains pedagogical justification.
- In relation to Toulmin's model of argumentation the basis for the claim: the fact is justified mainly on pedagogical warranty. And the mastering of juggling between C1-C2-C3 is demonstrated.
- The practical argument entails the main part of the premises for a practical argument.
- The teacher is mastering the pedagogical vocabulary.

An exploration of teachers' vocabulary revealed that teachers' gut feelings (category A) took up most of their thinking. On analysis of the quotes it was found that teachers spoke to the different levels of reflection as follows: (category A) = 131 quotes, (category B) = 77 quotes, (category C) = 35 quotes. Thus, teachers most frequently developed and reconstructed their practical arguments at category A, meaning that teaching practice was based mainly on gut feelings rather than on educational justification. However, teachers did engage in category B and C. We note that, experiences of talking and writing about their teaching reflections as participants in the project encouraged an ability to provide pedagogically justified and sound arguments that were aligned with their

beliefs. What is interesting in this study is that many of the teachers commented on the research approach (journal combined with interviews) as a method for developing their ability to develop a pedagogical vocabulary.

We were perhaps surprised at the great volume of quotes in category A: these teachers' everyday teaching practices do not, in themselves offer a pedagogical learning potential. Instead, teachers' experiences highlight the difficulties they face in coping with everyday (difficult) situations as they arise. When faced with problems in their classrooms, teachers tended to overemphasize gut feeling and tend not to draw on pedagogical argument when they reflected on their practice. It then just becomes another day at school and is forgotten about as soon as it is over, unaware that with some reflective practices actions could be changed. We suggest that there are advantages to be found in being able to access a meta level as a practice for development.

When analysing the data pertaining to category B we saw that the teachers do have some vocabulary for random educational justification. They have the pedagogical vocabulary with regard to what they want to achieve and to some extent can also explain why. The 'why' is usually related to the discipline or is about creating a good learning environment. In the interviews, where the focus is on the journal entries, the teachers are able to reflect on the entry and can articulate an awareness of 'being in the moment' rather than having a well-founded argument for doing what they did. But it is obvious at this point that it is difficult to articulate arguments, some become visible through the questioning in the interview – why they did what they did – but it is striking how often the choices they made were based on prior practices and experiences that were educationally unwarranted.

Teachers appear to learn from experience and often engaged in trial and error approaches through their practice. Although this may not be surprising, it is nonetheless

a concern that their routines did not seem to be informed by pedagogical rationale or an educational awareness of teaching. Further teachers who lack an educational and pedagogical vocabulary tended to rely on gut feelings (category A) and seldom grounded their teaching practice in pedagogical argument. Actions were based mainly on feelings, and these feelings were seldom related to a higher educational goal, such as Dale's level of competence C3. However, when teachers were supported through collegial critical dialogue and discussion they tended to develop a deeper understanding of their beliefs and actions (category B + C). In these categories, the teachers were able to move proficiently between C1-C2-C3. This is a finding supported in the CPD literature (Atkinson & Bolt 2010; Hammerness et al. 2005; Woolhouse & Cochrane 2010).

We suggest that teachers may benefit from critical pedagogical reflection that exposes the hidden aspects of their everyday teaching. The study illustrates that it is beneficial to engage teachers in reflective dialogue about their actions and beliefs in relation to their teaching goals, highlighting the close relationship between actions and beliefs. Working with reflective journal writing (Kaplan, Rupley, Sparks, & Holcomb, 2007; Surbeck, 1994), developing practical arguments (Fenstermacher & Richardson, 1993), playing the part of a critical friend (Baskerville, Goldblatt, & Ccje, 2009), or acting as the devil's advocate in epistemic interviews (Brinkmann, 2007) with colleagues or researchers, are all methods that could be potentially beneficial to routine practice. This is of particular importance if teachers are to be considered researchers of their own practice and able to achieve agency in their everyday professional lives.

