

CHAPTER 8

Lower secondary teachers' content – general beliefs about learning and teaching

Wenche Hammer Johannessen, NTNU/Nord universitet

ABSTRACT

The purpose of this study was to explore teachers' beliefs about learning and teaching. Ongoing educational developments have aimed at changing and developing teachers' practices to meet the future demands of student skills. Assuming that teachers' beliefs govern teachers' practices (Fives, Lacatena, & Gerard, 2015), the exploration of teachers' beliefs about learning and teaching is essential in developing teachers' practices. This study brings new insight into lower secondary teachers' content – general beliefs about learning and teaching as three dominant beliefs were identified and broadly described using a phenomenographic analysis (Marton, 1981). The findings indicate that the content and continuum of the dominant beliefs is broadly in line with those proposed for secondary teachers. Some of the dominant beliefs were deficient regarding meeting the future prospects of student skills, indicating limited learning possibilities for the students.

INTRODUCTION

The current paper explores lower secondary teachers' beliefs about learning and teaching, which is accomplished using reflective dialogues about learning and teaching. The purpose of the paper is to provide knowledge and understanding of the beliefs underlying the teachers' practices to stimulate professionals to challenge existing beliefs and thus develop existing practices. Articulated beliefs can facilitate professional growth and can be used as a tool for reflection (Fives et al., 2015).

According to the future student skills outlined in the work on 21st century skills (NOU 2014:7; NOU 2015:8; OECD, 2009), teachers need to create active learning environments to stimulate students' critical thinking, communication, collaboration and curiosity (OECD, 2009). To meet these new demands, teachers must be involved in continuous professional development involving activities such as updating their knowledge and skills, reflecting and collaborating with colleagues (Timperley, Wilson, Barrar, & Fung, 2007). A reflection of teachers' underlying beliefs that they rely on when teaching needs to be uncovered (Argyris, Putnam, & Smith, 1985; Dewey, 2013; Fives & Gill, 2015; Schön, 2001).

Teachers' beliefs about learning and/or teaching

Beliefs are a significant element in teachers' professional competence (Argyris & Schön, 1974; Mausethagen, 2015; Nordenbo, Søgaaard Larsen, Tiftikçi, Wendt, & Østergaard 2008) and are recognized as an individual's subjective and personal interpretations and judgement of the community's agreed-upon knowledge (Calderhead, 1996; Fives & Gill, 2015; Levin, 2015). *Beliefs* overlap with other constructs, such as conceptions, meanings and values (Fang, 1996; Fives & Buehl, 2012; Pajares, 1992). Beliefs are held as strong predictors of an individual's decisions and actions (Fives & Buehl, 2008; Fives et al., 2015), and they exist in a complex cognitive system (Kagan, 1992). Here, beliefs may be described as the teachers' espoused theories; the beliefs that guide their actions (Argyris & Schön, 1974, 1978; Schön, 2001).

In educational research, scholars have often differentiated between two underlying beliefs: learning and teaching (Fives & Gill, 2015; Kagan, 1992; Pajares, 1992). Beliefs about learning and teaching influence and govern teachers' approaches towards teaching and how they facilitate student learning and the teachers' professional development (Calderhead, 1996; Dewey, 1972; Fives & Gill, 2015; Pajares, 1992). Consequently, these beliefs are strongly connected

to effective teaching and successful student learning (Calderhead, 1996; Kagan, 1992; Nespor, 1987).

Teachers' beliefs about *learning* are often conceptualized as *what* is learned (content) and *how* (the ways in which learning takes place) it is learned (Marton & Booth, 2000); these beliefs are closely connected to teachers' beliefs about how knowledge is defined, constructed and justified (Fives & Buehl, 2008). Säljö (1979) identified five concepts of learning: *increasing knowledge, memorizing and reproducing, applying, understanding and developing new insights*. Later, a sixth conception, *changing a person* (Marton, Dall'Alba, & Beaty, 1993), and a seventh conception, *collective meaning-making* (Paakkari, Tynjälä, & Kannas, 2011), were identified. The first three are associated with reproductive approaches towards learning (subject matter orientation), while the last four are connected to a meaningful approach towards learning (student oriented).

