

TEACHING AND LEARNING MATERIALS AS CONTENT IN TEACHER EDUCATION

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Abstract: *This article has two purposes: (a) To argue that didactically designed teaching and learning materials as content in teacher education can meet two well-known challenges of teacher education: linking theory and practice and linking individual subject areas; and (b) To present the results of an empirical study carried out in connection with the Ph.D. thesis Teaching and Learning Materials Linking Theory and Practice in Initial Teacher Education? (Thingholm, 2014). The results show great variation in how the materials are presented as content in teacher education. This variation is attributed to the personal attitudes of the teacher educators.*

Keywords: teacher education, teaching and learning materials, sociocultural differences, new teacher

Introduction

This article has two purposes. The first purpose is to argue that didactically designed teaching and learning materials as content in teacher education can meet two well-known challenges of teacher education. The second purpose is to present the results of an empirical study carried out in connection with the Ph.D. thesis: *Teaching and Learning Materials Linking Theory and Practice in Initial Teacher Education?* (Thingholm, 2014). The purpose of this study was to demonstrate *whether* and *how* teacher candidates experience didactically designed teaching and learning materials as content in teacher education and whether the potential of didactically designed teaching and learning materials are exploited according to the challenges of linking theory to practice and linking individual subject areas within the teacher training program.

Teaching and Learning Materials

A professional teacher can transform anything into a teaching and learning material: a book, a film, an animal (alive or dead), food, or flowers. The limit is only set by the imagination and the relevant content knowledge and skills of the teachers, but

didactically designed teaching and learning materials are different from other materials. Although these materials can be defined in wide terms, the distinguishing feature of didactically designed materials is their intrinsic goal of student learning. In general, didactically designed teaching and learning materials are resources that have student learning as their primary aim. Hansen (2010) offers following definition: Didactically designed teaching and learning materials are pedagogically designed teaching and learning resources as for example a textbook. They are produced with a learning intention and might act as an independent arena for learning. They designate a certain academic content, set specific goals for learning and suggest certain activities for the student to achieve these goals. Didactically designed teaching and learning materials are typically implemented by the teacher and include therefore a teacher's guide with more or less direct instruction to how the teacher might plan, conduct and evaluate his/her own teaching (p. 21).

Didactically designed teaching and learning materials differ from semantically and functionally designed learning materials by being designed with a pedagogical approach, and therefore, with the intention

of teaching and learning. The strength of didactically designed teaching and learning materials is that they reduce complexity by identifying both a specific content and how to teach and learn from this content (Hansen, 2010). It is certainly true that there is an ambivalence surrounding these materials (Ball & Feiman-Nemser, 1988). On the one hand, didactically designed teaching and learning materials are strongly criticized for both their form and content and their implicit view on teaching and learning. They are boring and technical, confusing more than helpful, and the teacher manuals contain vague proposals for teaching. Therefore, due to the extensive criticism, it is not recommendable to inspire teacher candidates to use these educational materials either during their internship or in their future teaching profession. On the other hand, because educational materials are used widely and play a key role in schools, it is recommended that teacher candidates learn to use the materials in appropriate ways (Ball & Feiman-Nemser, 1988).

However, there are two reasons to focus on didactically designed teaching and learning materials that extend beyond this ambivalence. First, didactically designed teaching and learning materials are relevant because of their close relation to practice. Secondly, didactically designed teaching and learning materials are relevant because of their double discourse – academic and pedagogical. Focusing on didactically designed teaching and learning materials as content in teacher education is relevant because they play an important role in schools where they are essential to both the teachers’ teaching and the students’ learning (Hansen & Skovmand, 2011). International research shows that newly qualified teachers use didactically designed teaching and learning materials as scaffolding (Lemmer, Edwards, & Rapule, 2008; Poyas & Eilam, 2012; Shawer, 2010) to develop their own teaching practice

(Grossman & Thompson, 2008). The Danish evaluation report *Teaching and Learning Materials in Schools* (Undervisningsmidler i folkeskolen) (EVA, 2009) shows that teachers use didactically designed teaching and learning materials more often than IT-based resources during their teaching practice. The report also shows the teachers focus on their students’ interests and common goals when assessing didactically designed teaching and learning materials. Teachers focus less on the academic and pedagogical quality of the materials, which as the report states, “would require further competencies from the teacher” (EVA, 2009, p. 10-11).

