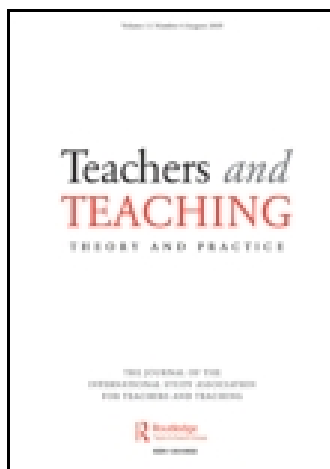


This article was downloaded by: [Beijing Normal University]

On: 18 November 2014, At: 17:25

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Teachers and Teaching: theory and practice

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/ctat20>

### Teachers' collaborative learning - development of teaching in group discussions

Hanna Kuusisaari <sup>a</sup>

<sup>a</sup> Department of Teacher Education , University of Helsinki , Helsinki , Finland

Published online: 20 Nov 2012.

To cite this article: Hanna Kuusisaari (2013) Teachers' collaborative learning - development of teaching in group discussions, *Teachers and Teaching: theory and practice*, 19:1, 50-62, DOI: [10.1080/13540602.2013.744198](http://dx.doi.org/10.1080/13540602.2013.744198)

To link to this article: <http://dx.doi.org/10.1080/13540602.2013.744198>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

## Teachers' collaborative learning – development of teaching in group discussions

Hanna Kuusisaari\*

*Department of Teacher Education, University of Helsinki, Helsinki, Finland*

*(Received 8 April 2011; final version received 24 October 2011)*

Teacher learning and the development of in-service education for teachers are both an active area of research and a broad challenge. In working as teachers, theory and practice are often seen as divided, or problems in teaching and the requirements of development are solved on the basis of experience. This study focuses on collaborative teacher learning as part of an in-service education course that supports teachers in connecting learning theories with practical knowledge and that aims to create new knowledge and practices for teaching. The starting points for the study are the changes of the curriculum and theories of learning. The aim is to analyse developing of teaching in teachers' collaborative group discussions and how the theoretical knowledge of learning theories is connected with developing teaching practices. The research method of the study was data driven, systematic and qualitative analysis of the content of the discussion. The research data consist of video recorded group discussions of two teacher teams from the in-service education course meeting. The analysis focused on *developing talk* and further, on finding interconnections between *the developing talk* and the theories of learning. The analysis shows three different ways how the learning theories emerged in method developing talk. The findings indicate that theoretical knowledge can be used or left unused and imply that creating and changing teaching practices is challenging. However, the findings show that theoretical, research-based knowledge on learning theories can be applied to developing teaching practices in the teachers' collaborative knowledge creation process. Long-term in-service education based on collaborative knowledge creation and supporting the interconnection of theoretical knowledge of learning and experience knowledge of teaching is a promising way to arrange and develop in-service education.

**Keywords:** in-service teacher education; collaboration; learning theories; teaching practice

### Introduction

It is widely known that Finnish students' results in the OECD Programme for International Student Assessment (PISA) 2000, 2003, 2006 and 2009 surveys reflected the success of the educational system. Among many cultural, societal and structural factors, research-based teacher training of all the teachers having a Master of Education Degree can be seen to be an important contributor to that success.

---

\*Email: [hanna.kuusisaari@helsinki.fi](mailto:hanna.kuusisaari@helsinki.fi)

The names of the teachers in displayed citations are changed.

Nonetheless, there exists the possibility of further deepening the skills and knowledge of graduated teachers through in-service education, and it has not been systematically addressed or developed. Further development of in-service education of teachers is a continuing challenge for the Finnish professional educational system, as well as globally.

In Finland, the national curriculum for the primary- and elementary-school level published in 2004 was based on the ideas of the constructivist and sociocultural theories of learning, and was to be implemented in comprehensive schools by 2006 at the latest. The curriculum commits all comprehensive and upper secondary schools' teachers to develop their teaching towards the constructivist and sociocultural theories of learning. In addition to the demands of the new curriculum, home life and society have also changed. The subjects of this research are subject teachers of Home Economics. Thus, the changes affecting home and social life are also a challenge for Home Economics as a school subject as well as for the methods of teaching it. The main goal of the Home Economics subject is to develop pupils' everyday life skills and competencies, both on a theoretical and practical level. Home Economics is a compulsory subject in 7th grade, and thereafter is an optional subject, which is one of the most popular optional subjects in 8th and 9th grades.

