Challenging the establishment? What benefits can a more practice-based, part-time bachelor program have in educating physiotherapists for tomorrow?

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Abstract

This article is based upon a study of 15 students' learning, educated within a part-time, decentralised and net-supported bachelor program in physio-therapy. The program was found to educate students with skills and at-tributes which are most needed for health care workers of tomorrow. The re-search questions were: What are the key factors of the program that contri-bute to the learning outcomes? How can such a program challenge a more traditional campus-delivered program? The most important factors were 1) the variation between learning arenas; on-campus activities, periods of clinical placement and self-study periods and 2) the stronger emphasize on clinical experiences throughout; regular, weekly skills training in clinics and tasks that stimulated reflection and social and collaborative learning. Transferring such elements to full-time programs is suggested. This im-plies more responsibility to the professional field, and affects the role of the teachers, supervisors and the power of the institution.

1. Introduction

Educating health care professionals with the necessary skills to take care of patients' needs within an ever changing and more complex reality should be a primary concern for educational institutions. Fu-ture health care workers need to develop abilities to adjust to – and na-vigate within complex situations, to develop and change their practice, and even to create new knowledge within their field (B. Richardson, 1999). Important aspects of the skills needed, regards "twenty-first century skills" like critical thinking and collaboration, (Garrison et al., 2003; Scardamalia et al., 2008), and generic skills as communica-tion, self-directed learning and ability to change (Clouten et al., 2006; Cross, 1998; Higgs et al., 1999; Overbaugh et al., 2006; Turnock et al.,

2005). From experiences with educating 15 students within a pioneer part-time net-supported decentralised bachelor program in physiotherapy at Tromsø University College[1], I suggest that this new program might have some advantages compared to the ordinary one regarding such skills. Some quotes from the students just before they qualified, illustrate what students learned and point towards aspects of relevance within the program's structure:

> I: I think I have become more independent to work on my own … find solutions … find my own ways, maybe. K: I must rely more on my own judgements and search for support for them elsewhere, for instance in literature. And I think I have learnt a lot about flexibility. That is a very important competence. Being flexible. We meet many new situations; at school, in practical placements, then it is the practical skills training with different physiotherapists, and then we are somewhere else. So we have to cope with many different situations and relationships. I think that has affected my personal life too..   Q: We have become more laid back and flexible. Being so much on our own can be a tool to develop these things.

Being more on their own and having to cope with many new situations seem to have developed self-directed learning and flexibility in these students. What qualities within the part-time program may have contributed to this? In this article I will present and discuss results from a study that was set out to investigate what students found important for motivation and learning in the particular part-time program, and discuss some pedagogical implications for designing bachelor programs in physiotherapy in the future. The questions I address are: *What are the key factors in the pedagogical design of a part-time, decentralised net-supported program that contribute to the development of self-directed and motivated learners? And in what ways can such a program challenge a more traditional campus-delivered program?* My intentions are to contribute to a discussion regarding pedagogical issues in designing a program for future health care workers.

2. Background: The part-time program and it's first students

To serve as a background for the study, I will give a brief description of the part-time bachelor program. Tromsø University College has educated physiotherapists since 1989 in the "traditional" way: a three year campus-based education with three longer periods of clinical placement in the region of Northern Norway. In January 2003 the University Board decided to try out an alternative way to educate physiotherapists, in order to meet external demands for being able to study in the districts and to combine studies with high-performance sports activities and family commitments. This became an opportunity to refresh the curriculum, and after 8 months of planning, 15 students were enrolled in October 2003. The 180 European Study Credit Points (ECTS) education was outlined as a four year program, where the first year was full-time (60 ECTS) in order to set the group and establish good studying routines, and the next three years were part-time at 2/3 pace (40 ECTS). The first year had 5 gatherings at campus of 2-4 weeks, whilst the next three had 3-4 gatherings and of 2-3 weeks. From year two the students had clinical placements in their home district of 5-8 weeks, four altogether. Compared to the ordinary program, the total amount of clinical placement was the same (45 ECTS), but the distribution of the weeks was more outstretched. When not at campus, and not in clinical placement, the part-time students were involved in longer periods