However, when teachers are able to explain their practical reasoning by articulating a practical argument, having a meta- perspective on their teaching, is empowering. The idea that research can simply be internalized by teachers must be dismissed, as

practical reasoning behind teaching practices takes place in complex and personally oriented situations. The dialogical approach where pedagogical questions are generated to support reflection encourages the development of a pedagogical vocabulary. We believe this approach has the potential to help teachers make sense of the basis for their actions and to develop agency to change practices in the future. Meta reflection through these mechanisms, expanding their vocabulary and pedagogical awareness, is a process that may benefit teachers to make sense of experience and articulate otherwise tacit knowledge. To become agents of change, teachers need to be able to develop a professional reflection on their everyday practices if they are going to be able to have control over how these practices develop in the future.

Although many school reforms seek to establish team building and knowledge sharing, teachers remain relatively isolated in their classroom. It is still teacher's personal experiences and actions that take up most of the working day. There is room for improvement if we are to steer away from a purely technical approach to teaching. The findings point to the strength of such an approach. Perhaps we should strive for active dialogical participation in a collegial learning community, an argument that is in line with other literature (Flores, 2006; Mansour, 2009). Moreover, if teachers' preconceptions are not addressed through dialogue or other means, there is a danger that teachers may retain problematic beliefs throughout their careers. Opportunities to reflect through writing and discussion, as illustrated in this paper, can support and foster different approaches to teaching and learning.

As an extension of this study this framework has been since developed for teachers in high schools. To date the method has been piloted with 400 teachers, acting as critical colleagues, at five different Danish high schools during the spring 2016 and fall 2016. As a result a framework of exercises has recently been published in a hand-book

for teachers in Danish (Author-a 2017a). It would seem that the approach holds credibility for teachers. In addition, the framework described in this paper has the potential to make a strong contribution to professional learning communities (Stoll et al. 2006) in the context in which they find themselves and ultimately to whole school improvement.

The study reported in this paper demonstrates that the teachers do develop educational awareness to different degrees. Given guidance and time devoted to developing vocabulary, discourses and deep reflection (with an outsider - the researcher in this study) teachers develop knowledge about, for and through their practices that support an authentic educational awareness that is not just based on gut feelings and unwarranted statements and beliefs grounded in prior learning experiences. The study reveals that over time – when working with teachers' beliefs during the process of writing and discussing – teachers' educational awareness is strengthened and teachers develop clearer and more precise methods/tools for shaping and taking advantage of the opportunities offered in their everyday teaching. This paper demonstrates how teachers' vocabulary forms and shapes dialogical procedures and the extent to which attention to teachers' ability to articulate themselves is potentially foundational for teacher agency.

This paper makes an important contribution to CPD by demonstrating how everyday practices can be brought under scrutiny and described, examined and analysed. For teachers to develop skills to articulate their everyday practices (and improve these practices) both reflective spaces and tools need to be provided for the individual teacher. At the organizational level scaffolding of dialogical structures together with collegial sparring has to be supported by the management. For CPD these results are important when considering how to foster teachers' pedagogical and educational awareness about their everyday lives in the classroom.

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Appendix 1 – Data collection overview

Data collection took place over a period of eight month during the fall of 2011 and spring of 2012

