

**This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.**

**Author(s):** Korpi, Hilikka; Peltokallio, Liisa; Piirainen, Arja

**Title:** The story models of physiotherapy students' professional development. Narrative research

**Year:** 2014

**Version:** Accepted version (Final draft)

**Copyright:** © Informa Healthcare, 2014

**Rights:** In Copyright

**Rights url:** <http://rightsstatements.org/page/InC/1.0/?language=en>

**Please cite the original version:**

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. <https://doi.org/10.3109/21679169.2014.934279>

# The Story Models of Physiotherapy Students' Professional Development

Korpi H, Peltokallio L & Piirainen A.

Faculty of Sport and Health Sciences, Department of Health Sciences,  
University of Jyväskylä

## 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.

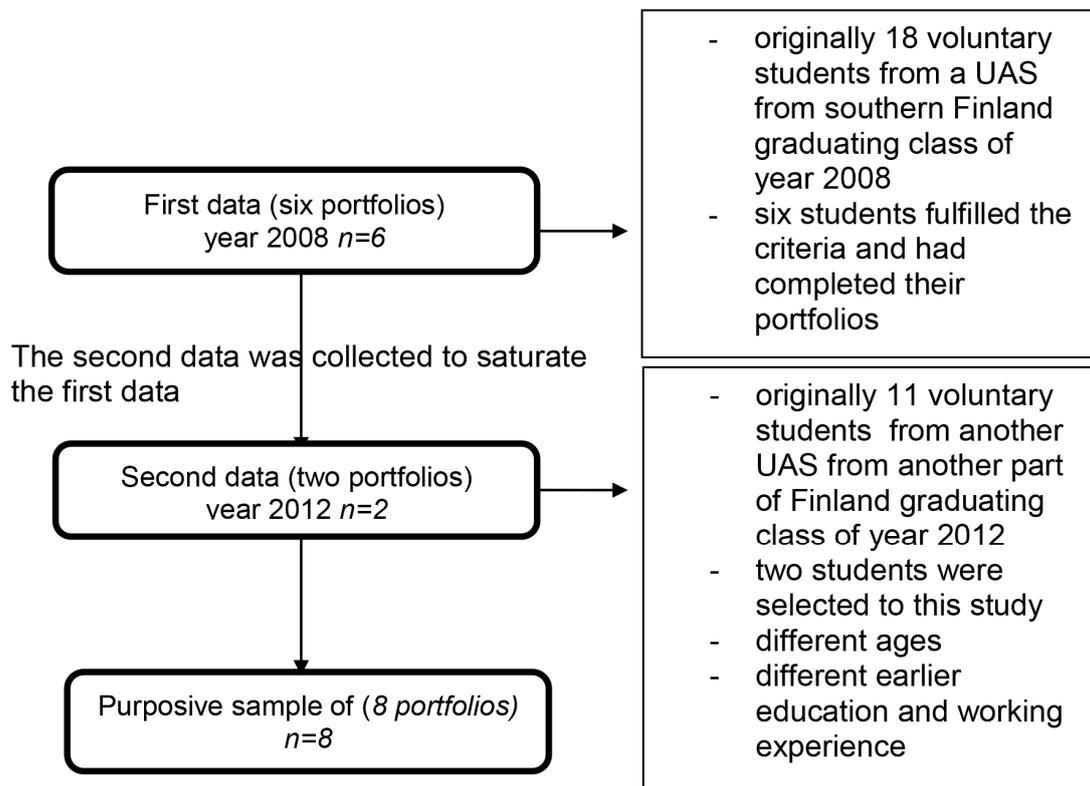


Figure 1. Study design and sampling flow chart

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.

<b>Sex</b> (f/m)	<b>Age</b> (years)	<b>Earlier education</b>	<b>Working experience</b> (years)	<b>Graduation time</b> (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):

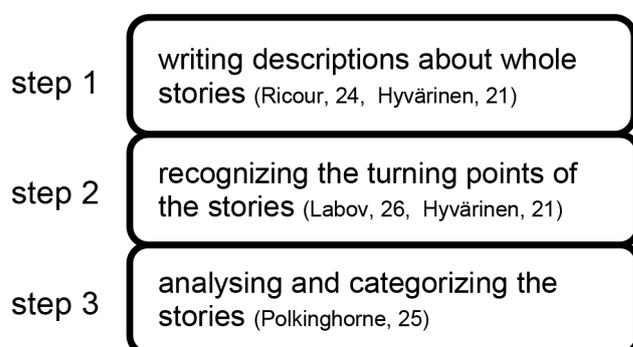


Figure 2. Data analysis.