of self-studies, which included weekly skills training with local physiotherapists; a total of 80 hours in year 1 and 48 hours each year from year 2-4. The structure of the program can be illustrated as follows:
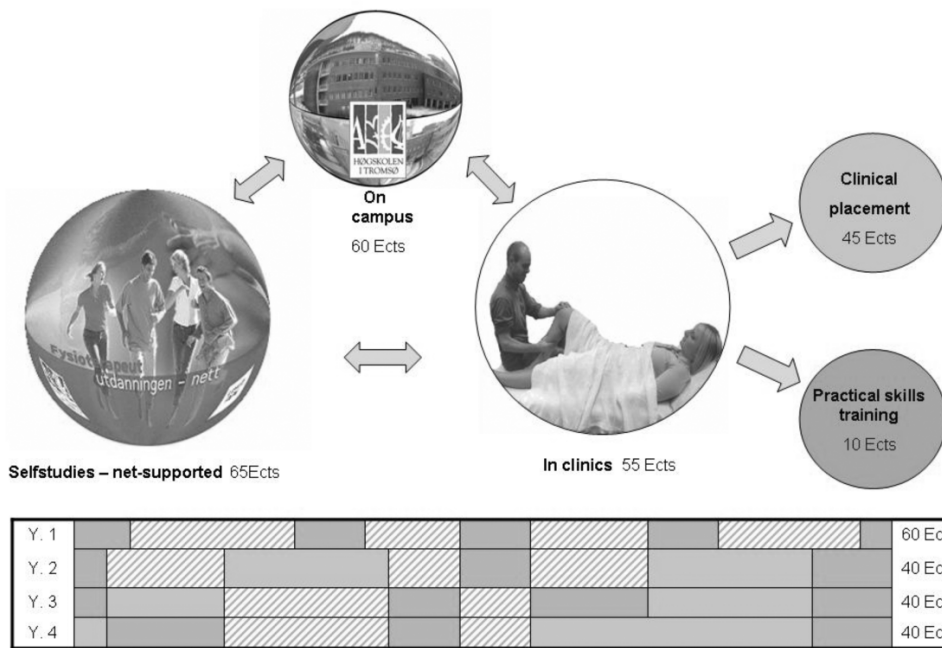

Fig. 1: Structure of program: Dark grey areas indicate on-campus periods of 2-4 weeks, shaded areas indicate periods of self-studies including weekly, individual practical skills training with the local physiotherapist, and light grey areas indicate periods of 4-8 weeks of clinical placements in hospitals or community health services.

The students covered the same main learning outcomes and exams as their full-time counterparts, but in a different outlined program. Frequent shifts between the learning arenas: campus, home, and clinical settings, self-studies with net-mediated work and e-learning and the involvement of weekly clinical work with local physiotherapist, represent the major structural differences compared to our traditional program. Other differences regarding the curriculum will be addressed in more detail when results from the study are discussed.

The group of the 15 students enrolled represented to a large extent the kind of students we wanted to attract: students living in rural areas who were unable to move and/or students who wanted to take a slower pace because of family commitments or high performing sporting activity. We also had a few whose grades were not good enough for being enrolled in the full-time program. Their age ranged from 51 to 19 years, with an average of 26,6. The lowest study point score was 43,7 with an average of 53,2. In comparison the two full time groups of 28 students enrolled in 2003 and 2004 ranged from 18-27 years, with an average of 23,5 and the average study point score was 51,2 and 51,6 respectively. This means that the part-time students represented a greater variety and diversity when it came to age, background and study points than the full-time students. During the four year program two students quitted in year 1; one because she chose to, the other because she failed the assignments, one student

chose to be transferred to the full-time program in year 3[2], and one still has study leave because of special circumstances. The others qualified successfully in June 2007.

3. Theoretical framework

Three theoretical perspectives serve as a background for the discussion of experiences from the part-time program. The first regards the teacher as responsible for making students' learning possible, emphasized within the literature of e-learning (Duffy et al., 2004; Garrison & Anderson, 2003; Laurillard, 1993), where it seems that the use of technology makes rethinking learning and teaching an especially pertinent issue. It states that the role of the teacher primarily is to create conditions for learning to occur and understanding to unfold. The students' learning experiences are formed and developed within a context of interrelated elements which the teacher to a large degree can - and should direct when designing the program and creating it's content. Garrison & Anderson (2003) have suggested a model which underlines some important tasks for the teacher; being an architect and facilitator in designing, guiding and giving feedback on learning processes, being a role model in creating a supportive and safe learning climate which makes it possible for the participants to engage themselves in discussions and learning activities, and being responsible for developing and expressing learning objectives. If we want to educate reflective practitioners and self-directed learners who engage in collaboration and knowledge building, teachers need to pay attention to the learning tasks – and how they can direct learning towards those objectives. Richardson (2000) states that the learning process is stimulated if the learning tasks; working with them and their result, are regarded worthwhile. This means that the teacher needs to address motivational aspects in learning, not only cognitive or intellectual capacities of the students.

The second perspective regards the nature of learning: what it is - and what processes are important. Because learning in the part-time program takes place at different arenas which includes the clinical field in new ways, and implements innovative use of e-learning, I find it useful to apply a perspective which recognizes the significance of multiple arenas and technological factors in learning. The situated learning perspective is such a perspective, where learning is seen as something that happens – and has to be analysed - in situations which include all human, technological and organisational factors that constitute the learning situation (Lave, 1991, Wenger, 1998). Learning is seen both as socially constructed and as cognitive and emotional processes within the individual. When the situated learning perspective was introduced, it highlighted apprenticeship-learning. Later the concept was developed to include the student's activity and participation in all kinds of "practices" (Akre et al., 1999). In the part-time program that includes individual and collective processes at campus, on the internet, at home, and in the workplace. The situated learning perspective makes it meaningful to take all such practices into account – and consider the relationship between them when looking into how learning is stimulated in the part-time program.

