

JYU DISSERTATIONS 25

Hilkka Korpi

Changing Landscape in Professional Development

Narrative Research from the Physiotherapy
Students' Perspective



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF SPORT AND
HEALTH SCIENCES

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In gratitude to my parents for all the support and wisdom,
You have given to my children and me.

“Hope” is the thing with feathers

By Emily Dickinson

“Hope” is the thing with feathers -
That perches in the soul -
And sings the tune without the words -
And never stops - at all -

And sweetest - in the Gale - is heard -
And sore must be the storm -
That could abash the little Bird
That kept so many warm -

I’ve heard it in the chilliest land -
And on the strangest Sea -
Yet - never - in Extremity,
It asked a crumb - of me.

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ABSTRACT

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Finnish summary

Diss.

Physiotherapy students construct their professional development gradually in a socio-cultural process between school and working life in the health care sector. The Health Care Professionals Act 559/1994 and National Qualification Framework (NQF) define the legislative basis and education for physiotherapists in Finland. The European Qualification Framework (EQF) defines the learning outcomes in education and they focus on what knowledge, skills and competences the learner has acquired by the end of the learning process, but it does not identify how outcomes are achieved.

The aim of this study is to investigate and understand physiotherapy students' stories about their professional development during their whole study time in physiotherapy. A qualitative narrative approach was used in this dissertation, which consists of four separate articles.

At present, professional development has four main aspects: previous experience, new learning, work culture and work agency. All those elements are needed in order to move forward in professional development. Three story models were formed from the students' narratives: the story of an autonomous learner, the story of becoming a physiotherapy community member and the story of a critical developer. After students had found a suitable study place for themselves, learning to learn and learning physiotherapy practical work were the meaningful turning points in their narratives. Professional development is based on previous experience where reflection and narrative learning promote learning. In the future, professional development seems to move in the direction where the andragogic principles and whole person is considered more in the learning process. Creativity and multidisciplinary teamwork is needed for developing the work culture. With the previous, an independent active agency is bringing hope for professional development.

It is essential to recognize the different elements of professional development. The different stages are equally meaningful and important in the process of development for expertise.

Key words: physiotherapy education; physiotherapy student; professional development; narrative approach

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I think it would be proper for me as a researcher of students' stories to start by telling my own story. Of course, there are many stories I would like to tell, but I guess you are more interested in hearing the story of my development in professional life, and what have been driving it. After many years of studying this subject, I can now understand that my personal stories are impossible to be disconnected from my professional development. Reflecting into the past and my personal growth are as important as researching new information and finding new tools for gaining better competences and agency in different work contexts.

I will like to give special thanks to you who have understood, guided and helped me in my professional story. First, I wish to thank my supervisors for supervising and believing in me. Liisa Peltokallio, I am so happy to have had you as my supervisor. I have learnt so much from you. Arja Piirainen, you are always understanding and supportive. Your presence in my professional story has been priceless. I also want to thank my reviewers' Professor emerita Elina Suutala and Professor Anne Marit Mengshoel for positive and valuable feedback that helped to improve the quality of my dissertation. I also want to thank Professor Kaisa Mannerkorpi for being my opponent.

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I have grown to be an adult educator in Vaasa Adult Education Center, Vakk, and continued my teaching career in Vamia. My special thanks goes to Anna-Maija Rentola who was my immediate manager for 7 years. I also wish to thank in a special way, The Sisters, my previous Kutu-team (Support of Rehabilitation) and many other colleagues that have shared their professionalism with me. Thank you for co-operating with me!

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I want to thank in a special way, my parents, family and relatives for creating positive attitude for study and development. I am so grateful for your love and all of the support you have given to me.

There are so many people I am not able to mention in this little story. You might know that there are people in our lives that touch us deeply and positively. Many patients, students, friends, relatives, have helped me to continue my professional development by encouraging and understanding me as a person.

All of you have simply given me HOPE!

Mustasaarella, elokuussa 2018

Hilkka

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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following publications, which will be referred to in the text by the Roman numerals I-IV:

- I Korpi, H., Peltokallio, L., & Piirainen, A. (2014) The story models of physiotherapy students' professional development. Narrative research. *European Journal of Physiotherapy*, 16(4), 219-229 doi: 10.3109/21679169.2014.934279
- II Korpi, H., Peltokallio, L., & Piirainen, A. (2018) Problem-based learning in professional studies - from the physiotherapy students' perspective. *Interdisciplinary Journal of Problem-Based Learning*. (in press)
- III Korpi, H., Peltokallio, L., & Piirainen, A. (2017) Practical work in physiotherapy students' professional development. *Reflective Practice. International and Multidisciplinary Perspectives*, 18(6), 821-836. doi:10.1080/14623943.2017.1361920
- IV Korpi, H., Peltokallio, L., & Piirainen, A. (2018) Seeking a new perspective on Physiotherapy professional development. Meta-synthesis of physiotherapy students' professional studies. (submitted)

ABBREVIATIONS

BC	before Christ
ECTS	European Credit Transfer and Accumulation System
e.g.	exempli gratia [for example]
EHEA	European Higher Education Area
ENPHE	European Network of Physiotherapy in Higher Education
EQF	European Qualification Framework
ER-WCPT	European Region - World Confederation for Physical Therapy
et al.	et aliae [and others]
EU	European Union
f	female
FAP	Finnish Association of Physiotherapists
GAS	Goal Attainment Scale
HE	Hallituksen esitys [Government proposition]
ICF	International Classification of Functioning, Disability and Health
LBD	Learning by Developing
m	male
NQF	National Qualification Framework
OIS	Open Innovation Space
PBL	Problem Based Learning
trans.	translated
UAS	University of Applied Science
vp	valtiopäivät [parliament]
WCPT	World Confederation for Physical Therapy

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ABSTRACT

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ORIGINAL PUBLICATIONS

1 INTRODUCTION

Studying is a significant stage in life during which one grows towards a new profession. For adults, professional learning brings hope to their lives; a new stage of life, professional agency is waiting around the corner. After this period, one is ready to step into working life, where it is realized that professional development will continue. Expertise and professional development grows gradually over time (e.g. Dreyfus & Dreyfus 1986). As a researcher, in this dissertation I try to describe professional development and learning with the help of a narrative approach. It is a new way of getting closer to the phenomena. I try to enter into the world of physiotherapy students' professional development and to understand what the students tell in their written portfolios during their education in the university of applied sciences. To clarify this, I borrow 21 physiotherapy students' stories, which Ricoeur (1991) sees as being a quest into their narratives.

Stories are ancient ways for people to understand their place in the world, also to cure themselves (e.g. Ricoeur 1984, 10; Mäkisalo-Ropponen 2007, 5; Kim 2016, 6). According to Ricoeur (1984) emplotting a story is both an organization of events into a story with a plot (*muthos*) and an "imitation of an action" (*mimesis*). *Mimesis*, though, contains more than the emplotment, more than the level of *mimesis*. It consists also of a reference to the world of action, and to the event of reading, which means that the structure is completed only when the reader reads the text (Ricoeur 1984; 1991).

The popularity of narrativeness in teaching and research has increased in different disciplines of science due to the constructivist concept of learning. Every student constructs their own study path and expertise based on their earlier knowledge, skills and concepts. When human beings tell stories, the function is to make sense of our experiences (for example Sarbin 1986; Polkinghorne 1988; Bruner 1990, Irwin 1996, Rossiter and Clark, 2007; Kim 2016), which is why it can be seen as one of the central tools of learning (Tolska 2002). Simultaneously students are building their professional identity (Eteläpelto & Vähäsantala 2006; Clark & Rossiter 2008). In the narrative approach students' life experiences, new ways of learning, reflection, transformative learning and the sociali-

zation process, which take place in different work contexts during their studies to become physiotherapists, merge into a unified story, which makes a deep connection amongst all of the components of learning.

The main goal of Finnish education policy is to offer equal opportunities for receiving education. The right to basic education free of charge for everyone is even written into the Finnish constitution (Constitution of Finland/1999, Chapter 2, Section 16). In addition, upper secondary education and tertiary level education include no study fees for citizens (Universities Act/2009, Chapter 2, Section 8; Universities of Applied Sciences Act/2014, Chapter 3, Section 12). Governance of the education system has been based on de-centralization since the early 1990s. Higher education in Finland is based on the division into universities and universities of applied sciences (UAS), in other words the dual model. Universities emphasize more scientific research and instruction and UAS are more focused on practical professional skills. The UAS degree is generally worth 210-240 ECTS. Universities and UAS have extensive autonomy. Quality, effectiveness and practical teaching arrangements are the responsibility of the education providers (Finnish National Agency for Education 2017). According to the Universities of Applied Sciences Act 932/2014 all the universities of applied sciences decide independently on curricula and pedagogical solutions. In Finland, physiotherapy education is provided by UAS at Bachelor's level. After that, it is also possible to continue studying physiotherapy at Master's level at the University of Jyväskylä and even going on to complete a PhD there (The Finnish Association of Physiotherapists 2012).

Physiotherapy education has been given for more than a century in Finland. Already in 1882, physiotherapy was an elective subject at the University of Helsinki. In 1908, Czar Nicholas II handed down a decree on the provision of medical gymnasium education at the University of Helsinki. Today physiotherapists are educated at universities of applied sciences (Bachelor's degree, 210 ECTS), which means 3.5 - 4 years of full-time studying. The entry requirement is a certificate from an upper secondary school or the matriculation certificate, a vocational qualification or corresponding foreign studies (The Finnish Association of Physiotherapists 2012). It is possible to study physiotherapy in 15 degree programmes in universities of applied sciences in Finland, 13 in Finnish, one in Swedish and one in English. According to the Universities of Applied Sciences Act 932/2014 all the universities of applied sciences decide independently on curricula and pedagogical solutions. The curricula show a variety of pedagogical strategy. They include, for example, problem-based pedagogy, innovation pedagogy, integrative pedagogy, multi-professional team learning, the OIS approach (the Open Innovation space), or the LBD practice model (Learning by Developing) (Sjögren et al. 2016; The Finnish Association of Physiotherapists 2017).

Being a physiotherapist is a regulated profession in Finland. The Act on Health Care Professionals 559/1994 and National Qualification Framework (NQF) define the legislative basis and qualifications or education leading to them for physiotherapists in Finland. The European Qualification Framework

(EQF) defines the learning outcomes in education. The EQF is a translation tool that helps communication and comparison between qualification in the European Union's 28 member states. The free movement of European people is one of the most important goals of the EU, as is also promoting workers' and learners' mobility and facilitating their lifelong learning across Europe. The EQF was adopted by the Council of the EU and the European Parliament in the Recommendation of 23 April 2008 with a commitment to put it into practice across Europe. Learning outcomes in knowledge, skills and competences are described in eight levels of education, which allow any national qualification framework (NQF) in Europe to relate to the EQF levels. It is possible to compare all types of education, training and qualifications, from school education to academic, professional and vocational at each of its levels. Physiotherapy higher education is located in level six of the eight levels of education in Europe (European Commission 2018).

There has been no previous narrative research on physiotherapy students' professional development over the entire period of their studies. In a search made on 14.12.2017, using the keywords "physiotherapy students" AND "study time" AND "professional development" AND "narrative research", no articles were found (CINAHL, Eric and Academic Search Elite). The results of this research will help when planning education and courses in physiotherapy and in vocational and professional education generally.

2 PROFESSIONAL DEVELOPMENT

The meaning of this dissertation is to investigate physiotherapy students' stories for becoming as professionals during their studies. Overall, there is no easy way of trying to explain professional development, even though it is a natural part of our life. The theory of development for expertise according to Dreyfus and Dreyfus (1986) is a traditional way of describing transition from a novice to an expert. It was used also at the beginning of this dissertation process and it helped in understanding the longitudinal process of professional development. The narrative approach to understanding the students' view in their professional development became a natural continuum for getting closer to the long-term phenomena.

In the core of the theoretical framework in this dissertation, adult learning is considered first because professional development always happens via individual learning process. Next, work culture and its role in professional development are viewed because largely physiotherapy professional development takes place in the context of real working life. Learning is needed in order to cope with working life and also to develop it. Thirdly, professional agency in physiotherapy including expertise and competences needed in physiotherapy professional development are discussed. Students' goal is to cope independently at work and become proficient employees.

Some historical perspective and little overview of the roots of adult learning and physiotherapy profession has been attached to the framework, despite the understanding that studying history is an own area of research. Anyway, it is necessary to take a look at history in adult's learning story and development of the physiotherapy profession as well because understanding our history is imperative in creating our future. That is in our interest in creating even better work culture for the students and health care workers in the future. The work culture is in continuous change, social and health care structures are significantly changing because of the social and health care reform in Finland (Finnish national government's proposition HE 16/2018 vp and HE 15/2018 vp). Today's healthcare students will enter into a completely different working culture

than what it is nowadays. New types of health care services are gradually being created.

The major aspects in adults' learning are experience and reflection. When writing their portfolios students are forced into reflection. Portfolios represent a person's growth and learning experiences during their studies (Linnakylä et al. 2007). Besides professional development, our narratives contain our personal development, the whole person, as well. Different experiences, interaction with other physiotherapists and interdisciplinary co-operation are important in learning. The sociocultural aspect and learning at work have a central role in professional development. Students learn by following experts in the field and younger colleagues by communicating with their more experienced colleagues.

The goal in students' professional development is to achieve professional agency, which is built up by learning professional competences and gradually deepening participation in work practices. The physiotherapy profession has deep roots in ancient times, currently valuable new tools to improve functionality, the result of evidence-based thinking, have been found which have again made the emotional aspect of our healing profession current. The holistic approach is increasingly recognized to be at the core of adult learning and also of the physiotherapy profession.

2.1 Adult learning

The roots of the adult learning story go back to ancient times. Learners need education to construct their professional agency. Teacher-student relations have an important role in development. Bruner (1966) sees the purpose of education to be that of stimulating inquiry and skill in the process of knowledge acquisition.

Adult learning has special features in relation to the learning of children and young people. Adults have generated life experience, which runs through learning. An adult as a learner also has to connect many issues when learning, with other responsibilities than studying, for example a family. Every adult learner has his or her own life situation, which is a starting point for his or her professional learning story. The pathway to expertise in one's own profession is not always that easy to build, but learning new skills and expertise gives the travelers hope. Illeris (2014) defines adult learning to be a very complex process involving integration of an internal and external interaction process between the learner and his or her social, cultural or material environment. Learning always takes place in the context of a specific society, which sets the basic conditions for the learning opportunities.

2.1.1 Roots of adult learning

The most central roots of Western culture, education, schooling and civilization originate from Greece, the cornerstone of Greek mentality, *paideia* (Jaeger 1959;

von Wright 1989; Castren & Pietilä-Castren 2015). Two different traditions can be separated underlying Western culture and particularly modern European civilized thinking: the legacy of the Hellenes (Athens) and Palestine (Jerusalem) (von Wright 1999; Siljander 2002). McLean (2005) identifies the cultural heritage of Antiquity, i.e., the Greco-Roman heritage of civilization, as coming from both the Hellenistic *paideia* tradition and the *cultura amini* tradition from Ancient Rome. Latin authors, for example Cicero (106 BC - 43 BC), used the term *cultura amini* for cultivating the land, for land, just as good as when left without cultivation, will produce only disordered vegetation of little value. Therefore, the human spirit will not achieve its proper results unless trained or educated. Culture corresponds most closely to the Greek term for education (*paideia*) as the development of character, taste and judgement. On the other hand, culture can be traced to the term civic (citizen, civil society and civilization). This reflects the need for a person to belong to a social group in order for the human spirit to produce its proper results. By bringing to a person the resources of tradition (the *traditita*), or past wisdom, the community facilitates comprehension. Hearing and enriching the mind with examples of values identified in the past inspires it to produce something analogous (McLean 2005).

Teacher-student relations play a significant role in the development of Western culture. There were more or less wise speakers and teachers traveling around Greece in the fourth century BC. They called themselves "sophists". In the beginning, the word meant wise, in Greek *sophos*, someone who was competent in some skill, but later the word meant a professional traveling teacher who made a living by teaching. From amongst the Greek philosophers maybe the most influential people, teachers and developers of thinking were Socrates (470 BC - 399 BC), Plato (428 BC - 348 BC) and Aristotle (384 BC - 322 BC). For Socrates, the exercise of reason and argumentation was important in order to recognize one's own limitations as a human being. One of the most significant inputs that Socrates has given to Western thinking is his dialogical teaching method, which includes asking, discussion and contradicting false arguments and contradictory conceptions. For Plato, the life of reason is the best life, even if it cannot ultimately answer every question. He brought the concept of the idea in thinking. Aristotle used reason to investigate the world around him and he added a more active role for the mind (Valentin 1953; Grimberg 1957; Saari-nen 2001).

As we get deeper into the subject of the adult learning story, the concept of andragogy emerges as a starting point in understanding how adults learn. Andragogy is a unifying concept of adult learning and it has probably changed the role of the learner in adult education more than any other force (Lindeman 1926a; Brookfield 1987; Reischmann 2004; Savicevic 2008; Knowles et al. 2012). As Lindeman (1926a, 9) states: "Education is life" for adults, it includes the development of the whole personality, where general knowledge, lived experience and professional education merge.

According to Reischmann (2004), the term andragogy was used first by the German teacher Alexander Kapp in 1833. He used it to describe Plato's ele-

ments of education. Andragogy refers to “man-led” rather than pedagogy, which has the root *ped-* meaning “child”. In a book entitled ‘Platon’s Erziehungslehre’ (Plato’s Educational Ideas) he describes the lifelong necessity to learn. He argues that education, self-reflection, and personal development is the first value in human life. So already here we find patterns which can be found repeatedly in the ongoing history of andragogy: Included and combined are the education of the inner, subjective personality (‘character’) and the outer, objective competencies; and learning happens not only through teachers, but also through self-reflection and life experience. Kapp does not explain the term *Andragogik*, and it is not clear whether he invented it or whether he borrowed it from somebody else. He does not develop a theory, but justifies ‘andragogy’ as the practical necessity of the education of adults (e.g. Savicevic 1991; Reischmann 2004).

“A fresh hope is astir” as Lindeman (1926a, 6) notes as he continues the andragogic learning story. The purpose of adult education is to put meaning into the whole life of adults. Only adulthood and maturity define its limits and all adult persons find themselves in specific situations with respect to their work, their recreation, their family life, their community life, and so on. Adult education begins at this point. Moreover, the resource of highest value in adult education is the learner’s experience. If education is life, then life is also education. “The whole of life is learning, therefore education can have no endings.” (Lindeman 1926a, 6). Lindeman also highlights the importance of situations, not subjects, in learning. It is “via the route of situations” that the movement made to achieve a desired result is achieved (Lindeman 1926a, 8). Later Lindeman (1945; 1951) added a strong commitment to progressive social action to these qualities. A committed and action-oriented form of education relates people to their community.

There have been interesting contributions to discussions on andragogy from various countries, especially from Central and Eastern Europe and from the USA. In Europe, in Yugoslavia and later Serbia, Dusan Savicevic (1926 – 2015) has been one of the leading experts in andragogy. He has worked internationally for the development of modern adult education, participating in efforts aimed at enabling all categories of adults to assume greater responsibilities in their professional life and society (Knox & Reischmann 2015). Savicevic (1999) defines “andragogy as a discipline, the subject of which is the study of education and learning of adults in all its forms of expression” (Savicevic 1999; Henschke 2003, Reischmann 2004). In the United States, besides Eduard Lindeman, Malcolm Knowles (1913 – 1997) introduced the concept of andragogy to a larger public and he created his own andragogic principles. The idea of “the art and science of helping adults learn” is one of the core meanings of andragogy (Knowles 1980, 43). In every profession, there are the “need to know” issues. In addition, previous life experience, internal motivation, problem or life centered orientation and capability to learn for real life situations play an important role in adults’ learning (Knowles 1980; Knowles et al. 2012).

The terms “lifewide education” (Reischmann 2004) and “lifelong learning” (Knowles 1984) have extended this field to even include formal and informal, intentional, institutional and autodidactic learning. The perception that the education of adults happens in more situations than just in adult education has also widened the conception of adult learning. People learn best when treated as human beings and the ultimate purpose of all education is to empower individuals through a process of lifelong learning (Knowles 1984; Reischmann 2004; Savicevic 2008; Knowles et al. 2012).

2.1.2 Narrative approach in learning

Narrative has been on the move since the 1980s and narrativeness is used in learning, for building identity, as a research approach and as a practical tool, for example in teaching and rehabilitation. Adult education began theorizing about how we learn through narrative at the beginning of this century, although using stories to teach has always been part of the practice for teachers, philosophers and researchers (Elbaz 1991; Clandinin & Connelly 2000; Clark 2001; Elbaz-Luwisch 2007; Rossiter & Clark 2007; Webster & Mertova 2007; Huttunen 2012; Estola & Syrjälä 2014; Kim 2016).

The word narrative comes from Latin *narrat* (“related”, “told”), *narrare* (“to tell”) or *narrativus* (“telling a story”). All of which are akin to the Latin *gnārus* (“knowing”) derived from ancient Sanskrit *gnā* (“to know”) (Kim 2016, 6). Many theorists agree narrative to be a recounting of events that are organized in a temporal sequence. This linear organization of events makes up a story (Abbott 2002). Barthes (1975) sums up as follows:

Narrative is present in myth, legend, fable, tale, novella, epic, history, tragedy, drama, comedy, mime, painting, cinema, comics, news item, and conversation. Moreover, under this almost infinitive diversity of forms, narrative is present in every age, in every place, in every society; it begins with the very history of mankind and there nowhere... been a people without narrative... narrative is international, trans historical, transcultural: it is simply there, like life itself (Barthes 1975, 237).

Story is a detailed organization of narrative events arranged in a structure based on time although the events are not necessarily in chronological order (Kim 2016, 8). That is the reason why stories (not narratives) have a beginning, middle and end (Labov & Waletzky 1967; Propp 1968; Ricoeur 1984). Therefore Kim claims (2016, 9) story to be clearly a higher category than narrative; a story gives a “full” description of lived experience, whereas a narrative may be a “partial” description of lived experience but, “narratives constitute stories, and stories rely on narratives”. A starting point for a discussion of narrative and story in adult education is an understanding of narrative as a broad orientation grounded on the premise that narrative is a fundamental structure of human meaning making (Bruner 1987, 2002; Polkinghorne 1988, 1996).

The most common and oldest narrative is known to be myth (*mythos* in Greek means story), which is transmitted from generation to generation. Myths are available in every culture. Mythic narratives can be divided into two main

branches: historical and fictional. Historical narrative introduces the reality of past events and leads to a genre of biography (Ricoeur 1984; Kearney 2002). Fictional narrative focuses on the redescription of events in relation to “beauty, goodness, nobility” and may embellish the events (Kim 2016, 6-7).

With the help of a narrative approach, it is possible to describe and understand professional development and the constructing of one’s professional identity (Eteläpelto et al. 2006; Greenfield et al. 2015). Narrative learning falls under the larger category of constructivist learning theory. The basic idea is that knowledge can never be independent of its knower and objective projection of the world, but on the contrary, it is self-built by the individual or community. A human being constructs knowledge based on previous knowledge and experiences. The past is in a way always present in the individual’s experience, which makes learning a personal act (Tynjälä 1999; Rauste-von Wright et al. 2003; Clark et al. 2008). Learning is also social in nature and social constructivism emphasizes the role of interaction in learning (e.g. Aittola 2012). Along with this constructivist thinking the narrative approach has also increased in popularity as a tool of learning (Tolska 2002).

Narrative learning is a twofold concept fostering learning through stories, and conceptualizing the learning process itself. Learning through stories involves stories heard, stories told and stories recognized. Stories are powerful because they engage our spirit, our imagination, our heart holistically. When we are learning something, we are trying to make sense of it and figure out how it is related to what we know already. We are creating a narrative of what we are learning. This narrative construction, storying our growing understanding of something, is how we learn (Clark et al. 2008; Greenfield et al. 2015). When human beings tell stories, the function is to make meaning of our experiences (e.g. Sarbin 1986; Polkinghorne 1988; Bruner 1990; Irwin 1996; Clark et al. 2008). Bruner (1990) sees narrativeness as structuring of experiences and the world, as constructing and as a way to use language. He talks about language as an instrument of communication and narrativeness as an instrument of mind to form meanings. If Bruner’s thinking is further developed, narrative thinking with its metaphors can be seen as one central tool of learning (Tolska 2002).

With the help of narrativeness learners can build their professional identity and grow towards expertise in their own field. Narrative identity is time reshaping story that accumulates during human life and from life experiences (Bruner 1987, 1990; Eteläpelto et al. 2006; Clark et al. 2008). Identities are deployed in situated narrative interactions when people position themselves in their practical contexts. A story acts for its teller as a tool of self-reflection and helps to form the conception about skills and knowledge (Deppermann 2013; Tyson 2016). The learning process and professional competences are based on previous learning and experiences. Professional identity in the health sector is built in real work situations and through cooperation between school and working life (Lähtenmäki 2006, 18-21; Laitinen-Väänänen 2008, 13; Piirainen & Viitanen 2010). When shaping their conception about life and what they have learned, learners also shape their coming life. The learners’ interpretations of

themselves creates the basis for how they interpret future experiences (Tynjälä 1999, 162-163). Hänninen (2002, 28) differentiates narrativeness into three dimensions: a narrative or a told story, an inner or experienced story and a drama or lived story. The inner story is primary in the perspective of experiencing meaningfulness in life when a person interprets life events. With the help of an inner story, the past is made understandable and the future is anticipated.

Many teachers have intuitively known that stories in any form are effective educational tools. Narrative allows us to link learning with the prior experiences of the learner. Telling their own learning stories helps students to reflect and recognize their own ways of learning and develop it. Stories are learning material, which promote self-reflection and professional development (Clark et al. 2008). Nowadays there are various narrative tools in learning that foster reflection, for example autobiographical writing, learning journals (Clark et al. 2008), diaries, written portfolios and e-portfolios (Linnakylä et al. 2007). The portfolio is a story of self. It can be seen as a tool for the creation of professional identity and professional development. The portfolio process during studies helps students to get to know their own learning story, to be aware of their own work and develop it. Hearing the stories of others also increases students' understanding and provides a perspective on the development of the whole community (Vanhanen-Nuutinen 2004; Moon 2010; Flanagan 2015).

2.1.3 Transformative learning

Experiences and reflection are major aspects in transformative learning. Transformative learning is a process of progress in a learner's life and there are as many different transformative learning stories as there are people who experience transformation (Cranton 2006). Lindeman (1926b) states that the chief purpose of adult education discovers the meaning of experience, the "technique of learning for adults which makes education conterminous with life and hence elevates living itself to the level of adventurous experiment". According to Dewey (1938), learning is applied when it takes place in everyday life where problems are real. In addition to experience, reflection is seen as essential in adults' learning. The learner's most fundamental conceptions need to be questioned (Kolb 1984; Mezirow 1990; Malinen 2000; Merriam et al. 2007). Kolb (1984, 40-42) presents experiential learning as a process of a four-stage cycle involving concrete experience, reflective observation, abstract conceptualization and active experimentation. He also highlights that the learning process is not identical for all human beings.

The transformative learning theory of Mezirow (1978) has a central place in the adult education literature. Transformative learning occurs when people critically examine their habitual expectations, revise them and act on the revised point of view (Mezirow 1978; 1990). Transformative learning transforms problematic frames of reference to make them more inclusive, discriminating, reflective, open, and emotionally able to change. The most personally significant transformations involve a critique of premises regarding the world and one's self. Transformative learning may be understood as the epistemology of how

adults learn to reason for themselves, rather than act on the assimilated beliefs, values, feelings, and judgements of others (Mezirow 2009). According to Illeris (2014, 40) transformative learning is the kind of “learning which implies change in the identity of the learner”.

Future importance to transformative learning is a holistic approach in addition to the use of rational discourse and critical reflection. A holistic approach recognizes the role of feelings, other ways of knowing (also intuition and somatic knowing) and the role of relationships with others in the process of transformative learning. This means actively dialoguing about the feelings of learners, reasoning when fostering transformative learning (Taylor 2008). According to Dirkx (2006, 46) it is “about inviting the whole person into the classroom environment, the person of fullness of being, as an affective, intuitive, thinking, physical, spiritual self.” The holistic approach includes the importance of relationships (Carter 2002; Dirkx & Smith 2009). In addition, a successful peer-learning partnership reflects valuable qualities: nonhierarchical status, no evaluative feedback, voluntary participation, partner selection, authenticity and establishment of mutual goals (Eisen 2001). In addition, project studies optimize transformation. According to Illeris (2015) it is possible to combine new learning with challenges to accustomed and habitual understandings, attitudes, and ways of relating to others.

2.2 Physiotherapy work culture

Students’ goal is to prepare themselves for real working life during their studies. Physiotherapists may be working in public, private or third sectors. It is also possible to establish a company or act as an independent practitioner. The upcoming reform of the social and health care service system will give the provinces decision-making power on services and service producers (Finnish national government’s proposition HE 15/2018 vp). Patients will then have more options to choose where they want to be treated (Finnish national government’s proposition HE 16/2018 vp). In October 2019, the provinces have to give information about service arrangement and service producers (HE 15/2018 vp). In practice, it is yet unknown how work culture will change after the reform.

To a large extent, students’ learning take place in instructed practical training in real working life with the help of workplace instructors. Professional socialisation process for becoming physiotherapists occurs during the education (e.g Öhman et al. 2002). Tacit knowledge and practices of the profession are largely learned in real work places (see Hammond et al. 2016). Gradually students’ become more proficient when getting more practical work experience.

2.2.1 Sociocultural learning

The social aspect and living interaction in learning has long traditions in the Nordic countries. Danish priest and philosopher Nikolai Frederik Severin

Gruntvig (1783-1872), “the father of Western adult education”, is thought to be one of the creators of the tradition of lifelong learning. There are a number of common threads that run through Grundtvig’s educational thought. Education as a matter of ‘living interaction’ is central. This leads to enlightenment, a coming-to-terms with the meaning of one’s own existence rather than vocational training or formal instruction. The stress on common humanity is essential, even though one needs a thorough understanding of one’s own culture before understanding that of others. The adult education colleges established by Gruntvig were based on the thought that every human being has to have an opportunity for education and that education has to be multidimensional and develop the personality of the whole person. These thoughts are also the basis for Finnish adult education and the network of adult education colleges (Warren 1989; Lawson 1993; Niemelä 2011). Seppo Niemelä (2011, 225) states in his doctoral thesis that the responsibility of a teacher and an instructor is both expert responsibility and responsibility for treating people right. The basic task of the grundtvigian teacher is to help learners to recover trust in their own thinking and awaken their sleeping autonomy.

In addition to the formal learning environments, students learn also in informal environments, contexts and situations, which are not seen as traditional studying. According to the sociocultural approach, people are active agents and create learning situations in which they can develop their own expertise. Therefore, learning is not only seen as information seeking or as the ability or expertise of an individual person. Learning deepens gradually in a process of participation, when learners learn to use the material and psychological tools of the community in their learning (Vygotski 1978; Lave & Wenger 1991; Wenger 1999; Säljö 2000; Hakkarainen et al. 2004; Rajala et al. 2013). Both thinking develops and the individual’s position and way of being in the world changes in learning (Packer & Coicoechea 2000). Connectivity and learning in different contexts can be combined in a curriculum (Guile and Griffith 2001; Virolainen 2014, 31).

2.2.2 Learning at work

Learning at work is significant in adult learning (Merriam et al. 2007, 293). Workplace learning is an interaction between workplace, learning and the learner. Interactions of the circumstances at work and the employee's preoccupation affect agency at work (Eteläpelto et al. 2013). Learners gather valuable experience and learn a variety of skills by gradually participating in work practices. Development grows within interaction with the workplace’s material, cultural and social environment. Learners get to know the tacit knowledge of experts and working culture (Wenger 1999, 214-215). At work, learners get to combine theoretical and practical knowledge, deepen theoretical thinking, and practice clinical reasoning and practical skills. At real work, learners can also find meanings for what they have learnt at school (Laitinen-Väänänen 2008, 52). Overall, by applying various general and vocational skills and knowledge, thinking skills, self-regulative skills, workplace practices (Virtanen et al. 2009)

and every day routines, learners increase their self-confidence and chances of finding employment opportunities through work (Väisänen 2003, vii).

