Becoming a Teacher - Student Teachers' Learning Patterns in Teacher Education

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Abstract

Student teacher learning is a key issue for further professional development. Literature on student teacher learning suggests that students learn about teaching and undergo professional transformation during their education. However, studies often focus on a certain time period and on how students should learn instead of how they actually do learn. In this study, 19 interviews with student teachers are used to analyse their learning patterns during teacher education. Four qualitatively different kinds of patterns of student teacher learning were identified. The patterns varied in terms of students' motivation to learn, conceptual coherency, approach to learning, and action strategy used. The patterns also held some internal inconsistencies between the different components observed. This may indicate a lack of understanding, willingness or skills concerning active learning. The results imply that more attention should be paid to promoting student teachers' active learning during education.

1. Introduction

It has been suggested that student teacher learning is a key issue, not only for continuing professional development, but also for providing meaningful learning environments for school pupils (Edwards & Protheroe, 2003). Prior studies on student teacher learning have advanced our understanding of various aspects of teacher learning, such as the development of reflective thinking (Lee, 2005), professional identity (Özmen, 2011; Tang, 2003) and teaching skills (Calderhead & Shorrock, 1997). Shortages in student teacher learning have also been identified. Student teachers have, for instance, shown an ability to form lesson plans and follow the curriculum, but have sometimes had difficulties in taking pupils' needs into account in the pedagogical situation (Edwards & D'Arcy, 2004; Edwards & Protheroe, 2003).

Moreover, in the literature on teacher learning, various ideal models on student teacher learning have been presented. However, the empirical evidence on student teacher learning is still surprisingly scarce (Vermunt & Endedijk, 2011). Accordingly, the gap in the literature on student teacher learning has meant a relative lack of studies which explore complementary aspects of student teacher learning (see e.g. van Eekelen, Vermunt & Boshuizen, 2006; Kremer-Hayon & Tillema, 1999); relatively few studies on dissonant learning patterns among student teachers (Vermunt & Endedijk, 2011), and a lack of studies which explore student teacher learning throughout the whole educational path and in a variety of contexts provided by teacher education (see e.g. Edwards & Protheroe, 2003; Tang, 2003. See also Opfer & Pedder, 2011; Putnam & Borko, 2000). The purpose of our study is to examine and achieve a better understanding of student teachers' learning paths during teacher education.

Our study focuses on exploring student learning as it appears according to student teachers' retrospective descriptions of their whole teacher education. This is done by observing student teachers' learning at a macro-level and person-centred way. Different aspects of each student teacher's learning patterns, i.e. the learning activities students usually employ, their beliefs and motivation and the internal consistency of the emerging patterns, are also examined. Accordingly, the present study will attempt to add to earlier research into teacher learning by examining the wholeness of these patterns

over a prolonged period of time, the characteristics of these multidimensional patterns, and the internal consistency of elements constituting the patterns.

1.1 Elements of Student Teacher Learning

Research has shown that people have a mixture of motives for becoming school teachers (Kyriacou & Benmansour, 1999; Jungert, Alm & Thornberg, 2014). Moreover, there is a growing interest worldwide in exploring these reasons, since many countries experience difficulties in getting enough people to make this career choice, resulting in a shortage of high quality applicants to teacher education (e.g. Kyriacou, Hultgren & Stephens, 1999). This is not however the case in Finland, where the teaching profession is highly valued and appreciated in society. For example, in primary school teacher education, only about 4-6% of applicants (depending on the institution) are admitted to courses each year (VAKAVA, 2012). However, the relevance of asking why a student would want to become a teacher in Finland is in the assumption that having internal reasons, such as becoming a good teacher, are more favourable for learning than external reasons, such as getting the academic grade. As a result, they may reflect more profound motivational aspects (Deci & Ryan, 1985; Ryan & Deci, 2000). The nature and quality of motivation among teacher students is crucial in terms of what kind of professionals they are going to be, for example what kind of student-teacher relationships there are pursuing in their teaching (Jungert, Alm & Thornberg, 2014).

