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Knowledge of teaching resources in the training of primary and lower secondary school teachers

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Abstract

This article builds on a study (Iversen, 2013) about the knowledge of teaching resources in the education of primary and lower secondary school teachers. The data comes from focus group interviews and video observations of students divided into two practice groups in a class of 17. The period of teaching covers two weeks. The students were located in *the Resource Centre*¹ the Resource Centre is a resource centre for teaching resources, play materials, communication material and technological resources for children, young people and adults. The object of the research is to examine how the Resource Centre influences primary and lower secondary school teacher trainees (henceforth called students) in their choice of teaching resources appropriate for pupils in the first to third class in primary school. Other significant factors are the students' background and experience from primary and lower secondary education, subject teachers, the practice group and the pupils in the school.

The analysis of the data can indicate that students who desire the professional development for teachers are bearers of a tradition which leads to the reproduction of a distinct culture of teaching and therefore certain teaching resources. Model teaching seems to have great significance for what the students choose from the

¹ Læringsloftet <http://tks2.no/loftet/>

teaching resources. The subject teachers at the College and the supervising teachers are important models for the students.

This study uses theory inspired by the French sociologist, Pierre Bourdieu. This theory is suited to create distance to the normal weekday I inhabit as a researcher, and which influences the reality of the social practice.

Key words: Resource Centre, Primary and lower secondary school students 1 – 7 year, The Theory of Practice, Teaching resources for the lower primary level in Norwegian primary schools.

Introduction

At the North-Trøndelag University College we are in the process of introducing the knowledge of teaching resources in all student teacher education. This includes GLU (Primary and lower secondary teacher education 1-7 and 5-10), PPU (Practical pedagogic education) and BLU (Kindergarten teacher education). The leadership of Student teacher education wishes to acquire a greater knowledge of how the Resource Centre can form a part of the education and this is the basis for this study. A class of students in 3rd semester in primary and lower secondary education had two weeks' theoretical and practical knowledge about varying teaching resources in the autumn of 2011. Students were to develop their own teaching resources to be used in Norwegian and English classes with pupils in the primary school's first to third class. The theory at the beginning of the period was to be used in planning and, afterwards, for reflecting on their use in practical pedagogic situations. The lessons during the first two and a half day were given by five teachers. The theory was about how to teach in Norwegian and English classes. In addition the staff at the Resource Centre gave the class a brief overview of which resources are available. The pedagogic teacher focused on adapted teaching and different learning styles (Dunn, 2000). This article gives an account of this study, and how the Resource Centre can play a role in implementing the state authorities' requirement of the use of a broad spectrum of teaching resources in the teaching of primary education. In this connection I will refer to the Education Act and the National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training (KP).

The Education Act is a law concerning primary and secondary education, which aims for education in schools and training establishments to "open doors to the world and give the pupils and apprentices insight and a foundation in history and culture" (§ 1.-1). Cooperation with the home is important. The Education Act contains provisions that schools should have access to learning materials (§ 9-3). The law has been changed so that in § 3-1 it stipulates that counties, as school owners in secondary

education, are responsible for supplying students with the necessary educational materials.

The requirements are stated in the National Curriculum for *Knowledge Promotion* (LK06)². Knowledge Promotion as school reform came into force in August 2006, and includes, from the autumn of 2007, the students of 1st – 10th grades in primary and first and second stage of secondary education. The reform led to a number of changes to the content, structure and organization of the first stage of primary school to the last year of upper secondary education. The overall objective of the reform is that all students in Norwegian schools should develop basic skills and knowledge so that they can participate actively in society. Schools should be inclusive, suit for all, and all students should have the same opportunities to develop their capabilities (Source: Regjeringen.no/Wikipedia).

In the general section of Knowledge Promotion (LK06) it states that active communicators need good tools, and that textbooks and other educational materials are essential for the quality of the teaching. Teaching aids must be designed and operated in accordance with the principles of the National Curriculum (LK06, s 12).

The Regulations for The National Curriculum for Primary Teacher Education § 2, state that students should have knowledge of a wide repertoire of ways of working, learning resources and learning contexts, and the relationship between objectives, content, working methods, assessment and individual students' abilities. The Ministry of Education and Research considers that a varied selection of teaching aids will continue to be important in the school's facilitation of training.

In 2010 the government adopted the introduction of the new Primary and Lower Secondary School Teacher Education with specialization for teaching 1st – 7th grades, and 5th – 10th (Ministry of Education and Research, 2010). The student will have knowledge of a wide repertoire of ways of working, learning resources and learning contexts and the relationship between objectives, content, working methods, assessment of individual pupils' abilities. In Norway, there is little added learning tool knowledge in students' curricula.

In White Paper 11 *About the role of the teacher* (2009), the importance of professional security is presented as an advantage for a more liberal approach to the subject. Professional security is also a basis for improvisation when necessary so that teaching can be varied by using different approaches and a wide repertoire of teaching aids. Such skills presuppose teaching about learning materials in education. In the professional education of teachers in Norway, there is very little focus on learning tools in students' curricula. This may help to explain why learning tool knowledge is not part of teachers' knowledge base.

² Kunnskapsløftet LK06.

In Norway, the *Centre for Educational Texts and Learning Processes* at Vestfold University College³ has courses related to knowledge of teaching aids. The Centre is a research and development institution for the analysis and production of learning resources in kindergartens, schools and higher education.

In the following I will give a brief overview of research reports of knowledge of teaching aids in the primary school after Knowledge Promotion was introduced.

Research on knowledge of teaching aids in the Knowledge Promotion 2006

The state authorities mention a wide spectrum of learning materials such as textbooks, digital learning resources, texts, sounds and images, or materials such as newspaper articles, films or works of fiction.

The term teaching aids is used in different ways. The Norwegian Directorate for Education and Training (the agency for kindergartens, primary and secondary schools under the Ministry of Education and Research), understand learning materials as textbooks, digital learning resources, texts, sounds and images, or materials such as newspaper articles, films or fiction. A general criterion is that teaching aids must be in line with the National Curriculum for Knowledge Promotion (LK06), and a tool to achieve competence goals and basic skills. To be able to make good choices based on these criteria requires competence from teachers in the selection and evaluation of learning materials.