Learning practical work prepares learners for their practice occupations, work roles, identities, and the worlds they will inhabit in practical occupations. Workplace practices and habits direct learners' activities and learning (Evans et al. 2006, 3-8; Higgs 2013, 4). It is possible to learn in various ways at work: learning formally and informally, experientially, context-boundly, field-specifically and by working alone and collaboratively (Eraut 2004; Billett et al. 2006; Virtanen et al. 2009). Learning at work is often informal and incidental, and reflection is in any case needed to make learning more effective and also to unearth the erroneous assumptions and mistakes (Grace & Trede 2013; Watkins et al. 2014). When learning at work the pedagogical practices also matter for education, and the integration of conceptual/theoretical, practical/experiential, self-regulative and sociocultural knowledge is beneficial from the learning perspective (Tynjälä & Gijbels 2012; Tynjälä et al. 2016).

2.2.3 Changing working-life

What kind of work culture are students getting into and on the other hand what kind of competences and skills do working life require? Work is in continuous change (e.g. Niemelä & Saarinen 2015; Andreasson et al. 2018). For example, there is plenty of new information available, new tools and practices are developed and networking happens internationally (e.g. Tammilehto 2003). Work is directed not only by Finnish legislation, but also by directives and statutes given by the European Union and international recommendations by international organizations such as the World Confederation for Physical Therapy (WCPT).

Practical working life is often complex. There are different learned habits and practices in different work places. Working life research in health care sector has lately been concentrated on leadership, well-being at work, interdisciplinary, multi-professional and multicultural work culture. People are also used to hierarchical action and decision-making in the health care sector (see Onnismaa & Kiander 2012; Kokkinen & Saarinen 2015; Andreasson et al. 2018). Health care is facing also many challenges, as there are doubts if it is stills an attractive place to work in. A positive workplace culture is one of the key factors of being happy at work (Hahtela et al. 2015). Andre et al. (2014) report that there are significant associations between work culture and quality of care and between empowerment and quality of care. Leadership style and supporting management, increased empowerment, participation and influence are important factors for improving quality of care.

Being in continuous change, work culture may be demanding also for experts in the branch, not only for the students. Interpersonal skills and understanding why continuous changes are needed may help in coping with challenging situations. Furthermore, reflection is important in developing also physiotherapy work culture (see Viitanen 1997; Viitanen & Piirainen 2003). In addition to that is today's continuous pressure for measurement evaluation in

different work places, one has to be efficient, flexible and creative at work (Siltala 2017, 64; Bergschöld 2018).

How could students be involved in these coming changes at workplaces? One possibility is in being involved in different working-life oriented projects in co-operation with educational institutions and workplaces (see Illeris 2015). Although students need guidance at workplaces, and according to Mikkonen et al. (2017) the literature shows strong evidence for the collective nature of workplace guidance, with the entire work community providing guidance and assistance for learners. Guidance provided by members of the communities of practice invites opportunities for learners to participate in collective practices. Collective guidance can also come from fellow learners and by other students at workplaces or teachers from educational institutions. When the process of guidance in the work community become transparent, both learners and other members of the work community become more aware of the objectives of the students' workplace learning or working-life oriented projects. Hence, supporting the adequate resources for guidance would be beneficial for everybody (Mikkonen et al. 2017).

2.3 Professional agency in physiotherapy

It is central to the narrative approach to find one's own voice and agency in order to shape both one's own life and professional path, to be an author of one's identity (Mackenzie 2008). The term agency has lately become more common in the educational and professional context, even though the idea of agency can be traced back at least to Kant's idea of enlightenment (Ecclestone 2007). Agency is connected to the idea that human beings are indeed in possession of a free will and that they use that will to make decisions and choices for their own life; take initiatives, control and willingly change their life situations as well as resist external forces (Wehmeyer 2004; Eteläpelto et al. 2013). Practical reasons, such as studying and working, require us to construct our identity for ourselves (Korsgaard 1996, 371; Tyson 2016). Acting and living requires reflective and integrated agency (Mackenzie 2008).

Professional agency is understood to exist when subjects' agency is directed at work-related phenomena, and when they influence, make choices, and take stances in ways that affect their work and/or their professional identities (Eteläpelto et al. 2013). Professional agency has a central influence on continuous professional learning, development of work practices and professional identities in the sociocultural context of the work community (Eteläpelto et al. 2015). Professional development occurs when knowledge, skills and experience increase. Development into experts comes to pass gradually step by step. In the health care sector learning and expertise always develop through cooperation between school and working life (Lähteenmäki 2006). Reflections on learning (Pirainen & Viitanen 2010; Kurunsaari et al. 2018) and instructed practical training (Laitinen-Väänänen 2008; Bartlett et al. 2009) are important in develop-

ing to become an expert in physiotherapy. Agency at work may be individual-oriented or externally oriented. Individual activity focuses on making a difference in or for oneself and one's own learning and shaping one's own career. An external orientation is needed to make a difference in current work practices and in developing and creating new work practices (Harteis & Goller 2014).

2.3.1 The roots of the physiotherapy profession

The roots of the physiotherapy story also have very ancient origins. For thousands of years, people with illnesses and disabilities were treated with various methods, making use of movements (with or without the aid of mechanical devices) as well as air, water, heat and cold, electricity, and light (Terlouw 2007). The roots of Western physiotherapy already exist in Ancient Greece where, for example, the physicians Herodicos (about 600 BC) and Hippocrates (460 BC – 377 BC) recommended the use of physical exercises in healthcare and illness treatment (Talvitie 1991, 1-4; Talvitie et al. 2006, 11). Hot water spas were established all over Greece. There were steam spas and cold-water pools in Sparta. A special emphasis was put into personal hygiene in Sparta and the meaning of body movement, decent living habits, inuring and self-control were underlined. Soft sports and massage with oil were recommended before baths (Licht 1965).

The most important stimulus for the rise of medical gymnastics, however, came from Sweden at the beginning of the 19th century. The work of the Swedish gymnast P. H. Ling (1776–1839) is considered crucial for the introduction and application of medical gymnastics in the first half of the 19th century. Ling developed a physical education system comprising military, aesthetical, pedagogical, and medical gymnastics. People who graduated from the school, which Ling had established 1813 in Stockholm, become qualified to supervise gymnastics for both healthy and ill people (Talvitie 1991, 5; Vikström-Grotell 2016, 2).

It could be said that physiotherapy has developed because of wars. Two world wars resulted in an unprecedented number of casualties and physical therapy played an important part in advances made in the treatment of injuries. The effectiveness of physical therapy to restore functional loss was clear and as a result the concept of rehabilitation extended. The World Confederation for Physical Therapy (WCPT) was established in 1951 with 11 countries. Finland and Sweden were among others in establishing the association (World Confederation for Physical Therapy 2011). The increase in knowledge of medical science, sports science and pedagogical science made development of physiotherapeutic tools possible and functioning ability became a central concept in physiotherapy. In addition, theoretical grounds of learning started to be utilized in physiotherapy (Vikström-Grotell 2016, 3). Physiotherapy developed as its own discipline of science in the 1980s (Lähtenmäki 2006, 15). In 1999, the World Confederation for Physical Therapy published the first worldwide description of physiotherapy according to which physiotherapy is action directed to individual people and population, which has as its goal to develop and restore maximal ability for movement and action in different stages of life. Physiotherapy was defined to be a process, which includes physiotherapeutic examination,

carrying out the therapy and evaluation of its impact (World Confederation for Physical Therapy 2011; Vikström-Grotell 2016, 16).

Physiotherapy education has been given for more than a century in Finland. Already in 1882, physiotherapy was an elective subject at the University of Helsinki. In 1908, Czar Nicholas II handed down a decree on provision of medical gymnasium education at the University of Helsinki. Nowadays it is possible to study physiotherapy at 15 degree programmes in universities of applied sciences (Bachelor's degree, 210 ECTS) in Finland, 13 in Finnish, one in Swedish and one in English, which means 3.5 - 4 years of full-time studying. The entry requirement is a certificate from an upper secondary school or the matriculation certificate, a vocational qualification or corresponding foreign studies (The Finnish Association of Physiotherapists 2012). According to the Universities of Applied Sciences Act 932/2014 all the universities of applied sciences decide independently on the curricula and pedagogical solutions. There is a variety of pedagogical strategies in the curricula, including, for example, problem-based pedagogy, innovation pedagogy, integrative pedagogy, multi-professional team learning, the OIS approach (Open Innovation space), or the LBD-practice model (Learning by Developing) (Sjögren et al. 2016).

Practical training is required in physiotherapy education programs. The Finnish Ministry of Education requires that physiotherapy education has to include 75 ECTS of practical training out of 210 ECTS. Practical training consists of workshops at school, working life orientated projects and clinical internships (Ministry of Culture and education 2006, Mämmelä 2015). Clinical placements have a big role in the socialization process and the instructors act as the most frequently chosen role models for the students (Öhman et al. 2002).

2.3.2 Expertise in physiotherapy

Expertise in the particular domain develops gradually during training and work experience (e.g. Dreyfus et al. 1986; Bereiter & Scardamalia 1993; Tynjälä 1999; Isopahkala-Bouret 2005; Räsänen & Trux 2012). In addition, there are factors of expertise that are common to every branch. Metacognitive and reflective skills are needed in evaluating one's own actions (e.g. Tynjälä 1999). Expertise is also related to informal competence, silent practical knowledge or use of common sense, which also includes emotional and social skills, problem solving, knowledge organization, ability to use knowledge effectively (Delamare Le Deist & Winterton 2005), creativity, automatized actions, communication and cultural interpretation. It also includes regulations such as work values, ethical dimensions, objectives and beliefs (Stenberg 1997; Gerber 2000; Winterton et al. 2006). The term competence is used to imply the right knowledge and skills, but also the right attitude and being able to perform effectively (e.g. Lans et al. 2010; Mulder & Gulikers 2010; Mulder 2011). The abilities and readiness of a human being, including silent knowledge, belong in their entirety to competence (Helakorpi 2006).

In education, the learning outcomes approach in Europe focuses on what knowledge, skills and competences the learner has acquired by the end of the

learning process. Knowledge is described as theoretical and/or factual. Skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments). Competence is described in terms of responsibility and autonomy. On level six, where physiotherapy education is located in the EQF, the knowledge is described to be advanced knowledge of a field of work or study, involving a critical understanding of theories and principles. Skills are defined as advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study. Competence involves managing complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; taking responsibility for managing the professional development of individuals and groups (ENPHE 2012; European Commission 2017).

Grace and Trede (2013) have studied physiotherapy students' conceptions of professionalism. The students understood professionalism to be a multifaceted concept, ranging from personal characteristics and behaviors, such as attention to dress code, punctuality and effective communication skills, to being able to establish effective interpersonal relationships, handle difficult situations calmly and reasonably, keep abreast of the impacts of current research on practice, and provide patient-centered care. Role models have powerful influences on developing a sense of professionalism and the students learned about professionalism in many ways, including observing interactions between lecturers, clinical supervisors and students (Grace et al. 2013).

Expertise in physiotherapy is based on knowledge of the prerequisites of health, human movements and daily activities (Jensen et al. 2000; French & Dowds 2008; Petterson et al. 2015), with practical skills being highly valued in the physiotherapy profession (Lindquist 2006, 12-15). In Finland, physiotherapy core competences have been researched in co-operation among the Finnish Ministry of Education and Culture, the Finnish Association of Physiotherapists (FAP), universities of applied sciences and the University of Jyväskylä. The knowledge and skills of a physiotherapist, the instructional competence of a physiotherapist and physiotherapy expertise in a multi-professional environment are the core competences of physiotherapists according to the interview study (n=83) which formed part of the above research (Sjögren et al. 2016). The substance knowledge and skills of a physiotherapist include physiotherapist as an action and movement expert (evaluation of skills of ability to function and move), scientific evidence as the basis of competence (GAS as a measuring tool, ICF as an evaluation tool, evidence-based physiotherapy supporting the methods) and future substance knowledge and skills (psychophysical, geriatric, technology and multicultural competence). Instructional competence includes instruction skills (interaction and instruction skills), the basis of physiotherapeutic instruction (customer orientation, empowering skills and comprehensiveness) and target groups of instruction (patients, relatives and health care personnel). The expertise of a physiotherapist in a multi-professional environ-

ment includes development into an expert (development of professional identity and understanding the other branches already in the education) and acting as an expert (recognizing one's own professional boundaries, showing physiotherapy competence, consulting and delegating) (Sjögren et al. 2016; Karihtala & Kangasperko 2016).

Clinical expert physiotherapists share a relatively common understanding of their role as physiotherapists, regardless of clinical specialty area. Practice begins and ends with patients. This understanding translates into listening intently to patients' stories, understanding the context of the patients' lives in designing and implementing treatment programs, and collaborating with and teaching patients and families about regaining function and enhancing their quality of life (Jensen et al. 2000). Jensen et al. (2000) identified the dimensions of clinical expertise in physical therapy practice across four clinical specialty areas: geriatrics, neurology, orthopedics, and pediatrics. A theoretical model of expert practice in physical therapy included four dimensions: (1) a dynamic, multidimensional knowledge base that is patient-centered and evolves through therapist reflection, (2) a clinical reasoning process that is embedded in a collaborative, problem-solving venture with the patient, (3) a central focus on movement assessment linked to patient function, and (4) consistent virtues seen in caring and commitment to patients (Jensen et al. 2000).

2.3.3 Continuing professional development

The adult learning story continues after graduation and it is life wide (Reischmann 2004; Knowles et al. 2012). When routine work skills have developed, experts set themselves even more challenging problems. This way they surpass themselves (Bereiter & Scardamalia 1993). Experts can be characterized as goal-oriented self-developers (Schön 1987; Sveiby 1997; Ericsson 2007), creative problem solvers and transformable situation "grippers" (Isopahkala-Bouret 2005). The experts' career development is a continuum, where the expertise is gradually increasing step-by-step (Dreyfus & Dreyfus 1986; Isopahkala-Bouret 2005). Progression from a novice to an expert can be seen in the development of thinking and ability to act, utilization of self-reflection and development of personality (Ruohotie 2006). Moreover, it typically takes at least 10 years of intensive practice in a particular domain (Isopahkala-Bouret 2005; Winterton et al. 2006).

There is a demand for healthcare professionals to keep their competence up-to-date in a changing world, which is one of the central reasons why continuing professional development is needed. Personal and professional development finds new paths to continue along in the stories of everyone, only it is more a matter of learner-centered and self-directed development than formal higher education studies. For clients to get the best possible treatment and therapy, continuing professional development is also needed in specialized fields of physiotherapy (French & Dowds 2008). In working life, professional agency often develops through non-formal ways of learning and it may help physiotherapists learn and develop confidence, communication strategies and different approaches to treatment. Besides reflection on personal experience and pa-

tient encounters, learning and development may be promoted and supported by taking on challenges and changing settings (Pettersson et al. 2015). Tacit knowledge is learned informally, for example in conversations, social interaction, teamwork and mentoring. The learning may also occur during the process of performing other activities and may be incidental (Eraut 2004; Le Clus 2011).

Expertise also develops increasingly in the ability of networks and organizations to solve new and changing problems (Launis & Engeström 1999). Shared expertise, collaborative building of knowledge and open and complex problems are typical of the expertise in work culture (Wenger 1999). Expertise and know-how is mediated through informal communities of practice. By shared expertise, it is possible to achieve something that an individual is not able to implement (Wenger 1999; Hakkarainen et al. 2017). Development within the field of information and communication technology (ICT), for example the use of Facebook and social media, wiki and e-learning generally has increased independent learning and discussion with others in the physiotherapy community. Users want to develop ways to extend their professional development also globally. E-learning encourages peer interaction and group work, and the sharing of users' knowledge and experiences (Roscoe 2011; Laliberté et al. 2014).

What does the future agency in physiotherapy look like? That story is not complete yet, but what we know is that in the future, more research on the effects of physiotherapy and development and recognition of physiotherapy as an independent scientific discipline is needed (Finnish Association of Physiotherapists 2012).

3 METHODS

3.1 Aim of this research

The aim of this study is to investigate and understand students' stories about their professional development during their entire physiotherapy studies. The concepts of development as expert, professional identity, expertise and career development overlap and it is difficult to differentiate them from each other (e.g. Dreyfus et al. 1986; Stenberg 1997; Tynjälä 1999; Gerber et al. 2000; Jensen et al. 2000; Delamare et al. 2005; Isopahkala-Bouret 2005; Lähteenmäki 2006; Winterton et al. 2006; French et al. 2008; Laitinen-Väänänen 2008; Grace et al. 2013; Petterson et al. 2015). Therefore, it is reasonable to investigate students' development as experts as whole stories, when the concepts have not already been differentiated and categorized. EQF competences concentrate on the learning outcomes in physiotherapy, but do not cover ways of achieving those outcomes. This way it is possible to create a new kind of knowledge and investigate physiotherapy students' development as experts from their own point of view (e.g. Ricoeur 1984; Bruner 1987; Polkinghorne 1988; Labov 1997; Riessman 2001; Hänninen 2004; Elliot 2005; Hyvärinen 2008; Gubrium & Holstein 2009; Callary 2013; Heikkinen 2014; Kim 2016). This study is part of a wider research project that concentrates on health science teachers' education.

The following research questions were set:

- (1) How do physiotherapy students describe their professional development during their studies?
- (2) What are the narratives of physiotherapy students' professional development?
- (3) What are the meaningful turning points and learning experiences of physiotherapy students during their education?
- (4) What is the metanarrative of the physiotherapy students' professional development?

3.2 Narrative approach

Narrativity is a rich and broad framework through which it is possible to investigate the ways humans experience the world depicted through stories, and for which it is characteristic to focus the attention on the stories as producers and mediators of truth. The focus is on people's authentic stories and the way individuals give meaning to experiences via their stories. Students tell what they experience as necessary to say (see Labov & Waletzky 1967; Polkinghorne 1988; Bruner 1990; Ricoeur 1990; Hyvärinen 2008). Narrative research material is either orally or literally presented narration, and can also consist of whatever narration-based material. Narrative crosses boundaries between research and practice and it is well suited to dealing with aspects of time and communication in change (Hänninen 2004; Webster & Mertova 2007; Kim 2016).

In the field of educational research, use of the term narrative inquiry has started when telling stories about educational experiences (Clandinin & Connelly 1991; Gough, 1997; Webster et al. 2007; Estola & Syrjälä 2014; Kim 2016). Narrative is well suited to addressing the complexities and subtleties of human experience in teaching and learning. Narrative inquiry attempts to capture the "whole story", whereas other methods tend to communicate understandings of the subjects or phenomena being studied at certain points (Webster et al. 2007, 3).

Why do narratives have such power nowadays? Greenfield et al. (2015) argue that it is because of a general trend in postmodern knowledge production. Reality is increasingly built by means of narratives. This change in knowledge culture or even paradigm change has been termed a narrative turn. The paradigm change from realism toward constructivism is connected to this viewpoint as well, where reality and understanding is individual and has been built up with our previous experience and knowledge. It can be said that human knowledge is a composition of narratives, and that knowledge consists of a plurality of small narratives, local and personal, which are always under construction. Individuals make sense of the world and themselves through narratives (Esteban-Guitar 2012).

Narrativity has deep roots in philosophy, literature and philology. There are numerous ways of approaching the phenomenon (Huttunen & Kakkori 2014). One of the most remarkable philosophers in the narrative approach has been Paul Ricoeur (1913 - 2005). He has his philosophical roots in hermeneutics, seeking for understanding and conceptualizing phenomena, but different in that he highlights the paradoxical nature of time in narratives. All things and all experiences are in time, and it has a major impact on how we think, for example, of identity, truth, meaning, reason, freedom, language, existence, the self (Wood 1991, 1-2; Smith 2011; Laitinen 2014). Ricoeur suggests we think of the examined life as a narrated life, the aim of which is to discover, a narrative identity (Ricoeur 1984; Wood 1991, 11).

Ricoeur's narrative approach has many dimensions. Ricoeur (1984) talks about three levels of Mimesis. Ricoeur also includes a historical aspect in his philosophy. He returns to Aristotle's poetics and develops a general dynamic sense of emplotment. On the first level (mimesis 1) is prefiguration, where he argues for a relation of dynamic circularity between life and narrative. The pre-existing experience and expectations of the stories are prefigurations. His structural analysis re-interprets what Aristotle wrote, according to which arts are forms of imitation (mimesis). Configuration (mimesis 2) of the whole story is called the emplotment where the plot is the most important element: This involves the organization of events into a coherent story, organized as whole with a beginning, middle and an end. Ricoeur claims that narrative emplotment synthesizes the heterogeneous. The plot tries to mediate a plurality of events and a unified story, the primacy of concordance and discordance, and the configuration of a succession (Ricoeur 1984; Laitinen 2014). Thirdly, refiguration consists also of a reference to the world of action, and to the event of reading, which means that the structure is completed only when the reader reads the text (mimesis 3). He talks about narrative understanding, which is more than theoretical understanding of a science of narrative. Narratives are nevertheless not only configurations out there; they are completed in the act of reading (Ricoeur 1984; Wood 1991, 11; Laitinen 2014).

Narrative knowledge does not aim at objectivity or generalized knowledge, but rather at a local, personal and subjective knowledge. The narrative approach allows people's voices to be heard in a more authentic way, although knowledge consists of multi-voiced and multilevel entities. When writing or telling their own story, the teller wants to achieve the truth about themselves. On the other side of the story, listeners of a good story get to widen their worldview, their horizon broadens and they can see something differently than in the past (Hyvärinen 2008; Huttunen & Kakkori 2014).

3.3 Data collection and participants

The aim in this dissertation was to investigate and understand physiotherapy students' stories about their professional development during the entire period of their studies. This dissertation focuses on the students' viewpoint during their learning. The data was gathered from physiotherapy students' portfolios during the whole 3.5-year education.

The data was collected in 2008, 2012 and 2014 from three different higher education institutions from different parts of Finland. Longitudinal data was collected during 3.5 years in all institutions. Students wrote portfolios during the whole period of their studies. The data consists of 2002 typewritten A4 pages of students' own learning experiences.

Before the education program began, the students were instructed to write a preliminary assignment entitled *what kind of a learner am I?*, which was attached to their portfolios. Every six months during their education, they wrote

about *my professional development*. Students described their learning experiences and feelings in their portfolios, how they had experienced each study module. They also collected documents, for example, successful seminar papers, in their portfolios. They were given instructions for writing the portfolios for the first time at the beginning of their studies. Each student's portfolio was a unique individual narrative of his or her study time.

The educational purpose of writing the portfolios was to provide an opportunity for personal reflection during studies and see the study modules as parts of a bigger picture. The students constructed their portfolios in a study module called "Development for the physiotherapy profession", where the aims were to reflect on their own learning and professional development, strengthen their learning processes and prepare themselves for the requirements of society and working life. The students also had regular meetings with the tutor-teacher in the study module and they presented their portfolios to other students in a learning café. The study module was worth 2 ECTS credits. Portfolios were required in these programs, but students were not graded on writing their portfolios. There were no length or word number requirements, and the portfolio was checked twice a year with a teacher.

In the first set of data, there were six voluntary students, who had completed their portfolios in full. The information from the first data set was saturated by a second set provided by 11 students from another institution in a different part of Finland and by a third set provided by four students, also from a different part of Finland. The aim was to ensure that there were enough observations of the phenomenon being studied (FIGURE 1).

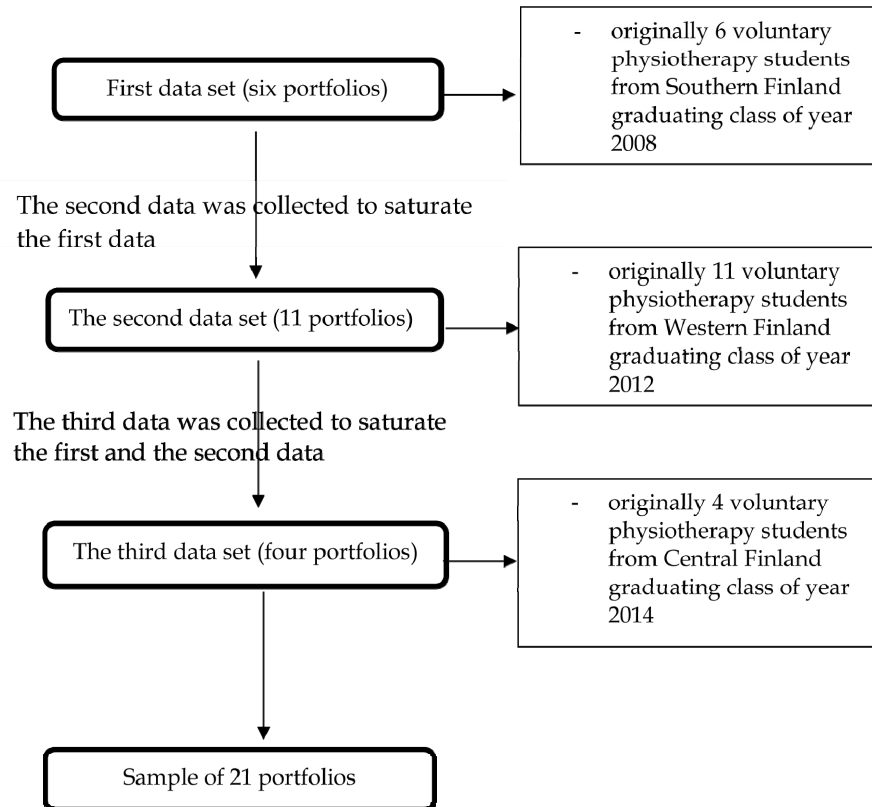


FIGURE 1. Study design and sampling flow chart.

The 21 participants in the study were 22- to 37-year-old students (mean age 25 years), 18 female and 3 male, who finished their studies in 2008, 2012 and 2014. Four students had earlier experience of higher education. Two had studied at university. Five had graduated from vocational upper secondary education, four as practical nurses and one from the catering field. In their previous profession, five had also been masseurs. Of the 21 students, 18 had taken the matriculation examination. All students had work experience of both childcare and elderly care and some of them also of instructing physical activity groups. Some students had work experience also in other fields (Table 1).

TABLE 1. Education and work experience of the participants.

Sex (f/m)	Age (years)	Earlier education	Working experi- ence(years)	Gradua- tion time (years)
Anna, f A	29	matriculation examination 3 years of studying at a university of tech- nology	10	2008
Eeva, f B	25	vocational upper secondary education (ca- tering branch) masseur	5	2008
Liisa, f C	34	matriculation examination vocational upper secondary education (practical nurse)	7	2008
Tiina, f D	22	vocational upper secondary education (practical nurse)	2	2008
Kaija, f E	24	matriculation examination	1	2008
Minna, f F	27	matriculation examination vocational upper secondary education (practical nurse)	5	2008
Maria, f G	22	matriculation examination	1	2012
Sonja, f H	37	matriculation examination MPhil	12	2012
Anni, f I	22	matriculation examination	1	2012
Emmi, f J	24	matriculation examination	1	2012
Hannele, f K	22	matriculation examination	1	2012
Satu, f L	23	matriculation examination, six months of nursing studies	1	2012
Antti, m M	23	matriculation examination	1	2012
Päivi, f N	24	upper secondary vocational education (practical nurse) sports masseur	3	2012
Merja, f O	25	matriculation examination a few months of studies for community health nurse	3	2012
Johanna, f P	23	matriculation examination sports masseur	1	2012
Aleksi, m Q	23	matriculation examination	2	2012
Seija, f R	25	matriculation examination masseur	1	2014
Jaana, f S	28	matriculation examination	5	2014
Anselmi, m T	23	matriculation examination	1	2014
Susanna, f U	23	matriculation examination sports masseur	1	2014

Permission for the study was requested from educational institutions as well as from the students themselves. Participation in the study was voluntary.

3.4 Analysis

The analysis in a narrative research study is often in a free form, but also accurate methods for analysis have been developed. Narrative data always needs interpretation; results cannot be explained in a simple way using numbers or categories (Bruner 1987; Hyvärinen 2008). Analysis of the data was a process, and it had to be read several times. In narrative analysis, different ways of reading were used depending on the question answered. An attempt was made to discover such issues in the material that would help to understand professional development.

First, an overview and descriptions (Ricoeur 1984; Polkinghorne 1988; Hyvärinen 2008) of the stories were made, and thereafter the turning points of the stories and story models could be recognized (Labov et al. 1967; Ricoeur 1984; Polkinghorne 1988; Hyvärinen 2008). Taxonomies and categories derived from the common elements across the database were used in this study to build up explanatory stories (Ricoeur 1984; Polkinghorne 1988). Story models of professional development were constructed from the students' learning stories. More detailed information on the main turning points was sought with the help of thematic analysis (Braun & Clarke 2006; Guest et al. 2012) and the IPA method (e. g. Smith 2017). Finally, using the help of metasynthesis for becoming physiotherapy professionals, the whole story was collected (Ricoeur 1984; Timulak 2007) (FIGURE 2).

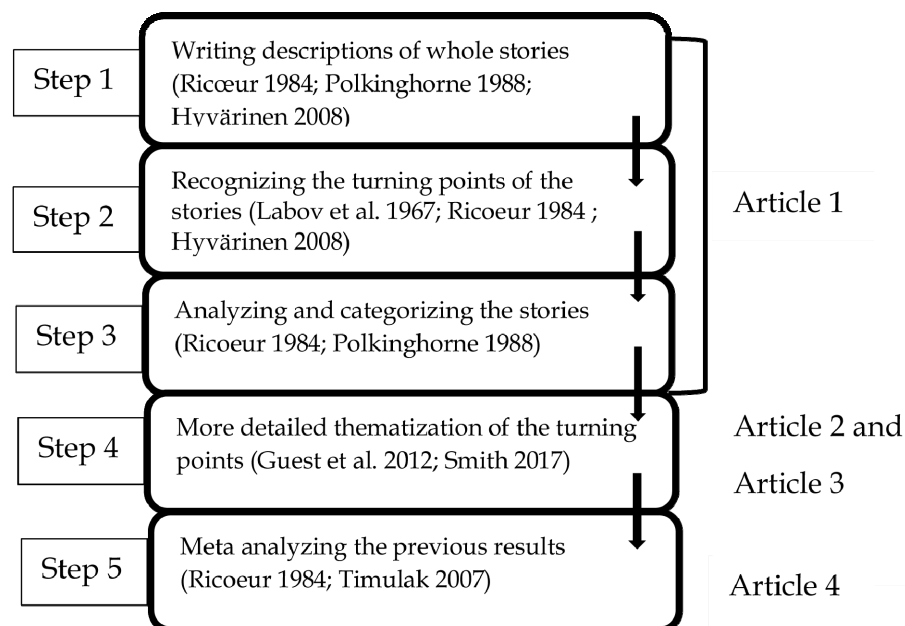


FIGURE 2. Data analysis.

The analysis in this study had five steps:

Step 1)

In this phase of the analysis, a general view of the students' stories was made. A chronological plot was formed from the stories. The plot is an integrating and interpreting process, in which pieces of a story are connected to make an entire story. Summarized individual narratives were formed of the students' stories (Ricoeur 1984; Polkinghorne 1988; Hyvärinen 2008). The recognizable features of a story were clearly shaped from the stories – the beginning, midpoint, ending and a chronological plot. Components defined by Labov et al. (1967) were recognizable in the students' stories. In particular, the evaluation the students wrote about professional development was considered. These individual descriptions were used in the following phases of the analysis.

Step 2)

Analysis was sharpened to cover details of the ongoing plot. In this phase, the main episodes and turning points, in which the students mostly used dense linguistic descriptions, were formed. The dense parts and the evaluations in the students' stories revealed the turning points in their studies (Labov et al. 1967; Ricoeur 1984; Hyvärinen 2008). Three different story models of the students' stories were formed according to the turning points in professional development.