Another basic element in the anatomy of student teachers' learning is the way they approach learning (Marton, 1985). In the literature on learning approaches in higher education, there is a strong consensus on the core division in approaches, that is, the two levels of processing: deep- and surface-level. In deep-level processing, the student's focus is on understanding by making inferences and inquiries, relating ideas and concepts, and reflecting on what she or he already knows; whereas in surface-level processing, the focus is more on memorising and 'passing tests' (Biggs, 1999; Marton, Hounsell & Entwistle, 1997; Gijbels, Donche, Richardson & Vermunt, 2013). It is also assumed that some aspects of learning are more often related. Intrinsic motivation, for example, is connected with the application of deep-level processing strategies (e.g. Schiefele, 1991). Hence, these dimensions are likely to occur together. Moreover, levels of processing are shown to be related to outcomes of learning. In other words, students learn different things from taking a deep- and a surface-level approach (see e.g. Trigwell, Ellis & Han, 2012). The use of a deep learning approach is generally associated with higher quality learning. However, research into the relationship between students' approaches to learning and learning outcomes seem to be inconsistent (e.g. Gijbels, van de Watering, Dochy & van de Bossche, 2005; Diseth & Martinsen, 2003). Although there are some longitudinal studies on approaches to learning (e.g. Zeegers, 2001), the learning outcomes are often assessed with some rather restricted learning tasks or tests (Vermunt & Endedijk, 2011). Consequently, the level of processing and professional knowledge construction in longer educational tracks is not very well known (Vermunt & Endedijk, 2011. See also Donche & van Petegem, 2009).

The research on student teacher learning (Bennett & Carre, 1993; Halliday, 1996) demonstrates that student teachers' personal conceptions of teaching and their roles as future teachers can exert a powerful influence on learning and professional knowledge construction (Kagari, 1992). There is also evidence that teacher education lacks adequate opportunities for constructing a meaningful and coherent professional knowledge and belief system (Blomberg, 2008). Teacher students adopt different and sometimes contradictory beliefs from varying learning contexts in teacher education (e.g. different courses). These beliefs may not be connected with their prior beliefs (e.g. their prior beliefs are not changed, see e.g. Vosniadou, 1994) and therefore the student's conceptual foundation about the work of a teacher is fragmented. Consequently, in real life situations they may be likely to go by implicit lay theories. Conceptions of learning in particular tend to be fragmented, and the coherence or lack of it in terms of conceptions of pupils' and their own learning are proven to have a strong influence on teachers' pedagogical practices (Bolhuis & Voeten, 2004).

Student teacher learning and learning outcomes strongly depend on the pedagogical practices of teacher education, and it seems that parts of the education is felt to be more efficient than others. For example, there is some evidence that teaching practice provides a beneficial grounding for the development of professional skills (e.g. Ben-Peretz, 1995; Lee, 2005) and the development of one's beliefs about the self as a pedagogical professional, i.e. professional identity, if they are properly supervised (Tang, 2003) and their reflection on these experiences is guided (Toom, Husu & Patrikainen, 2013). Moreover, different encounters within different pedagogical contexts and critical incidents that these contexts provide may promote or hinder the student's active, participatory role as learners. On the other hand, this has an effect on the student teacher's learning paths if these varying course and practice environments shape the student's beliefs and actions and point them in different directions. Therefore, incidents may result in friction in student teachers' learning patterns. The nature of this friction may be constructive or destructive (see e.g. Vermunt & Verloop, 1999; Pyhältö, Stubb & Lonka, 2009), depending on the fit between the student's aims and the environment's requirements and opportunities. Moreover, students may use different action strategies to cope with (Gustems-Carnicer & Calderón, 2013) or construct a fit with the learning environment. Two basic sets of coping strategies – direct action and palliative – are often distinguished in the literature. Coping strategies are used to master or tolerate challenges such as stressful

situations or circumstances where change and learning is needed. There is evidence of active, social and optimistic strategies being more beneficial for learning (e.g. Gustems-Carnicer & Calderón, 2013; Murray-Harvey, Slee, Lawson, Silins, Banfield & Russell, 2000), and that using the social resources at hand is related to higher achievement scores among students (Leana, 2011).

1.2 Patterns in Student Teacher Learning

Student learning has long been studied by observing some specific aspect of learning, as a student's orientation to learn or as a personal 'learning style'. A learning pattern, however, refers to all the learning activities that learners usually employ (how they approach learning, what strategies they use in these situations), their beliefs, and their learning motivation that characterise their learning in a certain period of time (Vermunt & Endedijk, 2011). It has been suggested that a learning pattern should entail motivational, behavioural and conceptual aspects of student teacher learning and that learning patterns are not always consistent. This means that the motivational, conceptual and behavioural aspects of teacher learning are not necessarily aligned with each other (Vermunt & Endedjik, 2011). Consequently, in learning patterns the different aspects of learning may be connected in more complex and unexpected ways.