Teachers' beliefs about *teaching* have been found to include beliefs about instructional strategies, classroom management, students and the teachers themselves as professional (Levin & He, 2008). The close relationship between learning and teaching was proposed by Pratt (1992), who conceptualized *teaching* as *content* (what is to be learned), *learners* (the nature of learners and the learning process), *teachers* (roles, functions and responsibilities), *ideals* (education purposes) and *context* (external factors influencing teaching and learning).

Research on teachers' beliefs about learning and teaching tends to be dichotomized, either focused on the subject matter (knowledge transmission/teacher oriented) or a student orientation (constructivist; de Vries et al., 2014; Fives & Buehl, 2012; Hancock & Gallard, 2004; Meirink, Meijer, Verloop, & Bergen, 2009; OECD, 2009; Pedersen & Liu, 2003; Prawat, 1992). The subject matter orientation is referred to as teacher-centered knowledge transmission, where teachers orient to the whole class instead of the students' individual needs, hence ensuring calm and concentration in the classroom (de Vries et al., 2014; Fives & Gill, 2015). The student orientation, however, focuses on students actively constructing their knowledge through social interactions, developing knowledge and competencies and having teachers facilitate individual student needs (de Vries et al., 2014; Fives & Gill, 2015). Studies have found that a student orientation is the best approach (de Vries et al., 2014; Fives & Gill, 2015; Prawat, 1992).

Boulton-Lewis, Smith, McCrindle, Burnett and Campbell (2001) explored secondary teachers' content-specific conceptions about teaching and learning and identified four categories of both conceptions, as shown in Table 8.1.

Tabell 8.1 Categories of the conceptions about teaching and learning (Boulton-Lewis et al., 2001)

Teaching as	Learning as
Transmission of content/skills	Acquisition and reproduction of content/skills
Development of skills/understanding	Development and application of skills/understanding
Facilitation of understanding	Development of understanding
Transformation	Transformation

The results from Boulton-Lewis et al.'s (2001) study indicated a congruence between the conceptions of teaching and learning as transformation/transformation. Also, the conceptions of teaching as transmission of content/skills were congruent with the conception of learning as the acquisition and reproduction of content/skills. Other scholars have found that student-oriented and subject-matter-oriented beliefs appear as two distinct dimensions of teachers' beliefs about learning and teaching (OECD, 2009; Van Driel, Bulte, & Verloop, 2007). Consequently, teachers possess characteristics of both views (de Vries et al., 2014). In a recent study, de Vries et al. (2013) found that the more student-oriented beliefs teachers had, the more they participated in continuous professional development (CPD).

More qualitative research on teachers' beliefs in general (Ferguson & Bråten, 2018; Fives & Buehl, 2008; Munthe, 2005; Nordenbo et al., 2008), especially research exploring teachers' beliefs about learning and teaching at a general content level, is still needed (Fives et al., 2015). Aiming to contribute to the relatively limited literature on lower secondary schoolteachers' general content beliefs about learning and teaching, the research question guiding the current paper is as follows:

What content-general beliefs do lower secondary teachers express about learning and teaching?

METHODS

Placed within a social constructivist paradigm with a phenomenographic design (Bowden & Walsh, 2000; Marton, 1981; Åkerlind, 2012), the current study sought to explore the qualitatively different beliefs teachers have about learning and teaching. The present study explores the phenomena "teachers' beliefs about learning and teaching", which is a second-order perspective, and is one of the reasons that justify the adoption of a phenomenographic approach to this study

(Bowden & Walsh, 2000; Marton, 1981). The other reason that justifies this approach is based on the assumption that the beliefs of a single phenomenon differ among people (Marton, 1981). In line with a phenomenographic design, reflective dialogues can elicit teachers' beliefs, which are embedded in their espoused theories (Argyris & Schön, 1974, 1978; Marton, 1981; Schön, 2001; Åkerlind, 2012). The present study was approved by the Norwegian Centre for Research Study.