The Ministry of Education has commissioned research reports dealing with the implementation of teaching aids and knowledge of teaching aids in basic education (Hodgson, 2010; Hodgson, Wenche & Tomlinson, 2012; Juuhl, Hontvedt & Skjelbred, 2010). The research reports show that schools have to varying degrees implemented LK06 intentions to adopt a wide range of learning materials.

The teachers seem to have a focus on subject knowledge and the use of fairly direct methods for the "handover" of this knowledge through oral presentation, repetition and so on.

The textbook remains important in all manners of organizing teaching. The black- or whiteboard is important in full class activities. The computer is used for all forms of organization. This may be use in presentations, for writing, or as a source for searching for information on the Internet. Books other than textbooks are rarely used. The use of non-fiction books occurs in less than five percent of the lessons in which there is full class teaching, group work or individual work. According to research reports (Hodgson, et al., 2012, p 69), this may be an indication that the Internet is replacing non-fiction books.

³ Høgskolen i Vestfold.

Since Norway has become a multicultural society, the intention of getting away from the common textbook, can be in contrast to the desires of the state which is that students should have common subject matter providing a general education. Skjelbred (Skjelbred, Solstad & Aamotsbakken, 2005, p. 9) states that the intention behind the reform is to get away from textbook driven teaching.

Research shows that teachers state that they do not have enough knowledge about the quality of teaching resources and their importance in teaching. Individual schools have rarely developed criteria for the selection of teaching aids. According to Skjelbred (2003), possible reasons for this may be that there is a lack of discussion about the quality of teaching resources in terms of professional goals and communication with students.

In light of governmental requirements for a wide range of approaches and teaching aids I will examine how elementary student teachers develop knowledge of teaching aids within a themed period of two weeks.

In my master's thesis (Iversen, 2013) I have written about different kind of knowledge using the concepts *phroneses*, *techne* and *episteme* (Aristotle, 1999a) and showed how these concepts may give us understanding of what is at stake in theoretical, practical and technical lives.

Phrones is everyday knowledge. It is a knowledge to consider what actions are good and for the good of man, combined with an ability to act right. This knowledge can not be learned by teaching, but by upbringing, good examples and experience in acting right: Aristotle (cited in Petersen, 2004, p 197).

Techne is a knowledge skill to manufacture, production and manufacturing. The special shape of this activity is that the goal of the activity is outside the activity itself. It is therefore the product of the activity evaluated. *Techne* provides insight into the general principles behind the activity, and an ability to reflect on the process. *Techne* has a skill in the performance, but also includes the ability to use knowledge and skills in a specific situation in practice. *Techne* can be learned and forgotten. It is a knowledge one can have without using it. Principles of production one can learn by teaching (cited in Petersen, 2004, p 196).

Episteme is knowledge form that can explain the general laws in practice.

A central theme of this study will be delineation of the research object and the importance of the researcher's role in constructing the research object and create a double breakthrough. A breakthrough with the research object and a breakthrough with the researcher's role. The informants appear as representatives of the collective phenomenon of student, to a greater degree than to reveal individual differences. The researcher has the opportunity to become more aware and responsive to the practice as it is practiced, while at the same time being a part of the social space which is

being studied, which sometimes comes to the fore, and sometimes is in the background.

In the next section I will explain the theoretical approach of this study, which is influenced by Bourdieu's sociological perspective.

Practice theory

Bourdieu's practice theory is a general theory concerning the science of practice, and everyday social action, and not a theory of professional practice in particular. Bourdieu (1997) seeks to point out that our actions are based on a practical sense more than on a rational act. Key concepts in practice theory (Bourdieu, Østerberg, et al., 1995) are *field*, *habitus* and *capital*.

Field consists of historical relationships or interactions between positions that are anchored in certain forms of power. In this study, the education system in Norway is a field with political management at the state level that has the most power. Other positions are the professional organization of kindergartens, basic education and higher education. Actors, or agents as Bourdieu calls them, are social individual who hold various positions in the field. Typically, we think of teachers and students, but parents, bureaucrats and politicians are also actors. The agents enter the field with their habitus, and a relation develops between the objective structures and the agents, and this dynamic can be compared to a game. The agents expect some form of result by the way they enter the game. In this study the agent is the student group that I have as informants in the theme period. The students take their education in order to gain formal approval as a teacher in primary or lower secondary school and expect to gain knowledge which makes them suitable to be teachers.

The actors in the field wield power both consciously and unconsciously. There are relationships between various political levels at the state, county and municipal levels. The dynamics between the structures and actors can maintain or change the balance of power. One characteristic of a field is the effect that an object undergoes by entering the field (Bourdieu, 1995, pp. 84ff). The object being studied is the student group, but the teachers and practice teachers are actors with key positions in the field.

This study is not analysed according to the field concept, although it could be interesting to find out the different actors' perception of the Resource Centre. A sociological analysis of habitus would be necessary in order to reveal the players game in the education field. In order to understand *the concept of habitus* it is important to see the relationship between the structures or social frameworks within which people act. Habitus is activated in meeting with a field . So what is habitus?

Habitus indicates a way of being, a bodily condition, where one is inclined toward certain things, and thereby not towards other things. We bring our habitus with us even though we are not aware of it, and the habitus may be activated under certain circumstances (Bourdieu, 1997). Habitus is the experiences we have had and have stored in our body, and then forgotten. These forgotten experiences from the past are with us in the present. The individual is not free to reflect over the choices that have been made, but neither is he or she totally subject to mechanical explanations as found in rationalist theories. On this background I construct the theoretical understanding of the decisions the students takes.

The study builds on Olesen (Gytz Olesen & Harrits, 2012) who has studied student demographics, regional movements, age, gender, social background, resources, lifestyle, cultural resources, professional identity and service motivation. These categories can form the basis for saying something about habitus and life's courses. The concept of habitus is linked to the course of the students' lives, and it is interesting to find out who the students are. Olesen (2012) studies the recruitment pattern and professional identity among students in Danish professional education and has studied the relationship between power and knowledge. The material resources and different lifestyles of the students are the subjects of investigation.