In order to help teachers to develop their teaching according to the demands of the new curriculum, a long-term in-service education course was organized for home economics teachers. The course was implemented during the years 2005–2006, and was intended to help home economics teachers to learn and create new knowledge and work practices for their own teaching.

The topic of learning possessed by teachers is an active area for research in education (Fishman & Davis, 2006, p. 535), and the issue of how they learn is crucial. A recent study of teacher learning research concluded that there seems to be an agreement that the teacher learning process is social and distributed (Fishman & Davis, 2006, p. 539). Other researchers have reached a similar conclusion: teachers need to be brought together in order to learn from each other (Fishman & Davis, 2006; Grossman, Wineburg, & Woolworth, 2001; Meirink, Meijer, & Verloop, 2007; Putnam & Borco, 2000). Such findings indicate that social support plays a critical role for teachers. It helps to develop distributed teacher expertise, giving teachers access to a far wider range of ideas (Fishman & Davis, 2006, p. 542). Researches of how teachers learn have taken various perspectives: for example, cognitive, socio-cognitive, sociocultural, situated and system-oriented. In addition, the concept of 'communities of learners' is prominent (Fishman & Davis, 2006); 'situated cognition' also represents ideas about the nature of cognition and learning (Putnam & Borco, 2000). For the development of teachers' in-service education, more research on how teachers collaboratively learn is needed, in particular concerning their use of theoretical knowledge and their experience to create new teaching practice. As in the work of teachers, theory and practice are often seen as divided, or problems in teaching or requirements of development are solved on the basis of experience, not through use of research-based theoretical knowledge on learning (Day, 1999, p. 150; Tuomi-Gröhn, 2003, p. 205). The aim of the present study is to analyse how teacher groups collaboratively create knowledge in their teaching during group discussions.

This present study is a part of the larger, ongoing research project on the whole course of the in-service education. A principal goal of the entire research project of the in-service education course is to research the process of collaborative knowledge

creation and, along with this study, to focus on how teachers' concepts of learning theories can be collaboratively changed, and thus how teachers' knowledge and skills of teaching are developed through in-service education.

In this article, I will present the starting points for the study, which are changes of the Finnish curriculum connected to the change of learning theories and briefly describe the concepts of collaboration and zone of proximal development (ZPD) that form the theoretical background. Qualitative analysis and findings are intertwined and therefore reported jointly according to two research questions: (1) How is the development of teaching to be found in teachers' group discussions? (2) How is the developing of ideas connected to learning theories?

### *The changes in approaches to learning in Finnish school curricula*

In order to understand change, namely what kinds of requirements Finnish teachers have encountered regarding learning theoretical content that curricula reflect, I will briefly introduce the changes of learning theories which have mostly contributed to Finnish school system since 1970s.

Based on my analysis of curriculums, the first Finnish national curriculum for comprehensive school released in 1970 was extensively based on behaviourism (e.g. Skinner, 1954/1968; Watson, 1925; Wheldall & Merrett, 1984). A second curriculum published in the year 1985 was also based on behaviourism, but a hint of a humanist approach (e.g. Fernald, 2007, pp. 213–214; Rogers & Freiberg, 1994) can be found. A third national curriculum made for comprehensive school in 1994 differed from two earlier ones: It was explicitly based on a constructivist learning theory (e.g. Glasersfeld, 1989, p. 162; Tuomi-Gröhn, 2005; Tynjälä, 1998, pp. 210–212).

The fourth and latest national curriculum introduced in 2004 continues to be based on constructivism, but also reflects a sociocultural approach. The *sociocultural approach to learning* derives from Vygotsky's (1978) theories. The central emphasis of sociocultural learning theory is learning and development in a social context through social interaction. Learning as a human action is situated in social, cultural and institutional contexts (settings) (Säljö, 2001; Vygotsky, 1978; Wertsch, 1991, p. 119). The interaction between collective resources (of thinking and materially mediated activity) and individual learning is proposed as the basis for development (Vygotsky, 1978, pp. 84–91). Knowledge is mediated by semiotic resources – mainly speech and language – and concrete artefacts (written, diagrammatic and pictorial material).

Sociocultural learning and teaching can be characterized through three main aspects of Vygotsky's theory of the ZPD. These are collaborative activity, interconnection between everyday practices and scientific concepts, and the goal of change and creation of new knowledge (Moll, 1990, pp. 5–11; Tuomi-Gröhn, 2003, pp. 204–206).