Thirdly self-directed learning is seen as an element of "high-order-learning", in contrast to "low-order learning". High-order-learning is a concept that encompasses a competency for reconstruction of knowledge and for acquisition of effective learning strategies, while low-order learning, involves the capacity to reproduce knowledge and rote learning (Bliss et al., 1999; J. T. E. Richardson, 2000). The competency which seems to be necessary for future physiotherapists to develop is the approach of high-order-learning where they are capable of abstraction,

interpretation and of construction of new knowledge (J. T. E. Richardson, 2000). A question of pedagogic relevance is whether a learning strategy can be learned through the education or if it is a characteristic of the student at entry. Some studies suggest that a problem-based-learning (PBL) program seems to have advantages compared to more traditional teaching methods in developing self-directed learning (Solomon, 2005). On the other hand research also suggests that more mature students enter a particular professional program with clearer assumptions of the rationale for their choice than younger ones, and therefore adapt better study techniques(Grepperud, 2007; J. T. E. Richardson, 2000). As the part-time program attracted older students than the traditional, (average 3 years), this is something to be considered when the results are discussed.

4. Method

The project was planned and set out by a teacher in bioengineering and myself, spring 2007. She had previously been involved in a project that investigated students learning experiences in multi-professional modules, while I had been deeply involved in the planning and implementation of the part-time program[3]. To investigate the research questions we gathered information from the students in two steps. First, in April, the students were asked to contribute with reflection notes regarding: "What has kept me going through these years?" Five of them did. These notes were analysed for the purpose of understanding what students themselves acknowledged as important in their learning process. Together with what we as educators recognised as special for this program, we developed five themes which integrated students' perceptions and teachers' research interests, for a focus group interview. These five themes were related to students' personal change, their understanding of learning, their comprehension of useful feedback, and to their perceptions of the e-learning platforms that was used. The reason for choosing a focus group interview format was the possibilities which this method provides for simultaneously focus on our research questions and for the participants to build upon each others contributions for new understanding to develop (Wibeck, 2000). In step two in June, just before their final exams, we gathered the students for the interview. The five themes were formulated as slightly provocative statements to stimulate different opinions and discussions: 1)Through four years of study I have changed, 2)Development of knowledge has a dialogic character, 3)Some types of feed-back doesn't promote learning, 4) Fronter (the e-learning platform for contact) is important and 5) Physio-net (the e-learning platform for content) is unnecessary for learning. All of them were covered, but the first three seemed to trigger discussions regarding motivational aspects the most, and got special attention.

For the interview we meant to divide the class into two groups of 8-7 persons respectively, but because some were unable to attend, and the last group would have been rather small, we ended up with one two hour long interview of 12 of the students. The students gave their consent to the interview being videotaped and to the transcripts from the video being used for the purpose of writing an article. The interview took place in a classroom at school. We found the bioengineering teacher as unknown to the students, to be best suited for stimulating new ideas and chose her to be the main interviewer. Along the way she consulted me on when to proceed, based on a joint agreement on when a theme was satisfying elaborated. Methodically the choice of one interview for the whole group can be disputed. The group was too big to ensure everybody's active participation. But even if one half was much more active verbally

and might have represented the more positive ones, the other half seemed to agree a lot of what was said by non-verbal cues. And even if we especially asked for other opinions, and the students felt safe amongst them, we might not have got conflicting views. The material therefore represents some important – but not every aspect of how the students perceived their learning and what contributed to motivation in the part-time program.

The work with the transcription of the interview was shared between the two of us, while I worked further on my own with analysing the total of 32 pages of transcripts. In analysing I first looked for elements that seemed to be important to the students' motivation overall, and for stimulating generic skills and skills of high-order learning in particular. Then I looked for relationships between the students' experiences and learning outcomes and what influence the structure, design and pedagogical practice of the program seemed to have. Hence the categories for presenting and discussing the results were generated from the material itself and from the theoretical perspectives applied, in order to answer the research questions.

5. Results and discussion

The chosen categories highlight what factors the students found important in stimulating learning, and also represent some major differences between the part-time – and the full-time program as they were organised at that time. Some of the factors may apply to characteristics of the students at entry of program, some to the variation and dynamics within and between elements in the program's structure, some to the development of positive relationships, and quite a few to the specific learning activities that were developed and adopted into the curriculum. The students' experiences are presented with rather long excerpts[4], and discussed in relation to research within distance learning and the theoretical perspectives presented earlier.

Students' motivation at entry of program

To my experience the students were extremely motivated and active, especially gathered at campus. Other teachers that were involved had the same opinions (Aars, 2008). That could of course be related to these students' initial motivation at entry of program. Quotes from three of them illustrate that they had a really strong drive for becoming a physiotherapist. K and L are above average age for the population of part-time students, while V is average:

> K: After looking after children and adults in our municipality and county for more than twenty years, my husband and I had a dream to develop our own concept of health service delivery based on a professional approach. Now that I am nearly qualified, I really feel the power of this motive. L: I have always dreamed to become a physiotherapist, so when I was accepted, I compared that to "winning the lottery". V: I knew from early age that I wanted to be a physiotherapist, and that meant that nothing could stop me from completing.