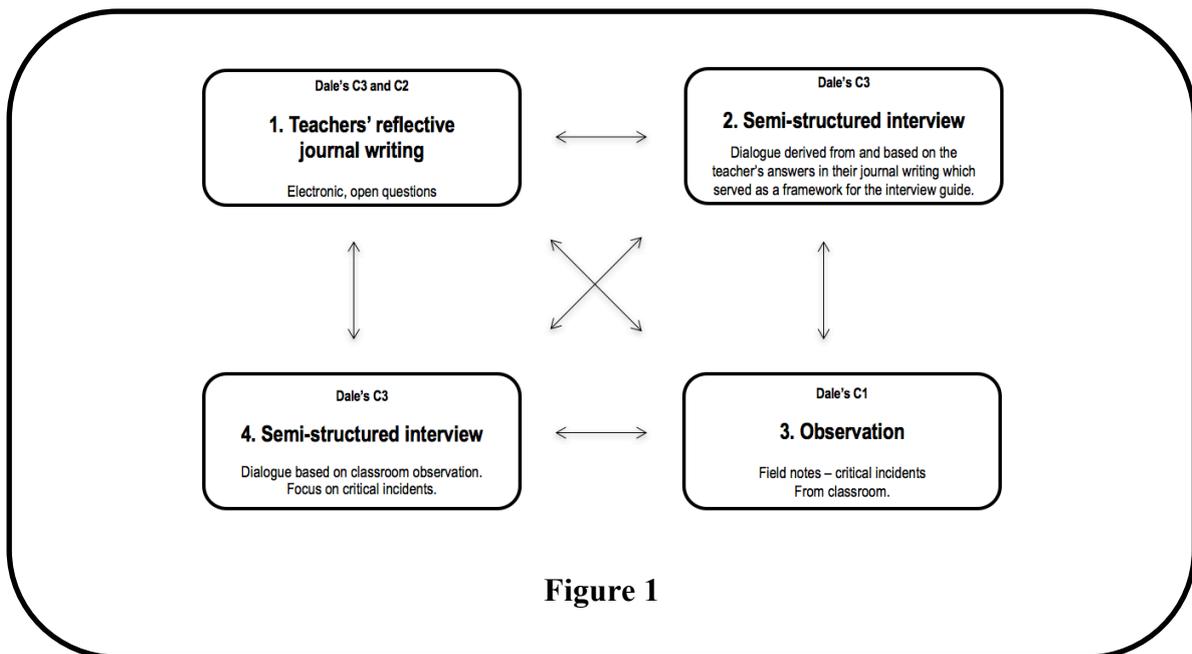
Informant pseudonym	Sex Female or Male	Age	Years of experience of teaching	Date and year of receiving the teachers' reflections journal	Interview #1: On the basis of the teachers' written reflection journals	Length of the interview #1: Hours, minutes, seconds	Date, year / time of observation	Number of classes	Teachers' subject during observation	Interview #2 Date and year	Length of interview #2: Hours, minutes, seconds
John	M	42	11	Sept. 17. / 2011	Sept. 19. 2011 / 12:30 PM	1:03:14	Jan. 10. 2012 / 10:05 -11:45 AM	2	Social science	Jan. 10. 2012	0:40:49
Sue	F	40	7	Oct. 05. / 2011	Oct. 07. 2011 / 10:00 AM	1:18:54	March 22. 2012 / 02:45-03:30 PM	1	Language	March 22. 2012	0:43:27
Fie	F	35	3	Oct. 04. / 2011	Oct. 06. 2011 / 02:00 PM	1:05:00	Jan. 11. 2012 / 08:05-09:45 AM	2	Geographic	Jan. 11. 2012	0:42:00
Ivy	F	46	13	Oct. 10. / 2011	Oct. 12. 2011 / 01:00 PM	1:15:02	March 21. 2012 / 10:05-12:45 AM	2	Language	March 21. 2012	1:32:59
Tom	M	30	1	Sept. 27. / 2011	Sept. 29. 2011 / 08:30 AM	0:56:20	Feb. 22. 2012 / 08:05-08:55 AM	1	Social science	Feb. 22. 2012	0:19:47
Mia	F	49	22	Sept. 04. / 2011	Sept. 06. 2011 / 11:00 AM	1:20:20	March 28. 2012 / 08:05-10:55 AM	3	English	March 28. 2012	0:53:09
Max	M	61	25	Oct. 23. / 2011	Oct. 25. 2011 / 10:00 AM	1:25:52	Feb. 29. 2012 / 12:05- 01:45 PM	2	Language	Feb. 29. 2012	0:36:06
Ann	F	48	6	Sept. 12. / 2011	Sept.12. 2011 / 09:00 AM	1:01:38	March 01. 2012 / 12:05-01:45 PM	2	Language	March 01. 2012	0:39:00
Eva	F	56	15	Sept. 11. / 2011	Sept. 13. 2011 / 10:00 AM	1:05:31	Feb. 24. 2012 /11:05-12:50 AM/PM	2	Language	Feb. 24. 2012	0:42:20
Liz	F	52	17	Sept. 17. / 2011	Sept. 19. 2011 / 02:00 PM	1:05:55	Feb. 23. 2012 / 01:00-01:45 PM	1	Social science	Feb. 23. 2012	0:29:55
Text in total*				10 written reflection journals	10 interviews Interview #1 = 12 hours of interviews		18 classes= 13 hours of observation 10 pieces of handwritten field notes from 13 hours of observation during class		7 different subjects/ disciplines	10 interviews Interview #2 = 7 hours of interviews	

*50 pages of transcription per informant= transcriptions in total= 500 pages of text excluding the handwritten field notes contained in Nvivo during the analysis.