Teacher candidates must acquire theoretical as well as practical knowledge and skills. The relationship between theory and practice has been described as a basic challenge for teacher education (Hansen & Skovmand, 2011). Teacher candidates experience two different worlds – a theoretical world on campus and a practical world during an internship (Burstein, 2009; Solstad, 2010). Didactically designed teaching and learning materials offer suggestions to the what, why, and how of teaching, which can reduce some of the complexity that characterises the teaching profession (Rasmussen, 2004). However, in order to plan, conduct, and evaluate a lesson according to the what, why, and how of the learning material, the teacher needs to redesign the material – both in an academic and a pedagogical way – in relation to the students and him- or herself. During their teacher education, teacher candidates ought to acquire the ability to redesign learning materials. Based on this idea and the great extent to which newly qualified teachers use didactically designed teaching and learning materials in schools (Lemmer et al., 2008; Poyas & Eilam, 2012; Shawer 2010), these materials become relevant as content in teacher education. Furthermore, due to their close relation to practice, I argue that didactically designed teaching and learning materials as

content can support the teacher candidates in linking theory and practice. Another reason to focus on didactically designed teaching and learning materials as content in teacher education is their double discourse; they are both academic and pedagogical. They are academic because they present a specific subject or discipline e.g. German grammar, the history of the Vikings, calculation, or how to paint. At the same time they present a pedagogical approach to how to teach and learn this specific subject or discipline, what to do, read or write, what to focus on, and how to do the work alone: in pairs, or groups. For the teachers, it is essential to be able to combine both academic and pedagogical knowledge and skills. Academic knowledge is important; however, according to the learning process of the students, academic knowledge becomes more effective when combined with didactic knowledge (Darling-Hammond & Youngs, 2002). Teacher candidates require academic knowledge and skills, but they also need to know how to communicate academic content. As well as understanding pedagogical theories, teacher candidates must learn to use these theories in practice. It is not enough to “think like a teacher” – one must also “act like a teacher” (Darling-Hammond, 2006, p. 35).

Academic knowledge and skills is essential for the teachers to observe and record both the students’ current level of learning and the students’ learning potential. Pedagogical knowledge and skills are essential for the teachers to intervene in the students’ current level of learning and learning potential. These skills of observing, recording, and intervening can be described as a diagnostic competence (Helmke, 2013). As described in the Order for the Danish Teacher Education, combining academic and pedagogical knowledge and skills demands “a binding interaction between the subjects of the program must take place” (Ministry of Education, 2006, para. 5.2) and “a

cooperation between the pedagogical subjects, the academic subjects and internship, which include more than one of the student’s academic subjects” (Ministry of Education, para. 28). Due to their double discourse, didactically designed teaching and learning materials are relevant as content in such an interaction and, as such, they can be a communicative theme that connects individual subject areas to an internship. I argue that individual subject areas can interact when teaching and learning materials are presented as content. Furthermore, this interaction allows the teacher candidates to relate the materials – and the subjects they present – to practice. This idea is presented in the following quotation, which compares teaching and learning materials to glue:

Analysis and evaluation of didactically designed teaching and learning materials in teacher education might act as glue binding the different subjects and creating a more practice oriented education. The special feature of didactically designed teaching and learning materials is the double discourse – academic and pedagogical. If you want to understand what has been called the didactic design, the special organization of knowledge including certain learning potential, a combined approach drawing on both pedagogical and academic subjects is required. (Hansen, 2008, pp. 29-30)

It is, therefore, interesting to explore whether and how didactically designed teaching and learning materials are included as content in teacher education and, in particular, to focus on their potential to form a meeting point for subject areas and for theory and practice.

Field of Research

The research literature appears modest with only few studies on didactically designed teaching and learning materials as content in teacher education (Thingholm, 2014). In

general, it reveals a great variation in how didactically designed teaching and learning materials are included as content in teacher education. This ranges from the materials not being included at all to materials being thoroughly included in a combined academic and pedagogical perspective. The literature also shows a discrepancy between the way didactically designed teaching and learning materials are presented on campus and in the internship (Ball & Feiman-Nemser, 1988; Horsley, 2007, 2010; Nicol & Crespo, 2006; Peacock & Miller, 2004). On campus, these materials are generally presented negatively; whereas, in the internship, they are presented more positively. It is a common feature that teacher educators are more critical of these materials than teachers in schools. This trend has also been identified in the United States, Canada, and Australia (Horsley, 2007, 2010). However, it is possible to identify a different trend in a study from China, which shows that didactically designed teaching and learning materials are regarded as a substantial part of content and are presented from an academic as well as a pedagogical perspective. In China, teacher educators teach their students how to redesign and use didactically designed teaching and learning materials (Li, 2002).