Olesen (2012) argues that professional bachelor programs are relatively closely related to practice, and practice periods are included in the program. Service adaptation and empathy are great with these students. The students agree that the program is a specialist education.

Professional education aims to provide sufficient manpower for the major areas of society and recruits students with specific characteristics and resources. One consequence of such a recruitment strategy is that the profession coincides with, and reproduces different social groups and the resources of these groups. This in turn affects the profession's position in relation to other citizens as well as to other professions.

Olesen (2012) claims that this leads to two types of closure. One form of closure is referred to as social closure, and is linked to reproduction and selection in terms of material resources. The second form of closure is symbolic closure, which is linked to reproduction and selection in relation to specific traits such as gender or lifestyle while at the same time associated with certain privileges and positions in the status hierarchy of society. The survey confirms that professional education contributes to the reproduction of the social heritage, as much as to the reproduction of professional hierarchy. Students who choose primary teacher education (the educational field) desire a professional training, where the practical knowledge according to Olesen (2012) may seem more important than the theoretical academic knowledge.

In my study, the students were requested to respond to a questionnaire which was developed with several of the questions that Olesen (2012) uses in his study. The

students could respond anonymously, but several chose to use their name. The answers are not followed up with interviews with the individuals, and the basis for speaking definitely about the students' capital and habitus is therefore limited. Trends in the data suggest that there are several similarities between my data and the Danish survey.

Bourdieu describes three forms of cultural capital. There is *embodied state* (physical condition) which is the embodied permanent resources in the head and body. Then there is an *objectified state* (objectified practice) in the form of cultural benefits such as pictures, books, instruments, etc. The third form of capital is *institutionalized state* or institutionalised condition which is a form associated with titles which belong to the formal education system. Capital appears in an embodied state, in the form of practices and in terms of the way we perceive positions within institutions. Within the education system, all three forms of capital will be present. The cultural capital that the students develop in terms of different skills is used by them to invest according to what is requested and valued in different areas of the education field. This is in line with the practice theory that shows the dynamics between fields, structure and the game the agents play to increase their cultural capital. The students bring with them different kinds of capital, and build on all three forms of capital during their time as a student.

Within the Bourdieu tradition (Prieur, Sestoft, Esmark, & Rosenlund, 2006, chapter 7), which has inspired me in this study, the theory is an integral part of the researcher's *modus operandi*, or a manner for working on this, which the scientific basis I am working from (Bourdieu). The theory must be present from the start, but has no sense without practical research. I will now explain the principles of the research design for the study, which leads towards the analysis of the data.

Research Design

In the study, I was searching for a practical logic that caused the students to invest in the game they are entering into. In order to construct knowledge concerning the field I was studying, I will explain the different tools that have significance bring about credible knowledge concerning the research object I am studying.

Given what has been said above, I have constructed the following research question:

In what way does the Resource Centre work in conjunction with other factors in the students' development of learning materials that they use with pupils in grades 1 – 4 in the primary school?

The research question indicates that the resources in the Centre affect how students developed teaching aids. This enquiry also suggests that factors other than the

Resource Centre can affect the choice of teaching aids, and the article will describe these factors.

Bourdieu (cited in Callewaert, 2006), believes that scientific descriptions and explanations of a social phenomenon requires overcoming the participants' preconceptions about their own work, and the researcher's particular scholastic approach, in order to construct the object for the study in scientific terms in a double movement. Such a double movement is an objectification and a subjectivisation that ultimately interact with each other back and forth. My research focus is on how students developed and reflected on the teaching aids they use in practice during the days of teaching practice with junior pupils in primary school. This will be the object of study, and the subject is myself in the role of the researcher.

The Researcher

Since practice is very complex, and impossible to capture in its diversity for the researcher, it is important that the researcher is aware of what the research focus is

Bourdieu (Bourdieu, Østerberg, Prieur, & Barth, 1995), points out that by making such a limitation, the researcher has acknowledged one pre-understanding of the research field. Something moves to the foreground and something to the background. The researcher cannot be the other, or be as the other, but strives to take his/her position in the social space for the viewpoint. This gives the researcher an opportunity to understand the social space from the perspective the agents perceive the world.

The researcher may come to believe that what drives and leads the practitioner is the researcher's theory, even though it is in a mini format and unconscious. The researcher must strive to create a break – to distance him/herself from an everyday (doxa) understanding of the phenomena observed, including using theory-led questions as well as the use of observation and interview categories. There are different opinions about researching in one's own culture simply because one unites with the studied field (doxa) that means lack of distance from the research. By using concepts from practice theory that break with the language I would normally use creates a distance from the known and provides a desired distance from the doxa as I am in the role of an employee from the university college.

The researcher must objectify the subject, which is the researcher, who also is objectified. The researcher must objectify the position in the global social space that is the goal of objectification. That means in my case that I had to analyze my own position as teacher and as researcher in the social space I entered together with the students. The researcher must strive to understand him/herself, and control him/herself in that field the researcher enters (Bourdieu, 2007b, p. 150). Bourdieu (Bourdieu, 2007b, p 123) emphasizes that the researcher is a part of a social space,

or a field, which is constructed by the scientific method. Since I occupied the role of teacher in charge of knowledge about teaching aids, this can mean that I have particular professional interests in confirming the importance of the Resource Centre.

The researcher position I decided to take was that of objective participation. I have a position in the field as a representative for education logic. This will affect the relationships with informants, and how I perceive foreground and background in the social space. I am well acquainted with education logic, and this can present problems in getting rid of my prior understanding and common conceptions (doxa) about education. This self-analysis is difficult, and will always have room for improvement. I have, however, endeavoured to reconstruct how the actions and utterances evolved, and provide the reader with the opportunity of assessing the credibility of the knowledge I construct. I will now begin to account for the informants in the study.