Step 3)

The direction, genre of the story, was formed from the plot, main episodes and critical turning points of the story. The story models have been given names according to their recognizable characteristics (Ricoeur 1984; Polkinghorne 1988). The students' ongoing professional development has been described yearly because the students themselves had used the years of studying as the "boundary marks".

Step 4)

The aim was to take a closer look at the main turning points in students' stories. Material related to a new way of learning and learning practical work was read in more detail. Interpretative Phenomenological Analysis (IPA) (Smith 2017) and thematic analysis (Guest et al. 2012) were used to get deeper into the themes of the turning points.

Step 5)

Previous articles were meta-analyzed, which gave an opportunity to reanalyze earlier findings and see single results more comprehensively. The intention was to investigate and capture the whole story of becoming physiotherapy professionals. The end result of the partial results will be a narrative inquiry for becoming physiotherapy professionals (Ricoeur 1984; Timulak 2007; Hökkä et al. 2014).

The articles making up this dissertation form the levels of narrative theory such that article I describes students' professional learning, articles II and III analyze the turning points of a descriptive story and article IV describes the metanarrative of physiotherapists' professional development, its central themes and concepts in a more abstract sense.

3.5 Preliminary understanding

In this chapter the author tells about her preliminary understanding of physiotherapy students' professional development because in narrative research the researcher is recognized to be involved in the research process (see Uitto 2011, 20). According to Etherington (2006, 81. quoted by Uitto 2011, 20) researchers' own values and beliefs inevitably influence research and its outcomes. Researchers are personally connected and related to their research topics through their own stories and the question of familiarity and unfamiliarity become important in the research process. The researcher is simultaneously an insider and an outsider in the research (Uitto 2011, 20). The author's preliminary understanding is written in italics next.

My previous experience has not affected the analysis of my research. I have not been employed by any of the UAS from which material has been acquired. My preliminary understanding, which is based on my own life experiences has more impact on what things are present in the current situation of the students and physiotherapy work culture. In this study, I have tried to bracket my previous understanding and listen to the participants' stories about their professional development. However, I also recognize some familiar, but also unfamiliar features maybe partly because my studies to become a physiotherapist were nearly 30 years ago. In Finland at that time, we did not have the UAS dual model in higher education and it was also possible to specialize in a one-year training programme, which I also did. Neither was it possible to experience a practical training period abroad at that time. In addition, many of the therapeutic tools have developed and research on physiotherapy has considerably increased.

My starting point for becoming a physiotherapist can be traced back to my childhood, because already as a child, I was interested in movement; I had gymnastics as my hobby. Almost all the other sports were also interesting. Besides sports, art and music interested me as well. School generally went very well, but maybe I was excited about all the other things even more. I was an active child. What to study? I really did not know for sure. I thought that maybe I would start with something and then it would always be possible to do something else. I happened to get into physiotherapy school in Helsinki. I specialized in neurological physiotherapy and got to work as a physiotherapist for over 20 years. Simultaneously I also studied music and later on music therapy. My workplaces have always been very interesting and I have had the opportunity to work in multiprofessional teams and be involved in developing projects. I think those projects at the Miina Sillanpää foundation have been an inspiration for becoming a researcher later on. I continued my professional development by studying health science

at the University of Jyväskylä, while mostly working as a physiotherapist at the same time. It was not always easy to combine work, studies and family life. Yes, I already had three boys to raise, Antti, Aleksi and Anselmi.

Maybe, because of my own experience, I got interested in adult learning. In addition, both of my parents were teachers, so I had already become familiar with educational life in my childhood. In addition, the teachers at the University of Jyväskylä just knew how to develop interest in getting more deeply into that subject during my pedagogical studies. I was looking for a topic for my master's thesis. Arja Piirainen asked whether it could be narrative research. I was excited, yes, of course, that is it. That is how I got into the world of narrative research.

I have my own experience in learning to become a physiotherapist and working in real working life in different contexts in Finland. I also have experience of adult education as a student and as an educator for eight years. My own experiences have helped me to understand the phenomenon better. However, I also understand that different people have different issues, which are meaningful during their professional stories. Every student builds up their expertise based on their earlier experiences in co-operation with others, something that I have seen also in my work as a teacher in the health and social sector in adult education. I also think that learning and professional development takes place in various contexts, for example in school, workplaces and informal communities. Besides studies, the students have other meaningful stories to tell in their lives, other interests like their hobbies and their family lives. I can also very well understand those other concerns students have in their lives during their studies.

4 MAIN RESULTS OF THE ORIGINAL ARTICLES

The main results from the articles are presented next. First, the students' descriptions of their professional development are presented. The students' voices were the core issue running through all the articles (1). There were three story models in physiotherapy students' professional development (2). The meaningful turning points and learning experiences of the students' stories are presented after the story models. The main learning experiences crystallized around to learn-experiences and learning physiotherapy practical work-experiences. These two learning experiences were studied more closely (3). After that, the metanarrative of the students' professional development was collected (4). The main results are presented in more detail in the articles. After the previous steps, it was possible to synthesize the essential thematic of professional development.

4.1 Students' voices I-IV

Students tell in their portfolios about themselves as learners and about their attitudes towards studying. They also tell why they wanted to study physiotherapy, how and what they learned, what was challenging in their studies and what was easier to learn. They gradually construct their professional story about becoming physiotherapy professionals. As they progressed along the steps of professional development, the feelings of the students changed from feelings of insecurity and fear to a sense of experience and self-assurance, finally finding their own developmental needs and gradually perceiving the whole nature of physiotherapy. Understanding the whole nature of physiotherapy increased their confidence, and their own skills grew.

The students' stories were constructed as chronological narratives. Narratives are interactively occasioned, negotiated and designed in students' contexts and they write their stories for themselves and also for their teachers. Students' own "voices" are presented in their stories (Bakhtin 1981). Students position

themselves by situated actions when they learn physiotherapy work at school and in different placements. Positions are reflexively related to social actions.

Workplaces are strongly present in students' stories and they tell a lot about their participation in different actions at real work (see Depperman 2013). Esteban-Guitar (2012) uses the term "funds of identities" when talking about people's various roles. Work is an important part in adults' lives, just as is studying to get a profession. Therefore, work is a part of our identity, "practical funds of identity". In addition to work there are other funds of identities (cultural, geographical, institutional and practical, which also includes work). All these funds of identities are socially and historically constructed products and related to one another (Esteban-Guitar 2012).

4.2 The story models of the students' professional development; I

Three story models were formed from the students' narratives: the story of an autonomous learner, the story of becoming a physiotherapy community member and the story of a critical developer. Students had different turning points that describe their professional development. They took place at different times in their studies depending on the story model. Even though the turning points are different in the story models, every narrative ends up in a Bachelor's degree in physiotherapy.

The story of an autonomous learner

The main turning points of the autonomous learners' stories were at the beginning of their studies when they found appropriate study places and professions for themselves. Starting to study physiotherapy was significant to these students. They already had more life experience than many of their fellow students, which they experienced as only positive in studies. Now they knew what they wanted to do, and they were willing to invest in it.

The story of becoming a physiotherapy community member

The turning points of becoming physiotherapy community members were during the second year of their studying when the problems at the beginning of studying and changes in study techniques were mostly over. Courses in their own field and practical training made the picture of physiotherapy clearer and brought new enthusiasm to studying. Practical training periods were important learning environments for these students. They felt their professional identity and expertise were mostly built in real work situations. In practical training, they found the meanings for what they had learnt at school. They reflected on how ready they were to face the challenges of "real work".

The story of a critical developer

The turning points of critical developers were described in the third year of their studies. In particular, these students were critical towards their own skills, information and sources. They gained a clearer picture of the physiotherapy sector and at the same time, their self-confidence increased. They were able to critically reflect on her learning. They experienced development projects at school as beneficial. Projects made it possible to innovate in the field of physiotherapy.

4.3 The meaningful turning points and learning experiences; II and III

Four different main episodes of professional development were constructed: previous studies, a new way of learning, understanding physiotherapy and turning professional in physiotherapy (FIGURE 3).

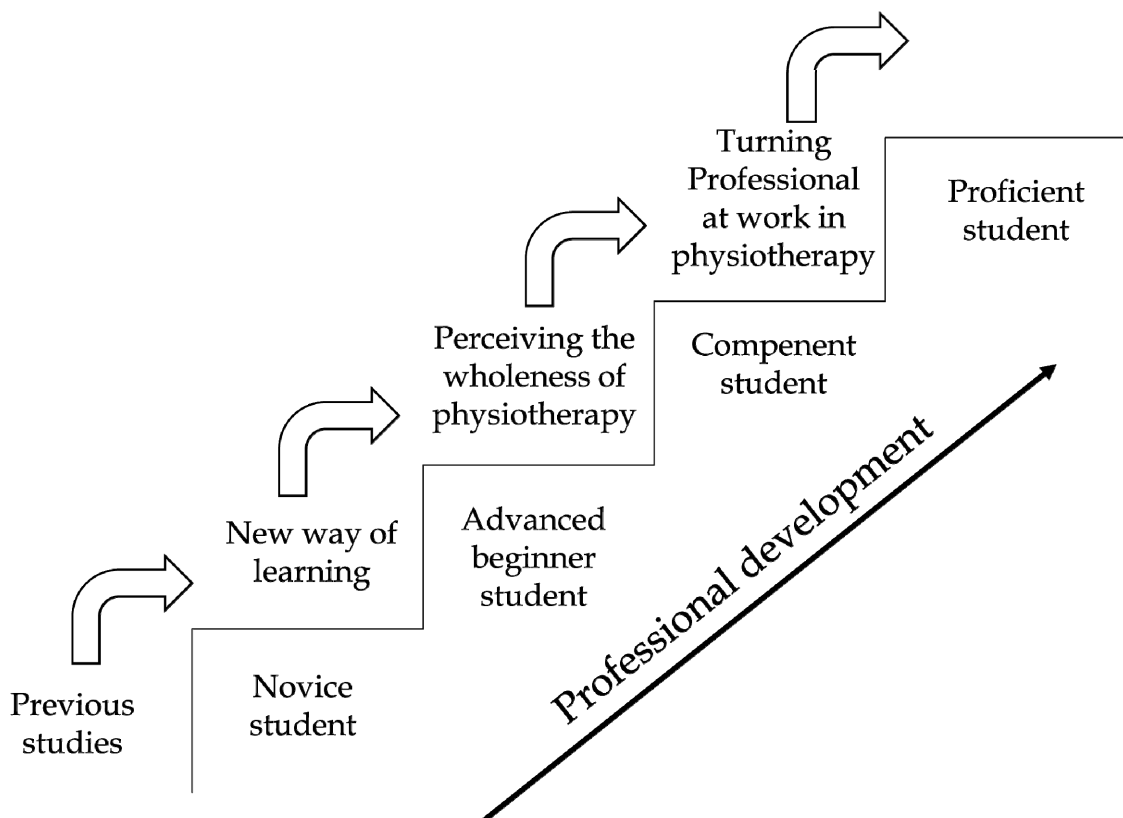


FIGURE 3. Physiotherapy students' development process in becoming experts.

- Previous studies: the students described their previous learning experiences and earlier achievements in studies.
- A new way of learning: the students described their learning needs, their problems in a new learning environment and things they experienced as beneficial.
- Understanding physiotherapy: after the initial changes, the students described their professional development, knowledge construction and learning of practical skills. Practical training periods had a big role in the professional development process in the stories.
- Turning professional in physiotherapy: In the final stage of studying, the students described their specialization area and the process of doing their final thesis. Transferring to working life and learning at work were in the thoughts of students near graduation.

Later in this dissertation process, these main learning experiences crystallized into a new way of learning – learning-to-learn experiences and learning physiotherapy practical work experiences. These two big learning experiences were studied more closely.

A new way of learning

In their stories, the physiotherapy students concentrated on talking about their learning to learn at the beginning of their studies. Students wrote a lot about their new way of learning when using problem-based learning in their studies, but also if they used other curricula. The new way of learning forced students to reflect critically on their previous conceptions of learning. The PBL method activated a reflection process in students. This experienced difference, created confusion and forced them into critical reflection. Learning to learn and the basis of the profession were generally learned at school. Self-reflection is focused on information seeking, creative learning processes, reflection together in peer-group working, and the role of the teacher. Students reflected critically on their previous conceptions about learning. It is important to become more aware of this phase of the students' professional development and to give them support in learning skills.

Practical work

Learning practical work was to a large extent a goal for the students. When starting studies for their own profession, students generally considered practical ways of learning and instructed practical training periods important from the perspective of learning and professional development. Generally, students wanted more practice. Information was learned by varying the ways of learning at school and workplaces. After the basis of the work was learned, the students needed a real client and a real workplace to deepen their learning. Tacit and situational knowledge had an essential role in learning in real work contexts.

Learning practical work consisted of learning physiotherapy competence and learning work agency and practices. Socialization for the physiotherapy profession played an important role in the development process.

4.4 A metanarrative for becoming physiotherapy professionals – configuration of the whole story; IV

The purpose of the study was to form a metanarrative of the Bachelor's level physiotherapy education from the students' point of view. Physiotherapy students' professional development proceeds in phases and learning takes place in different contexts in education and in working-life. Every phase of the metanarrative brings development to the profession and every phase is needed in order to achieve professional development. It is essential to recognize different elements of professional development at different stages. The different stages are equally meaningful and equally important in the process of development as an expert.

The following section describes the collection of a metanarrative, which attempts to be the whole story of the students' professional development as physiotherapists during their studies, from the common features and contents of the students' stories. The chronological order and the main stages during their studies are as follows (FIGURE 4):

- 1) Previous experience
- 2) Learning to learn
- 3) Learning physiotherapy practical work
 - a. *Basis of the practical work*
 - b. *Meaning of the profession*
 - c. *Totality of the practical work*
 - d. *Critical reflection on the work*
 - e. *Widening of the work*
- 4) Turning professional in physiotherapy

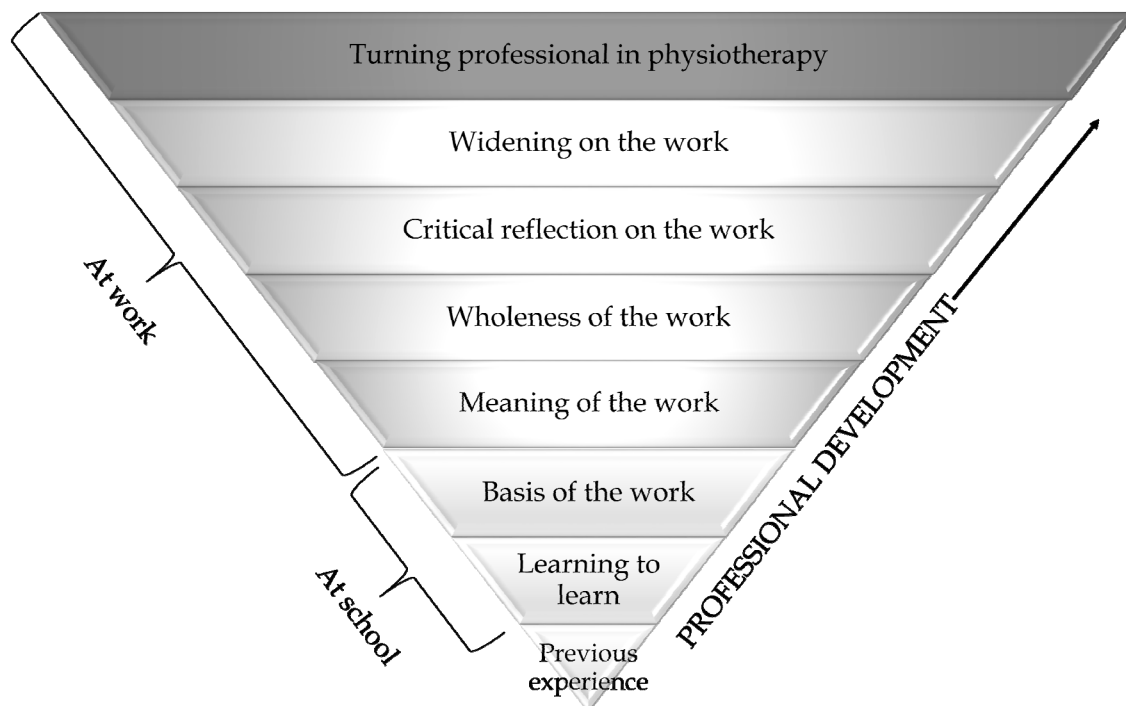


FIGURE 4. A metanarrative of the students' professional development includes eight stages.

4.4.1 Previous experience

The first step in professional development crystallized into previous experience. Previous experience played a significant role at the beginning of studies. The students described their previous learning experiences and earlier study achievements. They also wrote about their interests and hobbies and about their motivation in studying, as well as describing their previous work experiences. Earlier experiences had taught them to be the kind of learners they were at the beginning of physiotherapy studies.

Autonomous learners had more life-experience and they knew what they wanted to study. They had found an appropriate study place and profession for themselves. Autonomous learners also described their own growth as human beings in their stories. They described the beginning of their studies and the new study place as a positive change in their lives, like a new start for their own growth. Earlier studying experience helped them at the outset of their studies. They knew what they wanted and they knew what kind of learners they were. The motivation for studying was good.

4.4.2 Learning to learn

All the students wrote about their learning to learn in their stories. The students described their needs in learning, their problems in a new learning environment and things they experienced as beneficial.

A total of 15 of the 21 participants in this meta-analysis used problem-based learning as their approach to learning. Six of the participants studied by

using the learning by developing approach. Students who used the PBL method in studying wrote extensively about the method at the beginning of their studies. It was a new way of learning for all the students, which is why the writers wanted to pay closer attention to it. In addition, the students using another methods of studying wrote about their learning to learn, but not as much and not as critically as the ones using the PBL method.

Different kinds of curricula directed the learning process. PBL students learned to think critically already at the beginning of their studies, but additionally the students studying with learning by developing curricula described and showed anxiety about their development projects in working life.

It is important to “learn” a new way of learning already at the beginning of studies, making it beneficial for the entire duration of studies. Reflection is needed in all learning. Students learn by self-reflection and reflection together. In learning to learn by the PBL method self-reflection is focused on information seeking and creative learning processes, and reflection together on peer-group working and the role of the teacher. Even though working in tutorials was a new way of learning and it was demanding, the students felt that it was possible to learn extensively new information with its help.

4.4.3 Learning physiotherapy practical work

Learning physiotherapy practical work was more like a goal for the students. The socialization process for becoming a physiotherapist, learning tacit knowledge and practices of the profession in real working life play an important role in learning physiotherapy practical work. Tacit and situational knowledge of the physiotherapy and rehabilitation sector was learned in real work situations. In their first practical training students concentrated on evaluating their own practical skills and agency with clients. Gradually they started to see rehabilitation also from the clients’ point of view, giving them responsibility in their rehabilitation. Especially becoming members of the physiotherapy community reflected their ability to step into working life and how ready they were to face the challenges of “real work”.

Learning practical work proceeds in 5 phases:

1) **The basis of practical work**, human movement and action and therapeutic tools, is learned at school by integrating theory with practical ways of learning. The students looked forward to starting their physiotherapy studies and they got a new kind of enthusiasm for their professional development. They were gradually given the opportunity to get used to physiotherapeutic working methods. Practical observation of human movement and action were experienced as interesting. Practical lessons and practical ways of studying were generally thought to be useful and there was a wish to have more, for example transition exercises and practicing of functional tests. Students got new ideas for practical work but they also learned about new information, which they

would use as basis for all their work. They could also apply the earlier learned theoretical knowledge in practice.

2) **The meaning of the profession** and practical work takes shape in interaction with clients and observing how professionals work in real workplaces. Professional identity and the meaningfulness of the profession start to develop when facing real clients. Customer-orientation, the tacit knowledge of the profession and the different roles physiotherapists have with different client groups were learned in real work. Understanding the totality of the human being and also taking into account situational circumstances were understood by the end of the studies. Facing diversity amongst people and communicating with them became easier. Communication skills, verbal and non-verbal interaction, listening, sensitivity and the ability to be present in a situation are needed in the physiotherapy profession.

3) **The totality of practical work** takes shape by gradually participating in the work processes. Progressively deepening participation in work practices increased belonging to the physiotherapy community and the rehabilitation sector. Observing clients functioning, participating in examinations and advancing the physiotherapy process helped to form an understanding of physiotherapy practical work. Observations at real work complemented the theoretical knowledge learned at school. Examination skills improved with practice and the tools and procedures connected to it were refined at work. Learning by doing and advancing the physiotherapy process improved the students' self-confidence in their practical skills (examination skills, instruction skills, variability of exercises, reporting skills).

4) **Critical reflection on the work** processes - thinking, construction, evaluation and reasoning - developed. Clinical reasoning was done simultaneously with the actual practical work - figuring out the real problem with real clients. Students started to think why the clients acted the way they did. They planned, synthesized the collected information and constructed the physiotherapy diagnosis and appropriate goals for physiotherapy. They also created the belief in rehabilitation and chose suitable therapy methods for the clients. Rationalizing why certain exercises needed to be done was still experienced as difficult at the end of the studies. Students' thinking skills also developed in working-life projects. Students learned management, organizing, delegating and entrepreneurship through involvement and development in various co-operation projects to do with real working life. The turning point of critical developers during their studies occurred at this stage. They started to evaluate the skills and knowledge they had learnt critically. In addition to developing themselves, critical developers became interested in the development of the physiotherapy sector. Working life projects inspired them to develop a new type of activity.

5) **The conception of practical work widened** because of more work experience, also of informal learning and experiencing a practical training period abroad. Practical work processes became more assured. If they had a paid job during their studies, students had to plan, implement and evaluate the work processes and take more responsibility for their own work. Students also broadened their conception of physiotherapy practical work by experiencing an international instructed practical training period. Students learned new therapy methods and got new points of view on their work. They learned communication skills, openness and their self-confidence increased.

4.4.4 Turning professional in physiotherapy

In the final stage of studying, the students described their specialization area and the process of doing their final thesis. Transferring to working life and learning at work were in the thoughts of students near graduation. Students had found their own developmental needs and they had gradually perceived the whole nature of physiotherapy. They had learned reflection skills and criticality towards information.

On the verge of graduation, the students had adopted a positive attitude to lifelong learning. It was always possible to learn something new and become a better expert. Students were ready to enter the world of work, turning professionals in physiotherapy work. Anselmi wrote:

"Despite the comments relating to the use of time and to performing various tasks, at this point I feel that I have got a lot of tools from school to work as a physiotherapist. Working life will eventually reveal how far those skills will carry us, and how well we cope at work. I feel that it is time to move on to working life." T 32

4.5 The thematic of professional development

Even though a unifying metanarrative for the physiotherapy students' professional development was constructed in this study, professional development is not just one concept for individual students. Students have different narratives in the process. The multi-stored narratives - the essential thematic of professional development, leading to expertise and professional development during studies - are previous experience, new learning, work agency, and work culture in physiotherapy students' professional development (FIGURE 5). Learners connected new knowledge with lived experience and weaved it into existing narratives of meaning. Learning at work played a big role in professional development. In addition, the theoretical knowledge learned at school was deepened in real work contexts.



FIGURE 5. The thematic of physiotherapy professional development.

“Previous experience”

The students built up their expertise on the basis of their previous experiences. The reflection process was important in noticing the meaning of previous experiences in professional development.

“New learning”

New ways of learning and new knowledge were prerequisites for building students’ professional development. New learning took place through the variation at school and in working life. Students needed to adapt the learning methods used and widen their competences in different work contexts.

“Work culture”

Workplace practices and circumstances directed students’ learning. Students learned work culture by gradually participating in existing work practices in different work contexts. Tacit and situational knowledge, the values and habits of the profession were learned in real work. Students adapted a professional identity, and to a large extent socialization for the profession took place in physiotherapy work culture. Different work contexts widened the students’ professional development. Work culture was developed in working-life projects.

“Work agency”

Work agency in real work brought students the essential meaning of the profession. Independent managing at workplaces was a goal for the students. Work agency developed simultaneously with physiotherapy competences and familiarization with physiotherapy work culture.

These themes of the physiotherapy students’ professional development are related to one another. All of the themes are equally important in physiotherapy professional development at Bachelor’s level.

4.6 Professional development - Stories of hope

To summarize of the results, it could be said that multi-storied narratives leading to expertise during studies were stories of hope for the future. Professional development brought hope for the students (see Estola 2003). They were ready to step into working life. In becoming professionals, students reflected on their previous experiences, learning to learn, and going through a socialization process for the culture of the profession. Their work agency gradually improved and they were able to work independently in different work contexts. The essential thematic, which varied with different students depending on the stage of their professional studies, was previous experience, new learning, work culture, and work agency.

The themes of previous experience and work culture are the kind that one cannot influence that much, except by maturing and gaining more experience and getting to know various kinds of workplaces. New learning and work agency have more of an active meaning in professional development. All the students want to learn new knowledge, methods, tools for better functioning, etc. Work agency involves students being active in real working-life and taking responsibility for their own actions there. The students in this study were willing to be agents in their learning stories.

These elements in physiotherapy professional development rotate like pieces in a Rubik's cube. Every student finds his or her own way of moving forward and improving his or her expertise with the help of education (FIGURE 6).

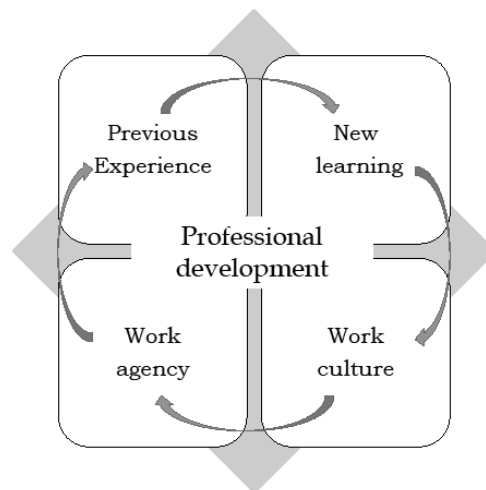


FIGURE 6. Physiotherapy professional development.

5 DISCUSSION

5.1 Reflections of the results

The story of the physiotherapy profession is important to recognize in understanding the development of the profession. This also facilitates comprehension of the physiotherapy community, the history as well as the future development of the profession. Every step in the development of the profession has been important and has led the way to the present. In addition to the professional story, it is necessary to understand how adults learn. It is educational to reflect and look back and learn from the history of the adult's learning story and highlight the good principles of adult education.

Students learn to be actively linked to the social physiotherapy work culture and at the same time build their learning paths in different situations. The socio-cultural aspect is emphasized in the students' learning stories. The turning points of students' learning stories are critical points in their learning. Turning points can be positive and encourage learning, but they may also present "pitfalls" or hinder learning if students do not receive necessary guidance or support. Curricula should be taken into account at work place and planned so that sufficient resources are available for teaching and learning, for learning to learn, and for learning during practical work phases.

Professional development is dynamic and movement takes place in every student's own study context. The themes of previous experience, new learning, work culture and work agency are the core meanings in the professional development for physiotherapists, and dynamic movement continues moving forward like the faces of a Rubik's cube. These themes or faces are always related to other themes, and all of them are needed in the development process. Professional development continues after graduation and it is lifelong learning as long as one is in working life.

It is possible to build personalized curricula for education when discussing with students and recognizing their developmental needs based on their previous experience. The students built up their professional development and expertise on their previous experiences. In this study, earlier studies, hobbies,

interests, life experiences and work experience had significance for the students at the beginning of their physiotherapy studies. Especially autonomous learners reflected their previous experience, which had taught them what kind of learners they were and what they wanted at this point in their life. Students had found a suitable study place for themselves. Also Walker Meinert (2008, 99) mentions in her dissertation that previous life experience has an impact on students' learning. According to her, earlier experiences and learning in the clinical learning area have even greater impact on learning than classroom theory.

Regular reflection is important in professional development. Reflection and the portfolio process were important for recognizing the students' previous experience and promoting self-reflection and professional development (see also Cranton & Taylor 2012). Previous experience is one of the andragogic principles and it plays an important role in adults' learning (Lindeman 1926a; Savičević 2008; Knowles et al. 2012). According to this study, it would be important to include reflective writing in curricula, as also Karjalainen (2012) and Kurunsaari et al. (2016) mentioned in their studies. There are various ways of fostering reflection, for example diaries, portfolios, e-portfolios, autobiographical writing, learning journals etc. (Linnakylä et al., 2007; Clark et al. 2008; Kurunsaari et al. 2018). Nowadays it is possible to include even videos and pictures in e-portfolios.

New learning took place in different contexts in this study; the basis of the profession was learned at school and various real working life contexts taught many new experiences and the skills needed for them. Andragogic principles contain "need to know" issues, which are the basis of each profession (see Savičević 2008; Knowles 2012). Professional development was constructed by integrating conceptual/theoretical, practical/experiential, self-regulative and sociocultural knowledge, as Tynjälä et al. (2016) have also stated. Learning tacit and situational knowledge at real work also had a big role in professional development.

At the beginning of their studies, students adopted new learning methods, which forced students to reflect critically on their previous conceptions about learning (see Dewey 1938; Mezirow 1990; Malinen 2000; Illeris 2014) and this was why it was a huge turning point in their stories of professional development as physiotherapists. Writing their portfolios and telling their own learning stories helped students to recognize their own ways of learning.

Problem and life-centered orientation in learning play an important role in adults' learning (see Knowles 1980). Students that used the PBL method in their studies experienced that information seeking, creative learning processes and working in tutor-groups demanded a lot of effort at the beginning of their studies. In addition, the role of the teacher was reflected. McAllister et al. (2014) argue that learning in tutorial groups nevertheless needs to adapt to students' progression and to be well aligned with tutorial work to have the intended effect. It is important to become more aware of this important step in the students' professional development at the beginning of studies and give them the needed support on learning to learn (see also Savin-Baden 2016).

The basis of physiotherapy work, human movement and action and therapeutic tools were learned at school. Theoretical knowledge was integrated into practical ways of studying. In addition, Jensen (2000) and French (2008) argue that expertise in physiotherapy is based on knowledge of the presumptions of health, human movements and daily activities. In addition, Lindquist (2006) emphasizes practical skills to be valued in the physiotherapy profession. As could also be seen in this study, the students wished to have generally more practical ways of learning at school during their education.

New learning at the final stage of studying was the process of doing the final thesis. Critical understanding of theories and principles and managing complex technical and professional activities or projects developed during involvement in research interventions when writing their thesis (see European commission 2017). Students understood the importance of scientific evidence as the basis of the profession, as also Sjögren et al. (2016) reported.

At the end of the studies students felt they were just starting to understand the totality of the profession. Advanced knowledge, skills and general competence developed with time and experience. Depending on their practical training periods and subject of the thesis, they had better understanding in some of the physiotherapy areas. Students took responsibility for learning more knowledge and skills when entering working life. They had adopted an attitude for lifelong learning. Sjögren et al. (2016) and Karihtala et al. (2016) comment on future physiotherapists' need to gain more substantial knowledge and skills in the area of psychophysical, geriatric, technology and multicultural competence.

Work culture was learned gradually by participating in existing work practices. The students learned to use the material and tools of the community in different work contexts, which increased belonging to the physiotherapy community (see also Vygotski 1978; Lave et al. 1991; Wenger 1999; Säljö 2001; Hakkarainen et al. 2004;; Kumpulainen et al. 2010). Workplaces were strongly present in students' stories and they told a lot about their participation in different actions at real work (see Depperman 2013). The meaning of the profession was not realized until at real work (see also Viitanen & Piirainen 2003).

The capability to learn for real life situations plays an important role in adults' learning and it is also one of the principles in andragogy (see Knowles 1980; Savicevic 2008). Also according to Dewey (1938) learning is applied when it takes place in everyday life where problems are real. At work it was possible to learn in various ways (see also Billett et al. 2006; Eraut 2004; Virtanen et al. 2009), also informally and incidentally (see Watkins et al. 2014). Different work contexts widened the students' professional development and physiotherapy work culture was developed in working-life projects. Students' own professional boundaries became stronger when interacting in a multi-professional team in working life (see Sjögren et al. 2016; Karihtala et al. 2016). Connectivity and learning in different contexts and networks could be combined also in curricula (see Virolainen 2014).