It is commonly found that flexible educational programs seem to attract students who are especially motivated, and who adopt high-order-learning skills (Grepperud, 2007, J. T. E. Richardson, 2000). This is explained foremost as an effect of age, experience and former qualifications, and less as an effect of a program's structure and design. Even if the part-time student's average age was three years above that of the full-time student, most of the students

were the same age. Based on this fact, and on the students own accounts of what motivated them along the "long and winding road", I will suggest that there were other factors regarding the pedagogical design of at least equally high importance in contributing to motivation and learning amongst the part-time students.

The structure gives a positive variation
As outlined in figure 1(p.3) the part-time program involves frequent and regular shifts between periods of on-campus activities, periods of self-studies at home with four hours of weekly skills training with clinicians and periods of clinical placement. Many students found this variation to be a positive factor, as well as the variation of workload, due to being part-time:

> I: It has maybe something to do with variations and intensity in the study program, it is quite intense at the assemblies and then you have the possibility to take a slower pace afterwards. V: We get variations, and can take a day or two off from time to time. You don't have the same pressure all the time and are more motivated when you meet up with the others. R: You get an opportunity to think things over, to reflect. B: At the ordinary program, I always felt I was behind. A lot of new knowledge to absorb every day, and not enough time to reflect … and.. always bad consciousness. L: It has been a nice alternation between periods of home studies, assemblies and practical placements, which add to the variation throughout the education. I believe that the every day variation is an important factor to have a good time as a student. I have enjoyed being able to plan my own day, and do other paid work in between.

Normally daily on-campus activities play a major role in the student's study work. Even if part-time students' work was directed by assignments and structured activities, it wasn't on a daily basis, and the students had to engage more in self-directed learning. The slower pace made studying less overwhelming, and allowed for absorbing and reflecting upon study tasks, which can influence the development of high-order learning (Gunawardena, 2004; Mezirow, 2000). The variation itself implied having to navigate between learning arenas, which is found to stimulate being flexible (Rye, 2008).

Studying part-time though, had economic consequences and meant that most students had to work in addition to studying. This could be a burden, and just another factor to deal with in the counter pressure many part-time students are exposed to (Grepperud, 2007). But L gives an example how the work also contributed professionally:

> L: I was able to work in a nursery when we didn't have practical placements or were mellomromat school. I enjoyed that. I found myself thinking as a physiotherapist a lot, working with the children, or observing the others … how they moved, what happened in their bodies ..

The job, which didn't directly relate to becoming a physiotherapist, still activated L's physiotherapeutic reasoning, and gave her experiences which she could reflect on and relate to subjects, relevant for future professional work. So even if a job most likely is a necessity, it could also contribute professionally, more likely if the job is connected to care or health care in some way or another, less if you work as a shop assistant for instance.

Support and relationships

Being a part-time student means that you spend less time actually being together with other students. In this perspective, how important did the students reckon the group and fellow students for their learning? The following quotes give an idea:

> K: At my age I get energy from younger students. That is a privilege for us above forty exclusively! It has been very exciting to follow the younger students into adulthood with everything that goes with that. Trust and love within the group has meant that everybody has been able to refine their resources and qualities instead of becoming homogenous, which is something that probably often happens within a class. L: Throughout the study our group has had a fantastic team spirit. A spirit which included everybody and acknowledged and accepted that we were different human beings. We had the ability to be happy on each others behalf or support each other if necessary. I think the students had a feeling of security amongst each other, as well as with the teachers. H: Support from fellow students has kept me going in periods with little confidence. R: The group constellation means a lot, and I think the size has significance too. Different age and different experiences also influences the learning process.

The students acknowledged differences as a quality, when it comes to age, background, interests etc. They also underlined the positive climate in the group, emotionally and learning wise. Was the sense of community that developed special to this group? A well-functioning group within distance education is found to rely on one or more students to set positive standards for the work (Helleve, 2007). In the part-time group there were clearly many active, assertive and attentive students which served as positive role-models. Another explanation for the forming of positive relationships could be the tendency for distance students to compensate for the lack of teaching faculty presence by interacting more among themselves (Singleton, 2005), or to establish a sense of belonging due to being different from others and protecting themselves when feeling exposed to critique from the outside (Grepperud, 2007). Both explanations seem to be relevant to understand the positive climate amongst our students. They studied widespread and with less campus-based activity, and since they were the first ever to be educated within an alternative program, they clearly faced some scepticism from other students whether the part-time program could fully compete with the full-time in educating physiotherapists.

From studies within distance learning it is obvious that distance learners in many respects are more vulnerable than students who are gathered together at school, and seem to need more support and feed-back (Grepperud, 2007). This seemed to be the case also with our students:

> K: What has been the most important? Family, family, family. H: Feedback from teachers and clinical supervisors has also been important. And good contact with the teachers that have followed us since the beginning in 2003. I admire the way they have engaged in us students (can relations be a theme?) B: The most important factor in forming me as a future physiotherapist has been the feedback I have got from supervisors. They see you in situations with patients and can tell you something about you as a person.