Informants

The students in the theme-period are the informants in this study. Students I have followed the same class for three semesters, and know each other well. All the students have completed upper secondary school. Some students have a general academic study background, while others have vocational backgrounds. The average age is about 22 years. They were born and raised in Trøndelag. I am using two practice groups as informants. In one group, there are two girls and one boy; in the second group there are two boys and three girls. The groups were chosen because they had different teaching aids and because I could visit these groups on the practice days. The informants can be recognized as a group, but I have anonymized the individuals by providing the names G1, G2, etc. (for girls) and B1, B2, etc. (for boys). The informants appear as representatives of the collective phenomenon of student, to a greater degree than to reveal individual differences. A more thorough analysis of the individual student habitus would have given a more nuanced picture of the dynamics between agent and field (Olsen, 1995).

The course of the students' lives is important for understanding the recruitment pattern for those seeking primary school teacher education. Olesen (Gytz Olesen & Harrits, 2012) argues that professional bachelor programs are relatively closely linked to practice, and practice periods are included in the program. Recruitment to these programs shows that a typical student has average scores on the grading scale. These students seem to have a good attitude of service and empathy, and they agree that education is a specialist training. I do not have data that can confirm or disprove these findings in my material, but I asked the students in the class if they would be willing to respond to a questionnaire that contained some of the same variables as Olesen. The answers I have received seem to correspond with the Danish situation. Further research in this area would be interesting in order to understand the assumptions students have when entering the program.

In the next chapter I will explain the collection methods: video recordings and focus group interviews.

Video observation

The video recordings were made with a handheld camera with a built-in microphone. The first recording is from the presentation of the students' teaching aids on Friday in the first week of the themed period. The second is from the exhibition which students had on Friday in week two. Both recordings were made before the focus group interview.

In the study, I used video-recording in order to study the informants in retrospect. I have drawn inspiration from Holgersen (Holgersen, Fink-Jensen, Nielsen, & Rønholt, 2003) to use video in the production of data.

The students are observed in practical actions in the classroom and the Resource Centre. They interacted with each other and used the teaching aids as tools to explain different forms of knowledge.

The student as a research object is seen as integral to physical locations, artefacts and tools, as well as in social relationships with other agents with different roles and status. Using interpretation processes I can use the video footage to analyze and reflect on what is observed in the primary world. I try to recognize, understand and explain the opinions that are expressed by the informant.

Focus groups

The focus group interview (Brinkkjær & Høyen, 2011) is a later reconstruction of practice that students express, and which is also influenced by the questions they receive from the researcher. I wanted to use focus group interviews in order to give students the opportunity to have a certain freedom in responding to the theme questions I had prepared. The focus group interview was conducted at the end of the themed period and as such it was reconstruction of the educational reality.

The focus group interview was conducted in a room with a whiteboard and an oval table. There was plenty of room for all the students on one side of the table. The interview guide, the focus group interviews and a transcription of interviews are influenced by my researcher role. In the focus group interview, I asked students to reflect on the themed period.

The physical space for data collection

I conducted the study at a university college campus in a classroom and in the Resource Centre. The classroom has a flat floor, a table at the front room, and five rows of tables at the back of the room. The Resource Centre consists of shelves with printed texts, pictures and physical artefacts.

In professional education, the students have less influence than the teachers, but there may be varying degrees of status between the different students, and between the students and the pupils in elementary school. Interest is focused on examining how meaning and significance are designed and created in specific relational interactions and specific contexts. It is important to note that there is a no necessary connection between the agents in the physical geographical space and the social space (Bryderup, 2003). This means that the students at the university college in the study may have things in common with other students taking a professional education elsewhere in Norway and in other countries. The article will continue by explaining the data.

Transcription

I have transcribed the complete focus group interview. The students speak in their own dialect, but I have used standardized Norwegian in the transcription. In order to express the oral expressions, I have largely retained the speech as it transpired.

The principles behind the transcription are inspired by Callewaert (2007) and Brinkkjær (Bryderup, 2003), and I will provide a brief account of what I have laid most emphasis on, and the value of transcription.

To transcribe as much as possible quite literally implies some translation and interpretation of what has been said.

By working with the focus interview I have endeavoured to both understand and explain what the informants meant with the statements they have made. There is an interaction between allowing the informant's voices to come forward and constructing knowledge from the statements the informants have made in the light of the position they occupy in the field.

Interpretation

Practice must be perceived and made meaningful within the context in which it unfolds. Interview and observation are important for constructing knowledge, but the researcher must be alert to both the agent's intention, and researcher's spontaneous interpretations since the researcher is also a part of the same world as the agent. By looking at the agents as objects, the researcher can achieve distance from the agents and say something more or different than the practice field itself. When the researcher needs to analyze the interview, there is some significance in the fact that

the researcher enjoys close proximity to the context the informants are referring to as the practical reality. The article explains the context in which the study is conducted, and who is the informant and who the researcher. Furthermore, I provide the reader with an insight into what has been observed and what the informants have said in the focus group interview. The analysis makes use of theoretical tools for constructing knowledge beyond the informants' understanding of practice, and the researcher's inclination to interpret the social practice as it is presented. This method of analyzing the social practices can be a professional contribution to the debate on the importance of teaching aids in educational contexts. The article will continue by explaining the data.

Data

The data has been collected during the themed period of two weeks. Collection of data has been through focus group interviews and by objective participation. Objective participation will according to Bourdieu (1995, p.57), show that the researcher overturns the natural relationship between the observer and the world researcher studying. The exotic is made into something familiar, and the familiar into something exotic. In meeting the informants it is not possible to use the data as a pattern for the analysis. The informants will at some point in the analysis be made "dumb" as an object and as a researcher, I will use the theoretical tools to construct knowledge about the data that I have. The intention is to achieve a comprehensive sociological objectification both of the object and the relationship the subject stands in with regard to its object. This means that I have to use theoretical tools to analyze my own preconceptions and the position I have in the field of research and endeavour to step outside the field and analyze both the informants and the researcher role.