In western countries, teacher educators generally present didactically designed teaching and learning materials in a negative way and do not teach teacher candidates to redesign and use the materials. Instead, they tell teacher candidates that professional teachers do not follow didactically designed teaching and learning materials but create their own materials (Ball & Feiman-Nemser, 1988; Horsley, 2007). However, teacher candidates have not been taught to create their own materials (Horsley, 2010); therefore, when they use didactically designed teaching and learning materials during their internship, they are inspired by their own schooldays and revert to virtually imitating their own school teachers (Behm,

2008). Despite this, during their internship, teacher candidates recognise that didactically designed teaching and learning materials can constructively scaffold both their own teaching and the students' learning process (Ball & Feiman-Nemser, 1988). The teacher candidates wonder why teacher educators do not recommend the candidates to use textbooks: "It is helping me along and the kids are learning the things they need to be learning. I mean, if it works, why should you be worried about making up you own plans for every single thing?" (Ball & Feiman-Nemser, p. 420). When teacher candidates are analysing teaching and learning materials they are more descriptive than analytical (Nicol & Crespo, 2006) and their critical attitude towards the materials, which they acquired from teacher educators, is changing when they experience how well the chosen material helps them structure their own teaching, supports student learning, and saves a lot time by not constantly designing new material themselves (Nicol & Crespo).

Ball and Feiman-Nemser (2005) have found different reactions from teacher candidates using textbooks and teachers' guides during the internship. Some felt pressed to maintain the established classroom practice. Others were overwhelmed by the demands of full-time teaching and used textbooks in order to survive. Some candidates found the guide confusing and insufficient: "I've got the materials, now what am I supposed to *do* with them?... I am not sure what they *mean* by all this stuff..." (Ball & Feiman-Nemser, p. 193). Unfortunately, the candidates revealed the limits of their knowledge and experience when planning outside of textbooks and in some cases the candidates misguided or gave incorrect information. One candidate wanted the students to understand what 'culture' is, but as she reflected; she was having a hard time understanding the concept herself. Then, how is pushing her out of the textbook, as recommended by her teacher educators,

helping her learning to teach subject matter? (Ball & Feiman-Nemser).

Theory and Method

This study was theoretically anchored in the sociological theory of systems developed by Niklas Luhmann (Luhmann, 2000, 2006, 2007). There are three reasons for grounding the thesis in this theory. First, the theory focuses on observation and construction, which represents an epistemological starting point where meaning cannot be discovered ontologically but must be invented (von Foerster, 1984). The theory of observation allows us to observe observations in a methodologically controlled and transparent manner. In this study, I observed how teacher candidates observe didactically designed teaching and learning materials as content in teacher education. Second, the theory focuses on communication and structural coupling. The theory of communication offered a new way to understand teaching as communication and didactically designed teaching and learning materials as a possible theme for this kind of communication – a theme which might encourage teacher candidates to link theory and practice as well as individual subject areas within their teacher training program. Third, the theory focused on distinctions or differences that make a difference. Such distinctions or differences are always set by an observer who has marked or actualized one specific thing, criteria, or phenomenon – some examples of actualized distinctions could be: students/not students, farmers/not farmers, happiness/unhappiness, or poverty/wealth. The theory of distinction offered a new way to understand the classic problem of linking theory and practice. It revealed how the concepts are related and how *practice* is a theoretical reflection:

The difference between theory and practice appears only to an observer, when re-entering the theory side. This applies whether the observer is a

practitioner or a theorist (teacher or researcher) and for that very reason, it is understandable that practice is theorized in many different ways. (Thingholm & Rasmussen, 2010, p. 42)

In this study, I adopted a methodological approach developed by Professor Jens Rasmussen (2004) in line with Luhmann's theory of systems. This approach, which is aligned with operative constructivism, is described as a "radicalization of hermeneutics" (Rasmussen, 2004, p. 322). It is radical because it rejects ontological conceptions. Ontology is the study of being and existing and an ontologically oriented science therefore asks "what?" In contrast, the radicalization of hermeneutics is an epistemologically oriented science and it therefore asks "how?" (Andersen, 1999, pp. 13-14). From this latter position, access to the world is only possible as a result of an observation; there is no observation independent of world or reality. An observation is an operation that marks a distinction or a difference and thereby makes it possible to observe and describe one object (not another) or distinguish between two objects. It is the observer – the researcher – who marks the separation and distinguishes between one object and all other objects – between the current and the potential. An observation is in itself an interpretation and it therefore makes no sense to distinguish between these concepts, since any interpretation involves an observation.