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.

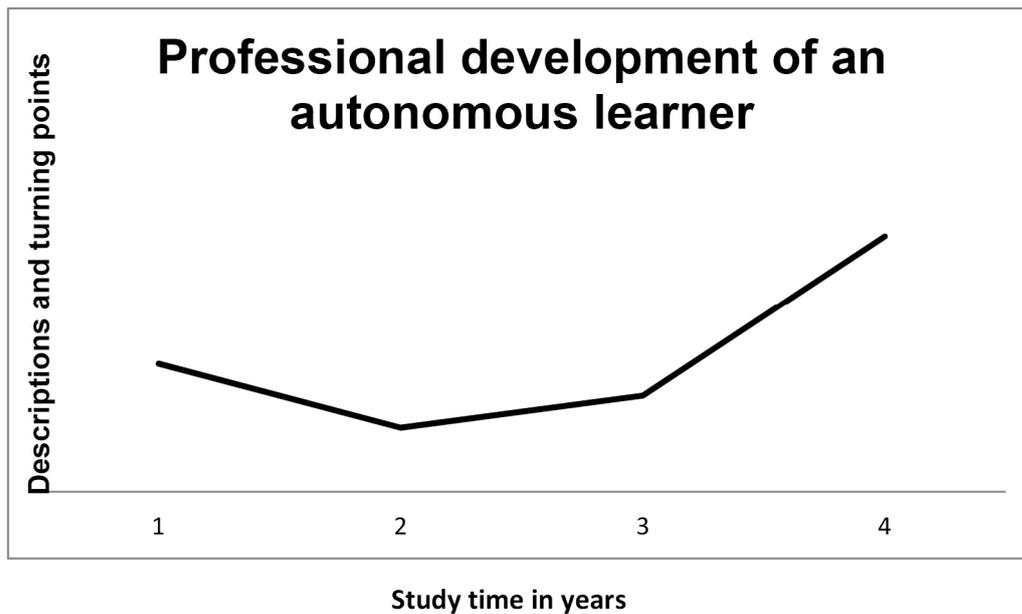


Figure 3. Guidelines for autonomous learners' turning points during their study time. Students' professional development improved in the turning points which can be seen on the dots in the pictures.

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.

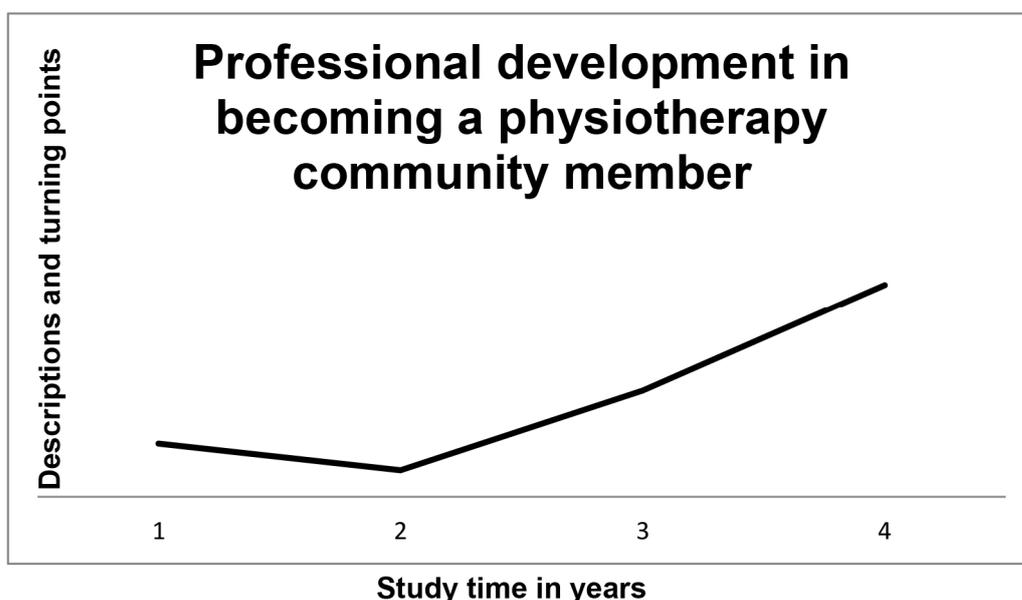


Figure 4. Guidelines for becoming physiotherapy community members’ turning points during their study time. Students’ professional development improved in the turning points which can be seen on the dots in the pictures.