The analysis is based on the transcription of the video observations and the focus group interview. First, I will explain the video footage made in the classroom. Then from the presentation that the students made on the penultimate day of the themed period.

Video observation

The students are introducing the teaching aids in the classroom

The video material is based on the two groups in the study. The first recording is from the presentation of the teaching aids. Present in the class were the other students, teachers of English and Norwegian, and two from the Resource Centre. The second is from the exhibition for invited students and teacher from other classes at HiNT.

I wanted to make a video recording of the group presentation with the opportunity for close-up shots of the students. During the video filming I was sitting at around two metres from the groups to get a good sound recording. Each group presentation from the classroom was approximately 30 minutes.

The video recordings were made with a handheld camera with a built-in microphone. The students were observed in practical actions in the classroom and the Resource Centre. The student as a research object is seen as integral to physical locations, artefacts and tools, as well as in social relationships with other agents with different roles and status. Both the recordings have been made before the focus group interview. The groups created teaching materials for use in English, but were clear that the teaching aids could be used in other subjects, such as Norwegian which they also had in this practice. The two groups were called "David and Lucy", and "Laban". I will begin with the David and Lucy group.

The David and Lucy-group

G1 holds up two figures who she says are called David and Lucy, and stresses that they should imagine a boy and a girl so that the pupils will be able to identify with them. Then she shows all the little items that the group has made in order to dress David and Lucy. G1 says that the figures can be made up as a girl or boy, but that pupils who want to "kid around a bit" can combine clothes and accessories so that there is a mixture of girl and boy. G1 now comes over and says that the pupils are to come forward to try out the teaching aids. Eventually, the pupils are well under way and G1 goes on to tell the class what possibilities these teaching aids have. One of the teachers asks the students how they will use the figures with the students. G1 answers that they must adhere to the curriculum for the 1st and 2nd class, but otherwise they are free to choose what to do and how to do it. G1 also refers to didactic thinking and talks about the relational model. She points out that they have a class with large range of differences, and that they must make sure that there is not too much that is new at one time.

The Laban group

The students have created a rug from hessian on which they have drawn shapes. It is similar to the game Twister. The group has made four dolls in the colours yellow, orange, red and green. Yellow is Visual and is given eyes. Orange is Auditory and gets some nice headphones. Green is Kinaesthetic and gets a backpack to convey that it likes to go for walks. Red is Tactile and receives some little hands. The group asks for volunteer fellow students who can come up to try the Laban game. Two boys and a girl volunteer. When the game is demonstrated the group stops. Some of the students comment on the teaching aids, and provide the group with compliments on a good learning tool that was fun to engage with. The English teacher tells the group

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that she thinks they have done the assignment in a good manner, and that the teaching material is suitability for use in many contexts, both in English and other subjects. They emphasize the importance of learning to use the teaching materials in other subjects. These teaching aids are visual, without printed text. The group has made teaching aids which consist of images and figures that they have made themselves. The group was concerned that there are students in the class who do not speak Norwegian. It is important to use teaching aids that do not require specific language skills. The group emphasizes that they have the curriculum in English which must be followed in the instruction. Both groups emphasize that they have taken into account what the pupils are used to and what the class teacher does.

Exhibition of teaching aids at the Resource Centre after the practice days

The Resource Centre is a flat rectangular room with shelves and tables. Approximately 60 people came to see the exhibits. Each group had its own area with a table that they arranged as a display for the teaching aids. They had written a text which explained the purpose of the teaching aid, and about some of their experiences.

All the groups had their own limited area for the presentation of their teaching aids. The director of studies organized a visit by the students from other classes in groups that who took some time with each exhibitor. The students were eager and engaged when they shared experiences they have had with the pupils in the school. There was little planned for other students to try out the teaching materials, but I can see from the video footage that situations arise where the group invited others to try out the teaching aids. There are the same types of questions about how they have made teaching aids and how they got their ideas. The greatest difference from the first week was that now the students could share about experience with the teaching aids from primary school practice they have had.

G1 talks about how they observed the pupils, and were able to support each individual pupil in the way they learned things. One student asked if there was difference in how boys and girls enjoyed David and Lucy. Both B2 and G1 replied that the boys were more eager to dress the characters in creative ways. The students talked about how a girl developed a relationship with the figure she had used, and would not give it up to other pupils. After having told about and demonstrated the teaching aid, G1 invited the students who were at the station to try it for themselves. Under guidance and tips the students got to try for themselves, and there were laughter, comments and questions. The students were eager to show and explain the teaching aids as a finished product, and the principles behind the choice of materials as well as the use of the teaching aids in the junior primary school. They emphasize that it is important for the teaching aids to be robust and that they are in a shape and colour that is tempting to look at. The students said they had found ideas from

teachers, practice teacher or one another in the practice group. Beyond this, they draw inspiration from the Resource Centre. The students responded that the teaching aids are intended for pupils who they already know but they have thought that teaching aids could be developed further for other pupil groups and subject areas. I will now tell about the focus group interview.

Focus Group Interview

The reflections the students make of their experiences related to the whole topic period and the materials from the Resource Centre are included in this reflection. In advance I had made a question guide with five thematic questions which I could use to gain the progress and coherence of the focus group interview. The topics were linked to the students' experiences and reflection during the themed period, the materials in the Resource Centre, the relationship between theory and practice, practice experiences with the pupils at junior primary level in the two practice days and the students' understanding of the relationship between teaching materials and knowledge development.

In the beginning the students got to watch video clips from the presentations the students had made in the first week of themed period. They were given the opportunity to make comments and express their views both during and after the video viewing.

The focus group interview was conducted on Friday in week two of the thematic period and lasted for 90 minutes.

The last ten minutes of the focused interview I also recorded with a video camera to get a picture of the students so that I could remember the voices and recall the individual informant. Students were given topic questions at the start of the focus group interview. During the focus interview I asked questions, commented, illustrated on the blackboard, and gave feedback on what the students said using nods, eyes and my voice. Finally, I asked that all the students take a minute to reflect on the conversation we had had and come with a brief summary of the key items they wished to repeat, or something that had not been said before. I videotaped this part.