The method was divided into three stages as designed by Rasmussen (2004). The first stage was the empirical construction. At this stage, the reality – as observed by an observer – becomes accessible through transcription and the communication changed from speech to text. The second stage was the hypothetical construction #1. At this stage, the informants' statements were attributed differences by the researcher to show how the informants

observed didactically designed teaching and learning materials as content in teacher education – in other words, to show with which distinction they have distinguished and denoted. These attributed differences were then categorised into 17 different categories (see Table 1 below). The third stage was the hypothetical construction #2. At this stage, the 17 categories were condensed into themes which appear as the result of the analysis.

To follow this method, distinctions must be introduced by the researcher. The selected distinctions were essential for several reasons; they structured the interview guide and represented the theme of the interviews. They also formed the basis for future observations of observations. I selected four distinctions that I considered relevant to the theme of this study:

1. Competent in analysing and using didactically designed teaching and learning materials/not competent in analysing and using didactically designed teaching and learning materials.
2. Theory/practice.
3. Educational training on campus/in internship.
4. Mono-disciplinary/poly-disciplinary.

These distinctions were formulated as questions and structured the interview

guide, which was also supplemented with a short questionnaire. In the questionnaire, the informants indicated in which subjects they have been presented with didactically designed teaching and learning materials.

Participants

Six group interviews were completed with a total of 17 teacher candidates: 15 women and 2 men. They have all completed mandatory internships and were approaching the end of their education. The teacher candidates were selected from three different university colleges in Denmark: University College Lillebælt (Odense), University College Nordjylland (Aalborg), and VIA University College (Silkeborg). The transcribed interviews were coded and analysed in the data processing program Nvivo10, and the results are presented below.

Results

The results of the analysis – the condensation of meaning – were based on four distinctions set by the researcher and a total of 17 further categories. The table below lists the four distinctions and their respective categories including the number of references in the transcribed interviews:

Table 1

Distinctions	Categories and Number of References	
#1: Competent in analysing and using didactically designed teaching and learning materials or not	1. the availability of the educational materials	26
	2. critical reflection	20
	3. educational materials analysis	13
	4. subject didactics	6
	5. design and entrepreneurship	4
	6. natural progression	3
#2: Theory/practice	1. professionalism and communication	42
	2. the student's role	18
	3. the teacher educator's role	17
	4. coupling (im)possibilities	5
#3: Educational training on campus/in internship	1. attitude and use	43
	2. the teacher's role (in internship)	41
	3. the teacher educator's role	11
	4. newly qualified teacher	11
#4: Mono-disciplinary/ poly-disciplinary	1. absence of interdisciplinarity	31
	2. general didactic with/without academic content	19
	3. structure of the teacher education program	15
	4. subject didactics	10
	5. the teacher educator's role	9
	6. the student's role	8
	7. resources and educational materials	7

The purpose of the analysis was to answer whether and how teacher candidates experienced didactically designed teaching and learning materials as content and whether they think that didactically designed teaching and learning materials, when presented as content, contributed to creating a structural coupling between theory and practice and between individual subject areas. Or, in other words, whether they thought the potential of didactically designed teaching and learning materials was exploited when presented as content. All indented quotes in this section, unless otherwise specified, were from the teacher candidates' interviews as reported originally in Thingholm (2014, pp. 130-167).

The interviewed candidates all agreed that, during their education program, they continually achieved the knowledge and skills described in the Order of Danish Teacher Education (Ministry of Education, 2006) as assessing, analysing, developing, selecting, using, and developing

didactically designed teaching and learning materials for use in schools.

From when I started the first year, my first year internship and now ... now I feel that, when I see new materials, I quickly evaluate the materials in relation to the class. In that way, somehow unconsciously...I cannot put my finger on exactly what my teacher told us, but it is the entire course.

However, when asked, the candidates explained that they had not been taught how to re-design didactically designed teaching and learning materials. Instead, the teachers often recommended that they design their own materials, not redesign existing materials.