Participants and context

Seven full-time lower secondary school teachers who teach in all three grades (8-10) volunteered for the study; the teachers worked in rural schools (grades 1-10) in Norway with few students (<100). The cohort was comprised of male and female teachers with more than 3 years of teaching experience. They all signed an informed consent form. All are quoted as "she" to enhance anonymity, and they are consecutively named 'T1', 'T2' and so forth. The teachers' experience ranged from 4 to 27 years; therefore, they are not defined as recently graduated teachers (Richter, Kunter, Klusmann, Ludtke, & Baumert, 2011).

Data generation

Data were generated in two individual reflective dialogues: a *reflective dialogue about learning* and a *reflective dialogue about teaching*. Both dialogues were conducted during 2016 in the participants' natural school settings (Hatch, 2002) with the aim of establishing broader beliefs about learning and teaching. A reflective dialogue, and especially think-aloud dialogue protocols, is typically used when exploring teachers' beliefs, (Bowden & Walsh, 2000; Fives & Gill, 2015; Kvale & Brinkmann, 2015). The dialogues were audiotaped and transcribed verbatim by the researcher.

The first dialogue, *the reflective dialogue about learning* (100-120 minutes), explored teachers' beliefs about learning. A dialogue protocol was written inspired by the literature and was used as a benchmark throughout the dialogue (Fives & Gill, 2015; Kelchtermans, 2009; Laursen, 2004; Pratt, 1992; Shavelson & Stern, 1981). The dialogue started out with the teachers' narratives (Fang, 1996). Framed by an active and confrontational dialogue (Holstein & Gubrium, 1995; Kvale & Brinkmann, 2015), themes such as teacher professionalism, learning and students' learning possibilities, student motivation, students and content were explored.

The second dialogue, *the reflective dialogue about teaching* (80-100 minutes), explored teachers' beliefs about teaching and was inspired by the think-aloud protocol (Someren, Barnard, & Sandberg, 1994). The dialogue included reflections on teachers' past, present and future teaching plans for the various subjects in which they taught. The plans were presented either as handwritten notes or digital documents. The reflections were developed individually and were stimulated by the researchers' elaborative follow-up questions. One question was posed to each participant at the start of the dialogue: "*How do you understand teaching?*".

Data analysis

The transcribed texts (14) were analysed using a phenomenographic approach focusing on the relationship between the participant and phenomena (Bowden & Walsh, 2000; Åkerlind, 2012). Initially, the individual texts were read iteratively, and familiar words and phrases were highlighted. Then, quotes were labelled using the Nvivo11. The present study differs from previous ones because it identifies beliefs about learning and teaching together and how they are interrelated. In this context, mapping can provide insight into what kind of beliefs are held and how they are structured and related (Novak & Cañas, 2006). Based on the analysis, individual belief maps were constructed (Johannessen, 2019) corresponding to the techniques outlined by Novak and Cañas (2006). The maps visualised the teachers' espoused beliefs about learning and teaching and how they were related. The maps were used as analytical tools throughout the process and later for member checking (Hatch, 2002). Still in line with the phenomenographic approach, the analysis shifted to also include a collective perspective (Marton, 1981). As the reflective interpretative process proceeded, the quotes were grouped based on similarities and differences and reorganised or added to the different emerging categories. Finally, the three categories were described and labelled. In a readthrough of the transcribed pilot interviews, no new dominant beliefs about learning and teaching were identified.

FINDINGS

Three dominant broad beliefs about learning and teaching were identified. Two teachers (T5 and T6) are associated with 1) *learning as the transmission of important knowledge and teaching as dialogic "chalk and talk"*; two (T3 and T7) are associated with 2) *learning as the application of useful skills and knowledge and teaching*

as doing and reflection; the final three teachers (T1, T2 and T4) are associated with 3) *learning as individual social and professional growth and teaching as dialogic collaboration*. A description of the three dominant beliefs follows, illustrated with representative examples of the teachers' espoused beliefs.