At best family served as the most important support, and the distance student's education became a family project. But even if not in the data, a couple of students obviously struggled in combinating roles and obligations as mother and spouse at one hand with being a student at the other. Good relationships with teachers and supervisors could hardly compensate for lack of home support, but were acknowledged by many as highly relevant. When not being "monitored" on a daily basis, the student in a distance program seems to need reassurance for being "on the right track" (Overbaugh & Lin, 2006). Because we were two teachers that followed the students throughout, our possibilities in getting an overview of the students' development were good, which could have contributed to a necessary sense of security and control. The supervisors' influence on the other hand, was more related to clinical performance. Research has shown that supervisors serve as strong role models for students' future clinical practice in general and that their feedback is regarded as especially relevant (Lindquist, 2006). It is not likely that supervisors are less important in the part-time program which is more founded in the clinical field than an ordinary one.

Meaningful and relevant learning experiences

Motivation throughout the education had a lot to do with how the students perceived the learning in different learning arenas, the tasks they were given and how they were supposed to work with them. What the students found as meaningful and relevant learning experiences were to a large extent attached to special features of the part-time program, like the regular and dynamic interplay between theory and practice, the integration of skills training in clinics, reflecting-on-experiences by an internet-tool, and studying methods that involved social and collaborative learning. These are elaborated below, and in relation to the situated learning perspective and how high-order learning strategies were affected.

The interplay theory and practice is a characteristic of the part-time program's structure and design of learning activities, which students found motivating for learning. The structure's need for navigating between learning arenas on a regular basis fostered such an interplay in itself. In addition we put considerably effort into making tasks which required underpinning experiences with theoretical knowledge, and investigating the usefulness of theoretical knowledge in practice. This pedagogical move of putting clinical experiences up front, and using studying methods which stimulated the dynamic interplay between theory and practice, was found meaningful, as these quotes are examples of:

> L: It is when you are in the clinics, you really have to apply the anatomy and you realise that you could try rote learning of muscles until ... but it was when being in the clinics and when I saw a flat foot, .. and yes .. this is how it has to be, that is the muscle that doesn't work. Q: In long periods I was overwhelmed by bad consciousness by not being able to study as much as I should in the self-study periods. Even better then, to come to the assemblies. It's amazing to experience a milieu which harmonizes with the things you need to learn. You get what you need in a compact format, can ask questions to someone that answers, and discuss the things you have just heard. MAGIC.

> R: Coming to the assemblies, getting lectures and sharing experiences and to reflect upon experiences from clinical visits and practicals have given a strong and powerful drive. I really concentrate then, and absorb everything!!

In a situated learning perspective it is discussed whether navigating between different arenas and contexts represent conflict and frustration, or challenge and deepened understanding (Akre & Ludvigsen, 1999). In my material there is support for the latter. The variation between assemblies and practice infused periods of self-studies seem to have triggered understanding. The quotes might suggest both an instrumental attitude to knowledge and learning where practice is seen as application of theory, and a discursive one with a "theory-informing-praxis and praxis-informing-theory" attitude. Because the rather strong perceptions of relevance and understanding that is expressed, also later on, I think that the latter and high-order learning strategies were involved to a large extent. From a medical education context it is found that the switching between arenas stimulated modification, rather than application of earlier knowledge (Dreier, 1999). For the medical students the differences between arenas added to a feeling of relevance, and stimulated ongoing learning processes, including that of high-order learning. I think the above quotes indicates that something similar happened to our part-time students too.

Skills training in clinics regularly in periods of self study were introduced from the beginning. Local physiotherapists around the region were responsible for providing the students individually with opportunities for skills training with patients four hours each week. This included training in observation and analysis of patients' movements, manual skills training needed for assessing patients' function etc. The following quote illustrates how the students perceived such skills training:

> V: Being with a physiotherapist from the beginning was really important. Then you get a picture of what physiotherapy is all about and where you are heading. It has been important to come to the assemblies and realise that you actually has learned a lot through the self-study periods, even if you only have had a few hours of practical skills training. That has made me eager to learn more from being in the clinics.

The importance of clinical experiences for educating health professionals is hardly disputed. Normally its relevance is discussed in connection to longer periods of clinical placement where the effect on learning relates to participation in the social and cultural context of the profession (Cross, 1998; Turnock, Moran, Scammel, Mallik, & Mulholland, 2005). From a situated learning perspective (Lave & Wenger, 1991; Wenger, 1998), clinical placements and practice enhances socialisation to the profession and makes it possible for students to gradually grow into the role as physiotherapists. But even regular, short encounters with the "reality" from early on seemed to have such an impact. Opposed to full-time students, the part-time students lived – and were closer to the reality he/she was to practice within, and they might have started to build their identity as physiotherapists earlier. Another effect of having regular skills training in the clinics can be related to the quality of the learning experience with working with patients rather than with fellow students. In a study of skills training (Bergland et al., 1997) showed that fellow students soon became "objects to practice with", while patients meant managing and solving "real health problems". The latter made stronger imprints in body and mind, and enhanced memorization (op cit).