Previous research on academic learning has found qualitatively different kinds of ways of learning. For example, Vermunt and Vermetten (2004) have identified four distinct patterns in studies concerning student learning. The patterns varied in terms of the goal of learning and the skills required in learning the subject matter. *Reproduction-directed* students tried to remember the subject matter and reproduce it in an exam, while *meaning-directed* learners used a deep approach to learning. *Application-directed* learners, on the other hand, focused on the usefulness of the subject matter and emphasised how they could use the acquired knowledge in practice. Besides these, *undirected learners,* who did not know how to learn the subject matter in an appropriate way, were identified.

Though previous studies on student learning have considered and combined different aspects of learning, research on student teachers' learning patterns and the consistency of these patterns is still scarce. For example, Oosterheert and Vermunt (2001) have identified four qualitatively varying learning patterns among student teachers that have similarities with those found in research on academic learning styles. These patterns, namely *survival, closed reproduction, open reproduction, closed meaning and open meaning orientation,* varied in terms of internal knowledge components, and regulative, affective and motivational approaches. The study, however, was conducted over a short time period, considering teacher students' whole educational journey. Therefore, there is a need for a more profound understanding of teacher students' actual, holistic and enduring learning patterns, as well as the internal consistency of these patterns (Vermunt & Endedjik, 2011).

1.3 The Aim of the Study

This study aims to gain a better understanding of student teachers' actual learning processes during teacher education. This is done by employing a macro-level analysis of each participant's complementary learning patterns. The aim is to explore students' whole learning processes, from the beginning to near to the end. This will be done by concentrating on complementary aspects of student learning instead of analysing some specific aspect of learning or only in some restricted time period, as emphasised in the previous research. The following research questions are addressed:

    1) What kinds of learning patterns can be identified among student teachers?

    2) Are these patterns consistent or is there friction between different aspects of the pattern?

2. Method

2.1 Finnish Teacher Education

In Finland, all comprehensive school teachers must have a master's degree. Elementary school teachers have an MA in educational science or educational psychology, and they teach in years 1-6, with pupils who are between 7 and 12 years old. The target time for graduation in elementary school teacher education is five years, but for many students the studies take longer. Though there are some differences between different university teacher education programmes, the studies (300 credits) typically include orientation studies such as ICT and language studies (25 credits), main subject studies in education/educational psychology (140 credits, including 2-3 teaching practice courses in the teacher training schools, 20 credits), two minor subject studies (multidisciplinary studies in subjects and cross-curricular issues taught in comprehensive school, 60 credits), and optional minor subject and optional studies (75 credits). Elementary school teachers may also have one or two subjects which they teach in years 7-9 if they have included these optional subject studies in their education. The case study presented in this article was conducted in one large research-intensive university in Finland.

2.2 Participants

This study includes data gathered from 19 elementary school student teachers (female: 14, male: 5, age: min/max: 23/51 years, mean: 31 years) who are completing their teacher studies. The sample was representative of student teachers as a whole in this context in terms of their gender, age and the duration of their education. The criteria for selecting the participants were: *students' self-estimated time of graduation* (within one year), *professional orientation* (interest in working in a comprehensive school after graduation), and *education as a major subject in the teacher education programme*. The criteria was set this way to engage with those participants who were most likely to be at the end of their studies and who represented the majority of Finnish teacher students in terms of their major and professional orientation. Some of the students had completed a significant number of ECTS credits beforehand, for example in the Open University, while others had just finished their upper secondary school. The participants also differed from each other in terms of their prior teaching experience. Some had little or no experience, while others had been working as a substitute teacher or school assistant for several years. Furthermore, for some of the students, teacher education was their second choice, whereas others had applied several times to join the degree programme. This heterogeneity of the sample is also characteristic of the wider Finnish teacher student population.

2.3 Data Collection

The student teacher interviews were conducted by using a contextually modified version of the Teachers' Professional Landscape Inventory (Authors, 2010, see appendix 1). The instrument was chosen to enable comparison of the results emerging from different contexts of teacher learning: learning in the school when practising the profession (Authors, 2014), and during education when learning the profession. The validity of the adapted instrument was tested in four pilot interviews before the data was collected.

The first named author visited eleven different courses in which the participants were most likely to be at the end of their studies, and gave a short introduction to the study. The students fitting the criteria were recruited on a voluntary basis and they gave their contact information to the researcher. After this, the potential participants were contacted via e-mail or by phone and a time for an interview was arranged.