Learning as the transmission of important knowledge and teaching as dialogic "chalk and talk"

Within this dominant belief, learning is described as a process of giving and receiving knowledge. Learning is explained as a result of teaching; students learn when the teacher explains and reviews the subject, which is often followed by individual assignments:

- T6 Teaching is when students learn what I intend to teach about. A teacher is a good transmitter. That's most important as a teacher. You can have many credits in a subject, but if you cannot impart the knowledge, the kids will not learn. A teacher is first and foremost a transmitter [...] I think learning and maturing are closely related.
- T5 To learn is what you end up with after being taught. Learning is when you have received knowledge, skills and competence. You have to understand to learn. Understanding is more important than doing.

The examples illustrate how the teachers value imparting knowledge to the whole class and also that learning occurs when students understand the content, but this depends on how mature the students are and whether they have completed the assignments. Indeed, these teachers primarily see themselves as knowledge transmitters. Furthermore, the teachers believe in the national curricula, but add content they find important or necessary:

- T5 I am totally against including learning outcomes which aren't stated in the Curriculum, besides one thing, and that is the capitals of Europe. In my opinion, this belongs to the general knowledge.

Here, teachers with this belief seem committed to the learning outcomes, controlling both what kind of knowledge students learn and how they should learn it. This is further supported by how the teachers explain their teaching as unidirectional communication and the imparting of knowledge. Perceiving

themselves as good imparters and claiming to value dialogue, the preferred instructional strategy is to “chalk and talk”. Besides loving to teach in this way, the teachers argue that “chalk and talk” is necessary because of a heavy syllabus and assessments and that the students are not capable of reflecting and taking part in discussion:

T7 You chalk and talk, and it becomes more like unidirectional communication, from teacher to student.

T6 Teaching is fun as long as I can do the talking. When I teach and the kids say: ‘Yeah, now I got it!’, then it is fun to be a teacher. Sometimes I think it is quite okay that the students keep quiet and do as I say. There isn’t much discussion. Some students aren’t capable of reflecting [...]. Discussions with students depend on how mature they are.

The quotes above may indicate that the teachers primarily choose an activity that gives them a good feeling. Indeed, students are seen as passive recipients of knowledge, sitting still and keeping quiet. Being in control of the situation seems important for teachers within this dominant belief.

A further elaboration about their beliefs about teaching includes memorizing, repetition, assignments, listening and reading, all of which are described as mainly individual work. The textbook is the main source of knowledge. If the students work together, it is described as sitting together doing the same work but individually. Teachers reason that how students work together is not important, while other teachers justify the choice of activities as preferred by the students or that collaboration has no effect:

T6 Many of the students say they prefer working individually. In the next social science lesson, they can either read together or individually taking notes, or they read and write questions.

T3 Collaboration doesn’t lead to learning; you learn when the teacher teaches.

These teachers see little value in student collaboration and that students work primarily individually with assignments. The teachers are fully aware of the importance of variation because it enhances learning and avoids boredom. Variation is preferable when in the form of a competition, but it is mainly explained as how students work:

- T3 Variation enhances learning. We must have some variation [...]. Because I find it very boring sitting still for like three hours. When they are working on assignments, it can be a bit boring. Then we need some variation, now and then. You have to vary, but at the same time not too much variation. So, variation is the way we work, students working by themselves or teaching.
- T6 They find this quite funny, the noun-relay, they have a competitive spirit. [...] I try as hard as I can to vary what we do, but most of the time I give lectures and the kids do tasks. [...] I think it has something to do with me not willing to release control.

These teachers see variation as either teaching or as students working and that variation might weaken the teachers' control. The teachers talk of few motivational strategies, admitting that stimulating student motivation is difficult. The chosen approaches to stimulating motivation are done through using the learning outcomes, competitions (T6 above), teacher engagement and assessments, as illustrated by T5:

- T5 I can only use my learning outcomes, and time will show if I get some questions from the group to work with. [...] I normally get their attention because I have a funny approach to stuff. They want to listen to me because I may say some funny things.