I don't think so [that our teachers teach us how to re-design], if I'm honest. But perhaps it is also because they are very focused on us making our own designs, and I really like doing so.

We are often told how important it is [to re-design materials] but we are not told very specifically how to do it ...

and how to change it to suit one's practice. It is kind of your own problem to deal with in internship.

Some candidates explained that they were competent in analysing teaching and learning materials; this was not because they had been thoroughly introduced to them but because of the didactic reflection connected their academic subject. According to the candidates, there was great variation in how teaching and learning materials were presented as content (superficially/thoroughly), and there did not seem to be a certain pattern with regard to different subjects.

I had history but we didn't talk about materials at all. We spent time doing it in Danish, but not much. And in Religion we very briefly saw some materials just before our internship.

In science we are often introduced to teaching and learning materials. When we are introduced to an academic theme, we try to find materials and look into how the materials treat the theme we have just been studying.

Well...in Danish we have been introduced to teaching and learning materials – a lot actually. Also a lot in History, but Social Science not at all.

Teacher educators mainly urged the candidates not to use didactically designed teaching and learning materials or at least to critically evaluate these materials.

In Danish, when we had to analyse these teaching and learning materials, our teacher emphasised that we should not use these materials from a-z because then we would probably not be able to differentiate our teaching and maybe also lose other basic stuff.

I think our Danish teacher has highlighted an important perspective; simply, there is a lot of didactically designed material that is too poorly

made to actually use it in a practical teaching context.

That is also the perspective we gain from here [on campus]...Our teachers have often told us that we must be very critical when reviewing various textbooks to see what other people have made ... Therefore we do not review textbooks very often...at least that is what my teachers explain. It is because we can make something much better...and if we do look at them, we should at least be as critical as possible.

Not all teacher educators were critical of didactically designed teaching and learning materials. Some teacher educators even designed the materials themselves and were therefore inclined to present it to teacher candidates. Some candidates claimed that didactically designed teaching and learning materials were included as a comprehensive and relevant part of content. This was in line with the Chinese study in which teacher candidates first achieve mathematical knowledge and skills themselves, which was connected to a specific academic content for candidates in schools: "How to clearly and effectively present the mathematical ideas to candidates becomes one of the major foci in the methods course" (Li, 2002, p. 190).

I think...it has been the case that we had to have a theory and understanding ourselves about numeracy...how we understand mathematical concepts and how to use them. Then afterwards we have looked into teaching and learning materials to see what it is like in practice for the students.

Other candidates claimed that didactically designed teaching and learning materials were presented briefly and superficially.

In Danish it was mostly theories, but we spent a lot of time analysing textbooks. In religion it was only presentation, we did not talk about them, we were just told that they

exist...as an introduction to our preparation for internship.

I am not 100% a science teacher even though I finished the course. It [the course] was about the knowledge we required and not so much about how to communicate it to the students.

In art it was also like that...we made products ourselves, drew in different ways and stuff like that. We were not told how to teach it to the kids. It was about us learning to be creative.

The candidates attributed the great variation in how didactically designed teaching and learning materials were presented to both teacher educators and teachers in schools. The way teachers presented didactically designed teaching and learning materials depended on their attitude towards the materials. Different attitudes towards didactically designed teaching and learning materials lead to different ways of presenting and using them.

It also depends on the teacher educators how much they choose to use teaching and learning materials. In social science my teacher educator designed an educational textbook himself and then it is relevant for him to show it to us and tell us how we can use it. But other teacher educators who has not designed any materials and maybe don't like using educational textbooks, well, then they use it less during their own teaching.

I think that the great difference the subjects in between is a huge problem. ... Some teacher educators are more focused on the academic content and others on subject didactic.

In general, teacher educators were more critical of didactically designed teaching and learning materials than teachers in schools:

I think...I don't know if you are too idealistic about it [on campus]...you have to be as authentic and resourceful as possible. In school...they are more down to earth. You have not got all the time in the world, so the textbook is more useful than you think.

I think...in the first year of internship the teacher said "You have to teach this theme from these pages". But the teacher educator had told us not to teach from a-z. Well...then the attitudes differed a lot. It was a bit difficult to decide whether one should stick to what was taught on campus or just rely on practice and go ahead. We did so the first year because we were all beginners wanting to pass the internship.