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.

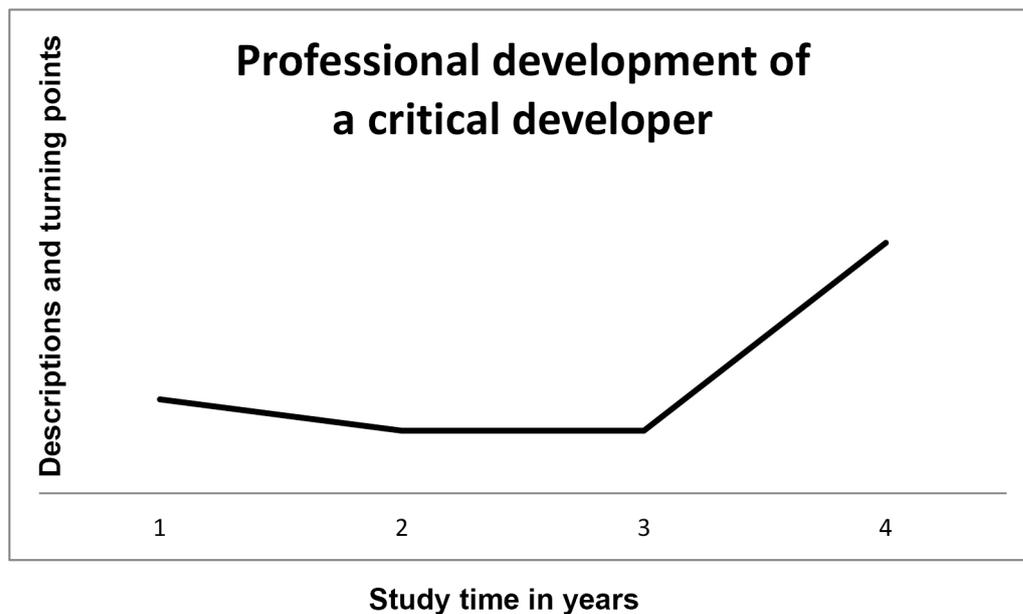


Figure 5. Guidelines for critical developers' turning points during their study time. Students' professional development improved in the turning points which can be seen on the dots in the pictures.

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.

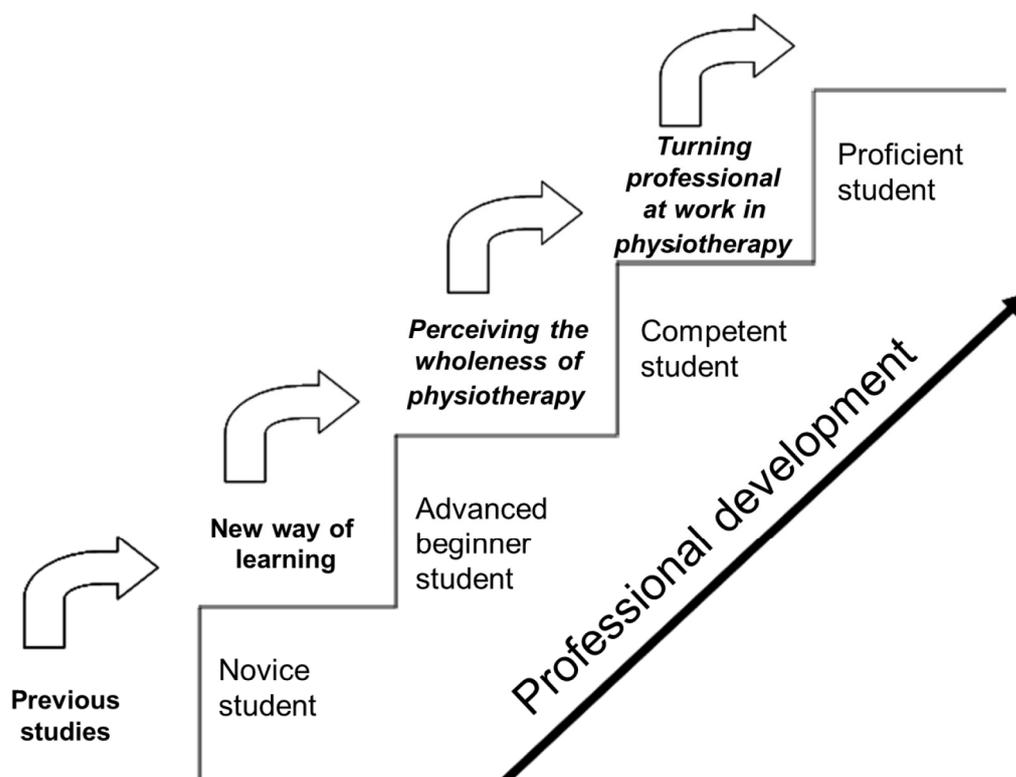


Figure 6. Physiotherapy students' professional development based on *Theory of Development for Expert by Dreyfus & Dreyfus (1986)* (10)

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.