The semi-structured theme interview included questions on three main themes: *the student teacher's learning process during teacher education*, *the student teacher's beliefs concerning studying in the teacher education programme,* and *the student teacher's beliefs concerning teachers' work in the school*. In the interview, students were asked to create a visual representation of their study path as they saw it, and to identify and mark the positive, promoting critical events and the negative, hindering key events that made a difference in their studies. After this the students were interviewed based on their visualisations (e.g. what happened? What did you learn in this situation? What made you change your way of thinking?)

Students' background information, including age, teaching experience, reasons for choosing a career as a teacher or doing teacher studies, and the current state of their studies, were explored. In total, the interview contained four background questions about the participants' personal and professional history and 16 questions about their studies in the teacher education programme and teachers' work in the school.

Each interview took between 60 and 210 minutes to complete. All interviews were digitally audio-recorded and decoded into text files by the researcher or the trained research assistant.

2.4 Analysis

The analysis was carried out using an abductive strategy (e.g. Chamberlain, 2006). In the first phase of the analysis, the student teachers' descriptions concerning their learning and its different dimensions were coded using an inductive strategy. After that, a theory-driven approach was used to formulate and finalise the categories and contents within each category.

The analysis was conducted by taking a person-centred approach. This meant that each student's individual learning processes during their education were analysed. The analysis entailed four different dimensions of learning: 1) motivation, 2) approach to learning, 3) action strategy, and 4) conception of teachers' work. In Table 1 the criteria for the analyses of each aspect is described in a more detailed way.

Table1. Four dimensions analysed in student teacher learning patterns

Motivation: "What motivates students to do teacher studies?"	Approach to Learning: "What kind of approach to learning have students adopted?"	Action Strategy: "What kind of action strategy do students use to cope with critical incidents?"	Conception of Teacher's Work: "What kind of conception of teachers' work do students hold?"
a)INTERNAL: The student's goal in learning is to be a "professional" teacher. The student expresses engagement in developing pedagogical expertise	a)DEEP: The student reflects what he or she knows and what he or she should know and searches for a way to learn. The student's goal is to deepen understanding and to make links between theory and practice.	a)ACTIVE AND TRANSFORMATIVE: The student tries to affect the pedagogical situation and actively seeks out new learning experiences.	a)COHERENT: The student expresses an internally coherent and structured (wider or narrow) view about teacher's work. The student conceptions concerning teaching-learning process or perceptions about self as a learner and pupil as a learner are coherent.
b)EXTERNAL: The student's goal in learning is getting an academic degree. The student is engaged in academic work in general.	b)SURFACE: The student reflects on his or her accomplishments and tries to find an easy or quick way to accomplish more. The student's goal is to pass the test, get easy answers, and get useful tips that will work in the field.	b)PASSIVE AND ADAPTIVE: The student adopts a strategy to comply with every situation (whether favourable or unfavourable). The student may criticise the circumstances, but does not act to change them, or to change his/her own behaviour/thinking, to accomplish learning.	b)FRAGMENTED: The student expresses different aspects about teacher's work that do not form a coherent system. Student's beliefs concerning their own learning and pupil's learning show inconsistencies. The student's beliefs may also be unstructured or the student has difficulties explicating his/her beliefs.
c)BOTH: The student expresses both motivational aspects	c)BOTH: A situationally changing approach (which depends on the course and the phase of studies).	c)SITUATIONALLY CHANGING: The student uses both strategies (depending on the situation).	

3. Results

3.1 Student Teachers' Learning Patterns

The results indicated that there was variation between student teachers in terms of their learning patterns. In total, four different kinds of learning patterns were identified (see Table 2). The patterns identified were: *meaning-directed actor (F=7)*, *undirected-inconsistent (F=6)*, *disengaged passer-by (F=4)* and *meaning-directed conformist (F=2)*. There were also some similarities between the students in terms of their patterns. When looking at the data as a whole, it was identified that a slight majority of the students (F=11/19) held a coherent conception about what teaching involved. On the other hand, many students had a fragmented conception (F=8/19). Although there were differences between student teachers' motivation to learn and their approach to learning, most students held a deep or strategic approach to learning and had internal reasons for studying. Surprisingly, however, the majority of student teachers had adopted a passive and adaptive action strategy, meaning that they adapted their actions according to the situation and silently accepted the pedagogy being practised. Only a few students reported using transformative action strategies and some reported that they occasionally influenced the pedagogical settings or said that they were able from time to time to influence critical incidents during their educational journey.

Table 2 also shows that some elements of the pattern were more frequently related. For instance, internal motivation, active strategy use and a deep approach to learning were often combined with a coherent conception of teaching. On the other hand, external reasons, a surface approach to learning, and difficulties in learning skills in terms of approach or actions strategy were often related to a fragmented conception of teaching.