However, a few candidates also had the opposite experience – very critical teachers in school and less critical teacher educators. The candidates also explained how their own attitude towards didactically designed teaching and learning materials was essential for how often and in what way they included didactically designed teaching and learning materials as content in reports or other study products. The variation in the way didactically designed teaching and learning materials were presented as content was not only attributed to the personal attitude of the teachers and the candidates but also external conditions. The teacher candidates experienced a relation between general resources and learning materials. Didactically designed teaching and learning materials were presented as content more often if they were readily available. This availability depended on both money and storage space, which were issues for both campuses and schools.

In line with the research field, the candidates experienced a difference in how didactically designed teaching and learning materials were presented as content on

campus and in the internship. When presenting didactically designed teaching and learning materials, teacher educators focused primarily on academic understanding and academic goals; whereas, teachers in schools focused primarily on layout and assessed how the concrete material appealed to their specific students.

I experience a difference...on campus you kind of 'put yourself above it' and analyse it according to the academic content... But teachers in school look for other things...as I see it... They wonder if this appeals to the students. Do I like it? Does it work in practice? I don't hear them talking about categories and criteria success. I don't think they analyse but assess layout, pictures and themes of content. Is it in any way appealing for the students?

On campus, the teacher candidates were often told to compare, analyse, and reflect critically on two or more didactically designed teaching and learning materials – a comparative and critical-analytical approach. During their internship, the candidates were often told to assess the concrete didactic material bought by the school. The purpose of this approach was to be inspired to use it in practice – an inspiration and application oriented approach. This duality was in line with other research that reveals sociocultural differences in these learning arenas (Ball & Feiman-Nemser, 1988; Horsley, 2007, 2010; Nicol & Crespo, 2006; Peacock & Miller, 2004). In the internship, didactically designed teaching and learning materials were presented from a practical perspective. On campus, didactically designed teaching and learning materials were mainly presented from a theoretical perspective. In this duality, the candidates oscillated between academic content (what to teach) and pedagogical methods (how to teach). On campus, the candidates discussed the academic content far more

than how the academic content can be taught to students in schools.

The teacher candidates explained how didactically designed teaching and learning materials were presented during their internships and in some of the subject areas on campus. Within the academic subject areas, the materials were presented in connection with didactics. The teacher candidates explained that didactically designed teaching and learning materials were not presented in pedagogical subject areas: pedagogic, general didactic and psychology.

Not at all in pedagogical subjects, they are more for our own sake...well...we are not teaching psychology for example.

And of course we did not talk about it [didactically designed teaching and learning materials] in pedagogy or general didactic.

Because the candidates did not experience didactically designed teaching and learning materials presented in pedagogical subject areas, they did not experience these materials presented in a poly-disciplinary way. The candidates explained how they themselves “drew on” knowledge from subject to subject. The candidates often described general didactic as a theoretical subject without a concrete academic content. According to the candidates, in order to avoid losing the general perspective of the subject, the teacher educators rarely included an academic content.

When I think back to general didactic, I wonder why teaching and learning materials were not part of the content...I mean...we talked about didactic models, Hiim and Hippe and how to plan your lesson. It would have made it all more transparent... we never got to the part of 'how to do it' and it would have been helpful.

General didactic is very theoretical... here you have a model, this is how it works and you have to pay attention to these elements. But we don't grasp anything concrete. What about ordinary textbooks... how to use them...we definitely miss that.

Besides the risk of losing a general perspective, the candidates also described other problems in linking the individual subject areas. Although the teacher educators were very professional within their own subject, they found it difficult to connect their own subject to other subject areas. The structure of the teacher education program was problematic because of the high number of classes and teachers. Two of the interviewed candidates had been following an optional subject called *Learning Material Design and Entrepreneurship*, which – more often than compulsory subjects – combined academic and pedagogical knowledge and skills when presenting learning materials (Thingholm, 2014).

The candidates all predicted that, when they are newly qualified teachers, they will use didactically designed teaching and learning materials more often than they were inspired to do so by teacher educators and more often than they did during their internships.

They [newly qualified teachers] also say “well, I'll just start by following the textbook” because there is so much to do as a new teacher so you can't manage to teach like you do in your internship. You automatically follow the textbook...I don't know...but I have often been told this.

Despite the double perspective – learning academic content and teaching academic content – the teacher candidates do not experience, when presented with content, that teaching and learning materials contribute to linking theory and practice or linking individual subject areas.