The latest curriculum 2004 describes learning as an individual but also as a social and cooperative goal-oriented process, in which knowledge and skills are developed within a cultural context. The curriculum's emphasis is on promoting learning through the use of both sociocultural and constructivist theory (The Finnish National Board of Education [FNBE], 2004, pp. 14–19). Thus, the aim of the in-service education course organized for teachers was to provide information about underlying theories of learning in the curriculum, so that teachers would learn and develop their teaching to correspond to aims of the curriculum.

### **Theoretical context of the in-service education course**

Day (1999, p. 150) argued that teachers rarely have opportunities to reflect widely and deeply on the purposes and practices of teaching skills or curriculum implementation, even though in-service education is offered to them. That is also the situation for teachers in Finland (Kiviniemi, 2008, p. 324). The in-service education course analysed in this study was organized in order to supply a context for the development of teaching skills and practice. The course was specifically intended to aid teachers in deepening learning and understanding of the underlying learning theories for the curriculum of 2004, and to support application of the theories in their teaching practices.

The in-service education course was organized within the sociocultural framework alongside the research, this being the emerging learning theory in the curriculum 2004. The key theoretical concept is Vygotsky's (1978) ZPD. According to Engeström (1987), when ZPD is applied to the work of adults, it is the distance between the actual working level and the level of potential as determined through problem-solving in collaboration with peers. The ZPD is thus a dynamic zone within the current upper limit of the individual's or a community's developmental level of abilities and knowledge.

### ***Collaborative learning and creation of new knowledge and practices***

The significance of the ZPD concept lies in dynamically combining both individual development and social interaction. In social interaction, individuals generate ideas, thoughts and meanings together. Such interaction does not primarily involve transferring information from one to another, but creating it through collaboration on a shared objective (Moll, 1990, p. 13; Paavola, Lipponen, & Hakkarainen, 2004, pp. 564, 569–570). The in-service education thus operates as a social context for collective knowledge creation and learning. Vygotsky's major focus on teaching and learning was not only on developmental processes as they normally occur, but especially on the effects of disruptions and interventions (Wertsch, 1985, p. 18). This means, according to Tuomi-Gröhn (2003, p. 206), that a Vygotskian approach to education does not characterize teaching and learning as a part of existent practices but as creating something fundamentally new: advanced activities and practices. By participating in the in-service education that promotes learning and the development of thinking in collaboration with other teachers, new ideas and practices for their teaching are developed by the participants.

### ***Interconnection between theoretical knowledge and everyday practices***

Because everyday concepts and scientific concepts are interconnected and interdependent; their development is mutually influential (Vygotsky, 1978, p. 193, 219). Scientific concepts grow down into everyday practice, into the domain of personal experience and facilitate the mastery of more advanced aspects of the everyday concepts (Tuomi-Gröhn, 2003, p. 205).

In the working life of teachers, it is often a problem that theoretical knowledge remains detached from everyday practice, and thus many problems in work settings are solved without drawing on already existing theoretical tools (Tuomi-Gröhn, 2003, p. 205). The course which is the focus of this study supports teachers to

surpass division and connect learning theories to practical knowledge in a collaborative learning process.

## **Research method**

### ***Research object***

The purpose of this study is to analyse how teacher groups collaboratively develop and create knowledge for their teaching in group discussions during an in-service course. The research questions of this study are: (1) How is the development of teaching to be found in teachers' group discussions? and (2) How is the developing of ideas connected to learning theories?

### ***Participants, setting and data collection of the study***

The arranged in-service education course consisted of a total of four (three 2-day and one 1-day) tuition and working meetings during one year time in 2005–2006. Working methods for the course as a whole were lectures, independent learning, group work and discussions and pilot teaching experiments between meetings. The teachers entered the course voluntarily. The information given to the applicants in advance informed them of the goal of this education course, which was to develop teaching on the basis of learning theories.

The research data of this article were collected by videotaping group discussions of teacher groups. After the teachers studied learning theories and curriculum, they worked as groups in order to create new experimental ideas and plan new teaching practices based on learning theories reflected in curriculum 2004. Two groups, at the first two-day meeting in the in-service education course, were selected as a target of this study, and named team A and team B. Team A consisted of four participants and team B of two participants. The durations of these group discussions were 1 h 10 min (team A) and 1 h 5 min (team B).

### **Analysis and findings of the group discussions**

Videotaped group discussions were transcribed carefully regarding addresses, address changes and contents. These transcriptions of data are the basis for my analysis. The method of analysis was data driven, systematic and qualitative as applied to the content of the discussion. The analysis was conducted in such a way that pursues transparency; the analysis is presented in detail with excerpts in order to illuminate the development of the analysis and interpretations made based on the analysis of group discussions. The following sections describe the development of analysis and the findings.