I have emphasized drawing all the students into the conversation. I have no discussions with the students and have very little of their own views linked to the theme, but confirm in an appreciative way the statements they make. There are no discussions between the students.

I will now describe and analyze various factors that have significance for the students' knowledge development.

Analysis

One goal for the themed period was that students would learn general principles behind the development of teaching aids and the ability to reflect on the process. In the focus group interview the interviewees indicate that they have developed knowledge for making choices based on the pupils they are going to encounter in the practice days. The students use didactic models to reflect on the choices they have to make when developing teaching aids. During the themed period, they gain insight into what they can do and what they need to develop further. They reflect on the quality of the teaching aids and their importance in the teaching and state that this gives them a greater professional confidence as a teacher.

The production of teaching materials has been very important for my identity as a teacher, for helping to raise awareness and the importance of working in groups when we have produced, for it has become much more nuanced that we have made now that we have had others to support us, and several people with different skills, than if we all were to have prepared a separate teaching aid (B1).

I link the analysis to five themes. These are the materials of the Resource Centre, the group which the students are working with, the pupils' right to adapted education, teachers and practice teachers as models for the students and how these students understand the relationship between theory and practice.

The materials in the Resource Centre

One stated aim of the study was to investigate how the students used the resources in the Resource Centre. On a general basis, the students indicated that the Resource Centre has been a good introduction to the teaching profession in school. They have discovered the resource that teaching aids are for special needs education. *"What I experience is that there has been an awareness of having adapted teaching aids so that they suit the different pupils and their learning methods much better"* (B2). The Resource Centre offers displayed material, online resources and professional expertise. In order for them to use different teaching aids successfully they need inspiration and ideas from teachers and/or the Resource Centre.

When we become so aware of the Resource Centre, see such an incredible number of opportunities, many more opportunities than if we find something someone else has made, plus – it is easier to use the areas and see the opportunity in it "(G3).

I have an idea if I want to use concretising material, but do not have the time and energy to make it. If we had known it was in the Resource Centre then we could have used it (G2).

We very wanted to tear ourselves away from the books ... use concretes ... and we certainly had something with the practice schools and we used that, but there is so much more to choose from here [Resource Centre] ... and then we could set some more on it that was only when we came into practice and started planning (B1).

The dynamics between the field of education, practice and the Resource Centre is reflected in the way the students wonder why the Resource Centre does not have a more visible place on the university college's website, and why they have not been informed more about the Resource Centre earlier in their education. (It should be noted that resources in this context are not linked to the habitus concept).

I would like there to be better advertising around the Resource Centre, and that others here at the school could know how important, or how much they can find here, and how important it can be in practice, and a very good aid, and give it a little more attention on the HiNT websites (G1).

Group work

The students reflect on primary experiences, and the benefits they have gained from working collectively in the practice groups to develop teaching aids and to try this out with pupils in school. They reflect on the planning, implementation and evaluation of educational activities. One student states that he has gained greater awareness of what the role of the teacher is. *"The group bit and discussions about various teaching aids have been very helpful"* (B1). The group becomes a learning environment and a place where the students gather, and that they also have as a support when they present the teaching aids. The statement from this student confirms the group work in one's own group, but also cooperation between the groups. The group work was important for getting ideas, planning and reflection.

I would say that sitting in the practice group and working in teams and across the groups - to get to know each other that way, seeing each other's strengths in a way. It has been very good (G2).

The interaction with the other students in parallel group work where they get the opportunity to try the teaching aid in a real educational context becomes important in order to see connections between the teaching aids the students have developed and worked for in the school.

From what I observe I can see that the students expressed that they have with them a habitus linked to teaching and teaching aids, but this habitus is challenged in

meetings with the group. The reflections provide the informants with an opportunity to ask questions about experiences from the past that they bring with them into the present.

I think that in general I've grown a lot as a teacher because of the interactions in the group and that we will use the teaching aids in the practical field (B2).

Pupils' rights to adapted education

The students often use the term adapted training. The training should be arranged so that the pupil reaches the competence goals as well as possible based on the individual's abilities and aptitudes. The students should use the knowledge and skills in a specific situation such as with pupils in first to third class in primary school. They reflect on how they should relate to the pupils if a choice of teaching materials has not worked, and how they will solve such a problem. The pupils are a measure for whether the teaching aids the students have created work in school. Adapted learning often appears in what the students say. Students mention pupils with minority languages and pupils with a need for special adaptation.

What I experience is that there has been a confirmation of having had adapted teaching aids so that they suit the different pupils and their learning methods much better" (B2). There is no one task for the entire class to do, but there are different things that might make it easier for the individual pupil to learn (B2).

The students draw a parallel with the pupils in the school that they think will learn more if they are having fun while doing an activity. The pupils learn without realizing that they are learning, the students say. The students are concerned with teaching the pupils so that they will learn, and that they will enjoy the lessons. When they succeed in getting a good interaction with pupils, and feel that they are contributing to helping the pupils thrive and learn what they have to, the students are proud and happy with their own knowledge.

I think that when one uses teaching aids that invite pupils to play, then we meet the children on their terms. We are down at their level, and then I think they can learn a lot from it, and then I feel somehow that when we meet them there, so you become better acquainted with the pupils (G3).

The themed period appears to have contributed to a greater understanding of how different teaching aids work in different contexts and with different purposes. By using other teaching aids than the book, such as hand-puppets, there are many pupils who find it easier to let the doll speak than that they get all the attention when they say something. The students highlight the importance of being able to create their own teaching aids, not just use teaching materials that already exist.

We are down to their level, and then I feel somehow that when we meet them there, so you become better acquainted with the pupils. Many pupils find it easier to communicate through a hand puppet than to talk and make eye contact with the teacher (B2).

I think that the two weeks we have had now to make a teaching aid at school, during school hours, has served as a very good introduction and will be a benefit when we become teachers (G1).

Influence from teachers and practice teachers

In the focus group interview, the students spoke about the importance teachers in their course have on the students' understanding and selection of teaching aids. They cited the introductory lecture which the pedagogy teacher and the other teachers had.