### Acknowledgements

The authors sincerely thank all the physiotherapy students in Finland who participated to this study. We also wish to thank physiotherapy teachers for helping to get the material from universities of applied sciences.

### Competing interests

None

### Sources

1. Lähteenmäki M-L. Asiantuntijuuden kehittyminen ongelmaperustaisessa fysioterapeuttikoulutuksessa. [Development for expertise in PBL –based physiotherapy education] Tampere. Tampere University Press; 2006.
2. Piirainen A, Viitanen E. Transforming expertise from individual to regional community expertise: a four-year study of an education intervention. *Int Jour of Lifelong Ed.* 2010; 29(5):581-596.
3. Laitinen-Väänänen S: The construction of supervision and physiotherapy expertise: a qualitative study of physiotherapy student's learning sessions in clinical education. Jyväskylä: Jyväskylä University Press, 2008.
4. Bartlett DJ, Lucy D, Bisbee L, Conti-Becker L. Understanding the professional socialization of Canadian physical therapy students: A Qualitative Investigation. *Phys ther Canada.* 2009, 61(1):15 – 25.
5. Gerber R. Experience, common sense and expertise in workplace learning. In: Gerber R & Lankshear C, eds. *Training for a smart workforce.* London: Routledge; 2000.
6. Winterton J, Delamare-Le Deist F, Stringfelloe E. Typology of knowledge, skills and competences: clarification of the concept and prototype. *Cedefop Reference Series, 64.* Luxembourg: Office for Official Publications of the European Communities; 2006.
7. Jensen GM, Gwyer J, Shepard KF & Hack LM. Expert Practice in Physical Therapy. *Phys ther.* 2000; 80(1):24-42.
8. French HP, Dowds J. An overview of Continuing Professional Development in physiotherapy. *Physiotherapy.* 2008; 94(3):190-197.

9. Isopahkala-Bouret U: Joy and struggle for renewal. A narrative inquiry into expertise in job transition. Helsinki. Helsinki University Press, 2005.
10. Dreyfus HL, Dreyfus SE: Mind over machine. The power of human intuition and expertise in the era of computer. 10. edition. New York. The Free Press, 1986.
11. European Commission [Internet]. European Union 1995-2012: The European framework for key competences [updated 2013 July 09; cited 2013 July 13]. The Directorate-General for Education and Culture. Available from: [http://ec.europa.eu/education/lifelong-learning-policy/key\\_en.html](http://ec.europa.eu/education/lifelong-learning-policy/key_en.html)
12. European Higher Education Area [internet]. European higher education 2010-2020. [updated 2013 July 9; cited 2013 July 13]. The Romanian Bologna Secretariat Available from: <http://www.ehea.info/>
13. Ministry of Culture and Education, Finland [internet] Finnish Education in a Nutshell. Espoo: Kopijyvä, 2012. Available from: [http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2013/liitteet/Finnish\\_education\\_in\\_a\\_nutshell.pdf](http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2013/liitteet/Finnish_education_in_a_nutshell.pdf)
14. Ministry of Culture and Education, Finland [internet] Eurooppalainen tutkintojen viitekehys [European Qualification Framework]. [updated 2013 July 6; cited 2013 July 15]. Available from: [http://www.minedu.fi/OPM/Koulutus/artikkelit/ammattillisen\\_koulutuksen\\_koeopenhamina-prosessi/Eurooppalainen\\_tutkintojen\\_ja\\_osaamisen\\_viitekehys\\_xEQFx.html](http://www.minedu.fi/OPM/Koulutus/artikkelit/ammattillisen_koulutuksen_koeopenhamina-prosessi/Eurooppalainen_tutkintojen_ja_osaamisen_viitekehys_xEQFx.html)
15. Mezirow J, How critical reflection triggers transformative Learning. In: Mezirow J. & Associates. Fostering critical reflection in adulthood. A guide to transformative and emancipatory learning. San Francisco: Jossey-Bass Publisher, 1990.
16. Cranton P. Understanding and promoting transformative learning. A guide for educators of adults. San Francisco: Jossey-Bass, 2006.
17. Ramklass SS. An investigation into alignment of South-African physiotherapy curriculum and the expectations of the healthcare system. Physiotherapy 2009. sep. 95 (3): 216-23.
18. Larin H, Wessel J and Al-Shamlan A. Reflections of Physiotherapy students in the United Arab Emirates during their clinical placement: a qualitative study. BMC Med Educ 2005. Jan 20; 5 (1) 3.
19. Perry J, Green A and Harrison K. The Impact of masters education in manual therapy and "knowledge acquisition model". Man Ther 2011. Jun: 16 (3): 285-90.
20. Holland C, Bench S, Brown K, Bradley C, Johnson L and Frisby J. Interprofessional working in acute care. Clin Teach 2013. Apr: 10 (2): 107-12.
21. Hyvärinen M: Analyzing narratives and story-telling. In: Alasuutari P, Brannen J, eds. Handbook of social research methods. Los Angeles – London – New Delhi – Singapore: Sage Publications, 2008
22. Bruner J. Life as narrative. Soc Research. 1987: 54(1):11 - 32.
23. Savicevic D. 'Convergence or divergence of ideas on andragogy in different countries', International. J of Lifelong Ed. 2008, 27(4):361-378.
24. Ricoer P. Time and narrative. vol. 1. Chicago: The University of Chicago Press, 1984.