Table 2. Student teacher learning patterns

Patterns	Meaning-directed Actor (F=7)	Undirected-inconsistent (F=6)	Disengaged Passer-by (F=4)	Meaning-directed Conformist (F=2)
What motivates the student in doing teacher studies?	The student's goal is mostly to be a professional teacher and/or the student shows engagement in gaining pedagogical expertise	The student's goal is mostly to be a professional teacher and/or the student shows engagement in gaining pedagogical expertise	The student's goal is to get an academic degree. The student shows little or no interest in teaching	The student's goal is to be a professional teacher and/or the student shows engagement in gaining pedagogical expertise
What kind of approach to learning does the student use?	The student uses a variable or deep approach to learning	The student uses a variable or deep approach to learning	The student uses a variable or surface approach to learning	The student uses a deep approach to learning
What kind of conception about teaching does the student hold?	Coherent	Fragmented	Coherent and Fragmented	Coherent
What kind of action strategy does the student use in critical incidents?	Situationally changing or active and transformative	Passive and adaptive.	Passive and adaptive	Passive and adaptive

3.1.1 Meaning-directed Actor (F=7)

The most typical pattern identified was meaning-directed actors. It was characteristic of this pattern that students were mostly internally motivated to study. Learning more about teaching was typically described as a primary reason for studying. The students also held a deep or variable approach to learning and they had constructed a coherent conception about teaching.

> I already had relevant work experience and I had clearly seen some things where I was missing a sort of theoretical framework, the reason why this work is actually done and why I am doing it, what kind of teacher I am, how I develop myself as a teacher. So I have kind of been able to get the answers to my questions from here.

> I have not come here to get a magical bag of tricks, or to get something that would help me teach my classes until I reach retirement age. I'm looking for a way to get deeper into teaching so that I can develop and maintain it. Or somehow to always keep myself updated in working as a teacher.

What characterises these students' approaches to learning was that they wanted to understand, to make connections with what they had learned before, and to change their beliefs if needed. Teacher students also more often intentionally chose their approach to learning after reflecting on the situation.

> … There are courses where you can challenge yourself and your way of thinking and sort of participate in this collaborative knowledge construction and learn that there is no single choice or right answer, but instead there are many that just depend on the reasoning behind them. In that way, you can compare responses, see other people's reasoning and with that be more prepared to then go to that school.

Student teachers' action strategies either changed from one situation to another or were transformative in nature, when they were able to make the effort to change their own behaviour or circumstances at least occasionally. Some of these students also actively sought out new learning experiences, for example, by getting into informal pedagogical discussions with other members in the scholarly community. Some students even reported that they had made an effort to change their non-functional pedagogical practices either by acting against the accepted rules in the situation, or by participating in the department administration process.

> On many occasions I raised my hand and said (laughs) something controversial and challenging. That is how I became sort of our class spokesperson and why I have been included in developing our educational programme, and so on. I tend to just say directly to the course lecturer 'Hey, excuse me, could we do this as homework?' ... such as if we are looking at something we could definitely do at home and everybody is just quiet and looking bored. It might be that teacher education is just full of good girls who just do not dare to say anything ... So that is why I raise my hand and say, 'Hey could we move forward, let's read this at home and you should send us a

link' ...

This pattern also identified some minor internal constructive friction. However, the inconsistencies can be interpreted as indicators of change towards more active learning. Such inconsistencies may also indicate that these students were able to vary their behaviour more easily in different situations and could choose if they wanted to adapt to the situational roles, or do something differently to enable meaningful learning for themselves or for the whole student group.

3.1.2 Undirected-inconsistent (F=6)

Undirected-inconsistent patterns were identified almost as often as meaning-directed actor patterns. Characteristically, undirected-inconsistent patterns lack coherence between the motivational and conceptual aspects and the approach and the action strategy adopted. Student teachers with this pattern described internal or variable reasons for studying and the use of a variable or deep approach to learning. Moreover, they held a fragmented conception of teaching and preferred passive and adaptive action strategies in studying.