B2 It was very good having the two start up days with lectures. I would say that there was a much better quality in teaching aids than if we had started making teaching aids as early as the Monday. Think about what you have learned previously, and so ---- In any case, we [in the group] said that the first lecture from the pedagogy teacher was very much a repetition of what we were doing last year. It was good to be made aware of that.

Another example which the students mention was inspiration from the teachers in mathematics and English.

Math teachers have some good programs – the desert problem, etc. These are the things that one could have had here in a folder [in the Resource Centre] too. That would have been helpful to us last year (G1).

I got a different view of play from the English teacher. We can use material that concretises things - songs and rules, etc. (B1).

From the teaching practice periods the students referred to the significance the practice teacher had for the teaching aids they choose. The student worked to prepare a practice activity, and when they came into school they got wider array of teaching aids than they had encountered in theoretical education at the university college. *"It was only when we were presented with the various issues by a practice teacher that they had in the school (B2).*

Development of teaching aids linked to theory and practice

The students indicated that the themed period had given them the opportunity to see the relationship between the teaching they receive in the university college and

practice in school. Moreover, they said that they understood the theory better when they had the opportunity to work on the development of teaching aids parallel to trying them out in the practice days. Students referred to the interaction between the teaching, development of teaching aids and practice which were relevant at the reflection level.

The method of reflecting has been at a much higher level than if we had just sat and talked about it, or just been out in practice, but we've had both at once (G3).

Our actions are based in a practical way of thinking, rather than in a rational action. The students linked educational activities to a theoretical understanding of practical actions in the school, and how they can act in specific situations. In this way the students had a better understanding of theoretical concepts and relationships between theoretical teaching and practice in the school. *"We started with the theory bit with several teachers, but it was only when I started producing myself that I really felt that I learned what we had gone through"* (B1).

The students referred to experiences from practice periods and from education in college in order to determine which teaching materials were to be used. In the education in the university college it is most common to use books as teaching aids, but they referred occasionally to other teaching aids. The teaching aids that the students developed contained a lot of pictures and specific objects. Some groups used CDs. The students did not use digital resources. Several supplemented these teaching aids with written texts.

We do have new ideas and such, but as 1st year students we do not have the capacity. There is so much else to think about ... could get here [Resource Centre] and so use it (G3).

When the students presented the teaching aids for fellow students before the practice placement, they were eager to say why they had developed teaching aids. After the practice period, the students could refer to the experiences they had had and confirm that the teaching aids had worked according to the hypothesis they had beforehand. They stressed that the pupils learn in so many different ways, and because the students intended to know the class and each student, the teaching aids had to be varied. *"What I experience is that there has been a confirmation, you could say, of having adapted teaching aids so that they suit the different pupils and their learning methods much better"* (B2).

The students are to some extent concerned that the theory (understood as the lectures) that they had received at the start of the themed period, was helpful to review what they had learned previously and that they could draw on when they developed their own teaching materials. They stated that it would be a different process if they had started with making teaching aids and received the theory

afterwards. Students had to think about their own professional perspective in dealing with the practice.

It was very good having the two start up days with lectures. I would say that there was a much better quality in teaching aids than if we had started making teaching aids as early as the Monday. Think about what you have learned previously, and so we talked about the fact that the first lecture from the pedagogy teacher was very much a repetition of what we were doing last year. It was good to be made aware of that ((B2).

In the focus group interview the practice concept occurred far more times than the theoretical concept. The students describe the educational activities which occurred in the education as theoretical, and what happens in the practical reality, as practice. From the practice periods they referred to learning about how to act as a teacher in the practical reality with the pupils. *"It is to by having tried it out in practice while you are immersed in the process of developing teaching materials. We had some "aha" experiences on the first day "(G1).*

If the general theory works in practice, it can too be an indication for the students that the theory is good or important and useful for practice. The students said that the theory at the start was useful to review what they had learned previously and that they could draw on it when they developed their own teaching aids. I interpret the students' understanding of the relationship between theory and practice as a form of clarification of the primary experience of the social world as natural and not necessarily self-reflective.

Don't know quite how I should explain it. I feel that when we started we had received the theory first - right? We had gotten the learning, and so we started with teaching aids, and so we got hands-on learning while we were doing it. We see this clearly when we come out on practice placement that they get to try your product and you see whether what you have made is working or not working (B1).

The students expressed that they largely saw the relationship between theory and practice when they were working with a specific teaching situation and connecting the teaching aid to this activity. The students said they had discovered links between theory and practice in a way that they had not done before in primary teacher education.

We see this clearly when we come out on practice placement that they [the pupils] get to try your product and you see whether what you have made is working or not working. There has been an awareness of having adapted teaching materials to that they suit the different pupils and their learning method much better (B1).

The students were given a certain freedom to influence the content of the lessons, but they acknowledged that they were controlled by the structures. They referred to the practice teacher and teachers in their course, and how the teaching aids will be customized to the curriculum in the subject and how far the pupils have come. Students saw many similarities from when they themselves were pupils, but now they were in the position of teacher. They talked about a didactic relational model, learning, learning outcomes, adapted learning, and ways of working.

We use technical terms to a greater extent in practice, not just as we read about it. Now the pupil is better cognitively, it is more natural to talk like that. It is important that we use such terminology and models and such like (G1).

When the students emphasized the importance of getting theoretical training first and then developing their own teaching materials, they connect to a logic that theory should be given a normative function in relation to practice. The students expressed an understanding that good theory can be used to understand and improve the conditions in practice.

The practitioner expects the theory should work in practice. The practice field is characterized by its own logic and uniqueness that cannot be drawn into a theory. Knowledge about the relationship between theory and practice understood in such a way can be interpreted as practical knowledge without the students reflecting about which relationship or possibilities are found in the relationship between theory and practice.