25. Polkinghorne D. E. Narrative knowing and the human sciences. USA. State University of New York Press, 1988.
26. Labov W. Some Further Steps in Narrative Analysis. Journal of Narrative and Life History 1997: 7 (1-4). [WWW document]. [referenced 20.2.2014]. <http://www.ling.upenn.edu/~wlabov/sfs.html>
27. Houtsonen J. Identiteetin rakentuminen koulun symbolisessa järjestyksessä. Teoksessa: Houtsonen J, Kauppila J. & Komonen K. (toim.) Koulutus, elämäkulku ja identiteetti. Kasvatustieteellisiä avauksia suomalaisten oppimiseen. [Identity construction of the schools' symbolic order. In: Houtsonen J, Kauppila, J. & Komonen K. (ed.) Education, the life course and identity. Educational and Sociological views of Finnish learning] Joensuu. Joensuu University Press, 2000.
28. Boud D. Moving towards autonomy. In Boud D, eds. Developing student autonomy in learning. New York: Kogan Page, 1988.
29. Wenger E. Communities of practice. Learning, meaning and identity. Cambridge. University Press, 1998.
30. The Enphe [internet]. European Qualification Framework for Life Long Learning in Physiotherapy , Final Report, 2012. Netherlands. European Network of Physiotherapy in Higher Education. Available from [http://enphe.org/Portals/enphe/documents/Final%20Report%20EQ%20FG\\_DEF\\_16012\\_013.pdf](http://enphe.org/Portals/enphe/documents/Final%20Report%20EQ%20FG_DEF_16012_013.pdf)
31. Schön DA. Education the reflective practioner. San Francisco: Jossey Boss, 1987.
32. Taatila V. Innovaatio-osaaminen. Teoksessa: Kallioinen O, toim. Osaamisohjainen opetussuunnitelma Laureassa, [Innovation Competence. In: Kallioinen O, ed. Knowledge-based curriculum in Laurea] Helsinki: Edita Prima Oy, 2007.
33. Lindeman E. C. The Meaning of Adult Education, New York: New Republic. Republished in a new edition in 1989 by The Oklahoma Research Center for Continuing Professional and Higher Education, 1926.
34. Loh J. Inquiry into Issues of Trustworthiness and Quality in Narrative Studies: A Perspective. The Qualitative Report 2013: 18 (1-15). [WWW document]. [referenced 20.2.2014]. <http://www.nova.edu/ssss/QR/QR18/loh65.pdf>
35. Heikkinen H.L.T. Narratiivinen tutkimus – ei yksi vaan monta tarinaa. Teoksessa: Heikkinen H.L.T. & Syrjälä L. (toim.) Minussa elää monta tarinaa. Kirjoituksia opettajuudesta. [Narrative research – not only one but many stories. In: Heikkinen H.L.T. & Syrjälä L. (ed.) There lives many stories in me. Writings about teachership.] Helsinki: SKS, 2002: 184-197.
36. Benner, P. From Novice to Expert. Excellence and Power in Clinical Nursing Practice. California, Addison-Wesley Publishing Company, 1984
37. Riessman, C. K.. Narrative methods for the human sciences. Thousand Oaks, CA: Sage Publications, 2008