Reflection- on- experiences was used deliberately in the part-time program with a specific internet based tool: Physio-net[5], for improving the quality of learning from reflection. At two occasions the students filmed treatment sessions with their patients and analysed their own

practice by means of this tool. On the screen they had one window for looking at the film, in shorter and edited clips, and one window for writing up their text to explain what was happening in the particular clip. In the process of analysing their film, they got feedback from teachers in a third window, related to each sequence of the film. When finished they could publish their analysed film for fellow students if they felt their product was good enough and if necessary permissions were acquired. How did this assignment effect learning?

> R: I have to dwell on things, especially when analysing those films, but it is very useful to put down what you think, because all of a sudden I get thoughts that I really hadn't taken the time to think. The fact that you have to watch yourself over and over again, and apply your knowledge means that you are in a process of dialogue. That has helped a lot. Q: I was over the moon by this task. It is genious! What a way to learning! G: This is the assignment that I have learned most from. Learning in different stages; Plan a treatment, assess yourself while treating the patient, and underpin your choices. V: I spend a lot of time thinking: What is the problem here? What am I doing? What is the patient doing? It is incredibly powerful learning to watch your own manual skills and positions.

   The mechanisms in learning were probably attached to the particular format of reflection, which involved parallel processes of looking, writing and feedback. The capacity for reflection and high-order learning is widely acknowledged as an attribute of the reflective practitioner who engage in continuing professional development (Clouder et al., 2004; Donaghy et al., 2007; Higgs et al., 2004; Schön, 1995), and is most often connected to what is orally or written expressed. Video and text together is a format that so far is sparsely investigated, one exception is Engebretsen (2006). While writing in itself is a slow mode of reflection which underlines the dialogic nature of learning and affects the depth of understanding (Garrison & Anderson, 2003; Laurillard, 1993), the combined looking and writing takes more time and might imply even more dialogue and - deeper understanding. And because the students had to build the rationale for their actions and decisions upon what they actually saw, heard and felt, not upon what they remembered from that situation, the chance for critical reflection, rather than justification, was greater (Aars, 2007b), and the potential for high-order learning strong.
   Social and collaborative learning highlights the dialogic nature of learning even more than being engaged in individual processes of reflection. In the part-time program the students were given a lot of collaborative tasks and they participated in asynchronous discussions on voluntary and compulsory terms on net and in face-to-face discussions. They valued learning from each other:

> R: We have had many interesting discussions. The subject interests me, and because of all the discussions we had, I still remember a lot from year 1... Discussions and dialogues are very important to knowledge development; sitting by myself gives me no learning outcome. The written dialogues mediated by net have been very useful too. If we have a question, we can get answers from each other and from the teachers. I learned a lot from the others. When they contributed with their experiences from their praxis, it was really interesting B: Sometimes you don't really know what you don't know. It's not until you discussed with others that you clarify the questions you have ... and you

realise what your problem is, and what the solutions could be. Q: I think I lost a lot. If I had been more humble and dared to make contact, I .. But when you don't, you don't get anything either.

Both oral discussions and written asynchronous net-mediated discussions were regarded as important in learning, and the students acknowledged that they had to contribute to gain. They found that formulating questions stimulated finding answers and helped them in getting a deeper understanding of something and in relating new ideas and concepts to former knowledge and experiences. Bringing experiences from diverse clinical settings was found motivating learning-wise, and being a heterogeneous group can be an advantage in this respect, documented also in a study of nurses (Singleton, 2005). The need for communication and collaboration involved in the part-time program therefore, can improve generic skills as communication and collaboration, as well as improve high-order strategies of learning. To take the potential of high-order, collaborative learning to a fuller extent, we could have stimulated the students to form communities of collective knowledge construction, where the students build upon each other ideas systematically. According to for instance Scardamalia & Bereiter (2008) and Paavola et al (2005) the net provides a medium where this can be fully realised, due to the written format and the transparency of it. These possibilities will be investigated further in the future.

Let's now turn to a summarization of which key factors in design and pedagogical practice in the part-time program that could explain positive outcomes, what – if anything can be implemented into ordinary programs and how this might represent a challenge to the educational institutions.

6. Pedagogical implications

Due to the part-time program's structure and pedagogical design, the students had to navigate between the learning arenas, engage in self-directed learning, reveal their practice and knowledge and reflecting upon it, as well as to collaborate with others in order to fulfil the requirements of the program. In a situated learning perspective the dynamic interplay between learning arenas and the dialectic relationship between individual and collective processes are important aspects of what has contributed to learning, including the development of generic skills and high-order learning strategies. The points of entry for discussing pedagogical implications are: 1) that these skills and strategies are seen as positive attributes for health care workers for tomorrow, and 2) that it is the teacher's responsibility to create conditions for such attributes to develop.