### ***How is the development of teaching to be found in teachers' group discussions?***

The basic unit of analysis was an *episode of topic talk*. An episode of topic talk is a unit where the topic of discussion stays the same (Rainio, 2003, p. 82). This classification was made after data driven analysis. In order to define a topic talk episode, at least three addresses of the new topic should be stated.



During further data driven analysis on episodes of topic talk, I found and defined six meaning types which refer to the content of discussion created in the process. The meaning types are (1) *procedure talk*, (2) *teaching experiment talk*, (3) *experience talk*, (4) *learning theory talk*, (5) *other talk* and (6) *developing talk*. Each topic talk episode represents one of the six meaning types. The meaning types are defined in what follows. After definitions, I will focus on defining and analysing *developing talk*<sup>1</sup> in more detail. Figure 1 summarizes how the analysis of the data proceeded.

*Procedure talk* is the talk in which group participants discuss practical things concerning how to organize the group work on a practical level, meaning working orders or rules of procedure. Participants revise the given task instructions, talk about the working schedule and participants' distribution of work. *Teaching experiment talk* concerns the practical arrangements for the planned teaching experiments such as the topics of point in time, when to arrange a teaching experiment period during a school year, whether to locate the teaching experiment in compulsory or optional courses and discussion on the content area for choosing the topic of experiment. *Experience talk* meaning type aggregates all the episodes in which the participants discuss their own teaching experiences. Teaching experiences involve telling about trying out some teaching method, explaining teaching on some specific home economics content area or telling one's own way of doing something when teaching. Also episodes in which participants talk about students' or pupils' doings or think about student's experiences, attitudes and attentions regarding learning or home economics contents are considered as experience talk. *Learning theory talk* as a meaning type means talk of learning theories as such; pondering learning theories of some teaching methods; or criticizing learning theories of studying. It includes episodes of topic talk, in which the participants' talk is entirely separate from the development of teaching methods, and afterwards ponder what learning type would their already planned teaching experiment plan represent. Learning theory talk does not include any developmental perspective; that is why this meaning type is its own type and separate from developing talk. According to the aim of the in-service

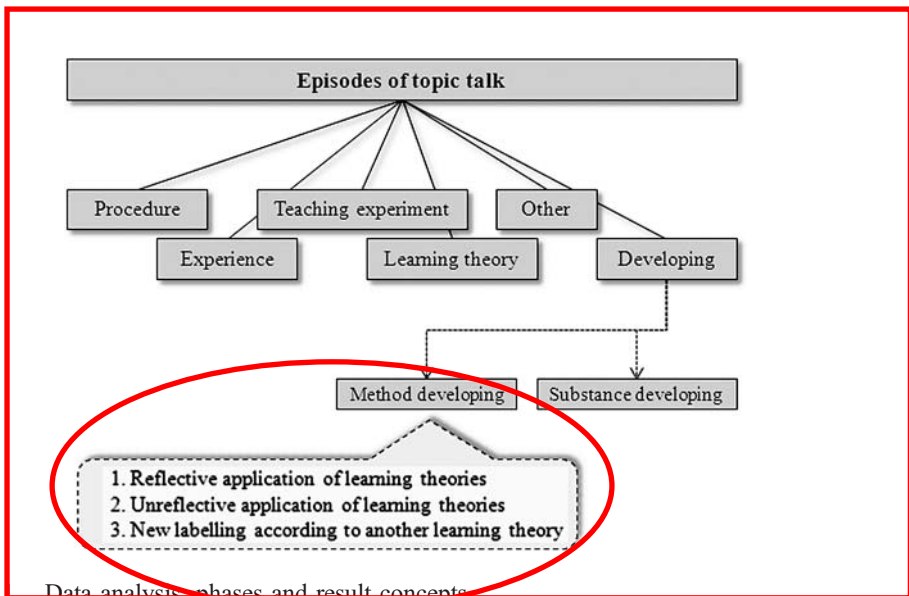


Figure 1. Data analysis phases and result concepts

education course, learning theory talk should not be separate from the developing talk, but as it is, it indicates challenges in connecting learning theories to developing of teaching. *Other talk* is not related to the group tasks or developing teaching; instead it consists of participants becoming familiar with each other, telling where and what kinds of school they are working in. Other talk often exists during and after coffee breaks. Other talk as a meaning type also consists of talk that is caused by the course organizer or educator entering the room, e.g. greeting and talk of time, schedule and lunches and coffee breaks.