Internship is another world than the rest of our education. And when you come back your teacher might ask “How did it go?” And then we dive into some of it...but that is it.

Well, it is not my experience, but I might have had a teacher ask, “Did you use a textbook?” I might have had this question ones or twice, but is not common practice.

When I came back to campus, my teacher asked which textbook we used in internship. I told her we used *Speak Up* and the only thing she did was [the candidate shrugs and sighs deeply] and rolled her eyes... “Oh God”. Because she is very much against textbooks. It would have been nice if we had had a round telling each other which textbooks we had been introduced to in our internship...because...I guess there was a reason for her doing so. I thought...well...it worked well for me and I had positive feedback from the school. It would have been nice to know why she rolled her eyes.

However, the candidates believed that didactically designed teaching and learning materials was a possible theme for structural coupling.

Textbooks could be a common dimension because within every subject you find textbooks and we could talk about them from an academic as well as a pedagogical perspective.

The only thing we lacked, I think, is some kind of connection to reality. ... I feel this connection to teaching and learning materials and our own teaching was lacking.

The candidates recognised a potential to link theory and practice when teaching and learning materials were presented as content, but they also identified problems in

doing so. These problems were mainly based on the difficulties of interdisciplinarity.

In summary, the teacher candidates experienced great variation in how didactically designed teaching and learning materials were presented. This experience ranged from the materials not being presented at all to the materials being presented thoroughly in an academic and/or pedagogical perspective as a relevant part of content. This great variation was primarily attributed to personal attitudes and beliefs of the teacher educators as well as the teachers in the internship. Furthermore, the candidates experienced that didactically designed teaching and learning materials were presented in a double perspective. On campus, the perspective was academic and critical-analytical; whereas, in the internship, the perspective was oriented towards use and method. Because of this duality and because learning materials were not presented in pedagogical subject areas, the candidates did not believe the potential of learning materials was being exploited – the materials did not act as a structural coupling between theory and practice or between individual subject areas.

Conclusion

Results from this study identified problems and dilemmas regarding didactically designed teaching and learning materials as content in teacher education. These problems and dilemmas were related and difficult to separate. In some ways, they included the concept of curriculum construction. Curriculum construction concerns the gap between the teaching and learning material, and the teaching (communication) situation in which they are used (Ball & Cohen, 1996). Any material used for teaching, even didactically designed materials, must be redesigned or constructed according to the individual teacher, the class, the students,

and the school. No communication is ever the same; communication is vivid, alive and must be continuously constructed.

“Good teachers don’t follow the textbook” (Ball & Feiman-Nemser, 1988, p. 414). Research showed that teacher candidates are often told not to use didactically designed teaching and learning materials because professional teachers create their own materials, and by doing so, create more exciting and meaningful activities for their classes (Ball & Feiman-Nemser, 1988; Horsley, 2007). However, when questioned, the teacher candidates explained that they are not taught how to create their own materials in order to make a more exciting and meaningful context for the class (Horsley, 2010; Thingholm, 2014). This situation is problematic because teaching and learning materials are used extensively in schools – especially by newly qualified teachers (Grossman & Thompson, 2008; Lemmer et al., 2008; Poyas & Eilam 2012; Shaver, 2010). These materials are essential to the students’ learning process as well as the teacher’s practice (Ball & Feiman-Nemser, 1988; Hansen & Skovmand, 2011). It is important to conduct more research to establish whether teachers (particularly newly qualified teachers) simply follow the textbook from beginning to end. If teacher candidates are not taught how to design or redesign existing teaching and learning materials when they reach the classroom, they may simply “go by the book.” If so, teacher educators actually achieve the opposite of what they intended. Curriculum construction, the ability to design and redesign didactical teaching and learning materials, should be a goal for teacher education not a starting point for newly qualified teachers (Ball & Feiman-Nemser, 2005).