Undirected-inconsistent student teachers also reported struggling to understand the meaning of learning goals and goal setting of their own studies. At the same time, they often reported that the curriculum applied at school had set the boundaries and goals in teaching practice, and that by following the curriculum one could justify one's actions whether pupils learned anything or not. Students also considered that the reflection of one's own action and learning was almost impossible in some situations, although as teachers they wanted to promote pupils' thinking skills:

> But somehow it feels so hard in just a couple of weeks to somehow reflect on your teaching in any depth. I can't anyway... somehow it is difficult to deeply reflect and at the same time set targets for your teaching practice. In our case it came at a halfway stage when I heard things like we don't have any targets at all. It was really unclear what the targets actually were. Also were we or the pupils missing our targets?… it was kind of confusing ... or then I just did not have it in me to plan lectures…

> And then ... (I've learned) that by using the curriculum it helps you quite a lot since then you have something to use to justify your own teaching ... for example how you should read it, and if you do something you are able to show that this is a purposeful activity instead of trying desperately to explain, for example in a parents' evening, what you were trying to do or achieve…But then ... if you do what you are able to and you can justify it, then even if someone does not learn to read…then there is nothing you can do about it... at least you have done what you can and have explained the reasoning behind it ... that is somehow why I am able to do this as a profession.

Students also identified dysfunctional pedagogical practices but did not make an effort to change them.

> It is interesting that while you are studying to be a teacher, the actual teaching you receive is sort of traditional. Like, for example, a lecture is purely classroom-type teaching and even small group classes have nothing special about them. Our teachers here don't use any sort of fancy new teaching methods. It feels that I'm just going around; nobody knows who I am and I'm just going along with the student crowd doing courses. It feels like the students support each other, while the faculty is somewhere else and now and then their paths cross. I did not, especially during the first few years, feel that we were part of any kind of scholarly community here in the university.

These students showed a willingness to engage in learning, but they did not fully succeed in doing so. Hence, they wanted to learn, but at the same time they lacked the understanding of active learning and how to construct meaningful learning environments for pupils at school.

3.1.3 Disengaged Passer-by (F=4)

All of these students in this category had prior experience as teachers. Therefore, most of them primarily wanted to have formal qualification for the profession they were already practicing and about which they already knew a great deal. They had external or variable study motivation, however they were highly motivated to get 'the thing done'. Some of them described experiencing a sort of disappointment:

> I've done these at quite a tight pace but actually this has been easier than I imagined. I've done about a hundred credits already and then there are also the additional special education credits for this term. So I've been a bit baffled, like 'was this it?' as my expectations were so high.

> I had high expectations of this education as obviously without it I could not get a post or permanent employment anywhere. It's a big thing and once I get this done I'm a qualified teacher.

Student teachers did not report many changes in their conceptions about teaching during their training. Some maintained a coherent conception of teaching, while some students' conceptions remained fragmented:

> I doubted my own competence as a teacher (before I entered teacher training), which is why I always felt that once I got the teaching qualification then I would be a real and good teacher. But the reality of working life has actually taught me so much about what being a teacher really is all about.

> It kind of feels like the teachers who teach here don't have that practical real life experience. I sometimes feel that I, with my relatively limited experience, know better how these things really are in the field than the teacher who is teaching me here.

Some of these students also reported that the pedagogical practices during teacher education were disengaging or dysfunctional. They reported that their studies had not fulfilled their expectations and because of this they had adapted (intentionally or unintentionally) a variable or surface approach to learning. Although some of these students were critical and could pinpoint the disengaging practices, their action strategy remained passive and adaptive in the critical incidents. The students did not mention in any detail their need or will to use active learning strategies. They usually preferred a practical approach to the teaching profession:

> It might in part have to do with the fact that, when I started my studies, I felt that what prepared a teacher for practical work was very important. So in that sense maybe I was unable to see the theoretical aspects that provided the framework for this job (laughs) or to see them as important. Nowadays I can appreciate theory more as I think you need something to base your actions on or something which your actions arise from… be it from theory or from something else, I can't exactly say what.

3.1.4 Meaning-directed Conformist (F=2)

There were also a few students whose learning differentiated from that of others. These students were identified as meaning-directed conformists. What characterised these students' learning was that they had internal reasons for studying and a deep approach to learning, and had constructed a coherent conception about teaching. In this sense, they were much like meaning-directed actors.

However, their action strategy was passive and adaptive, meaning that they did not see a need to influence their pedagogical settings in education, but contentedly took what the training had to offer them whether it was meaningful or not.

> Those first two years as a student, of course you did learn a lot about some things, but I wondered why I was being forced to learn these skills for which I see no use. I have not really needed to use them anywhere and at times I did not understand why certain things needed to be studied. Of course the two years were fun and I made friends in the study group. In the first two years you did not even really feel like university students. At times it felt like being in school and messing around with adult-sized children. Maybe only now, in this last year, has it felt like being a real university student and doing academic work.