As indicated above, the teachers reveal few motivational strategies, and the strategies they have seem loosely related to the students' individual learning processes.

Learning as the application of useful skills and knowledge and teaching as doing and reflection

Teachers within this dominant belief see learning as the acquisition of the useful skills and knowledge necessary for students to master the skills they will need in the future. They believe that students learn when they participate in practical activities followed by reflection:

- T3 We learn by doing things, building on something you already know. They also need social skills. I think the students learn more from a field trip outside than reading 30 pages in a book, [there is] much more learning.

T2 Learning is when you use something you have newly learned. You should be able to use the knowledge for something, use it in new contexts. You have to build brick-by-brick. Learning by doing and reflection.

These teachers focus on the utility value of social skills and knowledge and see learning as a result of practical teaching based on students' preconceptions. This is also supported by how they describe the importance of learning practical knowledge:

T6 I want to educate them on how to be self-conscious and aware of their responsibility, study technique, behaving properly, and becoming a good and decent human being. Knowledge also, of course, but that does not have priority. They have to be raised into becoming a resource for the society and for themselves. They have to learn how to screw something together or cook a meal. How to rent an apartment or apply for a mortgage or a job.

Typified in the quote above, teachers talk of students as youngsters who need to be equipped and trained into adulthood by the teachers, depending on the teachers' effort to equip their students; hence, teachers play a role as mediators of the knowledge and skills necessary for students to master life.

Elaborating on how to facilitate the knowledge application process, teachers talk of demonstrations, instructions and informal lectures. The teaching includes short introductions, illustrations or modelling by the teacher, followed by student assignments, practicing and experiencing on their own, either in pairs or small groups. According to the teachers, students need to participate in different practical activities, such as arts and crafts, theatre, laboratory work and field trips:

T4 I don't think we have to learn about deciliters and stuff like that by baking a cake, but on the other hand it might provide a possibility to measure stuff. Because the kids don't always comprehend [...] we are so lucky to have visits from our local bank teaching about personal economy.

T1 We have to free ourselves from the textbook and orient towards doing things. This can also be writing, you know. I am convinced that there are many students who have other strengths than theory and should be given the opportunity to flourish in school. We have to get across to those who are

not that good working with Pythagoras in the math book. If we go outside to calculate and explore things, they find the solutions right away. They know how to gut a fish.

Here, teachers recognize that learning processes can be diverse. Indeed, the teachers believe in learning practical skills related to the local context, trying to free themselves from the textbooks. The teachers highly value visits from the local community in the classroom.

Teachers stimulate student motivation by using playful and fun approaches to the content, hoping that extrinsic motivation will lead to intrinsic motivation:

T7 They aren't very excited about old-fashioned 'chalk and talk'. They think it's very nice to cooperate and to be able to do something practical. [...] It is possible to stimulate the competitive nature of the students – be the best or the first. It is possible to do that in the subjects, the extrinsic reward of mastering something, hoping that it will lead to intrinsic motivation.

Hence, these teachers try to meet the students' expectations regarding different instructional strategies and show how the teachers link intrinsic motivation and 'mastering something' together. This is the main reason for varying the teaching and the chosen assessment methods, which are necessary to give all the students the possibility to "show off their best":

T4 We have to adjust the teaching related to variation between lectures and exercises; I have to facilitate methods of assessment.

T7 Every student should be assessed in the way which works best for them.

The quotes exemplify how the teachers facilitate and encourage the students to master an individual skill level.

Learning as individual social and professional student development and teaching as exploratory dialogues

Teachers within this dominant belief see learning as a holistic process whereby students can grow and develop socially, professionally and linguistically. Learning is reasoned to be something students have to actively participate in and reflect on, and it is actively planned and initiated by the teachers:

- T4 Learning is everything: students developing [in] professional, social and linguistic [ways]. As a teacher you want to see how the students are capable of solving, thinking, exploring problems.
- T2 Learning is active work done by the students. We as teachers have to actively facilitate the work as well as we possibly can. It is a mix between social and individual perspectives constituting 'learning'. Students will always be in a learning process.