Concerning the goal of this study, the most interesting meaning type to be considered is *developing talk*. Developing talk includes all talk that develops teaching and aims to develop something new connected to teaching. Developing talk involves collaborative considerations, constructions and solution findings. It is noticeable that, although developing talk does not always include new ideas, they can be created and developed by discussion – the seeds of development.

The analysis proceeded by further analysing the developing talk. In a more detailed analysis of the developing talk, developing talk can be distinguished according to two categories: if developing of teaching methods is found, the episode is classed as *method-developing talk*; if it regards developing of the substance (topic) of home economics, I have classed the episode as *substance-developing talk*.

In *method-developing talk*, the participants discuss how learning proceeds, what kind of teaching and working methods can be used, how pupils learn and what a teacher's role is. Method-developing talk is related to learning theories and educational methods related to learning theories. *The substance-developing talk*, instead, focuses on what to teach, what to do, in contrast to method-developing talk, which focuses on the questions how and why. The talk includes mainly contents of courses, lessons and timing.

在线服务教育课程的目的：帮助教师通过将日常实践与理论知识结合创建新的教学实践形式。

### ***How is the developing of ideas connected to learning theories?***

As the in-service education course aimed to help teachers create new forms of teaching practice by combining theoretical knowledge (from learning theories) and practical experience from everyday teaching, I have focused my further analysis on *method-developing talk*. I continued the analysis by looking for relations between method-developing talk and the theories of learning.

In group discussions, there were several learning theories to be found such as behaviourism, humanism, constructivism and sociocultural approaches. However, the most interesting thing was how these learning theories were connected to the development of the teaching, and how the theoretical concepts and everyday practices were connected in teachers' group discussions. There are three different ways (see Figure 1) of how the learning theories emerged in method-developing talk:

有意识的利用学习理论深入研讨，讨论的目的就是运用不同学习理论来发展教学实践。

(1) *Reflective application of learning theories* means the conscious utilization of learning theories is there in the method-developing talk. The aims of learning that the different learning theories pursue are used as a basis for the development of teaching practices. Participants discuss what kind of learning these different theories aim to evoke and base their developing on that.

An example of that is when participants discuss and try to understand what kind of learning, constructivism and sociocultural learning theories aim to promote. They

例：参与者在讨论各种学习理论以期得到发展，当他们热衷 problem-based learning 时，开始讨论如何将这个理论应用的课堂实践。



become inspired on problem-based learning, and start to think how to create real everyday laundry problems for pupils to solve. They start to plan a larger teaching period based on problem-based learning methods. Excerpt 1 presents the reflective developing talk where team participants talk of what theory their idea represents and discuss which theory they should build their teaching of laundering on.

Excerpt 1. Reflective application of learning theories (constructivism & sociocultural approach) (team B. E 27).

Ann: • Well, this is new indeed that we have something this concrete.

Sheila: Let's look at where it goes from here. Now content for the teaching package we have there.

Ann: And there. Look it's here too, the aims derive from everyday life. [Points at cell in a the table of learning theories] Look at that.

Sheila: Oh dear.

Ann: Yea- look, this is pretty straightforward. • In my opinion – look. Isn't it? And look, it's like this: how pupils are motivated, because those cognitive conflicts or is it or is it contradictory with regard to skills or what is it, a cognitive and skill [contradiction]? Arises from everyday life [Reads from the table] Well these are from everyday life.

Sheila: All of these [created problems for pupils to solve] have arisen from everyday life.

Ann: Everything is in the deep of everyday life. So it's pretty clearly that, [Points at the table] And then look • Here too [points at the cell]. What is learning • So we get it like this here. So when we've done this [with pupils], and everyday life activity changes.

Sheila: So we have now • contextual learning is our real baseline

Ann: Yeah, according to this

(continues)

无意识地应用学习理论，他们往往没有意识到应用了学习理论，而多数是基于他们先前的经验。例：一个老师提到了一种教学方式，其他老师根据以往经验进行补充讨论如何将这种方式完善。

(2) *Unreflective application of learning theories* means that the learning theories are used without conscious thoughts or reflection. In this case, the participants clearly reflect and apply some of the learning theories with one voice. However, this application is based on their previous experience, not referring to learning theories. In particular, this can be seen when the behaviourism comes up in planning some exercises for pupils without anyone of the participants in the group realizing it or taking it into consideration

One illustrative example (see Excerpt 2) of this *unreflective application of learning theory*, is when one teacher suggested that bingo would be a good idea for teaching food preservation, especially in preserving berries and fruits. The group accepted the suggestion, and they collaboratively started to plan a game of bingo. In the plan, information is given to pupils in small pieces, and the teacher is responsible for teaching and making the bingo; the teacher tells the correct answers and the bingo also includes a reward for right answers. Planning the bingo arises collaboratively from participants' previous experience, without anyone realizing how well the bingo plan represents a behaviourist view on learning.