These students' learning patterns were nearly coherent, but the self-regulatory aspect of learning was not present.

4. Discussion

In this study, student teachers' theme interviews, including retrospective storylines, were used to analyse student teachers' learning during their teacher education. Certain challenges were involved in using a retrospective approach (e.g. Cox & Hassard, 2007). Participants' experiences and their overall life situations are often difficult to recall and sum up in a single interview (Kvale, 2007). The student teachers' experiences (as well as their behaviour) are always situated in time, context and their overall life situations, which are often challenging to recollect and summarise at the end of the study path. Therefore, retrospection is also likely to have some memory effects on the data. Accordingly, retrospection would have very likely affected the data, including the generalisation of experiences. However, the reflective and process-oriented design also gave the participants an opportunity to reflect on their study path and identify significant experiences in it. This resulted in rich data and ensured that the participants recalled and reported only significant experiences. Moreover, the data sample demographically represented the student teachers in a large research-intensive university in terms of age and gender. The student teachers' descriptions also became superfluous in this data. The data reached the point where student teachers' descriptions did not add anything new that could not be attached to already existing categories (see e.g. Onwuegbuzie & Leech, 2007).

However, just as there are similarities between different teacher education programmes in Finland and abroad, there are also differences between these learning environments. Therefore, these findings cannot, as such, be generalised to teacher education in general. Nevertheless, it is assumed that similar findings can be found in other teacher education contexts. This must, however, be validated by empirical evidence.

This study contributes to an understanding of research into student teacher learning patterns by exploring the quality and consistency of emerging multidimensional patterns. We identified four qualitatively different kinds of learning

patterns that are in line with previous research findings concerning student learning (Vermunt & Vermetten, 2004). In our study we also discovered that teacher students have meaning-oriented, reproduction-oriented and application-directed tendencies. Among teacher students, there were also those who were undirected learners and had inconsistencies in their learning patterns. Therefore, our study confirms the findings gathered from among different kinds of university student groups and adds that student teachers are not an exception among students in terms of their learning (Vermunt & Vermetten, 2004). This also raises a serious question as to whether they should be, as they are becoming experts of pedagogical teaching-learning processes. The student teachers' tendency to adapt and passively conform and their lack of self-regulation of learning may result in challenges to their gaining of active professional agency, and thus leading to difficulties in facilitating learning agency with pupils in the school.

A complementary way of analysing students' learning patterns by concentrating on different aspects of the patterns and the relationship between the different aspects enabled us to explore the internal consistency of the patterns. A positive finding in terms of meaningful professional learning was that the most typical category in student teachers' patterns was meaning-directed actor. It was also the most internally consistent pattern, suggesting that these students had adopted orientation and learned strategies that will probably support them in the transition to working life and help them to continue professional development during their career. However, some of the student teachers' patterns showed strong internal friction between the different aspects observed. For example, the undirected-inconsistent pattern may lead to alienation or burdening in professional life if the strong motivation to be a 'good professional' and the critical observations of the pedagogical practices are not accompanied by active efforts to construct better learning environments. Moreover, the deep approach to learning without active self-regulative action strategies in a meaning-directed conformist pattern may lead to static professional orientation which is not functional in developing the school or in heterogeneous, and therefore challenging, school environments.

One reason for the inconsistencies in the patterns may be the unwillingness to change one's behaviour or thoughts, or lack of self-regulative skills. However, the inconsistencies may also indicate that students' learning patterns are changing. They may even provide a fruitful ground for conceptual changes and for the formation of a reflective teacher identity, if these students are identified and their active learning is facilitated. Moreover, the results suggest that student teachers' learning is a complex entity and one element, such as strong internal motivation or coherent conceptions of teaching and learning, is not enough to build up an efficient pattern of learning. Hence there is a need for further analysis as well as longitudinal studies focusing on educational tracks, and beyond into the working life and transitions within and between them.

The results showed that there were differences in students' regulation of learning, and they resonate with some previous research proclaiming that teacher education does not always provide an optimal learning environment for active, meaningful learning (Niemi, 2002). One reason for this may be that gaps occur between teacher educators' beliefs and actual pedagogical practices (Lunenberg & Korthagen, 2003; Lunenberg, Korthagen & Swennen, 2007), as well as the students' engagement and how their experience fits with the given contexts. To sum up, becoming a teacher, in light of the present findings, is still a rocky road. Future teachers experience several positive and negative learning episodes during their journey, and they do not fully succeed in solving the pedagogical challenges coming up to their way as becoming a conceptual and practical professionals of meaningful and active teaching-learning process. As an example of this, the fact that active learning is rare poses the question of whether teacher education is able to foster students' active agency during their studies, and in doing so, construct a beneficial foundation for teachers to continue their professional development and create meaningful learning environments for themselves and their pupils in school.