Learning, hence, is both an individual and collective continuing process where all parties are active participants. According to the teachers, learning happens when students can think and reflect freely and participate in discussions with peers and their teachers:

- T1 You succeed when you facilitate in a way that enables students to explore on their own, giving them tasks that are open-ended and where the students have a certain freedom of choice. It is better if students themselves can explore the knowledge, so that it increasingly becomes more like a part of themselves. I want to be a catalyst enabling the students to come forward with what they know.
- T2 Teaching is an activity initiated by the teacher. The activity can be very varied. I often like to start with common thought processes. A lot of dialogue and conversations with the students.

The quotes above show that the essential part of teaching is to facilitate both students' individual thought processes and reflection and the classroom's common reflections and discussions. These teachers see themselves both as catalysts and facilitators of the different individual learning processes, encouraging students to construct their knowledge either on their own or in collaboration with their peers. The content is perceived as expandable and individually oriented knowledge. These teachers talk about how students should be meta-cognitive, supervising their own learning:

- T2 I want them to be meta-reflective. I want to hear many different answers and many different thoughts, because it is the learning process, which is very exciting for the students also. Not searching for the correct answer right away, but the process leading us to the answer. How to work smarter when doing your assignments, working on their own learning strategies.

The teachers value diversity of meanings and thoughts, focusing on students' meta-reflection to develop learning strategies. Recognizing that students are in a process of exploring and defining themselves as persons and shaping their identity, the teachers support these processes:

T1 They are in a little rebellion, of course. And they are undergoing rebuilding, trying to find themselves and choosing their own paths.

Indeed, these teachers see the students as unique persons developing individually within the community. In addition, the most important factors providing learning are the good relationships between teachers and students and the relationships among students. The teachers express their belief that honesty, respect, diversity and equality are important values in the class community. Pursuing the good experiences and feelings is important for the learning process:

T2 Relations and making sure that the basic elements are in order, only then you can focus on learning and the learning activity. [...] Honesty, that you collaborate well, respect each other; respect how we differ in [our] minds, perspectives and levels – in everything. Be gentle and happy. Be good to each other within a larger cooperation like a society or a class. Everyone has to contribute in their own way.

Implementing values as a basis for instruction is important for creating a good relationship, and these teachers expect the students and themselves to contribute and collaborate for each other's mutual learning process.

Teaching within this dominant belief is also described as a process of different dialogue types. To facilitate the individual and collective learning processes, the teaching is varied, actualized and inquiry based. Teaching includes different instructional strategies to facilitate learning: presentations, exercise, field trips, assignments and different materials to concretize the content. Most of all, the teachers value the dialogue, collaboration, free thinking, reflections and discussions:

T4 You have to vary, always being in a dialogue with the group, a dialogue with the students – what is best for the individual student and what is best for the whole group. I have to get to know the students, their strengths and

weaknesses. How to involve each student to the best for the group. And everyone has to practice on working with everyone.

- T2 The dialogue between me and the students is the premise provider when it comes to defining good teaching. It is all about a combination of plenary review, plenary discussion and thinking out loud about what they should have learned.

The quotations above show how the teachers value, monitor and facilitate the class community, encouraging student collaboration. One of the teachers uses what she describes as a “learning conversation” when presenting content. The following quote describes, among other things, what the teacher values in the conversation:

- T1 Working together, grapple [with] each other, you can do a lot more together than on your own. When we have this learning conversation, I am quite straightforward when hearing an answer or a reflection that I want to appreciate, pursuing a positive circle all the time, getting feedback on what you achieve. To get to know the ‘good feeling’, that is if you receive an assessed test or a good evaluation, and you can experience the good feeling, working and getting good feedback. Then you want to repeat it.

Indeed, these teachers value curiosity, engagement, positive feedback, positive feelings and awareness of one’s own learning and responsibilities, and they encourage mutual sharing and responsibility for each other’s learning, resulting in a ‘*we did it*’ feeling.