Excerpt 2. The unreflective application of behaviourism in planning a bingo (team A. E 23).

Johanna: Yea, I've done these in such a way that, you there is a claim that says cigarettes contain: one, Nicotine, two, Carotene and three, something else.

Yea, then they select the letter and put it in it's own column. Yea, that way you get a pretty good prediction of preliminary knowledge that students have. So, from different types of berries and in particular every man's rights and then, how to move in the forest. And then safety features.

Tina: Yea, so it could be there too.

Jane: Everything could be put there.

Tina: Everything could be put there.

Johanna: And then at that phase, when we go through every question by question, the right answers come and more additional information on the issue.

Jane: Yea, so yea. They have compiled it [knowledge from bingo] themselves, and complement it.

Johanna: Yea ...

Tina: So what name did you use to call this?

Johanna: Bingo.

Tina: Yea, bingo. Should we put ...

(continues)

安上自己知道的学习理论 (不一定对)

(3) *New labelling according to another learning theory* means that the learning theories are used outwardly without trying to understand or internalize the aims and differences of the different learning theories. The participants remember that certain working methods are related to a particular learning theory. For example, teachers remember that mind maps are often related to constructivist teaching methods. Then, according to the participants, adding a mind map in their plan, makes the whole teaching implementation constructivist. In fact, a single working method does not define the learning theory used in the whole teaching. Another way, how *new labelling according to another learning theory* appears in developing talk: is when participants are ostensibly developing constructivist methods, but actually they are using very much behaviouristic ones; often the group participants know it, that is to say, they intend more to repackage, than to make changes. The participants name and label their plan for representing constructivism even though that cannot be interpreted as constructivist.

One illustrative example of *the new labelling according to another learning theory* is from a developing talk episode (team B. E 44), where participants remember humanism as a 'nice' learning theory and they think of adding some humanistic element in their plan (see Excerpt 3). Sheila suggests that adding a song or a tale in their plan would make teaching humanistic. Humanism as a learning theory is not thought or understood, but songs and tales are remembered as working methods and are therefore added.

Excerpt 3. The new labelling according to humanism (team B. E 44).

Sheila: So listen, we will add in something humanistic about, how about Washerwomen song, in the beginning?

Ann: Does it exist?

Sheila: Well doesn't it? Because I-

Ann: What is it that, it is quite an old song.

(continues)

Sheila: Heh, then, also a tale also could be there.

...

Sheila: Yea but, let's write a story in the beginning [of the plan] or somewhere [in the plan] a story. So we'd have used all.

Table 1. Emergence of learning theories in method developing talk (E=episode, A=team A, B=team B).

	Reflective application of learning theories	Unreflective application of learning theories	New labelling according to another learning theory	Total
Behaviourism	2 (A: E20, E36)	3 (A: E20, E23; B: E42)		5
Humanism	1 (B: E17)		1 (B: E44)	2
Constructivism	3 (B: E21, E22, E29)	3 (A: P14; B: E28, E40)	2 (A: E20, E35)	8
Sociocultural	2 (B: E18, E27)		1 (A: E31)	3
Total	8	6	4	18

Table 1 visualizes the emergence of learning theories in the analysis of method-developing talk. Horizontal rows in the table represent conceptions of learning, and the columns the way of emerging. The numbers in the cells indicate the number of episode of topic talk in which the method-developing talk has a connection to the learning theory and how. Small letters and numbers in parentheses below the number indicate the team (A or B), and the ordinal numbers of the episodes of topic talk (E) in which the analysed portion of discussion appeared.

The Table 1 indicates, based on the reflective application of learning theory that, in collaboration. Teachers were able to learn and use learn learning theoretical knowledge for development of teaching practices. However, instances of unreflective application of learning theory and using learning theory as a label show that application of learning theories in everyday teaching practice is challenging. In developing teaching based only on teachers' experience (in the category of unreflective application of learning theory), the participants clearly applied some of the learning theories. However, they were not aware of it and this indicates that theory and practices are not explicit for the teachers. Moreover, regarding learning theories, Table 1 suggests that moving on from previous learning theories is difficult. It shows that teachers adhere to behaviourism. Humanism also clings as a pleasant adjunct. Still, as Table 1 shows, teachers gave both constructivism and sociocultural approach a serious effort.