Tacit and situational knowledge, the values and habits of the profession were learned at real work (see Hammond 2016). For example, customer-

orientation and different roles physiotherapists had were learned by observing how real physiotherapists worked. Students adapted the professional identity, and socialization for the profession took place to a large extent in physiotherapy work culture. Also earlier studies exploring professional socialization of physiotherapy students found it to be important in professional development (Abrandt 1997; Richardson 1997, 1999; Lopopolo 2001; Öhman et al. 2002). Öhman et al. (2002) argue that the process of professional socialization and shaping of a professional identity is closely connected. The process of professional socialization gradually led to a professional identity also in this study. Students' professional identity and expertise were built in real work situations where students were able to interact with real clients (see also Lähtenmäki 2006; Laitinen-Väänänen 2008; Piirainen & Viitanen 2010). Learning which implies change in the identity of the learner is transformative learning, according to Illeris (2014; 2015). Those professionals who become used to discussing ethical and moral reasoning in their workplace develop a stronger sense of what they believe, value and know (Hammond 2016). The role of the workplaces and the socialization process for adopting physiotherapy tacit knowledge and values of the profession is not mentioned in the EQF. Learning work culture is an important part in professional development and it should possibly be mentioned also in curricula.

How working life should be developed from the student's perspective so that working life supports students' professional development? Could students be more involved in developing tomorrow's work culture? Cooperation and reflection together could be beneficial not only for students and tomorrow's professionals but also for work organizations and educational organizations. There is awareness of common responsibility in instruction. Cooperation between work organizations and educational organizations could be developed further in the future. The development of students, instructors and instruction and the sharpening of the role of the teacher in the instruction of the students during the instructed practical trainings could lead to a common interest in educating new professionals for the needs of working life. How resources are allocated to instruction both in educational organizations and in work places also requires serious thought (see Mikkola et al. 2017). It is also worth thinking about how student-friendly different work places are. Not all learning can be the responsibility of the work places, and coordination of the whole study modules should still be the responsibility of the educational institutions and teachers. There could be space also for new innovations in this development of co-operation, for example by means of digitalized conversation platforms.

Independent *work agency* at workplaces was a goal for the students. Work agency developed simultaneously as students learned to know physiotherapy work culture and physiotherapy competences. In the context of EQF, competences are described as learning outcomes, but it is not said how to achieve knowledge, skills, and personal, social and/or methodological abilities in professional and personal development. Key competences at Bachelor's level in physiotherapy include critical thinking, creativity, initiative, problem solving,

risk assessment, decision-making and constructive management of feelings. Knowledge, skills and competences are described as involving advanced expertise in physiotherapy (European Commission 2017; EHEA 2017) - the students in this study thought they were just at the beginning of understanding their own profession. When entering working-life the students had the status of novice physiotherapists (see Dreyfus and Dreyfus 1986) and it takes at least 10 years of intensive practice in the domain to become experts (see Dreyfus et al. 1986; Isopahkala-Bouret 2005).

Different kind of knowledge (see Tynjälä et al. 2016) (conceptual/theoretical, practical/experiential, self-regulative, sociocultural, tacit and situational knowledge) was used in work that influenced work agency. At the beginning of the studies, the students concentrated on their own actions at work, but gradually they started to see physiotherapy also from the clients' perspective. At the outset, agency at work was individual-oriented and the students focused on their own learning. Later on in their studies when students participated in working-life projects to develop and create new work practices, the focus shifted to an external-orientation to work agency (see also Harteis et al. 2014).

Students' work agency improved as they learned examination skills, instruction skills, variability of the exercises and reporting skills. The importance of the interaction between the client and the physiotherapist was experienced as important, as also Piirainen (2006) mentions in her dissertation. Good communication skills, senses and ability to be present in a situation were needed in the physiotherapy profession. At this point in studying, customer orientation, empowerment and comprehensiveness, the basis of physiotherapeutic instruction, were understood and gave more meaning to professional development (see also Lindquist et al. 2010; Karihtala et al. 2016; Sjögren et al. 2016).

Students experienced that their manual skills developed by practicing, especially in the workplaces specializing in that branch. They experienced it as important to have practice with various patient groups and to have theoretical knowledge of the diagnosis and rehabilitation in order to know how to instruct the patients well. The use of methods, materials, tools, instruments and practical skills generally (European commission 2017) were learned more deeply at real work. Tacit knowledge of the work, skills, ability, attitude and knowledge needed for the physiotherapy profession played a major role in physiotherapy students' professional development (see Rogoff 1990, 2003; Lave & Wenger 1991; Bartlett 2010; Lindquist et al. 2010; Hammond 2016).

Students' cognitive and self-regulative skills (involving the use of logical, intuitive and creative thinking) (see European Commission 2017) developed simultaneously with the actual practical work when students reflected on their doing and learning. Thinking skills developed especially after they had understood the wholeness of the profession and what physiotherapy actually was. Working-life projects inspired students to engage in creative thinking and innovation where they learned to manage and solve complex problems, also involving consultation and delegation (see Karihtala et al. 2016; Sjögren et al. 2016;

European Commission 2018). It was at this stage in their studies that the critical developers' turning points occurred. They became more anxious in studying when they learned to reflect more critically and be involved in creative thinking and innovating new ideas for working life.

Informal learning and having a job taught students responsibility and autonomy at work. Work processes generally became more secure when learning autonomy in practical work. Also an international period in studying added to previous values when students were learning to manage in more complex situations, take responsibilities and make their own decisions (see European Commission 2017). Work agency became more fluent and it was possible to do practical work independently in changing circumstances (see Eraut 2004, Virtanen et al. 2009).

A proficient employee is wanted and appreciated in work organizations. In the future, I believe education and work culture can develop further. Space should be given to creativity and new ideas, which will undoubtedly emerge with the new student graduates. As a researcher, I am interested in the input of different parts in the development of students' competences and work culture. In addition to the students' stories, I would like to hear stories from working life, instructors, communities and teachers.

5.2 A little reflection and a reminder of the narratives' history

Because this study had a narrative approach and the stories and myths from ancient times have also been recognized as narratives of that time, it is relevant for me to take a little look at the narratives' history as well. I found the old story of Pandora. In her story, "Hope was the only thing left in the jar she had got as a gift from Zeus, the Greek God. All the evil things - sickness, disease - escaped into the world of people because Pandora opened the box she was asked not to open. However, Pandora was curious to see what was inside the box. She managed to shut the box before Hope (Elpis in Greek) had come out of the box." Could this be the reason why hope has more of a spiritual meaning even today? However, in ancient times "hope" also had different meanings from today, like the meaning of "achieving a goal", which many times means hard work to achieve the desired goal. "Hope" may also be represented by "anticipation", which includes an expectation of both good and bad events (Cartwright 2015). The point being that it is important in our professional development and in physiotherapy to keep up hope for the development of the profession. Hope is present in the students' stories, as also Lindeman (1926a) and Estola (2003) highlighted.

Sometimes we do not always know how something we have started may end, we do not know the consequences of our actions, but if something doesn't go the way we wanted, there is always hope in the box, something we can learn

that from the Pandora myth.¹ There are similar kinds of stories in other cultures as well, presenting new beginning and hope for future development.

The story of Pandora reminds us that the emotional aspect of the physiotherapy profession must not be forgotten. The very roots of the curing professions lie in the philosophy of giving hope and love for people, as also Michael Brennan (2016) pointed out in his speech at the ER-WCPT Congress in Liverpool on November 12th 2016. The new professional development orientation for physiotherapists could be a delving into the nature of spiritual culture in our professional expertise community.

5.3 Changing landscape in professional development

History has provided the tradition in learning and professional development generally. It is important to take notice of the good principles of Western educational thinking. At the present, professional development includes four main aspects: previous experience, new learning, work culture and work agency. All those elements are needed in order to move forward in professional development.

Professional development is based on previous experience where reflection (Kolb 1984; Mezirow 1990; Malinen 2000) and narrative learning (Tolska 2002; Estola et al. 2014; Kim 2016) in a way “push” and promote learning and development and improve understanding of the students’ own skills and developmental needs. In terms of the future, professional development seems to be moving in a direction where more attention is paid to the holistic approach in learning and to the whole person in the learning process (Dirkx 2006; Taylor 2008; Dirkx & Smith 2009). In addition, andragogic principles are again topical in adults’ new learning (Lindeman 1926; Knowles et al. 2012). Creativity and innovation are needed for developing the profession and the work culture (see Harteis & Goller 2014; Illeris 2015), while independent active professional agency (Eteläpelto et al. 2015) and multiprofessional teamwork (Sjögren et al. 2016) take the development of the profession and work culture forward (FIGURE 7). The courage to question brings hope for developing work and education. There is a need for wise courage and creativity in the development of the profession.

¹ The most famous version of the Pandora myth comes from Hesiod's poems, the *Works and Days* from 700 BC. “Only Hope was left within her unbreakable house, she remained under the lip of the jar, and did not fly away. Before (she could), Pandora replaced the lid of the jar. This was the will of aegis-bearing Zeus the Cloudfather.”

In another version of the myth, Aesop clarifies: “So all the good things flew away, soaring high above the earth, and Spes/Elpis (Hope) was the only thing left. When the lid was put back on the jar, Elpis (Hope) was kept inside. That is why Elpis (Hope) alone is still found among the people, promising that she will bestow on each of us the good things that have gone away.” Aesop, *Fables* 526 (from Babrius 58) (trans. Gibbs) (Greek fable C6th B.C.)

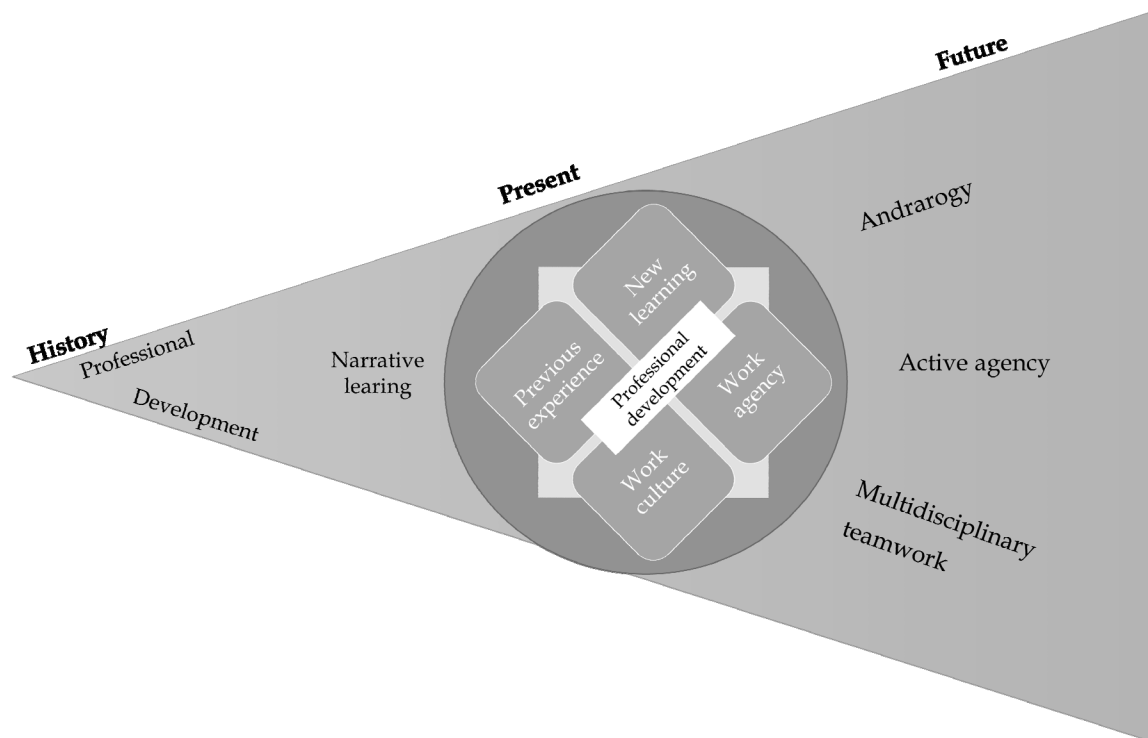


FIGURE 7. Widening landscape in physiotherapy students' professional development. Imagine this as a three-dimensional dynamic progression from the past into the future.

Believing in narrative, we must also believe that the story is not finished, that there are always other possibilities, and that other voices will enrich and expand it (Clark et al. 2008, 69). We are looking forward to this movement in our professional development.

5.4 Guidelines and practical implications to be considered in curricula

How to consider the thematic of professional development in the curricula. In addition, how to integrate the good principles of adult education into them. Some guidelines and practical implications for integrating the previous questions into curricula are discussed next.

Learning from previous experiences has been found to be useful for learning and development (e.g. Dewey 1938; Mezirow 1990; Malinen 2000; Illeris 2014), as was also the case in this study. For this reason, it is important to highlight the good educational principles of Western culture and to learn from history. The teacher-student relationship is still one of the most important factors in learning and it needs to be explained clearly to the students, what is the

teacher's role in the learning method used. Students need to clarify this for themselves, too. This involves reasoning, questioning, discussing, dialoguing, asking, correcting, recognizing limitations, and getting feedback, as was done already in ancient times (Socrates). In addition, ideas (Plato) and investigating the world (Aristotle) were found to be educational already back in that time (Valentin 1953; Grimberg 1957; Saarinen 2001). In addition, Gruntvig underlined teacher's role in adult education. The teacher has responsibility as an expert and responsibility for treating people right. Living interaction, humanity and developing the whole person during education are important factors in professional development even today (Warren 1989; Lawson 1993; Niemelä 2011). Besides the previous good principles, andragogic principles also proved to be present in the students' stories. "Need to know" issues, previous life experience, internal motivation, problem centered orientation and learning from real situations seem to be current themes in adults' learning (e.g. Knowles et al. 2012).

Reflection is important in learning and or contributing factor to this is, for example by writing portfolios, as the students in this study had done. Building one's own learning story helps to recognize one's own learning needs as well as strengths. It is also educational to learn from others' stories. The narrative learning method also supports the students' personal growth (Estola et al. 2014). The whole person, feelings and meanings of situations are recognized as contributing to the learning process.

New learning is learned in various ways and versatile and diverse learning methods keep up the students' enthusiasm for studying. Integrative learning in different contexts moves the students' professionalism forward. Practical ways of learning are valued. New learning may be contributed by supporting learning skills. Information seeking and IT skills are important in learning new information. Similarly, writing and reflective writing skills need guidance and support new learning (see also Kurunsaari et al. 2016). Nowadays peer-group learning happens widely in different learning approaches. Therefore, group working, ways of interaction, rules and roles in the group are important to learn (see Leppänen 2018).

Work culture is learned by participating in work practices (see Wenger 1999). Tacit and situational knowledge, norms, values, habits, ethics and also professional identity to a large extent are learned at different workplaces in a socialization process for the profession (Hammond et al. 2017). Learning in working life oriented projects is educational (see Illeris 2015) and the students have an opportunity to be creative and learn informal, tacit and situational knowledge from the work culture.

Independent work agency is the goal for the students during their education. Knowledge, skills and competences develop gradually as students take an active role in real patients' physiotherapy. Independent survival in different work contexts supports work agency (see Eteläpelto et al. 2015). Role models from real working life and committed instructors help students in their learning. Active agency brings hope for us physiotherapists, hope for development.

5.5 Trustworthiness

The qualitative, narrative approach was a good way of identifying the students' professional development. The portfolio process and getting to know one's own learning story are ways to become aware of one's own learning process and develop it. The disadvantages in narrative research are that there is no single precise method for analyzing the data, and the researcher has to create a suitable way to answer the research questions. Using different ways of reading always revealed new information in the data - information which nevertheless supported the earlier findings. An advantage in narrative analysis, however, is that as a result of the analysis the unique meanings from the stories of the participants in the study are figured out (Ricoeur 1984; Polkinghorne 1988; Hyvärinen 2008; Kim 2016).

The trustworthiness of narrative research has been discussed extensively, and different ways of arguing its quality have also been developed (see Loh 2013). The constructive way of thinking is based on a point of view in which reality is produced with the help of stories, so the other part of the correspondence relation is hard to construct. Verisimilitude is not based on argument, but a state in which the reader is able to emphasize the story and experience it like a simulation of truth. What is essential is that the world of the story opens up to the reader as trustworthy in such a way that the reader starts to empathize with the world of the people in the story and understand the motives for their actions in the circumstances in which they live (Loh 2013; Heikkinen 2014).

The portfolio data produced abundant material (2002 A4 pages), and in that sense, the research material is considered rich and broad. It was collected from different UAS and the students had various backgrounds. The students also wrote personal text and each participant had a unique portfolio. The students were able to write freely about their experiences of their learning and this is what they did. On the other hand, it can also be thought that writing a portfolio was a part of their studies and that teachers read the students' texts, so it could be that students possibly did not really want to divulge all of their experiences to the teachers. In contrast, though, a positive side of this research was that the portfolios were written constantly so students memorize different aspects well and longitudinal data covering their entire studies could be collected. The students did the first interpretation of their thoughts on their own; they wrote what they wanted to tell about their experiences. In addition to the portfolio data, there could have been additional data, for example in the form of individual or group interviews, but the amount of material would have been even larger than it was now. Again, in turn, for some students oral narration could have been easier than writing.

The progress of the analysis process has been described in such a way that it is possible to follow how and where the researchers obtained the results. The process is transferable. From the student's point of view the original articles

form an integral part of their study time, and they also include direct citations from the research material (see Loh 2013).

The theoretical choices are justified and various learning theories, concepts of work culture and physiotherapy agency were used in understanding the development process and the context students are going to be working in. The results of the study were examined in relation to these perspectives. (Giorgi 2002; Tong et al. 2007; Loh 2013). The thought, however, was that professional development is not only linearly ongoing, but that professional development also increases in different dimensions and in different ways depending on the story model. The final goal for the students is to perceive independent agency in physiotherapy work culture.

The results were presented in a way, which is logical and suitable for the approach. The plot of the students' stories was arranged in chronological order in a compact format. The turning points of the students' stories were recognized and examined in more detail with the help of thematic and interpretative phenomenological analysis. Finally, the essential themes of the physiotherapy students' professional development were identified with the help of an iterative process. The most essential messages concerning professional development were summarized in graphical figures (see Loh 2013).

The limitations of our study mainly relate to any potential generalizing of the findings, namely that our research was carried out in the Finnish context, relating to Finland's specific culture, education system and physiotherapy in Finland. The Finnish education system deviates from practices that are typical in many other Western countries. The material focuses on three out of 15 UAS, so it is not necessarily comparable to elsewhere. The material also focuses on students at Bachelor's level. The number of participants (21) is also quite small, but it includes a lot of material over a long period, the whole study time. The results of this study tell about the professional development experiences of the students in this study and cannot be generalized (see Tong et al. 2007; Smith 2011).

The relevance of this study is also a question of the utility of narrative truth. Is this study useful and is it relevant for use by members of the research community or by members of the teaching community? (Loh 2013) This is what Riessman (2008) considers the "ultimate test": "Does a piece of narrative research become a basis for others' work"? This research complements previous knowledge and brings a new kind of knowledge on physiotherapy professional development, for example the meaning of previous experience, new learning, work culture and agency at work, which can be utilized in developing education and planning curricula and the role of the workplaces in these.

The results may benefit other health care educational programs than physiotherapy as well as other vocational education programs in understanding the entire process of students' professional development during their studies and the meaning of work places and work culture in the development process. The main question and developmental task to be asked of teachers and of work places is whether they are able to identify students' growth and significant de-

velopment opportunities and to support professional development in the right places. This also requires good cooperation between the workplaces and the educational organizations so that the students can gradually participate in different tasks.

One of the limitations also worth mentioning is the English language. I as a researcher and writer did my best to write a fluent, articulate and clear presentation, even though English is not my mother tongue. Nevertheless, it may have somehow affected my choice of expression, something for which I ask my readers' understanding.

5.6 Ethical issues

Participation was voluntary and permission for the study was requested in writing from all participating educational institutions as well as the students themselves. Anonymity of the participants was maintained during the whole process and that is why the student's real names were not used in this study. The researcher met students personally and told them both orally and in writing about the aims and meaning of the research (see Tong et al. 2007, 349-357). Voluntary students from the graduating groups from two Universities of Applied Sciences gave their paper-based portfolio to the researcher, who copied them for the study, and returned them to the students. In one educational institution, e-portfolios were used, which the students sent to the researchers electronically. The material was kept in a locked closet in a locked room in the University of Jyväskylä. The electronic material was stored on a portable hard drive, which was kept in the same location with the rest of the materials. When the last article is published, the data will be disposed in the proper way. The anonymity of the participants have been maintained during the whole process; this is why the students' real names were not used in this study. Good ethical principles are used in the study, which is a part of a wider research project that has research permission from the ethical committee of the University of Jyväskylä (9.5.2012). Research permission has been granted also by each of the UAS, from which the data has been collected (2008-2014). None of the authors in the main articles was teaching at these universities of applied sciences while this study took place.

YHTEENVETO (FINNISH SUMMARY)

Fysioterapian työkuulttuurin omaksuminen ja itsenäinen toimijuus käytännön työssä ovat fysioterapian opiskelijoiden päämääränä. Opiskelijat rakentavat asiantuntijuuttaan uuden teorian tiedon sekä vähitellen karttuvan käytännön taidon avulla oppilaitoksen ja työelämän välisessä yhteistyössä. Oppiminen pohjautuu aikaisemmin opittuun ja aikaisempiin kokemuksiin. Laki terveydenhuollon ammattihenkilöistä 559/1994 ja Suomen kansallinen tutkintojen viitekehys (National Qualification Framework, NQF) määrittävät lainmukaisen perustan ammatille ja koulutukselle Suomessa. Eurooppalainen tutkintojen viitekehys (European Qualification Framework, EQF) määrittää oppimistulokset koulutukselle ja keskittyy siihen, mitä tietoja, taitoja ja kompetensseja oppijan tulee osata koulutuksen päättyessä, mutta se ei määritä sitä, miten tulokset saavutetaan.

Vuonna 1908 aloitettiin aikanaan lääkitysvoimistelijakoulutukseksi kutsuttu fysioterapiakoulutus Helsingin yliopistossa tsaari Nikolai II:n asetuksella. Fysioterapiaa pystyi opiskelemaan Helsingin yliopistossa valinnaisena aineena jo vuonna 1882. Suomessa on nykyään mahdollista opiskella fysioterapeutiksi ammattikorkeakoulussa 15 eri koulutuksessa. Opintoja on myös mahdollista tehdä sekä ruotsin että englannin kielellä, koulutuksen laajuus on 210 opintopistettä, joka tarkoittaa 3,5 - 4 vuotta kokopäivä opiskelua. Ammattikorkeakoululaki (932/2014) ja ammattikorkeakouluasetus (1129/2014) määrittävät ja ohjaavat ammattikorkeakoulujen toimintaa. Ammattikorkeakoulut ovat hallinnollisesti itsenäisiä ja voivat päättää opetusmetodeistaan.

Tutkimuksen tarkoituksena oli tutkia ja ymmärtää fysioterapiaopiskelijoiden kertomuksia heidän asiantuntijaksi kasvustaan heidän ammattikorkeakouluopintojensa aikana fysioterapian koulutuksen kehittämiseksi. Tutkimusaineistona käytettiin kolmesta eri ammattikorkeakoulusta fysioterapiaopiskelijoiden koko opiskeluaikanaan kirjoittamia portfolioita (n=21). Portfoliot analysoitiin narratiivisen lähestymistavan avulla. Narratiivinen eli tarinallinen ajattelu on yksi oppimisen keskeisistä työkaluista. Omien oppimistarinoiden kertominen auttaa opiskelijoita reflektomaan ja myös tiedostamaan omaa työskentelyään sekä kehittämään sitä. Narratiivisuuden avulla opiskelijat voivat rakentaa myös omaa ammatillista identiteettiään ja kasvaa kohti oman alansa asiantuntijuuttaan. Ricoeurin (1984) filosofinen kokonaisnäkemys ohjasi tutkimusta, jolloin tutkittavien yksilölliset merkitykselliset kokemukset saatiin selvitettyä. Väitöskirja koostuu neljästä erillisestä artikkelista ja yhteenveto-osasta.

Läntisen kulttuurin, koulutuksen ja fysioterapian ammatin perinteet ovat lähtökohtia fysioterapian asiantuntijaksi kasvussa suomalaisessa koulutusjärjestelmässä. Tällä hetkellä asiantuntijaksi kasvussa on neljä pääteemaa, neljä monikerroksista narratiivista, jotka johtavat fysioterapian asiantuntijaksi: aikaisempi kokemus, uuden oppiminen, työkuulttuuri ja työtoimijuus. Kaikkia näitä elementtejä tarvitaan kehittymisessä. Opiskelijoiden asiantuntijaksi kasvussa löytyi sopivan opiskelupaikan löytymisen jälkeen kaksi merkittävää käännekohtaa, joista toinen oli alkupuolella opintoja, jolloin uudenlaista oppimista tarvittiin

ammattillisissa opinnoissa. Toinen käännekohta oli käytännön työn oppiminen, josta opiskelijat kertoivat paljon portfolioissaan.

Fysioterapeuttiopiskelijoiden asiantuntijaksi kasvussa tunnistettiin kolme erilaista tarinamallia: autonomisen oppijan kasvun tarina, fysioterapiayhteisöön kasvun tarina ja kriittisen kehittäjän tarina. *Autonomisen oppijan tarinoissa* varsinaiset opiskeluajan käännekohdat kohdistuvat ajallisesti opiskelun alkuun. Näillä opiskelijoilla on takanaan aikaisempia opintoja, mutta vasta tässä elämänvaiheessa he ovat löytäneet etsimänsä alan ja opiskelupaikan. Opintojen alkuvaiheen ja uuden opiskelupaikan he kuvaavat olevan varsin positiivinen muutos heidän elämässään, ikään kuin uudenlainen alku omalle kasvuilleen. *Fysioterapiayhteisöön kasvun tarinoissa* opiskelijat kuvaavat eniten ammatillista kasvuaan astua työelämään. He pohtivat sitä, minkälaiset valmiudet heillä on kohdata oikean työn haasteet. Oman alan kurssit ja käytännön harjoittelut selkiyttävät kokonaiskuvaavaa fysioterapiasta ja tuovat uudenlaista innostusta opiskeluun. Käytännön kokemukset ylipäätään edistävät näiden opiskelijoiden ammatillista kasvua. *Kriittisen kehittäjän tarinoissa* opiskeluajan käännekohdat ovat melko myöhäisessä vaiheessa heidän opiskeluaan, jolloin kriittisyys sekä omia kykyjä että tiedonlähteitä kohtaan herää. Oman toiminnan kehittämisen lisäksi opiskelijat kiinnostuvat kehittämään myös fysioterapiaa alana. Etenkin koulussa toteutettavat hankkeet innostavat kehittämään uudenlaista toimintaa.

Oppimaan oppiminen - uudenlainen oppiminen, oli käännekohta opiskelijoiden kertomuksissa. Kaikki opiskelijat kertoivat oppimisestaan kertomuksissaan, mutta erityisesti opiskelijat, jotka opiskelivat ongelmalähtöisen opetus-suunnitelman (Problem Based Learning, PBL) mukaisesti (15/21 opiskelijasta) kertoivat paljon oppimismenetelmästäan opintojen alussa. PBL menetelmä oli uusi oppimismenetelmä kaikille opiskelijoille tässä tutkimuksessa, jotka käyttivät sitä oppimismenetelmänään. Tämä sai aikaan hämmennystä ja aktivoi kriittistä reflektiota opiskelijoissa. Reflektio oli kaksisuuntaista. *Itsereflektio* suuntautui *tiedonhakuun* sekä *luoviin oppimisprosesseihin*, kuten reflektiiviseen kirjoitustaitoon, seminaarityöskentelyyn ja esiintymistaitoon. *Reflektio yhdessä* suuntautui *opettajan rooliin* sekä *vertaisryhmän toimintaan*.

Käytännön työn oppiminen oli toinen suuri käännekohta opiskelijoiden kertomuksissa. Käytännön työpaikoilla oli fysioterapian työkuulttuuriin sosiaalustumisprosessissa suuri rooli. Työkuulttuurin hiljaisen tiedon oppiminen, ammatin tavat toimia, arvot ja asenteet opittiin suurelta osin aidoissa työelämän tilanteissa. Fysioterapian käytännön työn oppiminen eteni viidessä vaiheessa ammattikorkeakouluopintojen aikana. 1) *Fysioterapian perusta*, ihmisen liike, toiminta ja terapeuttiset menetelmät, opittiin koulussa integroimalla teoriatietoa ja käytännön toimintatapoja oppimiseen. 2) *Ammatin merkitys* hahmottui työelämässä, kun opiskelijat olivat vuorovaikutuksessa aidon asiakkaan kanssa. Fysioterapian ammattilaisten havainnoiminen koettiin tärkeäksi työkuulttuurin omaksumisessa. 3) *Fysioterapian kokonaisuus* hahmottui vähitellen osallistamalla käytännön työkuulttuuriin. Itsenäinen toimijuus lisäsi kuulumista fysioterapiayhteisöön ja kuntoutussektoriin. 4) *Fysioterapian kriittinen reflektio* -

metakognitiiviset taidot kehittyivät. Kliiniset päätöksentekotaidot, ajattelu, suunnittelu, arviointi, tiedon yhdistäminen ja rakentaminen kehittyivät samanaikaisesti käytännön työn oppimisen kanssa. 5) *Käsitys fysioterapiasta laajeni* sitä mukaa, kun opiskelijat saivat enemmän käytännön työkokemusta. Informaalinen oppiminen erilaisissa käytännön konteksteissa, ja erityisesti ulkomailta tapahtuva harjoittelujakso laajensivat opiskelijoiden käsitystä fysioterapiasta. Käytännön työprosessit tulivat sujuvammiksi, opiskelijat oppivat suunnittelemaan, toteuttamaan ja arvioimaan työprosesseja ja ottamaan enemmän vastuuta tekemästään työstä.

Reflektion ja narratiivisen oppimisen avulla aikaisempia kokemuksia voidaan hyödyntää asiantuntijaksi kasvussa. Tulevaisuudessa fysioterapian asiantuntijaksi kasvu näyttää laajenevan siihen suuntaan, jossa uudenlainen oppiminen olisi yhä kokonaisvaltaisempaa sekä andragogiset periaatteet huomioivaa. Fysioterapian työkulttuurin kehityksessä tarvitaan tulevaisuudessa lisää luovuutta ja innovatiivisuutta. Monialaisuus ja aktiivinen toimijuus vievät fysioterapian työtoimijuutta eteenpäin.

Tämä tutkimus tuo uudenlaista täydentävää tietoa asiantuntijaksi kasvusta terveystieteiden koulutuksen ja opetussuunnitelmien kehittämiseksi. On tärkeätä tunnistaa asiantuntijaksi kasvun eri elementit. Monikerroksiset ammatillisen kasvun narratiivit, tutkimuksen myötä hahmottuneet teemat: aikaisempi kokemus, uusi oppiminen, työkulttuuri ja työtoimijuus, ovat yhdenvertaisesti merkittäviä. Yhteenvetona voidaan sanoa, että nämä narratiivit johtavat asiantuntijuuteen opiskeluaikana. Ammatillisen kasvun kertomukset ovat kertomuksia toivosta, asiantuntijuus ja ammatillinen kasvu tuovat toivoa opiskelijoille. Rohkeus kyseenalaistaa ja kehittää ammattia tuovat toivoa fysioterapiaprofession kehitykseen jatkossakin. Uudet kertojat ja kertomukset liikuttavat fysioterapian professiota eteenpäin. Jäämme mielellämme odottamaan tätä liikettä.

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ORIGINAL PAPERS

I

THE STORY MODELS OF PHYSIOTHERAPY STUDENTS' PROFESSIONAL DEVELOPMENT. NARRATIVE RESEARCH

by

Korpi H., Peltokallio L. & Piirainen, A. 2014

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The Story Models of Physiotherapy Students' Professional Development

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Abstract

The aim of this article is to investigate students' narratives about their professional development process. This research brings new kind of knowledge to continuing learning, developing education and planning the curriculum in physiotherapy education. European Qualification Framework (EQF) defines learning competences in education. The qualitative research has a narrative approach. The material consists of eight voluntarily participating physiotherapy students' portfolios written during their whole study time. The longitudinal data tells about them as learners and their development process.