Acknowledgements

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Appendix 1. Contextually modified version of the Teachers Professional Landscape Inventory (TPLI) instrument.

Introduction to the interview

Today we are going to go through your experiences of teacher education and your thoughts regarding teachers' work.

The interview data will be treated confidentially and only the members of the research group will handle it. In addition, the identity of the participants will be protected and their identification will not be possible from the reported results.

The interview is divided into three parts: first I will ask you some background information, then we will discuss your experiences of teacher education, and finally I would like you to reflect on your future work as a teacher.

I You as a teacher and your teaching experience

1. What kind of teacher qualification will you get from your education? Are you studying to become a primary school teacher or a subject teacher?

2. What made you want to become a teacher?

3. How much experience do you currently have of the work of a teacher? Do you have other teaching experience in addition to normative teaching practice? If so, what kind and how much?

II Conceptions of your own agency in teacher education

4. You will graduate soon. What are your thoughts and how do you feel regarding your studies?

Here interviewees were asked to visualise their teacher studies and draw it on a piece of paper as they saw it; they visualised their journeys as timelines, winding roads or maps. These visualisations were used to support the sharing and discussing of experiences. Then the participants were asked to identify and mark on their visualisations the key positive, promoting events and the key negative, hindering events that made a difference to their studies. After that, the students were interviewed based on their visualisations. They were asked to describe their experiences one event at a time, and were requested to clarify and elaborate on their descriptions: when and where the key event in question occurred, why they thought it had occurred, and what happened after the event, as well as whether others had contributed to it. We encouraged interviewees to recall what, for them, had been the most significant (i.e. the most challenging or inspiring) situations and periods during their studies that may have influenced their learning and development as teachers.

5. Describe and visualise your learning path in teacher education on this piece of paper. The image may be a timeline or other suitable way of describing the study path. Mark the significant events of your study path in the visualisation. The situation may be:

-positive/inspiring or negative/frustrating

-a single encounter with a person or over a longer course/study period, during which you learned something essential for your future work.

These are support questions for the visualisation-based interview; each event was recalled by addressing these questions.

- What happened? Can you tell me more about the event? Who was there?

- What made the event particularly significant?

- What changed (thought or activity)? What did you think at first, how did your thoughts change after the event? What made you change your thought or actions? How did you feel?

-What essentials did you learn about teacher's work and being a teacher?

- How typical/atypical is the study situation you described? If the situation was atypical, what is the typical learning situation in teacher education?

-In addition to the above-mentioned situations, do you have in mind any longer episodes that influenced your thoughts about being a teacher or alternatively, situations that influenced your conceptions of being a teacher in a surprising and quick way?

6. Have your thoughts changed during the teacher education? If so, how? Could you briefly describe how your thoughts have changed during your study path? What did you think at the beginning of your studies, and what do you think now?

7. How would you describe teacher education from a student's perspective? What is it like to study here? Describe a typical day of studying.

8. How do you think a teacher educator sees the learning environment? What is the everyday work for teacher educators

like here?

9. How would you describe a typical pedagogical situation in teacher education? What is happening and who is present? What is the teacher educator doing, and what are the students doing?

10. What kinds of strengths do you think teacher education has supported?

11. Is there any kind of challenge/question/issue that makes you wonder regarding your future work as a teacher? If so, where do you get support for this at the moment?

12. Do you think that teacher education should be further developed? If so, how? What should be done to reach that aim you just described?

III Perceptions about teacher's professional agency in primary school

13. What is everyday life like in school from a teacher's perspective? Describe a typical work day.

14. What is everyday life in school from a pupil's perspective? Describe a typical school day.

15. You are almost a qualified teacher: What do you consider your core tasks are as a teacher? Why? How do you act to achieve your goals and to fulfil your core task?

16. Describe a typical lesson in your future class. What is happening? What are you as the teacher doing, and what are the students doing?

17. How do you see the importance of the professional community for your future work?

18. How would you like a) your pupils b) the parents c) the head teacher and other teachers to describe your work/working with you as a teacher?

19. Do you think that primary schools should be developed further? If so, in what direction? How would we get to the situation you described?

20. Is there anything else you would like to tell me or clarify?

Thank you!