**Conclusions**

The development of teachers' thinking is important in regards to their ability to offer relevant guidance and teaching to children. In order to develop teaching when the underlying theories of learning and teaching change, new knowledge and practices that do not yet exist, need to be created.

According to the findings, the results of the organized in-service education course, which was based on collaborative knowledge creation, are encouraging. New ideas emerged and were created in collaboration with teachers as evidenced in the *developing talk* that was found in teachers' discussions, even though the findings are from the beginning of the in-service education course. Developing talk showed itself as either substance- and method-developing talk. The further analysis of method-developing talk involved looking at how development of ideas is connected to learning theories; the analysis showed how theoretical knowledge can be used in *reflective application of learning theories* or can be left unused when experience comes up in *unreflective application of learning theory*, or theories are used ostensibly, just as a label.

从以前的学习理论中转变是很困难的,他们没有意识到,这表明理论教师和实践并不明确。此外,关于学习理论,表1表明,从以前的学习理论是困难的。它表明,教师坚持行为主义。人文主义也粘着愉快兼职。不过,如表1所示,教师对建构主义和社会文化方法认真努力。

On one hand, in the teacher teams' discussions, the developmental ideas did connect to learning theories; on the other hand, the connection was not fruitful as the unreflective applications and labelling emerged. According to sociocultural theory, one might conclude that the aim of learning to develop new teaching methods is too demanding. In other words, it is possible to ask regarding the ZPD, if the distance is too far between the actual developmental level of teams and the level of potential. Specifically, in the present context, this would mean that there was too much distance between teacher teams' existing learning theory knowledge (that is, their tools for improving teaching) and the demands for creating teaching and learning according to sociocultural and constructivist concepts. The teacher teams' ZPD poses a challenge in respect of collaborative development of new knowledge and practices, as the reflective applications of learning theory imply.

Putnam and Borco (2000) have studied, following a situative perspective, how various settings give raise to different kinds of knowing. They suggested that in teacher learning there are two different approaches: one approach is to ground teachers' learning experiences in their own practice by conducting activities in school sites, often in an individual teacher's classrooms. The second approach is to have teachers bring experiences from their classrooms to development activities e.g. in workshops. According to Putnam and Borco (2000, p. 6), the idea that teachers' knowledge is situated in classroom practice seems to be supported from a situative perspective, so that all learning experiences for teachers should take place in classrooms. The situative perspective holds that all knowledge is situated – the question is, what is the context in which knowledge and learning are situated. However, they argue, if the goal is to help teachers think in new ways, it is important to offer them learning experiences in different settings. Experiencing learning away from the day-to-day teaching setting may be necessary to help teachers to 'break set' – to experience things in new ways. This in-service course was arranged to give the opportunity and challenge to teachers to think and work in new ways and to offer a social context for collaboration. It appears that the in-service course served as a different setting that helped teachers learn theoretical knowledge and use it to develop their teaching. In-service education was also a context for sharing experiences, as the meaning type called 'experience talk' shows. In addition to learning theoretical knowledge, this could also make explicit teachers' theories that are embedded in practice, which helps to develop teaching methods and skills.

The findings provide evidence that in-service education is a potentially powerful part of the continuing professional development of teachers, which is consistent with Day's (1999, p. 150) conclusions. Long term academic in-service education based on becoming familiar with learning theories and collaborative knowledge creation could be a good way to support teachers' professional development. Theoretical research-based knowledge on learning should not be left unused or used superficially; in such a case, the old teaching methods remain, but are only named and labelled after the new theories. Thus, the genuine utilization of the learning theories should be promoted. The evidence of this study supports the position that the organized in-service education facilitated teachers in bridging theory-practice division, and helped to start connecting learning theories to the practical knowledge of teaching.

Further research on in-service education is needed, but this study suggests that long-term in-service education would do well to base itself on collaborative knowledge creation, according to a sociocultural approach. It appears to be a promising

way to develop in-service education, particularly with respect to connecting theoretical knowledge of learning with the experiential knowledge of teaching.

### Acknowledgements

The present study has been supported by The Finnish Doctoral Programme in Education and Learning (FiDPEL) and Elli Suninen-Rachel Troberg Foundation. I would also like to thank P. Seitamaa-Hakkarainen, T. Tuomi-Gröhn and P. Korvela for their valuable comments on a draft of this article and M. Hölttä for assistance with figures.

### Note

1. I use the term developing talk instead of e.g. development talk to emphasize active developing that happens during an episode.