The major findings are four main episodes in professional development: *the previous studies, new way of learning, understand the physiotherapy* and *turning to be professional in physiotherapy*. Three story models were found: *the story of the development of an autonomous learner, the story of the development in becoming a member of the community of physiotherapy* and *the story of the development of a critical developer*.

In conclusion, a four-level step of the physiotherapy students' professional development was formed. The model helps to understand the students' concepts about their professional development. Students need theoretical knowledge and practical skills for building their professional development. Reflecting the learning and instructed practice are important to professional development in health care. Learning is connected to action, context and culture where information is collected and used.

Keywords: physiotherapy student, professional development, university of applied sciences, narrative research

Introduction

Professional development during education occurs when knowledge, skills and experience increase. Learning and expertise always develop through cooperation between school and working life in education in the health sector. (1) Reflections of learning (2) and instructed practical training (3, 4) are important in professional development in physiotherapy.

Development from a novice to an expert can be seen in development of thinking and ability to act, utilization of self-reflection and development of personality. Expert knowledge can be informal competence, silent practical knowledge or use of common sense. It often includes emotional and social skills to which controlling of one's own competence, problem-solving, communication and cultural interpretation are connected. (5, 6) Expertise in physiotherapy is based on knowledge of the presumptions of health, human movements and daily activities. (7, 8) Career development of an expert is a continuum in which expertise increases step by step. Expertise is typically acquired through at least 10 years of intensive practise in a particular domain. (9, 10)

Professional qualification competences are defined on national and EU level. European Qualification Framework (EQF) divides education into eight levels. This has played a key role in developing higher education (levels 5-8) in Europe since 1999. Competence is the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of EQF, competences are described as outcomes. EQF defines eight independent key competences also on bachelor's level (240 ETCS) in physiotherapy. They include critical thinking, creativity, initiative, problem solving, risk assessment, decision making and constructive management of feelings. (11, 12)

Higher education in Finland is offered both by universities and universities of applied sciences (dual model). Universities emphasize more of scientific research and instruction. Universities of applied sciences also give practical

professional skills. The extent of a degree in university of applied sciences is generally 210–240 ECTS points and it requires 3–4 years of full-time study. (13) National Qualification Framework (NQF), set by Finnish Board of Education, is an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved. Finnish Bachelor's degrees are placed on level six of the eight levels of the EQF. This is central in physiotherapy education now. NQF and competences became in use in the beginning of 2013. (14)

Theory of development for expertise according to Dreyfus & Dreyfus (1980) is a traditional way of describing transition from a novice to an expert and it is used in this article. Transformative learning theory has a central place in the adult education literature. According to Mezirow (15) transformative learning occurs when people critically examine their habitual expectations, revise them and act on the revised point of view. Transformative learning is a process of progress in learner's life. It occurs in relation to a variety of kinds of habits of minds. Transformative learning takes place in a multiplicity of contexts and it is stimulated by different types of events. Transformative learning from the learner's point of view includes as many different transformative learning stories as there are people who experience transformation. (16)

Physiotherapy students' professional development throughout their studies, how the students tell about their professional development themselves, has not previously been studied. Systematic search from scientific databases (ERIC, MEDLINE, CINAHL and Academic Search Elite) was done 18.2.2014 when used keywords physiotherapy students AND professional development AND narrative research. Four articles were found and they concentrated in cultural and work cultural issues (17, 18) and professional knowledge and skill (19, 20).

The aim of this study is to investigate students' narratives about their professional development for planning their personal curricula in physiotherapy. Both Finnish physiotherapy curricula and EQF competences concentrate on the learning outcomes in physiotherapy but do not cover the ways how to achieve

those outcomes. Results of this research will help when planning education and courses in physiotherapy.

The research questions are: 1. How do physiotherapy students tell about their professional development during their study time? 2. What are the meaningful turning points and learning experiences of physiotherapy students during their education? 3. What are the narratives of physiotherapy students' professional development?

Methods

The research method is qualitative narrative approach to describe and understand the physiotherapy students' stories as narratives. Narrative is structuring experiences and the world, constructing and a way to use language. Language is an instrument of communication and narrative an instrument of mind to construct meanings. (21, 22)

In narrative research the focus is on people's authentic stories and the way individuals give meanings to experiences via their stories. When thinking like this the students' own voice is better heard with the help of their own stories, when they have done the first interpretation themselves. They tell what they experience as necessary to say. With the help of narrative approach, students can build their professional development. Narrative research enables a new kind of perspective, in which it is possible to combine students' life stories to their professional development. The research of the narratives' turning points allows the identification of transitions during studies. (21, 22, 23)

Study design

This study is part of a wider research project that concentrates on health care teacher's education. This article focuses on the students' view in learning.

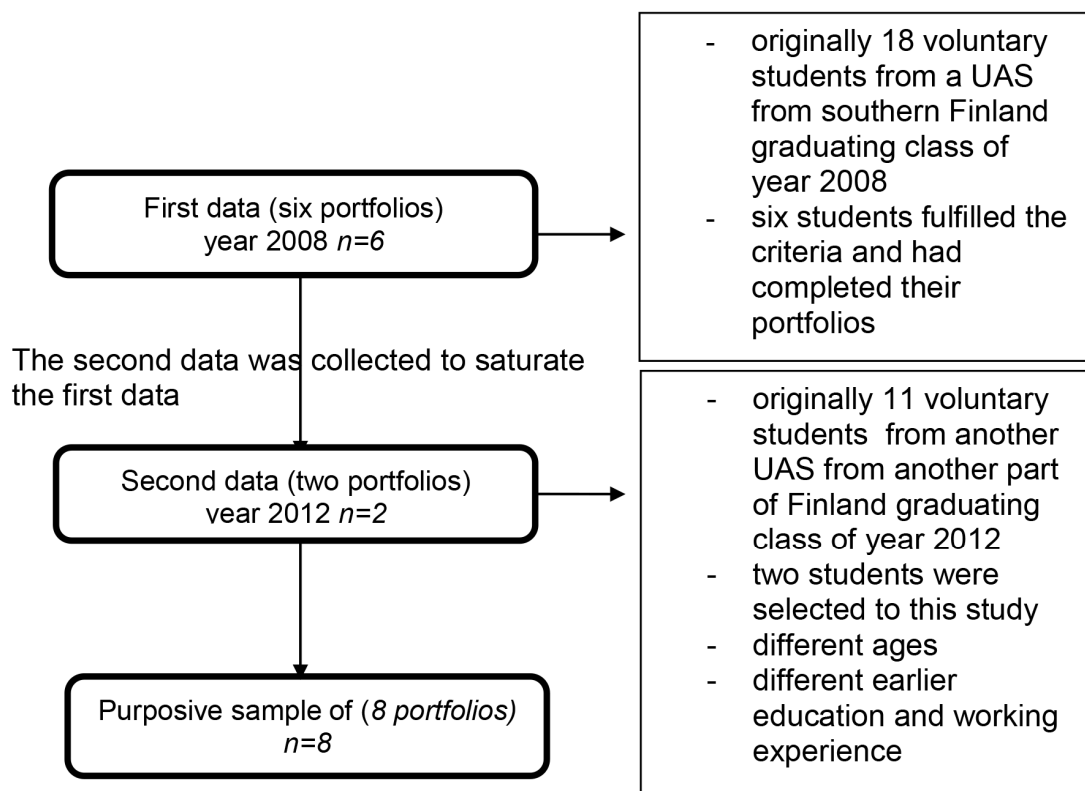


Figure 1. Study design and sampling flow chart

The data was collected in 2008 and 2012 from two different universities of applied sciences (UAS) from different parts of Finland with a different curriculum, graduating time and age groups. In the first data collection it was only six students out of 18 voluntary students who had completed their portfolios completely. In the second data it was wanted to saturate this first data with two different types of students out of 11 voluntary students (criteria: different ages, different earlier education and working experience). (figure 1)

Participants

Participants were eight 22 to 37 years old female students (mean age 27.5 years) who finished their studies in 2008 and 2012, participated in the study. Six students did not have earlier experience of higher education. Two had studied in university. Four had graduated from vocational upper secondary education, three as practical nurses and one from catering branch. One was a masseur as a previous profession. Six students had taken a matriculation examination. All

students had work experience from both child care and elderly care during their studies.

Sex (f/m)	Age (years)	Earlier education	Working experience (years)	Graduation time (year)
Anna f	29	- matriculation examination - 3 years of studying in a university of technology	10	2008
Eeva f	25	- vocational upper secondary education (catering branch) - masseur	5	2008
Liisa f	34	- matriculation examination - vocational upper secondary education (practical nurse)	7	2008
Tiina f	22	- vocational upper secondary education (practical nurse)	1	2008
Kaija f	24	- matriculation examination	1	2008
Minna f	27	- matriculation examination - vocational upper secondary education (practical nurse)	5	2008
Sonja f	37	- matriculation examination - MPhil	12	2012
Maria f	22	- matriculation examination	1	2012

Table 1. Education and work experience of the participants

Data collection

Longitudinal data was collected during 3, 5 years from two different universities of applied sciences in different parts of Finland. The data consists of 283 typewriting A4 pages of learning experiences of the students. Students wrote their portfolios every six month, in which they told their learning experiences and feelings. Students were given guidance in making a portfolio. They were instructed to theme-write about subjects *what kind of a learner am I* at the beginning of their studies and *my professional development* in every sixth month. Length of the stories varied from 12 to 47 pages, average they wrote was 35 pages. Writings were free narration of the students. In part of the stories

the students used literary sources as back-up to their thinking. Finally, the portfolio consisted of a single report of their study time.

Data Analysis

The analysis in a narrative research is often in a free form, but also accurate methods for analysis have been developed. Narrative data always needs interpretation; results cannot be explained in a simple way, numbers or categories. (21, 22) It was a process to analyse the data, and it had to be read several times. Different ways of reading are used in narrative analysis depending on the question answered. Such issues that would help to understand professional development were tried to be discovered in the material.

Three-stage analysis of narration has been used as basis for the analysis of the students' longitudinal narration. First a general view and descriptions of the stories are made, and thereafter the turning points of the stories and story models can be recognized. !24) Taxonomies and categories out of the common elements across the database are used in this study to build up explanatory stories. (25) Story models of professional development were constructed from the students' learning stories. The analysis in this study had three phases (figure 2):

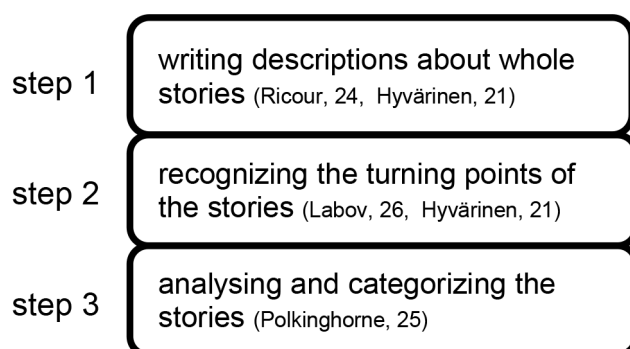


Figure 2. Data analysis.

Step 1) In this phase of the analysis a general view of the students' stories was made. A chronological plot was formed from the stories. The plot is an integrating and interpreting process, in which pieces of a story are connected to be an entire story. Summarized individual narratives were formed of the students' stories (21, 24). The recognisable features of a story were clearly shaped from the stories: the beginning, midpoint, ending and a chronological plot. Components defined by Labov (26) were recognizable in the students' stories. Especially the evaluation the students wrote about professional development was considered. These individual descriptions were used in the following phases of the analysis.

Step 2) Analysis was sharpened to cover details of the ongoing of the plot. In this phase the main episodes and turning points, in which the students used the dense lingual descriptions the most, were formed. The dense parts and the evaluations in the students' stories exposed the turning points in the study time. (21, 26)

Step 3) Three different story models of the students' stories were formed according to the turning points of professional development. The direction, genre of the story, which is graphically presented after the description, was formed of the plot, main episodes and critical turning points of the story. The story models have been given names according to their recognizable characteristics. (25) The students' ongoing in professional development has been yearly described because the students had themselves used the years of studying as the "boundary marks".

After analysing the data it was possible to connect the results and the story models to theoretical reference frames.

Results

Stories of eight physiotherapy students' professional development from the level of novice student to the level of skilled student had different turning points on their study time. During their studies physiotherapy students formed their professional identity. When finishing their education, the students should have capability for lifelong learning. It is important to pay attention to different types of learners when planning the curricula.

The Four Episodes of Professional Development

The students' stories were constructed as chronological narratives. One of the main results of the research was that a four-level transition -step of the physiotherapy students' professional development was formed. Four different main episodes of professional development were constructed: 1. *the previous studies*, 2. *a new way of learning*, 3. *understand the physiotherapy* and 4. *turning to be professional in physiotherapy*.

1. The previous studies: The students described their previous learning experiences and earlier achievement in studies. 2. A new way of learning: The students described their needs in learning, their problems in a new learning environment and things they experienced as beneficial. 3: Understand the physiotherapy: After the changes of the beginning the students told about their professional development; constructing knowledge and learning practical skills. Practical training periods had a big role in the professional development process in the stories. 4. Turning to be professional in physiotherapy: In the final stage of studying the students described their specialisation area and the process of doing their final thesis. Transferring to working life and learning at work were in thoughts of students near graduation. When going up in the professional development -steps the feelings of the students changed from feelings of insecurity and fear to experiences and assurance, finally finding their own developmental needs and perceiving the wholeness of physiotherapy

gradually. When understanding the wholeness of physiotherapy increased their trust, their own skills grew also.

The Story Models of Physiotherapy Students' Professional Development

Three story models were formed from the students' narratives: *the story of an autonomous learner*, *the story of becoming a physiotherapy community member* and *the story of a critical developer*. It could be seen that during the students' study time they had turning points that describe their professional development. They took place in different times in studies depending on the story model. The ongoing of the plot and turning points, which tell about thick points in study-time, can be seen in the figures (figures 1-3), as the students tell in their stories. Even though the turning points are different in the story models, every narrative ends up in Bachelor's degree in physiotherapy.

The Story of an Autonomous Learner

The main turning points of the *autonomous learners'* stories were at the beginning of their studies when they found appropriate study places and professions for themselves. (figure 3) Especially *Anna*, *Liisa* and *Sonja* described their own growth as human beings in their stories. These students had previous studies behind, but not until this stage in their life they had found the right branch and study place they had been seeking. They described the beginning of their studies and the new study place as a positive change in their lives, like a new start for their own growth.

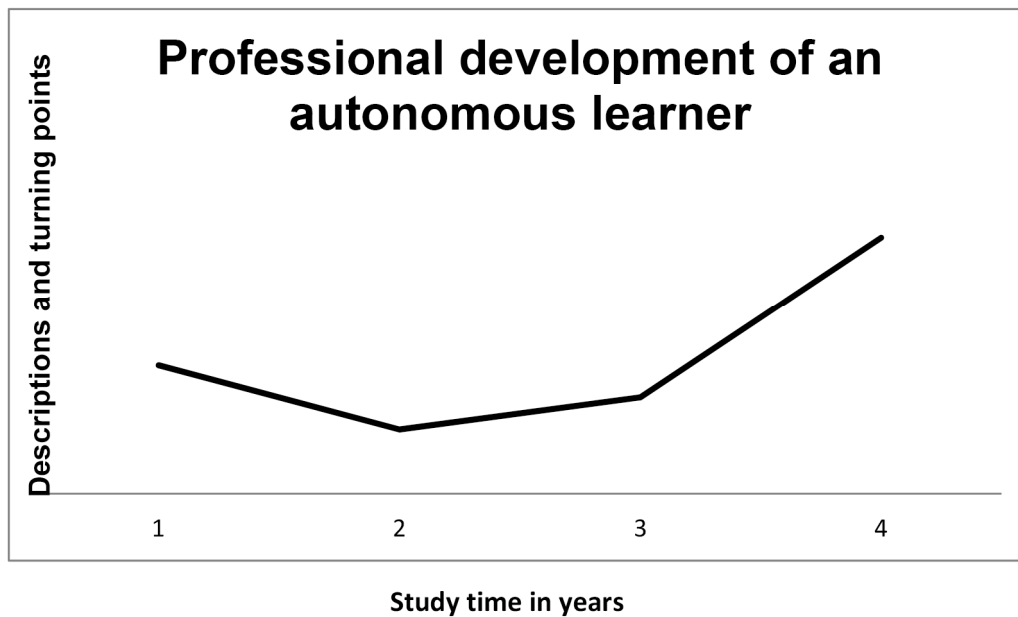


Figure 3. Guidelines for autonomous learners' turning points during their study time. Students' professional development improved in the turning points which can be seen on the dots in the pictures.

Anna finds university of applied sciences a learning environment, which seems to fit just for her. As she writes:

"I studied three years in university of technology before entering to university of applied sciences. In the university of technology studying consisted mainly of sitting in a large auditorium with about two hundred other students. Such environment was not for me and I felt it was wiser to apply to the university of applied sciences, where teaching is more personal, and the school community is smaller."A3

She felt that she needed a concise study environment in order to keep up with other students.

"I am very lazy by nature and I only do what I am pressured to do. That's why I need a concise learning environment, where I cannot be a slacker but have to keep up with the others constantly."A4

Also Sonja found studying at university of applied sciences different than studying in the university. She felt she belonged to a group now. As she writes:

"Clear advantage compared to the university I see education and training programs have had a strong desire to get started grouping right away. I was just wandering more or less by myself in the university - because social contacts were not forced to create, I did not create them. Even though there is a large age difference between me and many others in the class, I'm actually amazed that

everything has worked out so nicely. I have a real team, where I really belong now!" H 13

A Finnish reform that established universities of applied sciences, aimed at more student focused and work-oriented higher education. This seemed more appropriate to Anna than the traditional university environment. In the university of applied sciences, she felt she belonged to a more concise student group and got more personalized guidance.

Also a turning point in the story of Liisa is in the beginning of her studies when she found a suitable study place. She had studied many branches, but she had not found the right profession for herself before studying physiotherapy. She says previous studies were search for the right profession. As she writes:

"My first studies were just searching. I had to look around and see what there was to offer. It was really difficult to decide what to do with the rest of my life. My previous degrees have benefited and will only benefit me. Studying is never waste of time. At working life, I have noticed that the more you have competence, knowledge and skills in various areas, the more opportunities open up. At least I have experienced it as richness. "C4

Sonja felt she was wasting her life in her previous profession. She wanted more meaning for her work and life. Starting to study physiotherapy was a big change in her life, and she was happy about it. As she writes:

"I had experienced very strongly that I wasted my life as a human being in the previous work. I felt that I am not able to give enough for others, I could give more. I wanted my work more relevance and meaning. Physiotherapy crystallized things that I was searching for and which were meaningful and relevant to me. Human movements, body and mind and how they work together, interested me very much." H16

Starting to study physiotherapy was significant to Anna, Liisa and Sonja. They already had more life experience than many of their fellow students, which they experienced as only positive in studies. Now they knew what they wanted to do, and they were willing to invest in it.

The Story of Becoming a Physiotherapy Community Member

The turning points of becoming physiotherapy community members' were during the second year of their studies. (figure 4) Especially *Eeva, Tiina and*

Maria describe their professional development and ability to step to working life. They reflect how ready they are to face the challenges of the “real work”. In chronological plot descriptions their professional development started to increase during the second year of studying when the problems at the beginning of studying and changes in study techniques were mostly over (figure 4). Courses of their own branch and practical trainings made the picture of physiotherapy clearer and brought new enthusiasm to studying. Practical experiences helped the students’ professional development.

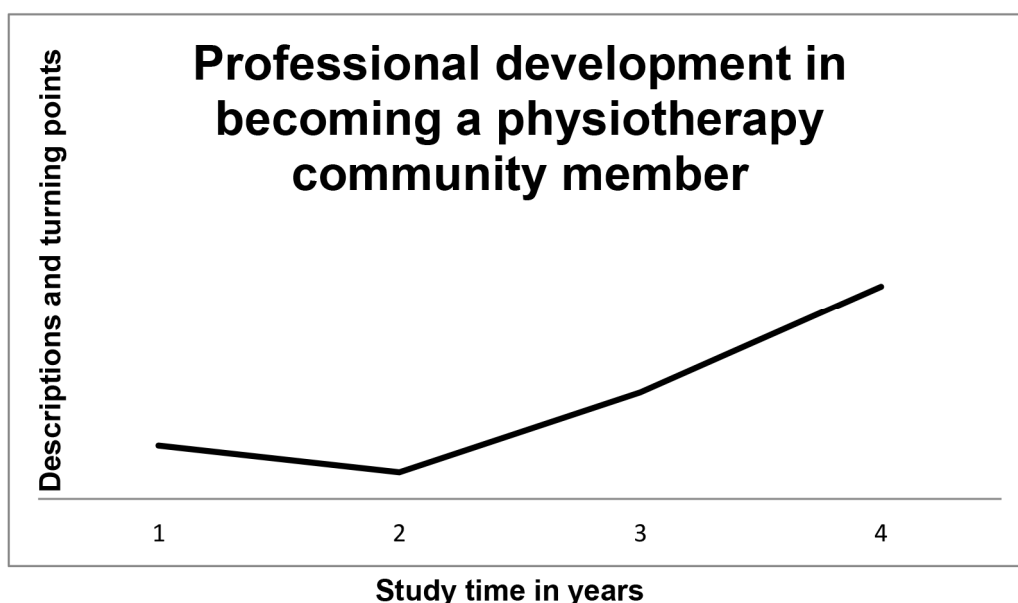


Figure 4. Guidelines for becoming physiotherapy community members’ turning points during their study time. Students’ professional development improved in the turning points which can be seen on the dots in the pictures.

Tiina’s turning point in professional development was placed on top of the second year of her studies, when she had a new kind of enthusiasm for learning. Courses in her own field and practical training increased her understanding of physiotherapy. As she writes:

"During the second year there was more work-based learning, and courses in my own field. I got a whole new kind of enthusiasm for the sector." F13

Tiina felt that she had learnt most of physiotherapy when she was on practical training, but she got important knowledge to survive in practise from school as well. As she writes:

"I think I have learnt most physiotherapy in practice, however, the school has given me tools to success there. On some subjects I have learnt a little bit more at school than some other subjects. "F14

Also Maria felt that getting to work with real patients was important experience for her. After first practical training she was eagerly waiting for the next one. As she writes:

"Practical training was a highlight of the autumn. It was nice to get to work with real customers. Practical training was a rich experience, and taught a lot. I look forward to the next practice. "G7

The turning point of Eeva's story's professional development was also during the second year of her studies, when the difficulties of the beginning of studies and changes in study techniques were over. Eeva told that the training periods extended her understanding of how wide physiotherapy sector was. Eeva felt that the practical experience and practical work helped her professional development, as well as giving her a valuable experience to meet clients.

Practical training periods were important learning environments to Eeva, Tiina and Maria. They felt their professional identity and expertise were mostly built in real work situations. In practical training they found the meanings for what they had learnt at school.

The Story of a Critical Developer

The turning points of critical developers were placed to the third year of their studies. Especially Kaija and Minna are critical towards their own skills, information and sources as well. (figure 5) It is important to question everything one has learnt, because that is the way one remains to be interested in knowledge and even the development of one's own profession.

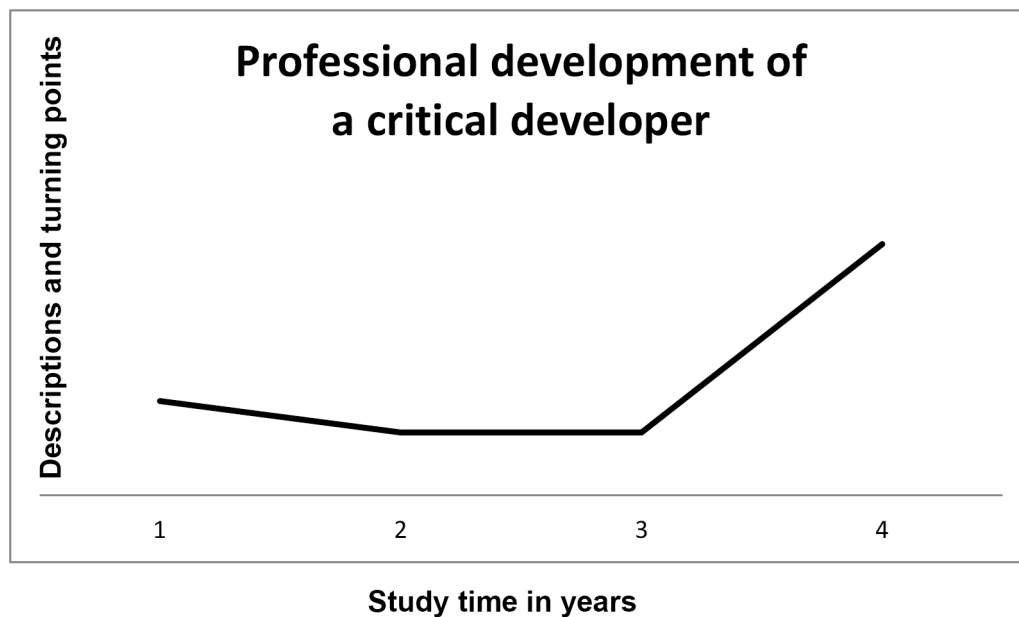


Figure 5. Guidelines for critical developers' turning points during their study time. Students' professional development improved in the turning points which can be seen on the dots in the pictures.

The turning point of Kaija's professional development is in the final phase of her studies, the third year, when she got the clearer picture of the physiotherapy sector and at the same time her self-confidence increased. As she writes:

"Challenging and interesting time for school work, slowly begins to take shape in front and back of the head, what is at stake and the study group is also welded together nicely -> a great resource!" E15

At the same time the criticality towards own skills increased. As she writes:

"After the practical period on spring time, the feeling was unusual: I was partly surer about myself than earlier, but awareness of the fact that school is finishing soon, made me feel quite critical about myself and my skills." E16

When assertiveness and understanding of physiotherapy increased Kaija was able to reflect her skills critically. She started to question what she knew and could do before going to real working life.

The turning point of Minna's professional development is also located in the end of the studies, when she started to estimate skills and knowledge she had learnt

critically. Through education she had learnt how to be critical towards information. In addition to developing herself Minna also became interested in the development of the physiotherapy sector. School projects inspired her to develop a new type of activity. As she writes:

“Through it also developing of one’s own action has renewed. In addition to developing own skills there has also been talked about developing the physiotherapy sector. When there has been developed in all kinds of (welfare TV, etc.) things in school, the amount of enthusiasm increases”D12

Minna became critical towards information as well as her own knowledge and skills. She was able to critically reflect her learning. She also experienced development projects at school as beneficial. They made it possible to innovate something new for physiotherapy branch.

Discussion

Previous studies are the starting point for professional development. Autonomous learners are enthusiastic students at the beginning of their studies; they have found their own field. University of applied sciences, alternative to the traditional university education, is suitable learning environment for them. The dual model of tertiary education in Finland tried to unite the traditions of further education and university. Positive sides of further education institutions below university were their practical orientation, access to employment, good pedagogy and principles of taking care of the students. (13) Autonomous learners search for their identities when seeking appropriate study and work places. They aim to answer the question who or what they are. Identity refers to different meanings people find for themselves and each other, as well as the way they perceive themselves as part of social network (27). Starting to study physiotherapy was significant to them. They were active and analysed their studies in many ways.

The autonomous learners are self-guided and independent learners. Well-planned and given feedback supports their learning. They have also ability to

co-operate with others and consider the problems to be solved. (28) Competence is described in terms of responsibility and autonomy in the context of EQF, which suits well to an autonomous learner in physiotherapy. They are responsive and certain that they have chosen a suitable profession. Autonomous learners have a good attitude to their studies, which is one of the key competences for lifelong learning. (11) Autonomous learners have motivation to learn important knowledge and skills needed to become physiotherapists. Physiotherapy education's challenge is to maintain their motivation at all times until the end of their studies. They need support and guidance especially after the first year of their studies.

Learning in work is essential especially for becoming physiotherapy community members. Practical training periods have been found to be important learning environments for physiotherapy students (1, 3, 4). Students' professional identity and expertise are built in real work situations. In practical training students can find meanings for what they have learnt at school. (3) In the work community learning and professional development is growing in the participation process. Students' professional development grows within interaction with the work place's material, cultural and social environment. Gradually deepening participation at work offers the beginner a limited opportunity to take part in the expert practices. Learners get to know the tacit knowledge of experts and working culture. (29) It is important for becoming physiotherapy community members to learn advanced skills needed in physiotherapy at practise. Skill, social and civic competences are important for them (11, 30). During education they need support especially at the beginning of their studies, before they get to the actual field of practice. Their motivation decreased right after the beginning, because there were not much physiotherapy studies. They also had to learn a new way of learning.

Investigative approach to work and critical community development can be seen in critical developers' narratives. They reflected their knowledge and skills critically when they understood physiotherapy better. Through education they had also learnt how to be critical towards information. Reflection is always a

critical element, but according to Mezirow (15) the concept of critical reflection refers to the earlier learning presuppositions' validity of questioning. Critical reflection and re-evaluation of problems, attitudes, perception, knowing, believing and acting are always significant adult learning experiences. Giving a meaning is to understand what experience is, and to make an interpretation about it. When using this interpretation as help of decision making and activities, transforms giving a meaning to learning. (15) Also, Schön (31) calls for a reflective expert, whose action is continuously based on self-examination, questioning and developing of oneself.

Development projects at school appeared to be beneficial for critical developers. They became interested in the development of the physiotherapy sector. On the level of critical reflection, students are able to innovate and develop new cooperation with working life. In the University of Applied Science's curriculum students have the opportunity to be involved in development projects and learn by doing and experiencing of projects involved. Experiences of various projects have been positive and encouraging. (32) Physiotherapists must remain in the rapid development of health care, which requires innovative physical therapy services. Also, the critical evaluation skills are needed to assess increasing research information. Another challenge is to create new knowledge and the development of the work. Active innovators develop their own work processes and create new ways to work also for organizations. They innovate also alternative ways of thinking in decision-making even in societal level. (32) All the EQF key competences require critical thinking, creativity, problem solving and decision making. (12) To get general competence on Bachelor's level, the candidate should manage complex technical or professional activities or projects. They should reflect also their need of further knowledge and take responsibility for developing knowledge. (30) This suits especially for critical developers at the end of their studies. Critical developers need support throughout their studies, until they feel they understand enough of physiotherapy. After that they find their own way of thinking and expressing themselves.

In conclusion a four-level step of the physiotherapy students' professional development was formed. "Thresholds" of the steps are main episodes constructed from the students' stories. The model helps to understand students' conceptions about steps of professional development in university of applied sciences. The terms of the theory of development for expert by Dreyfus & Dreyfus (10) were used in this article. The findings of this research fit well to this theory and they help to understand different stages needed when building the students' professional development. (figure 6) This data showed also that transformation (15, 16) in the turning points of student's narratives are also important in professional development.