The most important factors to influence students' learning were related to the curriculum being better founded in practice and more time. This gave room for more student-oriented forms of learning and more reflection that a traditional program normally offers. Integrating clinical experiences on a regular basis, with weekly skills training in the clinics throughout, and the use of reflection-on-practice by means of an ICT-tool, represent key factors for the positive findings which to some extent could be adopted into other contexts. While the ICT-tool easily could be used in a full-time program, putting clinical experiences up front like we did, seems more controversial. Less time at campus with more emphasize on clinical experiences and more time for self-studies could represent a conflicting point of view in an academic

discourse. With greater influence from the clinical field, the balance between academia and the professional field, between theoretical knowledge and practical knowledge is somewhat twisted. But rather than thinking in terms of conflict I find it useful to think in terms of reciprocal challenge, where the clinical field and the educational institution can serve as each others constructive critics. For instance we might not agree upon which competencies are needed for future physiotherapists and how to create conditions for these to develop, and discussion of these questions will necessarily touch upon professional issues regarding what is "best practice" and the development of the profession.

In a more clinical based education the roles of the teacher and the supervisor will change. The teacher has to be more of a facilitator for learning than a teacher who teaches. She/he has to focus even more on the creation of motivating learning activities and the stimulation of a supportive and safe learning climate. Learning objectives, learning activities, studying methods and assessment methods must be considered carefully and integrated into a dynamic and intellectually challenging learning ecology. Even if there might be a tendency that the students in a decentralised program form supportive relationships, it must also be a prime concern for the teacher. It seems to me that it is an advantage to follow the students throughout the education to be able to monitor their learning and engage in the creation of a responsive curriculum, which is adjusted to students' needs and perceptions, and teachers' judgements of how course objectives are met. That means that we have to organize the teacher's work more in terms of being responsible for the program as a whole, and less in terms of being responsible for particular subjects or particular years of the program, as it is most commonly practiced today.

The supervisors in the clinics on the other hand, will have an even stronger impact on the socialisation of the students to their future role as health care workers that they have now. Their responsibilities in educating students will be greater, and their values, beliefs, ethical standards and knowledge will influence more what students learn and how their professional identity is formed accordingly. This means that a more formalised pedagogical training of supervisors is needed, which again is a question about money and responsibility. All in all the implications of a shift towards a more practice-based education regard organisational, economical and professional issues, which need to be addressed and further discussed.

7. Conclusions

The data in this study is rather limited, being restricted to experiences from the first trial with a part-time, net supported decentralised program in physiotherapy only. Findings and discussions must therefore be regarded as tentative. More in depth studies of students learning within the particular design which emphasize practice in various ways and e-learning are needed before any conclusions can be drawn. But still there is reason to believe that the structure and pedagogical design of the program have some qualities worthwhile in educating health care workers for tomorrow, when it comes to self-directed learning, critical thinking and collaboration, and should be considered in planning curriculums in the future. One of the most important factors in developing the positive attributes and skills in students, is related to how clinical experiences and reflecting upon them in various ways, individually and collectively, were introduced and made central in the curriculum from early on. A change in that direction makes it necessary to look into the roles of the teacher and supervisor in

educating students, which not only has consequences for them respectively, but also generate discussions of a more general character regarding pedagogical and professional issues.

REFERENCES

Akre, V., & Ludvigsen, S. R. (1999): Hvordan læres medisinsk praksis? I K. Nielsen & S. Kvale (Eds.), *Mesterlære. Læring som sosial praksis*. Oslo: ad Notam Gyldendal.

Bergland, A., & Øien, I. (1997): Praksishandlinger og forståelse. I *Praksis - velferdsyrkenes kunnskapsgrunnlag?* Oslo: Tano Aschehoug.

Bliss, J., Light, P., & Säljö, R. (1999): *Learning sites : social and technological resources for learning*. Amsterdam: Pergamon.

Clouder, L., & Sellars, J. (2004): Reflective practice and clinical supervision: an interprofessional perspective. *Journal of Advanced Nursing, 46,*262-269.

Clouten, N., Homma, M., & Shimada, R. (2006): Clinical education and cultural diversity in physical therapy: Clinical performance of minority student physical therapists and the expectations of clinical instructors. *Physiotherapy Theory & Practice, 22*(1),1-15.

Cross, V. (1998): Begging to differ? Clinicians' and academics' views on desirable attributes for physiotherapy students on clinical placement. *Assessment & Evaluation in Higher Education, 23,*295-312.

Donaghy, M. E., & Morss, K. (2007): An evaluation of a framework for facilitating and assessing physiotherapy students' reflection on practice. *Physiotherapy Theory and Practice, 23*(2),83-94.

Dreier, O. (1999): Læring som endring av personlig deltakelse i sosiale kontekster. I K. Nielsen & S. Kvale (Eds.), *Mesterlære. Læring som sosial praksis*. Oslo: ad Notam Gyldendal.