Appendix 2 – Model of the metodological triangulation of the study

Figure 1 below describes the methodological triangulation. The numbers indicate the timeline/chronology for the data collection.

Research Design for Capturing Teacher Reflection – Making Reflections on Teaching Practices Visible



The arrows in figure 1 illustrate the workflow between reflective writing (1) and dialogue (2) combined with observation (3) and immediately dialogue again (4). The focus on the teachers' practice and beliefs becomes holistic and dynamic. The arrows that cross each other in the middle symbolise the interaction between the data sources during the analysis process. The different sources supported to generate a thickness in themes emerged. All the data has been analysed in an open coding process – a data-driven process (Miles & Hubermann 1994)⁵ in Nvivo to ensure transparency (findings revealed in: Author-a & Author-b, 2017; Author-a 2015; Author-a 2016a). Capturing all three levels of competencies, following Dale (1998, 1999), the research design can be summed up as follows:

- Capturing the teachers' experiences (C1: in class) and thoughts out of class (C2, C3): by talking and elaborating on their vocabulary during reflection journals (#1) and interviews (#2).
- Capturing the teachers' actions in class and preparing the lessons (C1, C2): by observation (#3) and by talking (#4) and all together elaborating on their vocabulary during reflection journals and interviews.

⁵ Starting with hundreds of open themes end ending with emerging these to 61 themes in the entire data material.

Appendix 3 – Reflective journal writing questions

<p>1. Please describe a successful teaching experience you have had.</p> <ul style="list-style-type: none"> • Try to think of your teaching within the last couple of days or weeks and try to describe a specific successful situation from the classroom. • If you have a hard time remembering a specific present situation you may think further back in time. • Describe the situation as detailed as possible. • What happened? What did you do?
<p>2. Please describe why this specific situation was successful in your opinion?</p> <ul style="list-style-type: none"> • Try to describe what it was about the situation that made it successful in your point of view?
<p>3. Please describe what have affected that the situation turned out well?</p> <ul style="list-style-type: none"> • Try to describe what might have affected the situation in a positive way?
<p>4. Please describe an unsuccessful teaching experience you have had</p> <ul style="list-style-type: none"> • Try to think of your teaching within the last couple of days or weeks and try to describe a specific unsuccessful situation from the classroom. • If you have a hard time remembering a specific present situation you may think further back in time. • Describe the situation as detailed as possible. What happened? What did you do?
<p>5. Please describe why this specific situation was unsuccessful in your opinion?</p> <ul style="list-style-type: none"> • Try to describe what it was about the situation that made it unsuccessful in your point of view. • For instance, point to the obstacles.
<p>6. Please describe what have affected that the situation did not turn out well?</p> <ul style="list-style-type: none"> • Try to describe what might have affected the situation in a negative way?
<p>7. Please describe what circumstances could have changed the unsuccessful situation for the better?</p> <ul style="list-style-type: none"> • Try to describe what you think might have contributed to the situation had not been unsuccessful/unsatisfactory. • What could, for example, have been done differently? • What could you do differently in a similar situation?
<p>8. Please describe what happened after the unsatisfactory/unsuccessful teaching situation?</p> <ul style="list-style-type: none"> • Try to describe what you were thinking or how you acted or reacted just immediately after the failed situation.

The open-ended questions in the reflective journal answered by the teachers as guideline for the following interview. The following questions as they appear in the open-ended reflective journal writing: The following questions in the open ended reflective journal writing serves as the outset for the scrutiny of the teacher's beliefs and thoughts and always relating to the acting/performing, therefore the outset is about an example from teaching to let the teacher invite the researcher into the classroom.

I am inspired by the process concerning reflective journal writing described in details in: (Author-a 2015) In the dialogue and the open ended questions in the teachers written reflection journal I am inspired partly by Fenstermacher and Richardson's premises for elicitation and reconstruction of a practical argument (1993) and partly by a Socratic inspired epistemic interview technique (Brinkmann 2007). And regarding the specific opening questions (listed above) pushing forward a process of reflection I am inspired by the questions constructed by: (Smyth 1989; Day 1999; Day 1993).