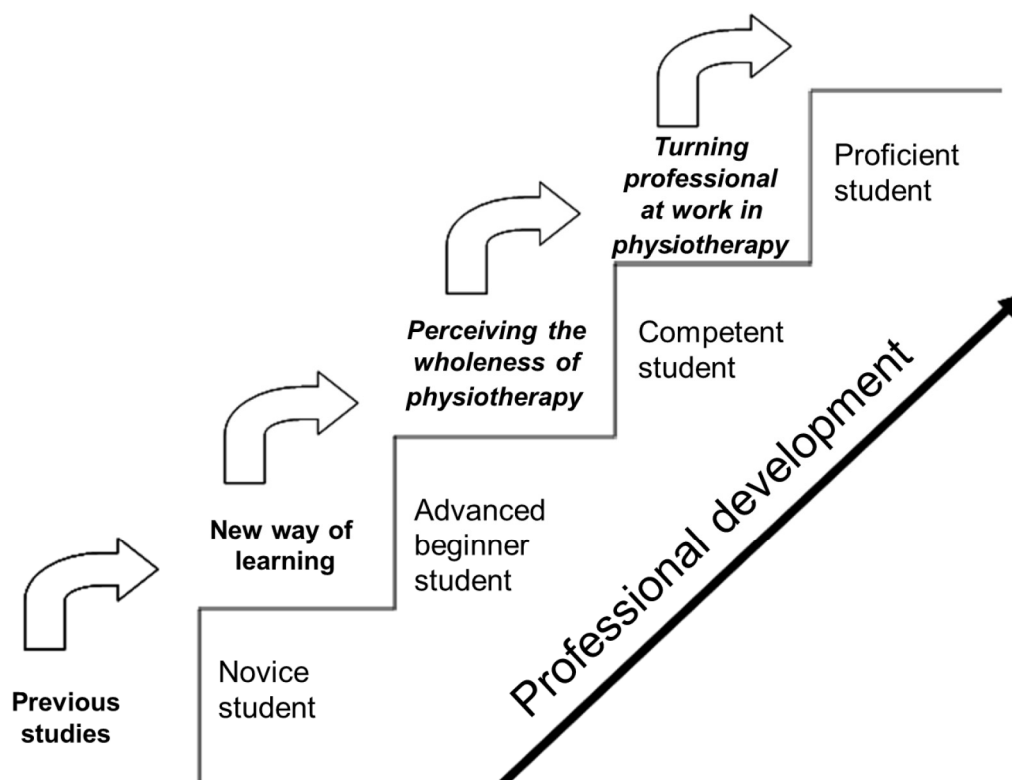


Figure 6. Physiotherapy students' professional development based on *Theory of Development for Expert by Dreyfus & Dreyfus (1986)* (10)

This data has seen three interesting students' story models, to which individual learning ways should be made possible. Every student type is important to real working life and to create new knowledge and development of the work. All the students have their own ways of learning and the challenge for the planners of curricula is to open possibilities for different kinds of learners. Professional development is a continuous creative process that takes place within real life

situations. Belonging to a group is meaningful: in that context students finally become professionals and also themselves. (33) European Union's competences for lifelong learning must be noted in teaching. Key competences are major factors in innovation, productivity and competitiveness. (21) The recommendations in physiotherapy education must have been followed in Finland since beginning of 2013. (14) Competences should not become barriers to studying. They should rather open possibilities to different stories of learning.

Trustworthiness of the results

The qualitative, narrative approach was a good way of recognizing the students' way of learning. The portfolio process and getting to know one's own story of learning are ways to become aware of one's own learning process and develop it. Disadvantages in narrative research are that there is not one exact way to analyze the data, and the researcher has to create a suitable way to answer the research questions. When using different ways of reading there always appeared new information from the data, which however supported the earlier findings. An advantage in narrative analysis is however that as a result of the analysis the unique meanings from the stories of the participants in the study are figured out. (21, 25)

When narrativeness is attached to constructive thinking, like in this research, then the validity of this study concerns about trustworthiness, verisimilitude, enough observation of phenomenon, justify their theoretical choices and present the results in a summarized way. (34) The researchers have taken care of having enough observations about the studied phenomenon. The ongoing of the analysis process has been described the way that it is possible to follow from where and how the researchers have got the results and it is transferable. Several ways of reading were used in the analysis and the results include direct citations of the research material.)34)

In this study the researchers justified their theoretical choices in a reference frame and looked at the results of their study in relation to earlier research

results and theories. (34) In this research the theoretical model used for professional development was Dreyfus et al. (10) from a novice to an expert – classification, which was originally used in the pilot education and which Benner (36) has applied to the development for expert of the health care employees. The results of the study were looked at in relation to this model of the students' professional development, in which the main episodes of the students' stories fit well. The thought however was that the professional development is not only linear ongoing, but that the professional development increases also in different dimensions and in different ways. Transformative learning by Mezirow (15) is a process of progress in learners' lives and it takes place especially in the turning points of professional development. This study brings new information about the physiotherapy students' development process. Each student narrative has its own turning point on a different step.

The results were summarized a way, which is logical and suitable to the approach. The plot of the students' stories had to be arranged in a chronological order in a compact format. In the stories' headlines the most essential message was summarized. (34) In the end the results were summarized in graphical pictures, story models and steps of the professional development of physiotherapy students.

The relevance of this study is also a question of utility of narrative truth. It is good to ask following questions. Is this study useful? Is it relevant for use by members of the research community or by members of the teaching community? (34) This is what Riessman (37) considers as the "ultimate test": "Does a piece of narrative research become a basis for others' work"? This research brings new kind of knowledge to continual learning and it can be utilized in developing education and planning the curricula in physiotherapy.

Limitations of the study are that the material focuses culturally on Finland and only in two out of 15 UAS, so it is not necessarily comparable to elsewhere. The material also focuses on students on Bachelor's level. The amount of material is also small, but it includes a long time period, the whole study time.

The results of this study tell about the experiences of the professional development of the students in this study and cannot be generalized. They anyway bring new knowledge of physiotherapy students' professional development.

Ethical issues

Participation was voluntary and permission for the study was asked from both educational institutions as well as the students themselves literally. It is important to make sure that the anonymity of the participants stays under the whole process because the amount of participants of narrative research is often small. That is why the student's real names were not used in this study. The researcher met students personally and told them both orally and literally the aims and meaning of the research. None of the authors was not teaching in these universities of applied sciences while this study was done. Good ethical principles are used in the study, which is a part of a wider research project that has research permission from Jyväskylä University.

Conclusion

The aim of this study was to investigate students' narratives about their professional development for planning their personal curricula in physiotherapy. Individual stories strengthened the conception that everyone constructs knowledge, skills and conception from their previous understanding and build one's own story of learning in individual schedule.

The results of the study help to understand the entirety of professional development and professional ability in physiotherapy. The critical stages of learning become clear in the four-level transition -steps of the physiotherapy students' professional development (figure 6). Four different main episodes of professional development are: the previous studies, a new way of learning, understand the physiotherapy and turning to be professional in physiotherapy.

Especially seeing the turning points of three different story models: the story of an autonomous learner, the story of becoming a physiotherapy community member and the story of a critical developer help to recognize when the different kinds of learners need guidance the most. That directs the planning of the physiotherapy curricula and improving of the teachers' and instructors' own work.

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Competing interests

None

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II

PROBLEM-BASED LEARNING IN PROFESSIONAL STUDIES From the Physiotherapy Students' Perspective

by

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ARTICLE

Problem-Based Learning in Professional Studies from the Physiotherapy Students' Perspective

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Abstract

The aim of the study was to investigate how physiotherapy students using a problem-based learning approach develop into experts during higher education, and answers the question: How do physiotherapy students at bachelor's level understand the problem-based learning approach while learning to become professionals? PBL is examined using interpretative phenomenological analysis (IPA) of longitudinal data written by 15 voluntary students from two different higher education institutions and collected during 3.5 years. The main results on the new way of learning strengthen earlier conceptions of the importance of reflection in the learning process. The PBL method activates a reflection process by allowing students to participate in something that differs from their previous experiences of teaching and learning methods, which creates confusion and forces them to critically reflect on their actions. There are two dimensions of reflection in this study: self-reflection (information-seeking and creative learning processes) and reflection together (peer-group working and the teacher), in which reflection together seems to be more powerful than in earlier experiential learning theories. This study brings out the directions for and the timing of the necessary scaffolding and support for learning.

Keywords: physiotherapy student, problem-based learning, professional development

Introduction

The first students who studied according to a problem-based curriculum began their studies in the medical doctor education program at MacMaster University in 1966, and since the 1980s PBL has become a significant approach in vocational education.

Problem-based learning (PBL) has a central part in students' learning in this study, which answers the question: How do physiotherapy students at bachelor's level understand the problem-based learning approach during their training to become professionals?

PBL Meets Requirements of Working Life

In working life, there is a need for experts who can solve different kinds of problems in a world that is becoming increasingly complex, which is why professional education needs to take into account the changing requirements of working life, and the different view of knowledge today. The difference can be looked at in the context of expertise. In content-based

thinking, an expert is seen as a person who knows a lot, whereas in the alternative conception, expertise is seen as the ability to adopt a broad perspective when using information and to make relevant evaluations about what is problematic in certain situations (Margetson, 1991; Savery, 2015; Strobel & van Barneveld, 2009).

PBL is grounded in experiential, collaborative, contextual, and constructivist theories of learning, and it aims to integrate different subjects and branches of knowledge (Savin-Baden & Major, 2004; Yew & Goh, 2016). PBL is an educational approach in which the focus of learning is on small group tutorials. The goals of the scenarios are to provide a context for learning, to activate prior knowledge, to motivate students, and to stimulate discussion. Learning is student-centered, and self-directed learning is emphasized (Barrett, 2006; Poikela E. & Poikela S., 2006; Saarinen-Rahiika & Binkley, 1998; Savery, 2006; Strobel & van Barneveld, 2009; Yew & Goh, 2016). Students are instructed to seek information and gain practical skills with the help of a contextual chain

of problems, and to use them in the most beneficial way in different situations (Boud & Feletti, 1991; Loyens, 2015; Margetson, 1991; Poikela E. & Poikela S., 2006; Savery, 2015; Strobel & van Barneveld, 2009; Yew & Goh, 2016).

PBL has been found to be superior when it comes to long-term retention, skill development, and satisfaction of students and teachers, while traditional approaches have been found to be more effective for short-term retention (Strobel & van Barneveld, 2009). Student engagement in PBL might sometimes be troublesome, and Savin-Baden (2016) argues that there are four threshold concepts in relation to student engagement with PBL: liminality, scaffolding, pedagogical content knowledge, and pedagogical stance. Liminality means stripping away of old identities. Scaffolding is giving a temporary structure to learning, guidance or collaboration with peers. Pedagogical content knowledge would be thinking like a physiotherapist, while pedagogical stance depicts the way in which students see themselves as learners in particular environments (Savin-Baden, 2016).

Problems Are the Cornerstone of PBL

Problems are the starting point and one of the cornerstones of the courses. Learning is triggered by a problem that needs resolution. Using a problem as a starting point can inspire and motivate the learners. Students make connections to “perplexity, confusion, or doubt” (see Dewey 1991, p. 12) by activating their individual or collective prior knowledge and finding resources to make sense of the phenomenon (Yew & Goh, 2016). The types of problems vary from one area to another, and the problem characteristics can be classified into feature and function characteristics (Jonassen & Hung, 2015; Sockalingam & Schmidt, 2011). In the health care sector, diagnosis-solution problems are quite common, and they involve identifying the cause of symptoms and prescribing treatment. The problem or the trigger may also examine troubleshooting, decision-making, situated cases, and design problems. The difficulty of the problem also plays a role in the effectiveness of students’ learning. PBL problems should be open-ended, complex, and authentic. Complexity is seen as motivating and challenging for the students and therefore engages their interest in studying. It also provides opportunities for students to examine the problem from multiple perspectives or disciplines. The problem needs to be contextualized for students’ future or real workplaces, which are seen as authentic (Jonassen & Hung, 2015).

Cyclical PBL Process

The learning process is cyclical and several models of PBL have been developed (see Barrett, 2006; Barrows, 1985; Lu & Chan, 2015; Rasi & Poikela, 2016; Schmidt, 1983). In Finnish higher education, the PBL model modified by Poikela and Poikela (Poikela E. & Poikela S., 2006) is commonly used. The model has eight stages, and it consists of collaborative

learning achieved in two tutorial sessions in which the tutor-teacher and a group of seven to nine students gather approximately once a week. During *the first stage*, students need to find a shared understanding of perspectives and conceptions of the problem. *The second stage* focuses on brainstorming. During *the third stage*, the students group similar types of ideas and name them. Actual problem areas are negotiated in *the fourth stage*. In *the fifth stage*, the students then form the learning task and the objects of study. During *the sixth stage*, it is time for information seeking and self-study. The second tutorial begins *the seventh stage*, where the new knowledge is used to tackle the learning task and is then applied in constructing the problem in a new manner. Finally, during *the eighth stage*, the complete problem-solving and learning process is clarified and reflected on in light of the original problem (Poikela, E. & Poikela, S., 2006; Rasi & Poikela, 2016). Poikela and Poikela’s PBL model is used in the educational institutes in Finland where this study took place (Lähteenmäki, 2006).

Physiotherapy Education in Finland

In Finland, the first physiotherapy education program according to PBL started in 1996 (Lähteenmäki, 2006), and nowadays the PBL approach is a commonly used teaching method in higher education. In the Finnish education system, the physiotherapy degree lasts 3.5 years (210 ECTS credits) and is equivalent to a bachelor’s degree.

The European Higher Education Network’s recommendations and descriptions direct physiotherapy education. Studies consist of general competences of health care education programs and profession-specific physiotherapy courses. Competences are defined as wide learning outcomes revealing individuals’ combinations of information, skills and attitudes, and they describe the ability to carry out professional tasks. Physiotherapy studies also include instructed practical training, optional studies, a thesis, and a maturity exam, with some universities using portfolios to activate the reflection process during the study time. The competence requirements of physiotherapy education are defined by the European Qualification Framework (EQF) and the National Qualification Framework (NQF) (European Higher Education Area, 2017; Ministry of Culture and Education, 2016).

Physiotherapy is a regulated profession and it is part of the health care system. Physiotherapists are particularly interested in their clients’ action and movement and want to find tools to improve clients’ functioning. Physiotherapy students’ goal during their education is to apply independent agency to their practical work and the related work culture. They build expertise through new theoretical knowledge and gradually accumulated practical skills. Learning is based on their previous experiences. Tacit knowledge of work culture,

the ways in which the profession operates, values, and attitudes are largely learned in real working life situations (Korpi, Peltokallio, & Piirainen, 2017). In practical working life, physiotherapists are constantly solving practical tasks regarding what kind of therapy methods would be beneficial for the clients, what kind of aid clients would benefit from, and how to cooperate in multidisciplinary teams. Using the PBL method in teaching and learning gives students a chance to prepare themselves for future physiotherapy work.

PBL in Health Science and Physiotherapy Professional Studies

PBL has been extensively researched within the health sector since the 1980s. A considerable amount of attention has been given to PBL in the medical education literature, although there has been growing interest in the PBL method in entry-level therapy educational programs as well (O'Donoghue, McMahon, Doody, Smith, & Cusack, 2011). Although O'Donoghue et al. (2011) conducted a systematic review of eight databases comparing the PBL method to other didactic approaches in seven therapy education programs (physiotherapy, occupational therapy, speech-language therapy, dietetics, podiatry, orthoptics, and therapeutic radiography), their conclusion based on 119 reviewed studies was that when compared to other didactic approaches, there was no evidence that the PBL method had a more positive effect on students' knowledge, performance, and satisfaction levels. There was limited evidence that PBL improved students' approaches to learning. The review showed that there is a need for more

research documenting the effects and effectiveness of PBL in professional entry-level education programs.

There has been limited research on using PBL as an approach throughout physiotherapy students' studies in learning to be a professional. Nevertheless, Solomon (1994) reported that the physiotherapy profession could also benefit from the efforts of medical education over recent decades. Using the keywords "physiotherapy students" AND "problem based learning," a systematic literature search made on 27.4.2018 (CINAHL and ERIC databases) found 12 studies of which 6 remained for analysis after the screening process. In the analysis of the studies, four key themes were found: PBL and interprofessional education, learning in a tutor group, lifelong learning, and a practice perspective.

PBL and Interprofessional Education

Interprofessional education (IPE) among health care professionals has been reported to have positive effects on learning; it promotes authentic working life situations and develops students' confidence in communicating in a team environment (e.g., Goelen, De Clerc, Huyghens, & Kerckhofs, 2006; Solomon & Salfi, 2011), and it narrows the gap between theory and practice (Cooper & Spencer-Dawe, 2006). Cusack and O'Donoghue (2012) examined health care students' perceptions of an IPE module delivered using the PBL method. Ninety-two students from four health science disciplines including medicine, physiotherapy, nursing, and diagnostic imaging participated in the study. At the end of the module, an evaluation was undertaken using a questionnaire with

Table 1. Key themes regarding the use of PBL in physiotherapy education.

Key Themes	The Benefit of PBL in Physiotherapy Education
PBL and interprofessional education	PBL modules create innovative interprofessional communication skills and increase interprofessional collaboration (Cusack & O'Donoghue, 2012; Goelen et al., 2006; Solomon & Salfi, 2011).
PBL and learning in a tutor group	Responsibility, time and support were the main themes in tutor group working (McAllister et al., 2014).
PBL and lifelong learning	Students had a positive attitude towards life-long learning (Kell & van Deursen, 2003). Life-long learning perspective may help make tutorial work more meaningful (McAllister et al., 2014).
PBL and a practice perspective	PBL offered positive benefits for both students and work places. Proactive students were able to apply transferable skills inherent in the PBL approach to clinical practice, including a holistic, problem-solving approach and effective team-working (Gunn et al., 2012).

quantitative and qualitative components. Over 70% of students positively endorsed the module and overall satisfaction with the module was high. Students valued the opportunity to work in small groups with students from the other health science disciplines. They highlighted module structure and content as being important elements for consideration when developing the module. Cusack and O'Donoghue (2012) suggest that further research is needed if improving communication and collaboration skills are to improve the quality of care as well. Interprofessional communication showed improvement also in Solomon and Salfi's (2011) study of using the PBL method in learning. The study conducted a program evaluation of an innovative interprofessional communication skills initiative that incorporated problem-based learning, cooperative learning, and standardized patients. The communication skills session consisted of a three-hour, faculty facilitated, and interactive format in which teams of five to eight students met to conduct an interview with a standardized patient and develop an interprofessional care plan. A total of 96 students from medical, nursing, physiotherapy, occupational therapy, midwifery, physician assistant, and pharmacy programs participated in the study. Students rated their satisfaction with the communication skills sessions highly. Students also felt that they learned about one another's scope of practice and built confidence in their communication skills development (Solomon & Salfi, 2011).

Learning in Tutor Groups

Studying in a tutor group is a central aspect in the PBL method. McAllister et al. (2014) investigated factors that promote or inhibit learning in PBL tutorial groups. Participants in the study were tutors and students from physiotherapy and speech-language pathology programs. Semistructured focus-group interviews and individual interviews were used in the study. In the results, three themes emerged from the thematic analysis: responsibility, time, and support. With regard to responsibility, the delicate balance between individual and institutional responsibility and control was shown in the interviews. Time included short and long-term perspectives in learning. Under support were mentioned supporting documents, activities, and personnel resources. Increased control by the program and tutors decreased students' motivation to assume responsibility for learning. To have a positive effect, support needs to adapt to student progress and to be well aligned to tutorial work. McAllister et al. (2014) argue that tutorial work is more meaningful for the students when a lifelong learning perspective in education is adopted.

PBL and Lifelong Learning

Lifelong learning skills and self-directed learning are needed in today's working life, and professional education promotes those skills. Kell and van Deursen (2003) compared the

learning profile development of two full-time physiotherapy cohorts (31 and 36 participants) who experienced different curricula, one of which was PBL oriented. The participants completed a questionnaire on their self-directed learning skills at four selected points during their three-year course and seven months after graduation. The results showed that both curricula influenced students' learning profile development over time. The PBL group responded positively to changes in the curricula in which dependence on the teacher was reduced and self-directed learning was adopted. These changes, however, were short-term and did not extend into early postgraduate life, which raised the question of whether physiotherapy work culture is able to reinforce and encourage newly graduated professionals in their learning development.

PBL and a Practice Perspective

Clinical practices are a major part of physiotherapy education, and students' goal during their education is to learn practical physiotherapy work skills (Korpi et al., 2017; Kurunsaari, Tynjälä, & Piirainen, 2018). Gunn, Hunter, and Haas (2012) studied how physiotherapy students applied the skills gained through PBL to practice from the perspective of placement supervisors. A qualitative semistructured interview was implemented for a sample of 10 experienced placement supervisors. The supervisors felt that PBL offered positive benefits for both students and workplaces. They felt that the experienced PBL students showed positive learning behaviors and good motivation and self-direction. The students were proactive and able to apply transferable skills inherent in the PBL approach to clinical practice, including a holistic problem-solving approach and effective team working. There was, however, variation among the students. For further research, Gunn et al. (2012) see it as useful to explore the factors that enable students to successfully apply to practice the attributes developed using the PBL approach.

As mentioned, there has been a limited number of studies on the PBL method and physiotherapy education, even though the PBL method is commonly used in physiotherapy education programs. The aim of this study was to understand how physiotherapy students at bachelor's level understand the problem-based learning approach during their learning to become professionals with the aim of developing health care education programs.

Methods

The focus of this article was on analyzing and understanding the influence of the PBL method during physiotherapy students' studies by using interpretative phenomenological analysis (IPA). The data consisted of students' written accounts of their learning to use the PBL method during their professional studies.

The cyclical PBL process used in the physiotherapy programs in this study was adapted mainly from Poikela and Poikela’s model of the PBL cycle, in which there are eight stages and two tutorial sessions (Poikela E. & Poikela S., 2006; Rasi & Poikela, 2016). During the whole physiotherapy education program, there were various PBL cycles, with the length and timing varying according to subject and study module. The tutor session took place approximately 1–2 times a week. At the beginning of the PBL cycle, the problem was presented as a starting point for the learning process in the PBL cycle. There were different kinds of starting points for the PBL cycle. For example, an experienced physiotherapist told the students her professional story in a study module called “physiotherapy as part of the health care sector.” Another example of a starting point was using Nordic walking poles in a study module called “physical activity.” The outcome of the learning process was a written seminar paper, compiled by the tutorial group and collected by the secretary of each group at the end of the process. The seminar works were presented orally to a larger audience. The presentations also varied from one subject to another, allowing the students to also be very creative. The students received support from their tutor-teacher, who directed the learning process, especially at the beginning of the studies, and made sure the learning task formulated by the students was appropriate to the tutorial. The students were graded according to the study modules, which consisted of a variety of sessions. In addition to tutorials, students also completed single tasks, practical tests, larger exams, and separate practical instruction periods.

IPA was developed within psychology and it aims to provide detailed examinations of personal lived experience in its own terms rather than using preexisting theoretical preconceptions (e.g., Smith, 2017). IPA subscribes to a hermeneutic phenomenology where both participant and researcher are recognized as sense-making agents (Cassidy, Reynolds, Naylor, & De Souza, 2011; Smith, 2004, 2011, 2017; Smith, Flowers, & Larkin, 2009; Smith, Spiers, Simpson, & Nicholls, 2017). The key theoretical perspectives of IPA are phenomenology, interpretation (hermeneutics), and idiography. For IPA, phenomenology involves hermeneutics, which is defined as the theory and practice of the interpretation of the meaning of texts (Smith, 2011, 2017; Smith et al., 2009; Smith et al., 2017). The IPA approach has a “practical” orientation and is therefore suitable for physiotherapy researchers (Cassidy et al., 2011). Thus, IPA is suitable for our research in understanding PBL during the learning process.

Data Collection

Data collection starts the process of uncovering and understanding the role of the PBL method in physiotherapy students’ learning to be professionals (see Smith & Osborn, 2008). During the students 3.5-year-long education longitudinal data was gathered from two different higher education institutes using physiotherapy students’ portfolios, which were the data source in this study (Figure 1). The data consists of 1,792 typewritten A4 pages of free narration of students’ learning experiences with each student contributing on average 119 pages. Some students also used literary sources to back up their ideas.

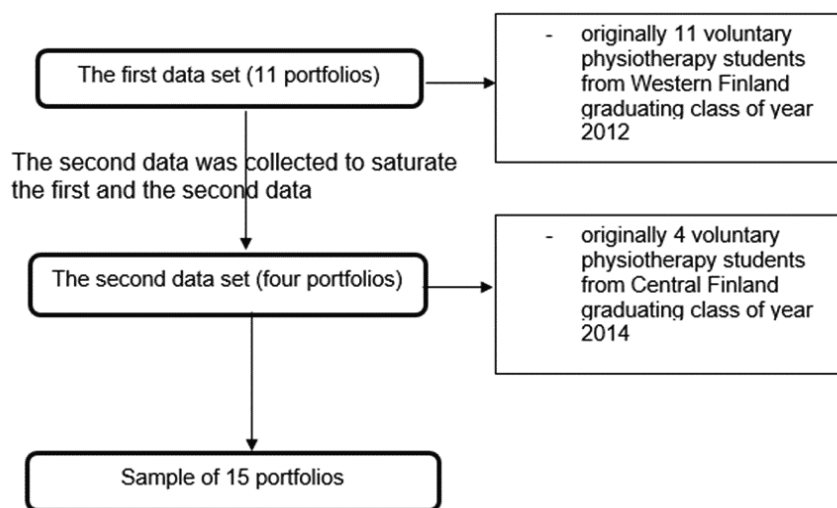


Figure 1. Research design.

Participants

The participants consisted of fifteen 22- to 37-year-old students (12 females and 3 males, mean age 24.5 years) who finished their studies in 2012 and 2014 at two different higher education institutions in different parts of Finland. Three students had earlier experience of higher education: one had studied at university, and one had graduated from vocational upper secondary education as a practical nurse. Four were professional massage therapists. Fourteen students had taken the matriculation examination. All students had gained work experience in health care and other fields both prior to and during their studies (Table 2).

Educational Purpose for Writing Portfolios

The educational purpose of writing the portfolios was to provide an opportunity for personal reflection during studies.

Writing crystalizes the thinking process (Bereiter & Scardamalia, 1987), and reflection is seen as essential in adults' learning (for example Kolb, 1984; Malinen, 2000; Merriam, Caffarella, & Baumgartner, 2007; Mezirow, 1990). The students constructed their portfolios in a study module called "Development for the Physiotherapy Profession," where the aims were to reflect on their own learning and professional development, strengthen their learning processes, and prepare themselves for the requirements of society and working life. The students also had regular meetings with the tutor-teacher in the study module, and they presented their portfolios to other students in a learning café. The study module was worth 2 ECTS credits. Portfolios were required in these programs, but students were not graded on writing their portfolios. There were no length or word number requirements, and the portfolio was checked twice a year with a tutor-teacher.

Table 2. Education and Work Experience of the Participants

Sex (f/m)	Age (years)	Earlier education	Working experience (years)	Graduation time (years)	UAS (A/B)
Maria, f A	22	- matriculation examination	1	2012	A
Sonja, f B	37	- matriculation examination - MPhil	12	2012	A
Anni, f C	22	- matriculation examination	1	2012	A
Emmi, f D	24	- matriculation examination	1	2012	A
Hannele, f E	22	- matriculation examination	1	2012	A
Satu, f F	23	- matriculation examination, - six months of nursing studies	1	2012	A
Antti, m G	23	- matriculation examination	1	2012	A
Päivi, f H	24	- upper secondary vocational education (practical nurse) - sports masseur	3	2012	A
Merja, f I	25	- matriculation examination - a few months of studies for community health nurse	3	2012	A
Johanna, f J	23	- matriculation examination - sports masseur	1	2012	A
Aleksi, m K	23	- matriculation examination	2	2012	A
Seija, f L	25	- matriculation examination - masseur	1	2014	B
Jaana, f M	28	- matriculation examination	5	2014	B
Anselmi, m N	23	- matriculation examination	1	2014	B
Susanna, f O	23	- matriculation examination - sports masseur	1	2014	B

Before the education program began, the students were instructed to write a preliminary assignment entitled *What kind of a learner am I?* This assignment was attached to their portfolios. Every six months during their education, they wrote about *My professional development*. Students described their learning experiences and feelings in their portfolios, and how they had experienced each study module. They also collected documents, for example, successful seminar papers, in their portfolios. They were given instructions for writing the portfolios for the first time at the beginning of their studies, before the actual tutorials started. Each student's portfolio was a unique individual narrative of his or her study time. Writing and collecting the portfolios made the students reflect once again on the study modules and see them as parts of a bigger picture.

Procedures

Participation in the study was voluntary and permission for the study was requested from both educational institutions as well as the students themselves. An enquiry was made to the head of the physiotherapy teachers about the teachers of the graduating groups who were then contacted. Face-to-face meetings with the teacher in charge and the participants were also arranged in the presence of their teacher, with e-mail used for supplementary participants. The researchers presented information about the study, both orally and in writing (see Loh, 2013; Tong, Sainsbury, & Craig, 2007). Voluntary students from the graduating group gave their paper-based portfolios to the researcher, who copied them for the study and then returned them to the students. In the other educational institution, e-portfolios were used, which the students sent to the researchers electronically. The anonymity of the participants has been maintained during the whole process, which is why the students' real names are not used in this study. Good ethical principles were adhered to in the study, which is part of a wider research project sanctioned by Jyväskylä University. None of the researchers were working in the educational institutes in which this study took place.

Analysis

In data analysis, a dual interpretation takes place. The participants make sense of the phenomenon in their own terms by explaining and interpreting their own experiences in their portfolios, after which the researchers explain and interpret, to make sense of the meaning of the participant's account during the analysis (Smith, 2011, 2017; Smith et al., 2009). Findings from the first case are then set aside to maintain sensitivity to each person's unique story (Smith et al., 2009). Using a qualitative method in the analyses allowed the students' own voices to be heard when the unique meanings of the participants' stories were figured out using IPA (Braun & Clarke, 2006; Smith, 2011). Analysis in this study had three stages:

Stage 1. Portfolios were read many times line-by-line by the first author and analyzed by searching for points of descriptive and conceptual note throughout. After this, a detailed examination of each of the 15 cases was made. The first author wrote descriptions of each case separately with regard to study time. These narratives were commented and agreed on by each researcher in this study. Narratives were used to understand the totality of the students' stories, in which the meaningful study experiences of and turning points in their learning to become professionals were recognized. The authors paid attention to students' expressions, their evaluations, and thick expressions in their portfolios. The first author collected students' experiences of the use of the PBL method from the original texts, with each researcher recognizing and agreeing upon convergences and divergences in the narratives and portfolios. The source of citations was the portfolios. Each of the 15 participants was identified by a letter of the alphabet (A–O, 15 participants). At this stage, researchers maintained an open mind and an explanatory attitude in order to produce a comprehensive and detailed account of the data (Smith, 2017; Smith et al., 2009).

Stage 2. The first author transformed the initial notes into experiential themes in one of the margins. The themes were discussed and agreed on in the research group. The themes captured the key elements of each participant's experiences of using the PBL method during their learning to become professionals. The study was data-driven (Smith, 2017; Smith et al., 2009).

Stage 3. The research group synthesized and superordinated the themes into a new abstraction level (Cassidy et al., 2011; Smith, 2017; Smith et al., 2009; Smith & Osborn, 2008). The themes that arose from the data are described and reported in more detail in the results.

Trustworthiness of the Study

The generic qualitative criteria are useful, even in assessing the quality of an IPA study. Smith (2011) highlights four principles of Yardley's approach (Yardley, 2000, 2008) when assessing the research from the perspective of sensitivity to context, commitment and rigor, transparency and coherence, and impact and importance. Smith has also described a set of guidelines to improve the quality of IPA research (Smith, 2011; Smith et al., 2009), and it is these guidelines that we have followed.

When analyzing the portfolios we used a four-stage analysis. The first author read the whole data and the other authors became involved at stage 3 when synthesizing the thematic data to form an abstract level. We gained a gradually deeper understanding of how the students understood the use of the PBL method in their professional studies.

This research had a *clear focus* on the PBL method in physiotherapy students' learning to be professional. A particular aspect rather than a broad overview is more likely to be of high quality (Smith, 2011). The data in this research was wide with students' own narration over the entire period of their studies used as data. Students told about what they had experienced as important. This is *strong data*, as Smith (2011) highlighted. This study opens up *the breadth and depth* of the main theme, and levels and sectors of the new way of learning are presented. Each theme is supported with extracts from the participants, as Smith (2011) suggested, with *direct citations* from students' portfolios used to support the results. The students' voice is present in the results. This research strove to take into account students' *different perspectives* on the PBL method. *The analysis was interpretative*, not just descriptive (Smith, 2011), and the analysis went systematically deeper from stage 1 to stage 3. The analysis pointed out both *convergences and divergences* of the student's experiences of the PBL method. The limitations of our study mainly relate to any potential generalizing of the findings, namely that our research was carried out in the Finnish context, relating to Finland's specific culture, education system, and physiotherapy teacher training in Finland. The Finnish education system deviates from practices that are typical in many other Western countries (Sahlberg, 2011). Further research is needed to examine and understand learning in professional education. The researchers did their best to write a fluent, articulate, and clear presentation, even though none of the researchers has English as their mother tongue.