### References

- Day, C. (1999). *Developing teachers: The challenges of lifelong learning*. London: Falmer Press.
- Engeström, Y. (1987). *Learning by expanding. An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Fernald, D. (2007). *Psychology. Six perspectives. Harvard University*. California: Sage.
- Fishman, B.J., & Davis, E.A. (2006). Teacher learning research and the learning sciences. In R.K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 535–550). Cambridge: Cambridge University Press.
- Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record*, 103(6), 942–1012.
- Kiviniemi, U. (2008). Opettajien täydennyskoulutus 2005 ja seuranta 1998–2005 oppiaineittain ja oppialoitain eri oppilaitosmuodoissa [Teachers' in-service education 2005 and a follow-up during 1998–2005 in different subjects and fields in different educational institutes]. In A. Kallioniemi (Ed.), *Uudistuva ja kehittyvä ainedidaktiikka* [Renewing and developing subject didactics]. Part 1 (Research Reports No. 298). Helsinki: University of Helsinki.
- Meirink, J.A., Meijer, P.C., & Verloop, N. (2007). A closer look at teachers' individual learning in collaborative settings. *Teachers and Teaching: Theory and Practice*, 13(2), 145–164.
- Moll, L. (Ed.). (1990). *Vygotsky and education: Instructional implications and applications of sociohistorical psychology*. Cambridge: Cambridge University Press.
- Paavola, S., Lipponen, L., & Hakkarainen, K. (2004). Models of innovative knowledge companies and three metaphors of learning. *Review of Educational Research*, 74(4), 557–576.
- Programme for International Student Assessment (PISA) <http://www.pisa.oecd.org>
- Putnam, R.T., & Borco, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4–15.
- Rainio, P. (2003). *Tietotyön malli koulun kehittämisessä. Muutoksen esteet, edellytykset ja mahdollisuudet opettajien puheessa* [The knowledge-work model in school development. Obstacles, preconditions, and possibilities for change in teachers' talk] (Research Reports No. 7). University of Helsinki: Center for Activity Theory and Developmental Work Research.
- Rogers, C., & Freiberg, H.J. (1994). *Freedom to Learn*. Upper Saddle River, NJ: Merrill.
- Säljö, R. (2001). *Oppimiskäytännöt. Sosiokulttuurinen näkökulma* [Practices of learning. A sociocultural view]. Helsinki: Wsoy.
- Skinner, B.F. (1954/1968). The science of learning and the art of teaching. In B.F. Skinner (Ed.), *The technology of teaching* (pp. 9–28). New York, NY: Appleton-Century-Crofts. (Original work published in 1954 in the *Harvard Educational Review*, 24(2), 86–97).
- The Finnish National Board of Education (FNBE). (2004). *Perusopetuksen opetussuunnitelman perusteet* [The national core curriculum for basic education] (online). Retrieved September 21, 2010, from [www.oph.fi/ops/perusopetus/pops\\_web.pdf](http://www.oph.fi/ops/perusopetus/pops_web.pdf)

- Tuomi-Gröhn, T. (2003). Developmental transfer as a goal of internship in practical nursing. In T. Tuomi-Gröhn & Y. Engeström (Eds.), *Between school and work: New perspectives on transfer and boundary-crossing* (pp. 21–47). Earli. Amsterdam: Pergamon.
- Tuomi-Gröhn, T. (2005). Studying learning, transfer and context: A comparison of current approaches to learning. In Y. Engeström, J. Lompscher, & G. Rückriem (Eds.), *Putting activity theory to work. Contributions from developmental work research* (pp. 204–206). Berlin: Lehmanns Media.
- Tynjälä, P. (1998). Writing as a tool for constructive learning.in: Students' learning experiences during an experiment. *Higher Education*, 36(2), 209–230.
- von Glasersfeld, E. (1989). Constructivism in education. In T. Husen & N. Postlewaite (Eds.), *International encyclopedia of education* (pp. 162–163). Oxford: Pergamon Press.
- Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological functions*. Cambridge: Harvard University Press.
- Watson, J.B. (1925). *Behaviorism*. New York, NY: People's Institute.
- Wertsch, J.V. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA: Harvard University Press.
- Wertsch, J.V. (1991). *Voices of the mind. A sociocultural approach to mediated action*. London: Harvester Wheatsheaf.
- Wheldall, K., & Merrett, F. (1984). The behavioural approach to classroom management. In D. Fontana (Ed.), *Behaviourism and learning theory in education. British journal of educational psychology monograph series No. 1* (pp. 15–42). Edinburg, TX: Scottish Academy Press.