“Janice found planning and teaching all subjects all day long for her second grade class an overwhelming task. She relied heavily on textbooks and teachers’ guides

as a way of managing, although she said she felt guilty about doing so” (Ball & Feiman-Nemser, 1988, p. 415). Research showed sociocultural differences in how didactically designed teaching and learning materials were presented on campus and in internships (Ball & Feiman-Nemser, 1988; Horsley 2007, 2010; Nicol & Crespo 2006; Peacock & Miller, 2004; Thingholm, 2014) To a certain degree, the differences conflict, which is why teacher candidates might feel guilty for not following the advice of the teacher educators, but follow the advice of their internship teachers. In a certain way, it becomes a matter of whom to trust – the teacher educator or the teacher in school. Communication on campus and in internships cannot be identical, but when these two types of communication begin to conflict, it becomes even more difficult for teacher candidates to link theory and practice. Communication must be guiding not misleading. The results of this study also revealed a difference between what teacher candidates do during their internship and what they imagine they will do as newly qualified teachers regarding the use of teaching and learning materials. During their internship, they worked in groups and had ample time to plan lessons and design materials and activities for the class. In contrast, as newly qualified teachers, they imagined that they will be working primarily on their own without much time to plan lessons and design materials and activities for the class. Therefore, they predicted that they will follow the textbook a lot more because of time pressure and other demanding tasks – tasks for which they were not responsible in an internship (Thingholm, 2014). It is possible to question whether the teacher candidates were well prepared regarding the use of teaching and learning materials when leaving campus for the internship, and subsequently, when leaving an internship for the profession. The primary purpose of teacher education is to educate teachers to perform as professionals, professionals who among many other

things, are able to design and redesign teaching and learning materials. It is necessary to observe teacher candidates as teachers-to-be (Werler, 2008). Regarding the use of teaching and learning materials, it might even be necessary to observe teacher candidates as newly qualified teachers-to-be. We know from other research that newly qualified teachers benefit from using didactically designed teaching and learning materials when teaching. For this reason, they should be taught how to use them effectively during teacher education.

Through my study and my literature findings, I leave four recommendations:

- Didactically designed teaching and learning materials can be a relevant theme in the tripartite meeting between teacher educator, school teacher, and teacher candidates which is mandatory in some teacher training programs during the internship (Rasmussen & Rash-Christensen, 2015). During this meeting, it is possible to discuss the attitude towards and the use of didactically designed teaching and learning materials from the perspective of the teacher and the teacher educator as well as the teacher candidates. The conflicting perspectives can be analysed and related to the experience of the teacher candidate. These meetings often lack a specific content and the communication seems to be rather random; the teacher educator “interviewing” the candidates about their experience during the internship (Rasmussen & Rash-Christensen, p. 8).
- Teacher educators can adopt a more systematic approach to didactically designed teaching and learning materials. One possible approach is suggested by Peacock and Miller (2004): the teacher-learner-text triangle (TLT). Using this approach the teacher candidates acquire three competencies needed to use didactically designed teaching and learning materials:

“Analysing text, planning for text use and supporting students whilst using text” (Peacock & Miller, p. 220).

- More explicit objectives and methods concerning didactically designed teaching and learning materials are needed in teacher education. Based on their research Ball and Feiman-Nemser (2005) suggested four objectives and methods: “Justifying decisions in teaching, textbooks as sources of subject matter and pedagogical knowledge, implementing curriculum and learning to learn from curriculum materials side” (pp. 196-197).
- Didactically designed teaching and learning materials can be usefully presented and analysed in general didactic or other pedagogical subjects. It would strengthen the pedagogical approach and enable the interdisciplinarity. Teaching and learning materials are important didactical issues or elements in line with objectives, methods, students’ preconditions, and the role of the teacher. Furthermore authors of didactically designed teaching and learning materials can collaborate with teacher educators and share their academic and pedagogical ideas and reflections with teacher candidates. The perspective of the author of didactically designed teaching and learning materials seems to be lacking in teacher education.

In this article, I have argued that presenting didactically designed teaching and learning materials as content in teacher education might help teacher candidates to link theory and practice with individual subject areas. The materials hold this potential because of their close relation to practice and because of their double discourse: academic and pedagogical. It is well known that teaching and learning materials play a central role in schools, but as yet, we do not know much about the role they play or do not play in teacher education. However, what we do know is that there is great variation in how they are presented as content, superficially or thoroughly, and we also know there is a difference in how they are presented on campus and during the internship. On campus, they are presented from a comparative and critical-analytical perspective concerning how to understand learning materials; whereas, in the internship, they are presented from an inspiration and application oriented perspective concerning how to use learning materials. Teacher candidates attribute these differences mainly to personal attitudes and beliefs of the teacher educators as well as teachers in the internship. At present, the potential of didactically designed teaching and learning materials is not exploited due to conflicting communication on campus and in the internship and due to the fact that the materials, at least in Danish teacher education program, are not presented as content in pedagogical subject areas.

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