Results

The PBL method was a new way of learning for all the students in this study. In fact, the use of the PBL method at the beginning of their studies was the turning point in their narratives (Korpi, Peltokallio, & Piirainen, 2014). Later on in their studies, they no longer wrote about their learning method that much, and at the end of the study time, they hardly mentioned the PBL method at all. The PBL method had become familiar and a natural part of their professional studies.

The new way of learning was categorized into three levels from a depth perspective and into four sectors from a width perspective (Figure 2). Next, the three levels of depth perspective are described, followed by the width perspective sectors of learning.

The Three Thematic Levels of the New Way of Learning

The use of the PBL method in teaching jolts all students at the beginning of their studies. Students experienced the difference from their previous experiences of teaching and learning methods. It caused confusion in many students and led to critical reflection on the PBL method in learning.

First Level: Difference. A new way of learning creates enthusiasm on the part of the students, but at the same time, it brings fear about not learning everything essential. Students reflected on whether the PBL method was a suitable method of learning for them, and the use of the PBL method caused

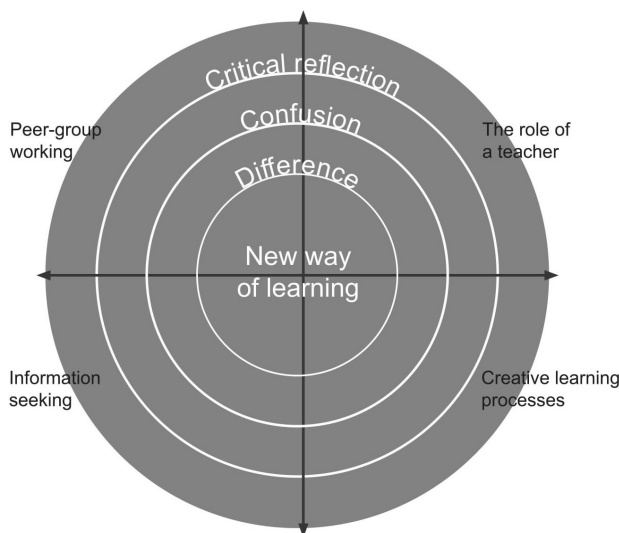


Figure 2. Levels and sectors of the new way of learning (PBL).

contradictory opinions. Because of the PBL method, many students generally experienced the first six months of studying as stressful. Sonja writes:

The pace of tutorials, “start–end,” “start–end,” felt at first rather tough, every weekend went on contributing your share of the written tasks. I felt like school work would not get easier for one moment. B 2

Also, Maria experienced the first half year of studying as stressful. She writes:

There were tutorials after tutorials, there were a lot of exercises and a little bit of stress all the time. In the autumn we already had anatomy, English, written communication, Swedish, different kinds of lectures, an e-course, tutorials and a practice period in a health care centre. A 2

Some students, on the other hand, experienced the PBL method as an appropriate new way of learning at the beginning of their studies. They felt studying was pleasant and the method was experienced as a suitable way to learn, especially when the students knew how to seek information independently. Anselmi describes his experience:

Tutorials feel like a good way to study and I feel that I myself learn better with this kind of group work than only by reading a book. Reflecting on the stuff in a tutorial helps at least my own learning a lot. N 17

Some of the students thought that the PBL method was a good, but at the same time challenging, way of learning. Merja says:

I myself have thought that PBL is a really good thing and way of learning, even though it demands a lot of activity and my/one’s own—and the group’s—eagerness. Even though I at times experience PBL studying as challenging, I believe I can be proud of the way of learning at school when I graduate. I have also started to understand the suitability of PBL studying for our field. I 3

The PBL method was experienced as working better in some subjects than others. Some students thought that the PBL method was even better in some subjects than the traditional way to learn because they also had to learn to reason independently. Seija writes:

I feel, though, that I know some parts better than others, for example I can explain how a muscle functions during a movement and in order to create movement because we went through those things so well also in the tutorials. L 1

Second Level: Confusion. Due to the experience of difference compared to their earlier ways of learning, students’

reactions reflected confusion. Some students experienced the PBL method as strange, and at the beginning of their studies, it was difficult to get a proper picture of what it was. Students were also unsure about what they should know about the subjects, how deeply they should investigate the subjects, and what they should be able to tell other students. Some students described the PBL cycle as an official and even slightly scary and arduous experience, especially if they had limited information-seeking skills. The studying rhythm was experienced as being fast, which is why some students felt that learning remained superficial. As a result students missed the traditional way of studying with the help of a set of lectures. In their portfolios students also wondered if they learned everything necessary via the PBL method, yet it was consoling to the students to know that PBL is also used in other health care education programs. Johanna comments:

I didn’t get a proper picture of what problem-based learning was in the lecture. The question of what the idea of this is, was raised in my mind. I was scared that with this kind of learning method it isn’t anyhow possible to learn as effectively as with the traditional way of lecturing. On the other hand, my fear was eased by knowing that problem-based learning is used in the education of medical doctors. J 1

Similarly, Sonja was uncertain and confused about whether she had learned everything she needed and if she had been active enough in learning independently. She writes:

At the beginning I was a bit confused. Right after the previous tutorial a new one begins, it feels like there is no time to take a breath and there is no eagerness to focus on the subject with the same intensity every time. I cannot deny I sometimes get a feeling that “during this tutorial I’m gonna be a slacker, I don’t have the resources to aim for the best now.” At the same time you sometimes notice that you keep on thinking if you’re learning enough about this subject. B 6

Jaana was also unsure about what she should know and be able to do. She wondered how deeply she should immerse herself in the topics of the tutorial tasks and what she should know and be able to do in practice. In addition, she thought about what she should share with other students about the topic.

Studying walking brought up thoughts about what was the intended level of detail for knowledge about the topic. What should I know about walking, and how much should I know about it to direct a person who has difficulties in their own walking? The group situation also forced me to think about how I should formulate my theoretical knowledge so that it suits them and about how

much they are able to comprehend of the information I share, and while I also gain some useful new knowledge in the process. M 6

Third Level: Critical Reflection. Even though the first half-year of studying was generally felt to be stressful because of the PBL method, the students' experience, however, was that they had learned group-working skills, information-seeking, and critical evaluation of sources. The PBL method had also helped them to better recognize what kind of learners they are. Susanna explains:

I could still mention separately that thanks to problem-based learning I learnt a lot about working in a group and information-seeking and also looking at the sources critically. Because of PBL I have also better recognized what kind of student I am myself—what way and how I learn best and how I act in a group—and how I could improve my group-working skills. O 9

Even though working in tutorials was a new way of learning, the students experienced that with its help it was possible to learn broadly new information. Hannele writes:

The tutorial exercises felt heavy at times because every time you had finished one tutorial a new task started. Anyway, you learn a wide range of new information in tutorial exercises. E 1

The Four Thematic Sectors of the New Way of Learning

Students reflected critically on information-seeking, creative learning processes, peer-group working, and the teacher's role when using the PBL method.

First Sector: Information-Seeking. It had a much greater role than many had thought. Information-seeking skills were experienced as necessary when using the PBL method, and the information-seeking courses were generally experienced as truly important, with information-seeking playing a much larger role than many of the students had thought. Students said that information technology, information-seeking skills, and critical use of references were of central importance when using the PBL method. Sonja writes:

Independent information-seeking has a central role in problem-based learning; I really experienced it as very important that different information sources in our own field were introduced to us. Because I have had to think about critical use of sources in my history studies, it is easy to apply this in the current studies as well, the same principles apply also to this field. IT was partly beneficial for me, one always learns something new even though one has already worked a lot on a computer. B 8

Even though information-seeking was necessary for the students, it was also experienced as interesting. Päivi comments:

As a style PBL studying felt difficult in the beginning but getting to know it gave a new perspective on studying. Along with PBL studying you have to be able to seek the information and learn it, but on the other hand, it has been interesting. H 1

In addition to information-seeking skills, it was necessary to learn to package and edit the new information in an appropriate format, which was considered challenging. Susanna describes the problem:

Problem based learning demands a lot of independent information searching, and time and again I have faced challenges with it. The greatest challenges have been packaging the information, picking up the most important pieces of information and editing them into a form that is the easiest for oneself to understand. That is going to take a lot of time, and if I am in a hurry to find material for a tutor meeting, for example, I often need to take too broad a spectrum of information, which I end up not knowing that well, which in turn makes processing the topic more difficult. O 12

Second Sector: Creative Learning Processes. This demanded a lot of effort and many students experienced that producing written text was challenging and it was a complex process to learn to write at the beginning of their studies. Writing their portfolios at the same time was helpful for the development of their writing and reflection skills. Jaana describes this:

I felt that the production of written text was slightly challenging after a long break. Diary-like pieces were a nice way to start and get a nice writing rhythm going. Especially my skill in writing informational text was in dire need of practice and I had to learn referencing from scratch (which still isn't going very well). In this situation, I believe that I will learn and develop by doing, and only doing. M 2

Many students felt the seminar work at the beginning of studies was challenging and stressful with the first seminar works demanding considerable work. Instructions on written work were experienced as helping the process. Students also wondered about the reason for seminar-type learning. Presenting seminar work was also part of creative skills requiring concentration and preparation. Emmi elaborates:

The first tutorial was very, very exciting and maybe even a bit of a scary situation. I couldn't imagine that after that there would be a lot of them almost every week.

Next, there was a seminar work and it demanded even more work, especially when none of us understood what they were looking for by doing it. We hadn't quite understood the instructions for the written tasks so it was difficult to comply with them. Our written outcome didn't turn out very well but luckily for us the presentation went brilliantly. D 1

Third Sector: Peer-Group Working. This consisted of three subthemes: belonging to a group, format of the tutorials, and interacting with others. Many students experienced tutor group working to be the best part of the PBL process.

a. Belonging to a group. Belonging to a group was important for students. They realized the meaning of the group in learning. Emmi describes:

It is important to belong somewhere, and hardly anyone wants to be left outside. Group work is important and I understood that there is going to be a lot of it in this school. A group is always stronger than an individual. D 2

All the group members were expected to act responsibly, complete all the given subjects thoroughly, and follow commonly agreed rules. A positive attitude and motivation in studying increased team spirit in a tutor group. Anselmi writes:

I have always experienced the tutorials as really nice with this first tutor group. We have been able to handle the given subjects very thoroughly in a good atmosphere. All the group members are responsible, and all stuck to the commonly agreed rules, which helps the functioning of the group and also learning. N 16

b. Format of the tutorials. The format of the tutorials was learned in the first period of studies. At the beginning of every tutorial the students were presented with a starting point in response to which they started to form a question, the answer to which they were seeking during the tutorial. After the starting point had been set, the student roles were assigned. The students had understood the roles of the chairperson, secretary, passive observer, and other students. Antti describes:

A heart rate monitor and Nordic walking poles can be thrown in front of us. Then a question about them is made by students and solved by students. Also, the roles and all the well-defined transitional episodes before getting to make the question were new things. Afterwards thought is clear that the roles of secretary and chairperson have to exist if you want the work to form a coherent whole and for it to be divided equally. The role of the secretary is probably useful in the first tutorials but I'm not sure if it is as necessary with experienced students. The passive observer could let all the

information go in one ear and immediately out of the other and then state that everything went well and everybody produced stuff. He or she however gets the information in more detail from the secretary afterwards and that way gets into the stuff. G 1

At a slightly later stage of their studies, many students experienced particularly concrete **case tutorials** as especially useful. These helped students to face patients with the same kinds of problems in real working life. Satu explains:

The cases that were in the tutorials were interesting, and it was nice to study this way, because they had concrete examples. Back, shoulder, ankle and knee were interesting and the things you learned were beneficial in the instructed practical training. These were exactly the things I had the most of in my instructed practical training so it was nice when you already knew quite a lot about things. F 3

It was interesting to see that real people have the same problems, which they had studied at school in theory. Sonja comments:

The tutorials gave a lot of concrete benefit because in my practice I, for example, had more than one client suffering from neck and shoulder problems and that was exactly like a case we had in a tutorial. B 10

c. Interacting with others. Discussion in a tutor-group was generally experienced to be the best part of the PBL method. Students felt that their own perspectives were strengthened. Listening to others and reflecting on their own experiences in a group were useful in learning. Moreover, even though working in tutorials and interacting with others was a new way of learning and it was demanding, the students' experience was that it was possible to learn largely new information, as Susanna explains:

While listening to experiences, a brilliant discussion arose about a child's behaviour in a group—and how different things affect a child's behaviour and development. This seemed to be the best side of PBL, when I at least experience that I learn effectively particularly through discussion and reflection. O 2

The discussions and the sharing of experiences, which took place in the tutor meetings, linked theory with practice. Seija writes:

The experiences we shared with each other in the tutor sessions linked the theory with everyday life, which led to them being viewed from different viewpoints. L 3

Fourth Sector: The Role of the Teacher. The students became aware that the role of the teacher differs in the PBL method

from the traditional way of studying. Instead of traditional teaching, tutor-teachers encouraged students to seek information by themselves because independent information-seeking would be needed in the future. The teacher set goals for learning, delimited tutor tasks, gave instructions, encouraged, helped, and gave “tips” for presentations. The role of the teacher was greater at the beginning of the studies. Alekski recalls:

The first tutorial in the autumn was quite searching but, when mirrored against the goals, we made it with the help of the tutor-teacher. K 1

In the beginning of the studies, the teacher had a bigger role in directing the tutor session. The teacher had to limit the students from straying too far from the topic. Susanna recalls:

In the first session, the teacher still had a larger-than-normal role, since we didn't know the best way to proceed in each cycle. Once we got our topic, we found common ground, and were not lacking in ideas or discourse. In the brainstorming circle, we also came up with good ideas, and from time to time it felt like we were straying too far from the topic. The teacher tried to calm us down by saying that while brainstorming we were not supposed to limit or discard anything, but quite the contrary to take on all ideas with open arms. Suffice it to say that our mind map ended up being quite broad. O 17

As studies proceeded, the directive role of the teacher got smaller, and the students were learning efficiently without the directive role of the teacher. Susanna continues:

The most memorable session was a session where the teacher was not present, and our topic was muscle innervation. We taught each other e.g. by using the blackboard and explaining everything very thoroughly, so that every single one of us would know how the nerve impulse moves in the muscle-nerve junction. It was an amazing session and the learning was effective. A native English-speaking tutor was also nice for variety and especially good for language practice. O 3

The students had understood that the role of the teacher was different from the traditional, teacher-led manner of studying. The students experienced this as useful regarding the transition to working life. Anni explains:

The role of the teacher in this manner of studying is not to teach us, but to motivate us to search for information from different sources by ourselves, since we would need this skill in the future. C 1

Besides the tutorials, the students appreciated varied teaching methods and especially practical ways of learning as part of their learning process. Päivi recalls:

The health education day was completely awesome and I got enthusiastic about the upcoming studies because of it. There should be more of them. This was instantly concrete when you got to do tests for real clients. H 4

Expert lectures, for example by doctors, were experienced as important. It was interesting to listen to their examples from real working life. Sonja writes:

We gained an incredible amount of information, and the manner in which it was provided to us ensured that it stuck with us. There was a lot to learn, but the lectures proceeded at a relaxed pace, and along with every topic covered the lecturer told us about many real example cases from his long medical career. B 13

The Main Results From the New Way of Learning

The main results from the new way of learning strengthen earlier conceptions of the importance of reflection in the learning process (e.g., Dewey, 1938; Illeris, 2014; Malinen, 2000; Mezirow, 1990). There are two dimensions of reflection in this study: self-reflection (information-seeking and creative learning processes) and reflection together (peer-group working and the teacher), with reflection together seeming to be more powerful than in earlier experiential learning theories (Figure 3, see next page).

Discussion

It is interesting to see that learning to learn has such an important role in learning to become professionals. The students actually told more about the new way of learning than about the profession they were studying for. Reflection on learning and on the learning method used seemed to be a starting point for students' learning to be professionals in physiotherapy higher education. Two dimensions of reflection, self-reflection and reflection together, are central in students' stories, and these are discussed in more detail. The new way of learning forced students to reflect critically on their previous conceptions of learning, and this was a huge turning point in their stories about their learning to become physiotherapists (see Dewey, 1938; Illeris, 2014; Malinen, 2000; Mezirow, 1990). It is important to notice this and become more aware of this important step in the students' learning to become professionals (see Figure 2).

Contradictory opinions about studying with the PBL method have been reported in Finland as the results in this study also showed. For each student in this study, the PBL method was a new method for learning. As a result, the initial phase of studies was experienced as quite stressful and students felt the learning rhythm to be fast with tutorials following each

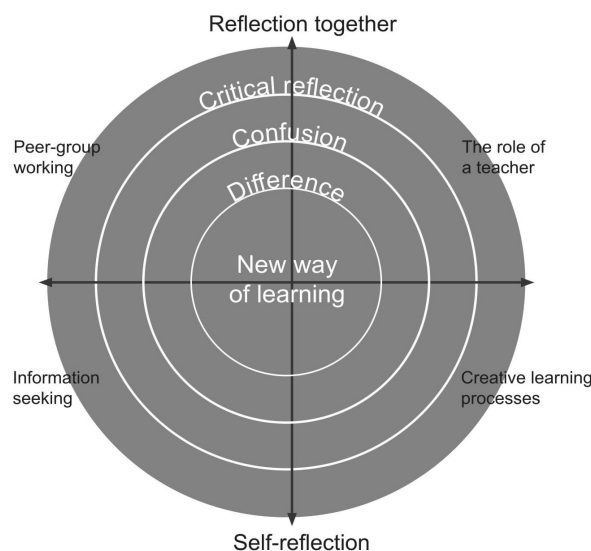


Figure 3. The two dimensions of reflection in the new way of learning in PBL.

other in close succession. Also, Tuomi and Äimölä (2014) reported that the PBL method produced more satisfied and enthusiastic students, but at the same time caused insecurity among other students. The positive sides, however, are the flexibility in timetabling and variety in learning. Furthermore, learning in tutorial groups trains multiple skills and knowledge for studying and working life. In this study, engagement in PBL at the beginning of studies was challenging for some of the students since a new way of learning means a stripping away of the old, and students need to see themselves as learners in this new environment. In addition, Savin-Baden (2016) reports that learning to use PBL requires scaffolding in learning, guidance, and collaboration, which can be seen especially at the beginning of studies in this research.

Self-reflection concentrated on information-seeking and creative learning processes in this study. **Information-seeking**, searching for sources, critical reflection on sources, and processing of information were experienced as playing an important part in using the PBL method. IT skills, information-seeking courses, and critical use of references are experienced as important in programs. Also, Tuomi and Äimölä (2014) report that some students experienced independent information-seeking as beneficial to learning, with other students regarding it as absolutely essential. Even though information-seeking was felt to be demanding at the beginning of the studies in this study, Kamwendo and Törnquist (2001) reported that PBL students

have better attitudes toward research later in their studies than traditional students. A lifelong learning perspective and a positive attitude to learning also contribute to tutor work (Kell & van Deursen, 2003; McAllister et al., 2014).

In this study, **creative learning processes** were experienced as demanding a lot of effort at the beginning of the studies. Students needed writing skills when tackling seminar topics in the PBL circles; similarly, presenting their own work required concentration. Writing essays, in particular, was experienced as a challenging but also educational process. Often the lack of time was felt to be a problem. On the other hand, Tuomi and Äimölä (2014) report that if there was time to do one assignment properly, it was experienced as rewarding. According to this study, physiotherapy education needs to consider development of writing skills. Also, Kurunsaari, Tynjälä, and Piirainen (2016) report that physiotherapy students may experience reflective writing as a useless task, as a tool for deepening understanding, as a tool for self-reflection, and as a tool for professional development. This is important in education because in health care reflective processes are increasingly related to writing activities: professionals need to document, register, and synthesize information (Karjalainen, 2012).

Creative learning processes and information-seeking skills improved as studies proceeded, which helped students to study using the PBL method. Lähteenmäki (2006, pp. 48–49)

also reported in her dissertation that physiotherapy students studying with the PBL method gradually and progressively improved their independent studying. In the first academic year information-processing transformed from mainly repeating collected information to a more analytical and reflective use of information and building of common information. Seeking information, independent study, and analyses of the information learned in the tutor group, synthesis, and seminar situations could be seen to correspond to abstract conceptualization in Kolb's (1984) cycle of experiential learning.

Reflection together concentrated on peer-group working and what the role of the teacher was. In this study, **the teacher's role** was understood to be different from that in traditional learning, with the teacher, especially at the beginning of studies, playing a big role in encouraging and instructing students to seek information independently and learn by using the PBL method. McAllister et al. (2014) also state support to be an important factor in learning in tutor groups. Furthermore Poikela (2003, pp. 301–304) states in her dissertation that tutor-teachers need to involve adequate expertise regarding the content studied and also have the ability to adopt the roles of facilitator, expert, and learning designer. The tutor-teacher is also a learner in the process of PBL, continuously having to check and adjust his/her pedagogical ideas.

Many students experienced tutor-group working to be the best part of the PBL process in this study. **Working in peer-groups** consisted of the format of tutorials, belonging to a group, and interaction between students. Students felt that they had already learned how tutorials proceed at the beginning of their studies. They had learned to act in various roles in the tutor groups. It is important for students to focus on understanding how the PBL cycle proceeds in order to adopt the learning process (see also Lähteenmäki, 2006, pp. 48–49; Pekkinen, 2014; Rasi & Poikela, 2016; Saarinen-Rahiika & Binkley, 1998). The roles that are used in PBL tutorials, however, cause contradictory thoughts. On the one hand, they are considered good and it is seen as educational that one can act under their shelter and that they change every time. On the other hand, people would like to be able to reject a role (Tuomi & Äimölä, 2014). The new situation is exciting or even scary, and it might feel difficult to concentrate on a given task. To avoid that, specific role cards have been developed for students to use during the tutorials (Pekkinen, 2014).

In this study, the starting points at the beginning of tutorials were experienced as a new tool of learning. The principal idea behind PBL is that the starting point for learning should be a problem, a query, or a puzzle that the learner wishes to solve (Bound, Keogh, & Walker, 1985; Jonassen & Hung, 2015; Saarinen-Rahiika & Binkley, 1998; Yew & Goh, 2016). The problem can be also a scenario, a trigger, a case, or a structured contextualized problem, depending on the aim of

learning (Barrett, 2006; Jonassen & Hung, 2015; Sockalingam & Schmidt, 2011). Tuomi and Äimölä (2014) reported that the starting points of learning assignments had produced rich comments with regard to both improving learning and weakening it. The basic starting point is to see the learning assignment as interesting and in this study, case learning assignments especially were mostly experienced as interesting starting points. The starting point given to the students can be seen as a concrete experience of Kolb's (1984) cycle of experiential learning, with the beginning of the PBL cycle corresponding to the stage of reflective observation.

According to the results in this study, a tutor group needs to have commonly agreed rules to function well. A good attitude toward group working and responsibility helps the learning process in the PBL method, a finding also confirmed by McAllister et al. (2014), who identified responsibility as central to work in tutor groups. There is an opportunity and a duty to be accountable for the work process in the tutor group. This study supports the idea that a small group contributes to learning more than a large group. According to the students, the stability of the group supports learning and its functioning can be disturbed, even by new members joining the group. Similarly, Piirainen and Skaniakos (2014) see that learning is promoted if all the group members commit to the group and to an atmosphere that is positive for learning.

Interaction in a tutor group was seen to be the best part of the PBL method. Discussion, listening to others' experiences, sharing experiences, confirming one's own opinions, and learning completely new information in a tutor group were experienced as positive for learning. Also, Tuomi and Äimölä (2014) stated that discussion and listening as a form of learning receives positive feedback from the perspective of learning. Students also learned memory-enhancing new information and new viewpoints from others' examples, experiences, stories, and information they had discovered.

Tutor group working overall was an effective factor in learning with PBL in this study. Working in a group helped in developing social and group working skills, as Lähteenmäki (2006) has also stated, and also in improving teamwork and interprofessional communication, which are needed in real working life situations (Cusack & O'Donoghue, 2012; Goelen et al., 2006; Holland et al., 2013; Piirainen, 2014; Solomon & Salfi, 2011). These kinds of real-life learning contexts, where there are students from different professional areas, narrow the gap between theory and practice (Cooper & Spencer-Dawe, 2006). In addition, Gunn et al. (2012) reported that proactive students were able to apply transferable skills inherent in the PBL method of learning to clinical practice, and that this had positive benefits for both students and workplaces.

In higher education and learning to become professionals, **experiential learning** is essential. Students wrote about their

experiences in their portfolios. Adult experiential learning evokes reflection and it is always a process, not just an outcome, resulting in a widening of personal experiential knowing (Dewey, 1938; Illeris, 2014; Knowles, 1980; Kolb, 1984; Malinen, 2000; Mezirow, 1990). The PBL method seemed to activate a reflection process. The results in this study support Dewey's (1938) idea of the reflection process after experience and Schön's (1987) view on reflection also taking place in the midst of the experience as well as afterward. The nature of the reflection process varied, underlining the premises and assumptions of earlier experiences (see Mezirow, 1990). In this study, the PBL method forced students to reflect on their earlier ways of learning and their assumptions about their earlier experiences in studying. They had to learn to be more self-directed and to take more responsibility for their learning than earlier in their studies. They had to learn to learn and their personal knowledge about learning was transformed (Cranton, 2006; Mezirow, 1990). In addition, Kell and van Deursen (2003) reported that students that had used the PBL method in learning had even better lifelong learning skills than students following traditional curricula, which was not taken into consideration in this study.

Practical Implications for Education

This study showed there is a need for scaffolding, especially at the beginning of studies, when using PBL as an approach. This study brings out the directions for and the timing of the necessary scaffolding. It needs to be directed toward information seeking, creative learning processes, group working, and clarifying the teacher's role. There is a need for support during the first six months of studies because the initial period of studying is generally experienced as quite hard.

Scaffolding and guidance at the beginning of studies should be directed largely toward information seeking. It is essential to make sure the students' IT skills are good enough for this purpose and for independent writing as well. Stable tutorial groups promote learning, and commonly agreed rules in the groups create a pleasant atmosphere and a sense of belonging to the group. Tutorial rhythms should not be too exhausting at the beginning of the studies before the students get used to their frequency and duration.

It is important in learning to support reflection skills, which is why reflective writing courses are also beneficial for students in learning to be reflective. Writing portfolios and diaries during studying forces reflection. In addition, regular discussions in a tutor group and with a teacher promote reflection.

Students need guidance from the tutor-teacher, especially at the beginning of their studies. The role of teachers needs to be clarified for the students. Besides the tutorials, the students benefit from varied teaching methods as part of their learning process. Promoting and encouraging a good

attitude and open atmosphere for learning provides a positive beginning for completely professional studies.

Further research on the use of PBL in physiotherapy professional studies is needed. For example, what would be a suitable tutorial rhythm for the students at the beginning of studies? How do we support the students' creative learning processes and reflective writing as part of PBL seminar tasks? Moreover, how do we encourage students to use their problem-solving skills in instructed practical training periods and in working life? Cooperation with clinical placements and educational institutes is needed for transforming the PBL ideology into a physiotherapy work culture that supports students and professionals' lifelong learning.

Conclusion

The main outcomes of the study were as follows: (1) The PBL method activated physiotherapy students for reflection at the beginning of their studies and they experienced the difference from their earlier learning method, which created confusion and forced critical reflection. (2) The new way of learning includes self-reflection and reflection together, with self-reflection focused on information-seeking and creative learning processes, and reflection together focused on peer-group working and the role of the teacher.

The study brings new information for developing health care education and its curricula. Learning to learn—a new way of learning—is an essential step in students' learning to become professionals, something that is important to notice in their curricula and which provides the support needed for learning skills.

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III

PRACTICAL WORK IN PHYSIOTHERAPY STUDENTS' PROFESSIONAL DEVELOPMENT

by

Korpi H., Peltokallio L. & Piirainen, A. 2017

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Practical work

- in physiotherapy students` professional development

Abstract

Learning practical work through co-operation between school and working life is a part of physiotherapy higher education. Students learn practical work by integration of theoretical, practical, tacit and situational knowledge in a socialization process. Workplace practices and habits direct students' learning. This study answers the question: What kind of conceptions of learning practical work do physiotherapy students have?

Longitudinal data written by 21 voluntary students (mean age 25 years) was collected during 3.5 years. Thematic analysis was used in analysing the data.

Learning practical work proceeds in 5 phases. 1) The basis of the practical work, human movement and action and therapeutic tools, is learned at school. 2) Meaning of the profession and practical work takes shape in an interaction with clients and observing how professionals work at real workplaces. 3) The wholeness of the practical work takes shape by gradually participating in the work processes. 4) Critical reflection of the work processes - thinking, construction, evaluation and reasoning – develops and 5)The conception of the practical work widens.

The study brings new information about learning practical work for developing health care education and its curricula. The role of the workplaces is huge in learning tacit knowledge of the profession.

Keywords: practical work; physiotherapy student; professional development; thematic analysis

Introduction

Immersing themselves deeper into the world of work, the writers paid attention to various concepts used in this area, including practice, practical skills, practical training, practical judgement, instructed practical training, work-based learning, practice-based learning, agency, work agency. The multiplicity of terms used around the work sum up it to be a complex and difficult phenomenon to define. Every term has a subtle difference in the meaning. The focus in this study is to understand the students' view in learning physiotherapy practical work. To make this article simpler to write and others to understand, the writers use the term practical work for describing all the dimensions and skills learned and needed in work practices.

Already Aristotle talked about practical wisdom, which is an early version of the so-called knowledge and knowing what to do in practice. Dewey (1938, pp. 19-20) highlighted a necessary relation between the processes of actual experience and education. The process of experiential learning starts from concrete experience and it includes critical reflection. Learning occurs by reflecting critically earlier habitual expectations, revising them and acting by the revised point of view (Malinen, 2000, pp. 134-140; Mezirow, 1990, pp. 4-5). In every profession, there are the "need to know" issues. In addition to that, previous life experience, internal motivation, problem or life centred orientation and capability to learn for real life situations play an important role in adults' learning (Knowles, 1980, p. 43). Transformative learning from the learner's point of view includes as many different transformative learning stories as there are people who experience transformation (Cranton, 2006, pp. 19-20).

Students' professional identity and expertise are built in real work situations and through cooperation between school and working life in health care education sector (Lähteenmäki, 2006; Laitinen-Väänänen, 2008; [author]). Practical training is required in physiotherapy education programs. The Finnish Ministry of Education demands there has to be 75 ECTS practical training out of 210 ECTS in physiotherapy education. Practical training consists of workshops at school, working life orientated projects and clinical internships (Ministry of Culture and Education, 2006, Mämmelä, 2015).

Learning practical work prepares students for their occupations, work roles and identities. Workplace practices and habits direct students' activities and learning (Higgs 2013; Evans, Hodginson, Rainbird & Unwin, 2006, pp. 3-8). Interactions of the

circumstances at work and the employee's preoccupation affect agency at work (Eteläpelto, Vähäsantanen, Hökkä & Paloniemi, 2013). Agency at work may be individual-oriented or externally-oriented. Individual activity focuses on making a difference in or for self and one's own learning and career shaping. The external focus is to make a difference in current work practice, developing and creating new work practices (Harteis & Goller, 2014).