To help the students learn, the teachers actualize the content by using real-life examples. This is necessary because these teachers talk of how they educate ‘*world citizens*’ (T2). In the excerpt below, T2 explains how she uses an ongoing international conflict to actualize plenary discussions about ethics and culture:

- T2 What is going to be more and more important, and you can tell by the characteristics of the society, is students learning about different meanings, religions and getting more insight into other cultures than we do now. Using the conflict between North Korea and USA as an example, we can talk about ethics, trying to understand cultures and how they think.

Here, these teachers value students developing tolerance for other meanings, cultures and perspectives.

DISCUSSION

The present study identified and broadly described lower secondary teachers' dominant content-general beliefs about learning and teaching. The beliefs are broadly in line with previous research when it comes to the content and continuum of dominant beliefs ranging from subject matter orientation to student orientation (Boulton-Lewis et al., 2001; de Vries et al., 2014; Fives & Gill, 2015; Marton et al., 1993, Säljö, 1979). Overall, these findings show that teachers talk about teaching when asked about learning. Here illustrated by T6, when asked about learning, stated that *“teaching is when students learn...”* This may indicate that some of the teachers have limited language and/or awareness of students individual learning processes. This may also give a reason to believe that teachers beliefs are contextually bound, referring to the action in the classroom when expressing own beliefs about learning and teaching.

The first dominant belief, *learning as the transmission of important knowledge and teaching as dialogic “chalk and talk”*, corresponds to the subject matter orientation (de Vries et al., 2014; Fives & Gill, 2015). The data show that teachers believe learning is a result of teachers imparting important knowledge to students (Boulton-Lewis et al., 2001; Marton et al., 1993). This indicates a perception of knowledge as a kind of “package” that is controlled and held by the teacher and transmitted to the students and that relates to a content and teacher-centered view of teaching (Fives et al., 2015). The findings indicate that teachers are committed to the national learning outcomes controlling both the content (what) and the learning process (how). Consistent with a subject matter orientation, these teachers see themselves as transmitters and the students as passive recipients (de Vries et al., 2014; Fives & Gill, 2015). Consequently, student learning depends on the teacher. However, the data also reveal how these teachers actually “love to chalk and talk” (T6), something which adds nuance to the existing perception of the teacher as transmitter. Characterizing students as less able to participate in discussions (T6) or to collaborate with peers (T3) indicates a kind of deficit view of students, believing that these abilities are fixed and not able to change. This view is in line with a reproductive approach to learning (Marton et al., 1993; Säljö, 1979), revealing few beliefs concerning how to facilitate the diversity of students' learning, stimulate motivation, collaborate and vary the teaching. The findings indicate a weak correspondence with the demands needed for obtaining 21st century skills (NOU 2014:7; NOU 2015:8; OECD, 2009) and participating in CPD (de Vries et al., 2013).

The second dominant belief, *learning as the application of useful skills and knowledge and teaching as doing and reflection*, is competence-oriented. This orientation partly connects to both the subject matter and the student orientations (de Vries et al., 2014; Fives & Gill, 2015). Here, learning is believed to be the process of participating in different practical activities and reflection, referring to the levels of learning as the application (Marton et al., 1993) and development of skills/understanding (Boulton-Lewis et al., 2001). This is also supported by how the teachers believe that they must equip students with the competences necessary to master life. Student learning seems to depend on the teachers' and local actors' mediation of the knowledge and skills prescribed by the national curricula and the local context; this may indicate a teacher-oriented view of learning (Hancock & Gallard, 2004), hence a subject matter orientation (de Vries et al., 2014). The data show few variations and motivational strategies, indicating a teacher-centered view of teaching (de Vries et al., 2014; Fives & Gill, 2015; Hancock & Gallard, 2004). However, these teachers also focus on the utility value of the content and the practical activities in school, which indicates a student-orientation (de Vries et al., 2014; Fives & Gill, 2015; Pedersen & Liu, 2003). Overall, these findings show a meaningful approach towards learning (Marton et al., 1993; Säljö, 1979) combined with an approach towards teaching as the development of skills/understanding (Boulton-Lewis et al., 2001). The findings suggest that this dominant belief meets the demands of collaboration and communication (NOU 2014:7; NOU 2015:8; OECD, 2009) and that teachers are participating in CPD to some degree (de Vries et al., 2013).