The theory of practice must be a theory about the break with practice as the theory implies, and not a practical tool in itself. One theory about the practical sense involves overcoming a classic contradiction between theory and practice, between distance and participation (Bourdieu, 2007a)

Practical knowledge can be developed by gaining knowledge about rules and principles, but also by experience and training. Understanding in this context is to reflect on different forms of knowledge, and how our understanding of the theoretical and the practical sides of life has different logics that do not easily fit together. When the students refer to the experiences from the Resource Centre and practice experiences from school, I interpret their statements as though they derive theory from practice. In this article I do not explain much about the conception 'knowledge'. In my masterthesis I use Aritstotle interpretation of different kind of knowledge which are phrones, techne and episteme, and show how his interpretation has influenced our way of understanding this concept and our understanding of the relation between theory and practice. Shortly I understand knowledge as the students get as a combination between phrones and techne, and less of episteme. In other words the

students who choose primary teacher education (the educational field) desire a professional training, where the practical knowledge according to Olesen (2012) may

seem more important than the theoretical academic knowledge. The study confirmed to some extent the findings that Olesen found in Danish students, but it also shows that the students are not bound in this opinion. Tools that can help students to analyze the educational practical reality are necessary in order to challenge their habitus. Professional training affects the students' cultural capital. The embodied state in the form of concrete enduring resources in body and mind. The objectivised state in the form of the knowledge they develop around the didactics of teaching aids, and the institutionalized state associated with formal approval as a teacher after graduation. Battles in the field will affect the various agents, in this case the students. Agents with large social capital and key positions will have greater influence than agents with less capital.

Conclusions

In this article I have explained how the Resource Centre (a centre for print and digital resources), interacting with other factors affects the students' development and selection of teaching materials which they used with pupils in the 1st - 4th classes in primary school. The students referred to the Resource Centre, the practice group, meeting with pupils in the school, the teaching during the themed period, and teachers in their training course and in schools as models for the selection of teaching aids. The Resource Centre's materials had proven to be significant for inspiration and motivation to develop their own teaching aids that the students used in their teaching program in schools.

The students work with the development of teaching aids was oriented towards concrete actions, which coincide with practicality, and was activated in the game that the agents were invited into, and in which they invested their habitus and capital. Some knowledge (phroneses) can only be acquired by trading in the practical reality, and part of that knowledge is shaped as physical experiences, and becomes effective in situations where this knowledge can be applied. The students had a form of intuition for what teaching materials that would be suitable for the learners they had become acquainted with. Students were oriented towards the goal of creating teaching materials that was well suited to the purpose they were intended for. The reasons the agents provided will therefore be a form of post-rationalization. First, the students have a primary experience in the social space from the Resource Centre and from practice in school, which they then reflected on afterwards. From the focus group interview, I have taken an example of awareness of practical sense when the students were reflecting on the experiences they have had.

I think it's very good with the joint evaluation because it is so easy to become parochial if one is alone. For indeed there are things - G3 gets hung up over other things than I do, because when you have different backgrounds and different things that we are good at and focus on, and it is very good ... when

we three people, and with you (the researcher) and ... the practice teacher who has the experience, so together evaluate something (G1).

Knowledge (phrones, techne and episteme) during education will continue as active or tacit knowledge, and be activated under certain conditions later in the practical reality in school. Students have a practical sense of which teaching aids can be used in schools, and which teaching aids are suitable and captivate the children of primary school age. The teachers in the training course and in practice appear to be models, and have great significance for how knowledge of teaching aids is included in educational activities. The educational training field indicates and recognize certain educational materials before others.

Students who apply to teacher education seem to have a habitus that reproduces the education field (Gytz Olesen & Harrits, 2012). This is still not talk about a fixed position. The knowledge that students develop can be used for critical reflection and thinking. Students are given the tools to examine the conditions that educational activity, understood as constant socialization and systematic periodic influence in the education field, offer. The knowledge students and teachers develop together can enable us to think of a theory about different social practices, which are interrelated with other factors in the reality. Great demands are placed on professional educational training courses and primary schools if a thorough self-assessment of the intention of being an inclusive school with adapted training. Teaching aid expertise belongs within this self-assessment.

The reason for the study is a desire from the student administration to make theory and empirical evidence about how the Resource Centre can be used to develop a didactic of teaching aids among teacher trainee students in both primary and secondary school teacher training and in pre-school teacher education. The research design and analysis are influenced by my habitus, capital and position in primary teacher education. I have used sociologically inspired theory to explain and understand the social practice that was contained in the themed period about teaching aid knowledge. I have also used philosophy to deal with the concepts of knowledge, even if this is not an explicit part in this article.

Further studies

Further study of the data is necessary to investigate if the artefacts in the Alternative analyses of the data can be to study the impact that artefacts in the Resource Centre that can be used for cognitive development. Theoretical approaches that can be used include those of Vygotsky, Piaget or Bandura (Daniels, 2001; Vygotsky, Cole, John-Steiner, Scribner, & Souberman, 1978). In an extension of such an approach it could also be feasible to study how the Resource Centre materials are linked to primary school resources. The theoretical approach can build on different activity systems (Engeström & Tuomi-Gröhn, 2007).

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Biographical Note

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Scientific Positions.

During his career he has been teaching drama, theater, film and mediapedagogic for about 25 years as Assistant professor at Nord Trøndelag University College, Nesna University College and The Arctic University of Tromsø. For some years now he has been a member of the staff at the Resource Centre and done a mastertheses about teaching materials and different concepts of knowledge. From Other Positions in Primary School in Norway he has been an advisor at Chief Municipal Education Office, part-time, Teacher in all classes in primary school, and headmaster in primary school, Teacher in Upper Secondary School.

Jan Viggo Iversen has been doing a research how to use drama and role play for children and youths in their effort to build identity in a life in eksile. Further more he has been interested in computer games vs real role play in drama. Another study was a cooperation with youth and elderly people (65 – 80 years) where they created a text and played theater about how to be a teenage and a pensioner. His interest in drama – theater and philosophy made him do a research with teenage 15 -16 year old where the youth discussed different ethical and lifeproblem and made a theater performance.

Iversen has also worked as a leader of fine art in a local government. Leader of a project working to improve the way local government use their resources for a better childhood.