Students learn formally and informally, experientially, context-boundly, field-specifically and by working alone and collaboratively (Billett, Barker, & Smith, 2006; Virtanen, Tynjälä & Collin, 2009). Learning at work is often informal and incidental, and reflection is needed to make learning more effective and also to unearth the erroneous assumptions and mistakes (Watkins, Marsick, & de Álava, 2014). When learning at work for education, the pedagogical practices also matter and the integration of conceptual/theoretical, practical/experiential, self-regulative and sociocultural knowledge is beneficial in the learning perspective (Tynjälä & Gijbels, 2012; Tynjälä, Häkkinen, & Hämäläinen, 2014; Tynjälä, Virtanen, Klemola, Kostiainen, & Rasku-Puttonen, 2016).

Students gather valuable experience and learn variety of skills by gradually participating in work practices. Students' development into experts grows within interaction with the work place's material, cultural and social environment. Learners become familiar with the tacit knowledge of experts and working culture. (Wenger, 1999, pp. 214-215). Students' professional identity and expertise are built in real work situations. They get to combine theoretical and practical knowledge, deepen theoretical thinking, and practice clinical reasoning and practical skills. In real work, students can also find meanings for what they have learnt at school (Laitinen-Väänänen, 2008). Work increases all the various general and vocational skills and knowledge of students, the thinking skills, self-regulative skills, workplace practices, everyday routines, self-confidence and chances of finding employment opportunities (Virtanen et al., 2009).

When starting their own branch studies, physiotherapy students have utilized practical ways of learning and instructed practical training periods in different physiotherapy areas (e.g. Laitinen-Väänänen, 2008), which have been found to be important for their professional development. Nevertheless, physiotherapy students' agency at work and work practices have been the subject of only limited research. A systematic literature review using keywords "work practices" AND "physiotherapy

students” AND “professional development” generated one appropriate finding 1.5.2017 (CINAHL, Medline, Academic search Elite and Eric). Öhman, Salomon & Finch (2002) see that adapting the professional identity is closely connected to the process of socialization. Professional socialization starts at the beginning of the educational program and continues by learning formal knowledge, skills and rules, as well as informal and tacit knowledge, norms, values and loyalties within the profession. Clinical placements have a major role in the socialization process and the instructors act as the most frequently chosen role models for the students (Öhman et al., 2002).

The aim of this study was to examine physiotherapy students’ conceptions of learning practical work. The following research question was addressed: What kind of conceptions of learning practical work do physiotherapy students have?

Methods

The study had a qualitative approach to obtain knowledge of physiotherapy students’ conceptions in learning practical work. Students were building their identities of becoming professionals in their portfolios. They wrote about themselves as learners and gradually becoming physiotherapy community members. Workplaces are strongly present in students’ stories and they tell a lot about their participation in different actions at real work (Bruner, 1987; Depperman, 2013).

Data collection and participants

This study is part of a wider research project that concentrates on the health care teacher’s education. This article focuses on the students’ view in learning practical work in their professional development. The data was gathered from physiotherapy students’ portfolios during the whole 3.5-year education.

The data was collected in 2008, 2012 and 2014 from three different higher education institutions from different parts of Finland. Longitudinal data was collected during 3.5 years in all institutions. Students wrote portfolios during their whole study time. The data consists of 2002 typewriting A4 pages of their own learning experiences. They wrote about subjects *what kind of a learner am I* and *my professional development*.

The writings were the students' free narration. Students wrote their portfolios every sixth months, telling about their learning experiences and feelings. Finally, the portfolio consisted of a single report of their study time. The data consisted of portfolios from 21 voluntary students studying in different parts of Finland. (figure 1)

Twenty-one 22 to 37-year-old students (mean age 25 years), who finished their studies in 2008, 2012 and 2014 participated in the study. Three of the students were male and 18 female. Participants were selected from those educational institutions where portfolios were written during the whole study time. Physiotherapy units were contacted and with the help of teachers, a meeting was scheduled in which graduating students were told both orally and in writing about the study. After the meeting, voluntary students gave the researcher their portfolios, which the researcher copied for herself. In one educational institution, the students sent their e-portfolios to the researcher via email. Other portfolios were scanned to the same external hard drive. Four students had earlier experience of higher education. Two had studied in university. Five had graduated from vocational upper secondary education, four as practical nurses and one from the catering branch. Five had also been masseurs in their previous profession. Eighteen students out of twenty-one had taken the matriculation examination. All students had work experience from both childcare and elderly care and part of them also instructing physical activity groups. Some students also had work experience in other branches. (Appendix 1)

Permission for the study was asked from educational institutions as well as the students themselves. Participation in the study was voluntary.

Analysis

Thematic analysis was used in analysing the data. The theme in the analysis includes something that is essential for the research question and it aims to show different points of view regarding the central themes of the research (Guest, MacQueen, & Namey, 2012, pp.10-11; Braun & Clarke, 2006). The portfolios were read many times to obtain a sense of the whole. After this, narratives were written about every student. Every student's writings, segments (sentences or chapters), about practical learning were collected (A-U, 21 students) and analysed without the researchers employing any previously stated frames and premises. The results, i.e. the themes, were derived from the data via an abstraction process from the content area (Graneheim & Lundman, 2004). Key themes from the texts

were identified and appropriately coded. Thematic analysis needs interpretation from the researchers (Guest et al., 2012, p. 17). Three researchers took part in analyzing the data, two of them experienced PhD researchers, the third a PhD student. A process of reflection and discussion resulted in agreement on themes. The relationships of the themes and phases can be seen in Table 1. The results include direct citations from the researched material. The researchers were not working in the organizations where data was collected, but each one of them has experience of the health care education area. The themes that arose from the data are described and reported in more detail in the results. Learning practical work was categorized into five phases and into two key themes, both of which consist of five subthemes. (Table 1.)

Results

When starting the studies of their own profession, students generally considered practical ways of learning and instructed practical training periods important from the perspective of learning and professional development. Generally, students wanted more practice. Information was learned by variation of learning at school and workplaces.

Themes attached to practical learning clearly emerged, and they are described in more detail in the following. The main theme, *learning practical work*, was formed in the analysis. It describes the whole turning point in studying. The basis of the profession was already learned at school. The central themes for learning practical work were *human movement and action* and *therapeutic tools*. Theoretical knowledge was integrated into practical ways of studying. After the basis of the work was learned, the students needed a real client and also a real workplace to deepen their learning. Tacit and situational knowledge had an essential role in learning in real work contexts. Key themes for learning practical work sharpened in *learning physiotherapy competence* and *learning work agency and practices*. Reflection and feedback were needed in all learning.

There were also sub-themes attached to the key themes. Sub-themes in learning work agency and practices consisted of motivation to study practical work, observation of physiotherapy professional work, belonging to the work community, developing working-life and informal learning in different contexts. Sub-themes in learning physiotherapy competence consisted of enthusiasm for professional development,

interaction with real clients, instruction and examination at work, clinical reasoning and widening the work culture.

Basis of the practical work was learned at school

Studies of their own branch attached students' to the physiotherapy profession

The students eagerly awaited starting the physiotherapy branch studies. They got a new kind of enthusiasm to their professional development. They gradually got the possibility to make use of physiotherapeutic working methods. Practical observation of human movement and action were experienced as interesting.

A wish for more practical ways to study

Practical lessons were generally thought to be useful and more of them were wanted, for example transition exercises and practicing of tests. Students got new ideas for practical work but they also learned a lot of new information, which they would use as basis in all work. (figure 2) They could also apply the theoretical knowledge learned earlier to practice. New practical skills were constructed based on previous knowledge. Knowledge was deepened and more was learned about the tools for better functioning. The students also liked a practical test as a way of completing the course because they could show learning in a different way than in writing. In addition, feedback of their accomplishment was immediate.

Also other *practical ways of studying* were generally praised by the students. *Functional seminars* where students got to try different kinds of treatments in practice were considered as interesting and good learning experiences. The students also learnt a lot in *case tutorials* because concrete examples of real patients were used in them. Theoretical knowledge, problem solving and reasoning were connected to practical themes and discussed with peers and teachers. These cases also helped students in instructed practical trainings because they saw real that people to have the same problems, which they had studied at school theoretically. *Days for practical instruction, testing and exercise* were also experienced as beneficial in learning. Especially the stories students

heard gave new perspectives on the practical work. Before the actual instructed training periods started, *meetings with clients* were experienced to teach a lot about the physiotherapy process.

Work agency and work processes were learned at real workplaces

Students felt that it provided variety in studying to get into a workplace. They got new experiences, information, viewpoints and aspects for their professional development. Courses to do physiotherapists' own branch were experienced as important and practical lessons at school were useful, but many students thought that it was actually at the workplace that they started to understand contents better. Students' theoretical knowledge deepened and extended through practice. Issues were also easier to remember with the help of concrete situations. Being at real work also strengthened their career choice to become physiotherapists.

Tacit and situational knowledge of the physiotherapy and rehabilitation sector were learned in real work situations. In the first practical training students concentrated on evaluating their own practical skills and agency with clients. Gradually they started to see rehabilitation also from the clients' point of view and gave responsibility also to the clients in their rehabilitation. Themes that arose from real work for their practical learning were understanding the work agency and practices and understanding the physiotherapy process. Getting feedback and reflection was important in all learning. Expertise was learned in variety of ways at work, which will next be explained more in detail.

Learning work agency and practices

The role of the *physiotherapy profession*, rehabilitation and health sector generally took shape *by observing real work*. At the first workplace students learned a lot by following how professional physiotherapists worked. Students paid attention especially to customer-orientation and how therapists respected clients' feelings and life situations. Professionals also supported and encouraged clients and were assertive. Gradually students' understanding about various aspects that affect rehabilitation deepened. By following clients' holistic rehabilitation they got knowledge about care paths and multi-

professional rehabilitation. Observations in different environments widened the tacit knowledge about the different roles physiotherapists had with different patient groups and placements.

'First instructed practical training went well in every sense and there was enough interesting stuff to be followed. I believe I have got a quite varying picture about the activities in a health care centre and particularly about physiotherapy, as varying as one can get during two weeks.' G 3

Gradually deepening participation in work practices increased a sense of belonging to the physiotherapy community and beyond it. Step-by-step independent survival in the workplace became more of a goal for the students. If workplace personnel trusted students to take care of their own share of the work and communicated openly, it increased belonging to the work community. When students were familiar with the therapy methods used in the workplace they could concentrate on their agency at work better. Some students had a possibility to participate in a multi-professional rehabilitation team, which increased their understanding of the rehabilitation sector. *Learning by developing in working-life projects* inspired development activities for the physiotherapy branch. Students became enthusiastic about developing new kind of action in co-operation with working life. Being in a project was experienced as hard work and students threw themselves into it with full energy. They learned management, organizing, delegating and entrepreneurship generally. The role of networking became important and students gained courage to discuss with others.

Practical work processes became more secure *by informal learning*. Some students gained practical experience by doing paid work during the study time. Some students instructed sports groups, some massaged and many students had summer jobs before their graduation. Students' practical work experiences helped their professional development and also gave valuable experience for meeting clients. Students learned to plan, implement and evaluate the work processes and take more responsibility of their own work.

Learning physiotherapy competence

The professional identity and the meaningfulness of the profession started to develop when *facing real clients*. Understanding the totality of the human being and considering situational circumstances were understood by the end of the studies. As a result, facing

diversity in people and communicating with them became easier. Communication skills, verbal and non-verbal interaction, listening, good senses and ability to be present in a situation were needed. Physiotherapy students understood meeting the client as a part of the physiotherapy process.

'My professional identity started developing in the first instructed practical training. The patient, a counterpart of every physiotherapist, and comprehensive facing of him was needed for it. After this experience the meaningfulness of the whole profession opened up. Here one is in touch with real and concrete, literally tangible things.' H 11

The wholeness of the practical work started to form when *observing clients functioning, participating in the examination and progressing through the physiotherapy process*. It was important to understand clients' functioning and feelings. Examination skills got better by practicing at work. Advancing the physiotherapy *process* and self-confidence for students' practical skills got better *by learning by doing*. *Instruction skills*, manual, oral as well as visual, also developed by practicing. Students wanted to learn how to motivate, encourage and support their clients for better functioning. Some students experienced however, that they could still be more vigorous and demanding in their instructions in order to achieve the intended development in physiotherapy. At the same time students had to consider their clients' life situations.

'During the both instructed practical trainings I noticed how important the role of the physiotherapist is as the supporter of the rehabilitation of the patient. It is important to encourage and be assertive enough so that the goals become achieved.' Q 2

Students were generally timid in using manual instruction at the beginning of the studies. Manual skills developed gradually by practicing, especially in the workplaces specialized in that branch. *Variability of the exercises* and the use of different kinds of therapeutic tools increased by practicing. The use of different therapy methods became easier in the later part of the studies after understanding the wholeness of physiotherapy.

'My own 'exercise bank' has grown since the instructed practical trainings started, which adds to the flexibility in physiotherapy situations; if one exercise does not for some reason succeed, I have some other exercise in mind, which helps in achieving goal.' S 5

Reporting skills developed through practicing towards understanding the situational needs. Students learned how to report essential issues during therapy visits and to make statistics. Nevertheless, students had to concentrate on writing and on what was appropriate to report in certain situations.

'My writing/reporting skills have also developed in a direction appropriate to reporting even though I sometimes still notice that I have to stop to think how to say things in a way that they make sense, and at times my reporting could be even more accurate.' T 26

Clinical reasoning – thinking skills, constructing and evaluation - was done simultaneously with the actual practical work. Figuring out the real problem with real customers felt interesting. At work students also started to reason why the clients acted the way they did. Examination situations needed planning, because many things had to be considered. Students practiced how to synthesize the collected information from the clients and they learned to construct the physiotherapy diagnosis.

'I had to take into consideration the client's ability to act and move and build up the physiotherapy diagnosis in the client report so I had to particularly observe this information during the normal physiotherapy situation.' U 14

Students also practiced how to construct appropriate goals for physiotherapy and they became gradually more realistic in it. Setting little goals forward helped to create the belief that the client will be able to act independently step by step. When learning to make concrete goals it was easier to choose suitable therapy methods. Rationalizing why certain exercises needed to be done was experienced as challenging. The clinical reasoning and evaluation process got easier towards the end of the study time when students had enough information about different client groups and their ongoing rehabilitation as well as practical experience about physiotherapy.

Experiencing an international instructed practical training period widened the understanding of the physiotherapy process. Different habits and different treatments were used in practice in different countries and students got new points of view on their own work. In addition to new therapy methods students learned communication skills, openness and their self-confidence increased. They developed and matured as human beings, because they had survived in a foreign culture. They could manage in different situations in the future.

Summary

Learning practical work proceeds in five phases in **the** socialization process for the physiotherapy profession. In conclusion (figure 3), the results of the study are combined from the following key themes: learning work agency and practices, and learning physiotherapy competence. Phase 1) Basis of the practical work is learned at school. Learning physiotherapy competence, work agency and practices develops at real work. Phase 2) Meaning of the practical work takes shape in interaction with clients and by observing how real physiotherapists work. Phase 3) Wholeness of the profession takes

shape **through gradual participation** in the physiotherapy work practices by observing, participating **in** and practicing examination and instruction. Phase 4) Critical reflection **on** the practical work – thinking, construction and evaluation - develops by getting experience of clinical reasoning and working life-projects; and phase 5) Conception of physiotherapy practical work widens **through gaining** international and informal work experience.

Reflection and getting feedback were important in all learning in this study. It was important for the students to be welcomed to the workplace and to get *feedback* on their work. Feedback helped students to develop their practical skills. A positive attitude towards the students, explaining issues and discussing with them as well as replying to their questions were considered important. Students were grateful for guiding, instruction, tips, getting new perspectives and for their instructors sharing their experiences and latest knowledge with them. *Reflection* on the experiences was also understood to be educational. Especially towards to the end of the studies, the meaning of reflection was understood better. Reflection was done by writing portfolios during the whole study time, but mostly it was done during the instructed practical training periods.

Students experienced that their physiotherapy education had been intense, but they had learned a lot. Students were waiting for graduation, but the transition to working life felt exciting. There still seemed to be a lot to learn. After a long period of studying students were, however, satisfied with their achievements. On the verge of the graduation, the students had adopted an attitude to lifelong learning. It was always possible to learn something new and become a better expert. Students were ready to enter the world of work and turning into professionals in the physiotherapy work.

Discussion

Students reflected a lot about their practical work in their portfolios and it was to a large extent their goal in their education to learn to practice the physiotherapy profession in real working life. Students' professional identity and expertise, i.e. that part of their funds of practice (Esteban-Guitar, 2012), were built in real work situations and through co-operation between school and working life (Lähteenmäki, 2006, Laitinen-Väänänen, 2008; [author]). Approximately a third of the education programs are implemented in real

work contexts (Ministry of Culture and Education, 2006; Mämmelä, 2015). This study showed that maybe a lot more about the physiotherapy profession and practical work is actually learned at different work contexts. Tacit and situational knowledge has a huge role in physiotherapy students' professional development. This is not to underestimate the role of the schools and curricula, since all the basics of practical work, the "hearth" of the profession - human movement and action and therapeutic tools - are still learned at school.

Öhman's et al. (2002) approach to learning practical work has a similar base to this research, learning practical work and the tacit knowledge of the profession with the help of a socialization process that takes place in different placements during the education.

Their own branch studies attached students to the physiotherapy profession. The basis of the practical work was learned by the integration of theory and practical ways of learning. At this stage the conceptual and theoretical understanding (Virtanen et al., 2009, Tynjälä et al., 2012) started to develop, but the understanding deepened in real work in the later phases of learning practical work. At the curriculum level integrative pedagogy is needed to consider the needs and starting points of the students and also to understand the requirements and practices of working life (Tynjälä et al., 2012; 2014; 2016). It is important to understand how adults learn (Knowles 1980) and how important a role work plays in their lives (Billett et al., 2006, Watkins et al., 2015). Thus, learning needs to be seen more than just a series of situations. As Lindeman (1961) has stated, "education is life" for adults. That is why these stories of becoming professionals have a huge meaning for the individuals who participated in this study (see Cranton, 2006).

For learning practical work further, real situations with real patients and real workplaces were needed. The meaning of the profession took shape by facing real clients and observing how professionals worked. Also the picture of the rehabilitation and health care sector was built by following the clients' care paths at real work. Also Bartlett et al. (2009) report that the professionalism and communication develop at the beginning of the physiotherapists' socialization process at real work. Students recognized the importance of developing trust with clients through communication. First practical experiences awakened many emotions for students and the emotions were linked to self-confidence, which could not be that high while performing practical work at this stage (Bartlett et al., 2009). Direct involvement with patients is experienced as quality (Morris,

2007). By listening to clients' life stories and interacting with them, students gradually found it easier to understand clients' different life situations and diversity in people.

The wholeness of the physiotherapy practical work was understood by gradually participating in the work practices (Wenger, 1999). Knowing how to do physiotherapy work independently was a key to being accepted in the work community. Participating at workplaces is engaging in learning work, which includes individual learning and also remaking of cultural practices that comprise their work (Billett et al., 2006). Those two dimensions of learning work were seen also in physiotherapy students' stories. They concentrated on developing their own practical skills, but at the same time they were learning work agency and practices. Workplace practices and circumstances directed students' learning (Higgs, 2013, Evans et al., 2006, Eteläpelto et al., 2013). For learning physiotherapy competence students practiced by doing different tasks at work and the variety of the therapeutic tools increased at real work. Gradually students learned the habits and tools professionals used in different places and got to know the tacit knowledge and working culture (Wenger, 1999). Work agency was individual-oriented at this point and students focused on their own learning (Harteis et al., 2014). At this stage students' practical skills and competences developed, including specific skills needed in physiotherapy and also generic skills needed in working life (Virtanen et al., 2009). Students also had more active role in managing their emotions to build their self-confidence, which increases when studies go on, in practical work (Bartlett et al., 2009; Wessel, & Larin. 2006).

Critical reflection on the practical work became easier after students had gained experience. Clinical reasoning in the physiotherapy process and participating in working-life projects developed students' thinking, constructing and evaluation skills. Evaluation of the process was experienced as difficult and practical experience and theoretical knowledge of the different client groups were needed in order to learn to evaluate the clients' progression. Students were generally enthusiastic in developing work practices in co-operation with working life and they learnt valuable skills like entrepreneurship and planning their own work. Learning by developing in projects involving work agency was more externally-oriented and the focus was on developing and creating new work practices (Harteis et al., 2014). At this stage, students' self-regulative skills developed (Virtanen et al., 2009).

Students' understanding of practical work widened with their increasing experience from different workplaces. Non-curricular experiences and different work places for instructed practical training increased the students' preparedness for working life (Atkinson, & McElroy, 2016; Bennett, & Hartberg, 2007). Experiencing a practical work period abroad widened the conception of the physiotherapy process because different tools and habits were used in therapy in different countries. Also communicating in a foreign language and understanding different cultures taught openness in interaction. Students gained also experience informally by doing paid work and their work processes became more secure. They learned to take more responsibility of their practical work. In all conceptual and theoretical understanding, practical skills and competences and self-regulative skills became more fluent and it was possible for practical work to be done independently in changing circumstances (Virtanen et al., 2009). Interprofessional training also widens understanding of the health care sector. It is important to co-operate in real working life. (Lindh Falk, Hammar, & Nyström, 2015).

Students' learning of physiotherapy practical work in co-operation between school and working life was connected to the socialization process of the working culture of the profession and also to cultures in each workplace. In a professional socialization process students gradually learned tacit, situational and informal knowledge, habits, tools, values, loyalties (Öhman et al., 2002; Richardson, 1999, Bartlett et al., 2009), professional identity, hidden structures and tacit cultural dynamics of the profession (Hammond et al., 2016). Students need to learn physiotherapy competences and work practices in different workplaces and also to learn accepted behaviours of the profession before their agency at work develops to be independent and secure. The work agency is still developing during the education. The students need to go through the socialization process for the profession in order to learn independent practical work in physiotherapy.

Conclusions and clinical implications

Learning practical work proceeds in five phases in the socialization process for the physiotherapy profession. 1) Basis of the work 2) Meaning of the work 3) Wholeness of the work 4) Critical reflection on the work and 5) Widening of the work. Feedback and reflection are needed in all phases.

The study brings new information about learning practical work for developing health care education and its curricula. The role of the workplaces is huge in learning tacit knowledge of the profession, which is essential in the practical work in physiotherapy.

Ethical issues

There was a desire to recognize students' own conceptions and own "voices" about learning practical work. The portfolio process during the study time gave students a tool for their reflection and for becoming aware of their own learning process (Guest et al., 2012; Braun et al., 2006; Bakhtin, 1981).

The progress of the analysing process has been described consistently. Researchers have also taken care to obtain enough observations about the studied phenomenon. The results were derived from the data and include direct citations of the researched material. The results of the study were discussed with the theories used and also with previous studies from the subject (see Tong et al., 2007).

Participation in the study was voluntary and permission for the study was requested from both educational institutions as well as the students themselves. The anonymity of the participants has been maintained during the whole process and that is why the students' real names were not used in this study. Good ethical principles are used in the study and it has a research permit from the University of xxx and additionally from the other higher education institutions.

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Competing interest

None.

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Table 1. Practical work in Physiotherapy students' learning process.

Main themes and subthemes	Learning workplace agency	Learning Physiotherapy competencies
Basis of the work	Motivation to study practical work	Enthusiasm to professional development to be PT
Meaning of the work	Observation of the PT professional work	Interaction within real clients
Wholeness of the work	Belonging to the whole community	Instruction and examination at work
Critical reflection of the work	Developing working life	Clinical reasoning
Widening the work	Informal learning at different contexts	Widening PT culture

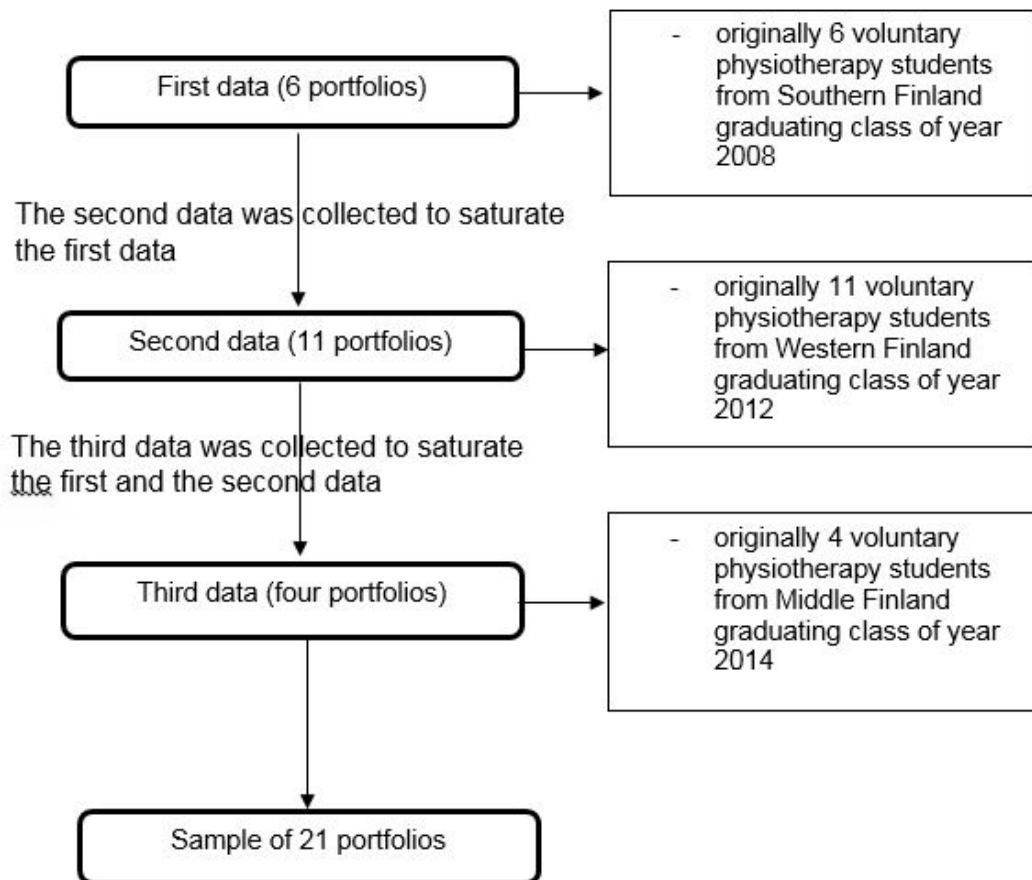


Figure 1. Study design and sampling flow chart.

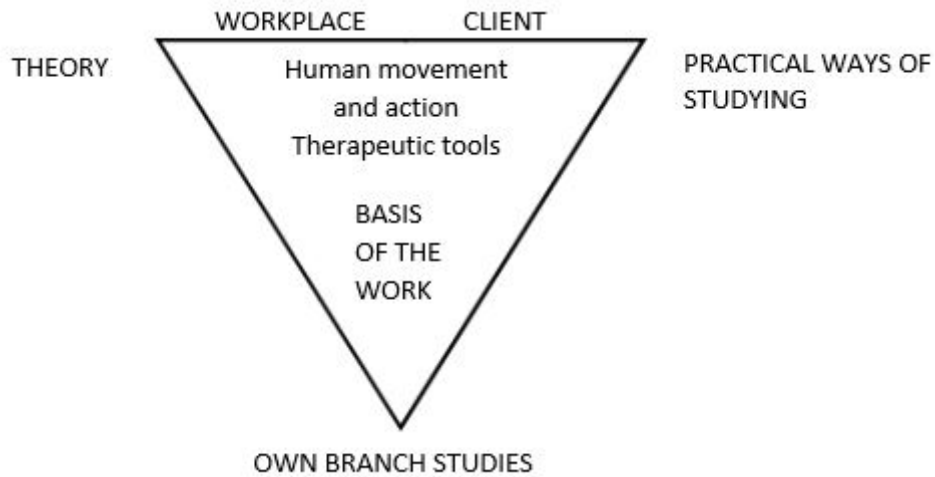


Figure 2. Basis of the practical work was learned at school. Facing real clients and real work context were needed in deepening students' learning in practical work.

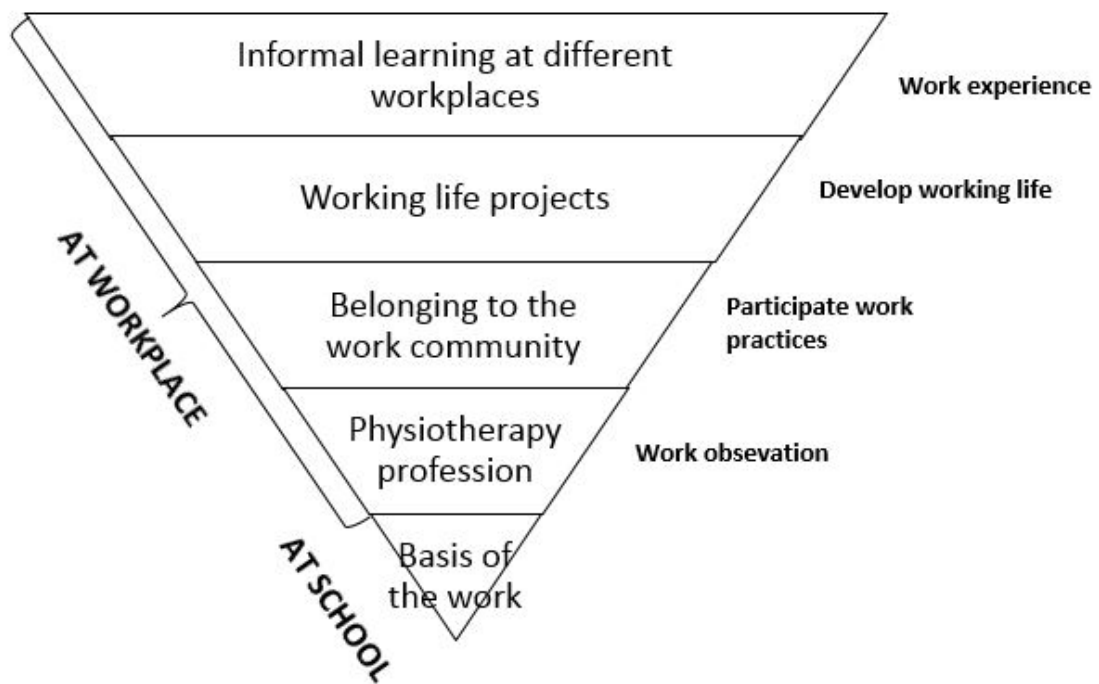


Figure 3. Learning workplace agency and work practices. Reflection was needed in all learning.

Appendix

Sex (f/m)	Age (years)	Earlier education	Working experience (years)	Graduation time (years)
Anna, f A	29	- matriculation examination - 3 years of studying in a university of technology	10	2008
Eeva, f B	25	- vocational upper secondary education (catering branch) - masseur	5	2008
Liisa, f C	34	- matriculation examination - vocational upper secondary education (practical nurse)	7	2008
Tiina, f D	22	- vocational upper secondary education (practical nurse)	2	2008
Kaija, f E	24	- matriculation examination	1	2008
Minna, f F	27	- matriculation examination - vocational upper secondary education (practical nurse)	5	2008
Maria, f G	22	- matriculation examination	1	2012
Sonja, f H	37	- matriculation examination - MPhil	12	2012
Anni, f I	22	- matriculation examination	1	2012
Emmi, f J	24	- matriculation examination	1	2012
Hannele, f K	22	- matriculation examination	1	2012
Satu, f L	23	- matriculation examination, - a half year of nursing studies	1	2012
Antti, m M	23	- matriculation examination	1	2012
Päivi, f N	24	- upper secondary vocational education (practical nurse) - sports masseur	3	2012
Merja, f O	25	- matriculation examination - few months of studies for community health nurse	3	2012
Johanna, f P	23	- matriculation examination - sports masseur	1	2012
Aleksi, m Q	23	- matriculation examination	2	2012
Seija, f R	25	- matriculation examination - masseur	1	2014
Jaana, f S	28	- matriculation examination	5	2014
Anselmi, m T	23	- matriculation examination	1	2014
Susanna, f U	23	- matriculation examination - sports masseur	1	2014

IV

SEEKING A NEW PERSPECTIVE ON PHYSIOTHERAPY PROFESSIONAL DEVELOPMENT Meta-synthesis of Physiotherapy Students' Professional Studies.

by

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(submitted)

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