The third dominant belief, *learning as individual social and professional growth and teaching as dialogic collaboration*, corresponds to the student-orientation (de Vries et al., 2014; Fives & Gill, 2015). The beliefs about learning relate to previous research describing learning as the development of new insights and changing a person (Marton et al., 1993), hence being about transformation (Boulton-Lewis et al., 2001). This is supported by how the teachers perceive themselves as catalysts (T1) facilitating the students' holistic growth and change and that they acknowledge students can learn in different ways. Here, students change because of the teachers' effort, not in a controlling but rather in a supporting way. Several data illustrate that these teachers believe in students' freedom of choice when exploring knowledge, constructing and extending their own knowledge base, referring to the transformative levels of the learning and changing of a person (Boulton-Lewis et al., 2001; Marton et al., 1993); this may indicate

a student orientation (de Vries et al., 2014; Fives & Gill, 2015). As the data show, these teachers' beliefs about teaching show their beliefs to be teaching as transformation (Boulton-Lewis et al., 2001) and the teaching as student-oriented (de Vries et al., 2014; Fives et al., 2015; Pedersen & Liu, 2003). The data indicate that teaching is believed to be both an individual and collective process that develops free thinking and meta-reflection, collaboration and the mutual sharing of knowledge. Here, the teachers recognize the importance of how the class community and relations are fundamental parts of individual learning processes, referring to the transformational level of both learning and teaching (Boulton-Lewis et al., 2001) and learning as collective meaning-making (Paakkari et al., 2011). These teachers use classroom interactions to boost individual motivation. Together with how they speak of creating curiosity, actualizing the content and varying the teaching to facilitate diversity refers to a student-centered approach towards teaching (Fives & Gill, 2015). Overall, these teachers' beliefs about learning and teaching correspond to the student-orientation (de Vries et al., 2014; Fives & Gill, 2015) and meet the demand for learning vital future student skills: collaboration, communication, curiosity and critical thinking (NOU 2014:7; NOU 2015:8; OECD, 2009). The findings also indicate that these teachers participate in CPD (de Vries et al., 2013).

IMPLICATIONS

The findings show that some of the dominant beliefs about learning and teaching include few concerns about how to facilitate and motivate different student learning processes within the class community. Concerning future prospects of student competencies as outlined in the document on 21st century skills (NOU 2014:7; NOU 2015:8; OECD, 2009), it is worrying that student collaboration, communication, critical thinking and curiosity seem more or less absent in some of the teachers' articulated beliefs. Given the strong relationship between beliefs and behavior, students will probably have limited learning possibilities in some of the teachers' classrooms (Dewey, 1933; Fives & Gill, 2015; Kagan, 1992; Nordenbo et al., 2008; Pajares, 1992). Having participated in several national educational developing programs over the last decades, teachers still seem to have beliefs corresponding to conceptions of learning and teaching dominant almost 20 years ago (Boulton-Lewis et al., 2001); this indicates that prior developing programs have provided limited opportunities for teachers to explore and challenge the beliefs underlying their practices.

The current study might be utilized as an analytical tool for teachers' individual reflections or as part of teacher development programs aiming to raise awareness of the range of beliefs held by teachers, as well as help in exploring alternative ways of thinking and indirectly changing teacher approaches towards teaching. Future research should explore how to facilitate both student teachers and current teachers in developing and maintaining beliefs that reflect a student-orientation. Referring to prior research on how teachers' beliefs relate to participation in CPD (de Vries et al., 2013; de Vries et al., 2014; Timperley et al., 2007), in future programs, or in daily life in school should provide the possibility for teachers to explore their own beliefs about learning and teaching.

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