Duffy, T. M., & Kirkley, J. R. (Eds.) (2004): *Learner-centered Theory and Practice in Distance Education. Cases from higher education*. Mahwah: Lawrence Erlbaum Associates.

Engebretsen, M. (2006): Making sense with multimedia. A text theoretical study of digital format integrating writing and video [Electronic Version]. *Seminar.net-International journal of media, technology and lifelong learning, 2*(1).

Garrison, D. R., & Anderson, T. (2003): *E-learning in the 21st century : a framework for research and practice*. London: RoutledgeFalmer.

Grepperud, G. (2007): *"Kunnskap skal styra rike og land ..." : livslang læring i høyere utdanning*. Oslo: Gyldendal akademisk.

Gunawardena, C. N. (2004): The Challenge of Designing Inquiry-Based Online Learning Environment: Theory into Practice. I T. M. Duffy & J. R. Kirkley (Eds.): *Learner-centered theory and practice in Distance Education*. New Jersey: Lawrence Erlbaum Associates.

Helleve, I. (2007): In an ICT-based teacher-education context: why was our group "the magic group"? *European Journal of Teacher Education, 30,*267-284.

Higgs, J., & Hunt, A. (1999): Preparing for the workplace: Fostering Generic Attributes *Journal of Allied Health, 28*(4),230-236..

Higgs, J., Richardson, B., & Abrandt Dahlgren, M. (2004): *Developing practice knowledge for health professionals*. Edinburgh: Butterworth-Heinemann.

Laurillard, D. (1993): *Rethinking University Teaching - a framework for the effective use of educational technology*. London: Routledge.

Lave, J., & Wenger, E. (1991): *Situated learning : legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lindquist, I. (2006): *Learning to be a physiotherapist*. Karolinska Institutet, Stockholm.

Mezirow, J. (2000): *Learning as transformation : critical perspectives on a theory in progress*. San Fransisco: Jossey-Bass.

Overbaugh, R. C., & Lin, S. Y. (2006): Student Characteristics, Sense of Community, and Cognitive Achievement in Web-based and Lab-based Learning Environments. *Journal of Research on Technology in Education, 39*(2),205-223.

Paavola, S., & Hakkarainen, K. (2005): The Knowledge Creation Metaphor - An Emergent Epistemological Approach to Learning. *Science & Education*, 535-557.

Richardson, B. (1999): Professional Development. *Physiotherapy*, 85(9),461-467.

Richardson, J. T. E. (2000): *Researching Student Learning. Approaches to Studying in Campus-based and Distance Education*. Buckingham: Open University Press.

Rye, S. A. (2008): Dimensions of flexibility - Students, communication technology and distributed education [Electronic Version]. *Seminar.net-International journal of media, technology and lifelong learning, 4*(1).

Scardamalia, M., & Bereiter, C. (Eds.) (2008): *Knowledge Building*. New York: Macmillan Reference.

Schön, D. A. (1995): *The reflective practitioner : how professionals think in action*. Aldershot: Arena.

Singleton, A. (2005): *A comparison of critical thinking skills for advanced practice nursing students in traditional and distance learning cohort formats*. University of Missouri-Columbia.

Solomon, P. (2005): Problem-based learning: A review of current issues relevant to physiotherapy education. *Physiotherapy Theory & Practice, 21*(1),27-49.

Turnock, C., Moran, P., Scammel, J., Mallik, M., & Mulholland, J. (2005): The preparation of practice educators: an overview of current practice in five healthcare disciplines. *Work Based Learning in Primary Care, 3*,218-235.

Wenger, E. (1998): *Communities of practice : learning, meaning, and identity*. Cambridge: Cambridge University Press.

Wibeck, V. (2000): *Fokusgrupper. Om fokuserande gruppintervjuer som undersökingsmetod*. Lund: Studentlitteratur.

Aars, M. (2007a): Utvikling og bruk av Fysio-nett - katalysator for faglig og pedagogisk nytenkning. I G. Myklebost & O. Skare (Eds.): *Om re-mediering av undervisning - og læring gjennom samarbeid: refleksjoner over prosjekterfaringer 2006*. Tromsø: Norgesuniversitetet.

Aars, M. (2007b): Å møte sin praksis - på nett. I M. Brekke & T. Tiller (Eds.): *Samklang. Nye læringsutfordringer i helsefaglig utdanning og yrke*. Kristiansand: Høyskoleforlaget.

Aars, M. (2008): Hva kan vi lære av forsøksprosjektet "desentralisert, nettstøttet fysioterapiutdanning på deltid"? I E. B. Jensen (Ed.): *Fra krisetiltak til suksesshistorier. Desentraliserte profesjonsutdanninger i Troms 1978-2008* . Stamsund: Orkana Forlag.

NOTER

1   Before taking responsibility for the part-time program, I had worked within our ordinary campus-based program for seven years.

2   These three part-time students were replaced by students from the full-time program.

3   For different reasons I had to complete the project by myself after the empirical material was gathered.

4   I have translated these from Norwegian, and some of the meaning might have been slightly distorted in that process.