



Facilitating practical knowledge by using ECT

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Abstract

*Practical skills constitute essential knowledge in occupational therapy. The knowledge is situation- and experience-based, generated from within the situation. In a particular program for educating Palestinian Occupational Therapists in Gaza, facilitating such knowledge proved to be difficult. Due to travel restrictions and an unstable political situation, teachers and students were separated. Educational communication technology (ECT) like videoconferences, internet and videos became new and necessary tools. This article is based on results from an action research project which followed the process of using flexible forms of learning and developing an internet based learning programme named Ergonet. The learning process of the students using it was examined with the aim of answering the following research question: **How can flexible forms of learning be developed and used to facilitate practical knowledge in Occupational Therapy education?** The development and implementation of Ergonet as a supporting device in students' learning of practical skills is described through the experience of the teachers involved. The results indicate how rote-learning and lack of reflective and critical thinking, firmly established among Palestinian students, have been challenged and changed by the didactic use of Ergonet.*

Keywords: Educational communication technology, practical knowledge, situated learning, reflection, problemsolving, critical reflection

Challenges in facilitating practical knowledge of Occupational Therapy students in Palestine

Isolated from education

The impetus for the development of this project was the situation of 10 students from Gaza who, due to Israeli travel restrictions, were physically isolated from teachers and students. Gaza, with a population of 1.5 million people, had no education and only one Occupational Therapist. The students had scholarships and were accepted at the Occupational Therapy (OT) program at Bethlehem University (BU), West Bank from 2003-2007. During these years their cause of "right to freedom of movement" was heard in the Israeli High Court several times without success (2007). Since travel restrictions also affected Palestinians from the West Bank, foreign

Occupational Therapist teachers, employed at BU, travelled to Gaza to teach the students from 2003-2005. However travel to Gaza became impossible when the situation deteriorated in 2006 due to the publication of cartoons of the prophet Mohammad in a Western newspaper, followed by the conflict between the political parties Fatah and Hamas in 2007 and the Israeli closure of Gaza. The students completed the entire 4-year program inside Gaza except for two weeks in each of the 6th, 7th and 8th semesters. During the total of 6 weeks teachers and students met for practical skills training and evaluation/exams in Egypt.

In this situation the use of alternative teaching tools such as video-conferences, internet and video had to be considered. These flexible forms of learning or educational technology (ECT) are defined by Garrison & Anderson (2003, p. 34) as: “those tools used in formal education practice to disseminate, illustrate, communicate, or immerse learners and teachers in activities purposively designed to include learning”. To support the process of changing the teaching strategies an action research was implemented, lasting from 2005-2007. I was the project coordinator and facilitated the research process combined with my work as an Occupational Therapist teacher in Norway. The participants were 3 Occupational Therapist teachers working at BU, originally from Palestine, Sweden and New Zealand. In addition to the political conflict and travel restrictions the teachers were concerned with how to deal with professional, pedagogical and cultural challenges in the process of facilitating practical knowledge in the education of the Gaza students.

Professional, pedagogical and cultural challenges

The main courses to facilitate practical knowledge in the Bachelor program are four courses in *Occupational Therapy Theory and Skills* and six *Clinical Fieldwork*, constituting 95 credits altogether. Lectures in occupational therapy (OT) theory are combined with skill training in the classroom. The teacher demonstrates assessment and treatment strategies for the students to practice. Students also watch demonstrations with clients. Supervised clinical fieldwork is most important. However the lack of clinical Occupational Therapists in Gaza to demonstrate and guide the learning process to facilitate practical knowledge presented a major challenge. Stimulating factual knowledge by internet and videoconferences on the other hand was obtainable.

In Palestine rote- learning and memorising is firmly established as the main learning strategy at all levels. The educational system is hierarchically built and the teachers are supposed to be experts. Evaluation and exams measure factual knowledge and the learners are expected to use surface approaches, like memorising, in learning (Blair & Randall, 2002). Because practical knowledge is situated and embodied (Alve, 2006; Merleau-Ponty, 1994), it can hardly be obtained by reading only. Deep approaches such as reflection and problem-solving are not emphasised and are therefore basically unfamiliar to the students. This often results in a “low-level engagement” (Biggs, 2003, p. 4) like passivity, teacher dependency, lack of creativity and problem-solving skills. The Gaza students impressed the teachers by correctly reciting factual knowledge, but they had problems transforming such knowledge into practical situations. For an Occupational Therapist the ability to adjust knowledge to different practical situations is a prerequisite, and the students’ lack of practical knowledge therefore represented a challenge to the teachers. They needed to find ways to facilitate active participation and deep approach learning activities (Biggs, 2003; Garrison & Anderson, 2003; Marton & Booth, 1997). Problem based learning (PBL) is acknowledged as a learning strategy that can enhance deep learning and stimulate students to become more practical (Biggs, 2003) which concurs with my experience as a teacher in Norway. However, due to the specific pedagogical conditions, introducing such a strategy was found too challenging for all participants, as well as

inappropriate for “imperialistic” reasons. We therefore had to find another strategy to meet the demands of teacher-student separation in facilitating practical knowledge.

This article aims to answer the research question: *How can flexible forms of learning be developed and used to facilitate practical knowledge in occupational therapy education?* The intention is to describe a process departing from a more traditional pedagogical learning perspective of “knowing that” to a more comprehensive and practical oriented perspective of “knowing how and knowing from within the situations” (Nortvedt & Grimen, 2004). In the article I will first present the theoretical perspectives applied on understanding practical knowledge and reflective learning and explain the research design and background for developing flexible form of learning, before results are presented and discussed.

Theoretical perspectives

Practical knowledge

Practical knowledge is “knowing-in-action” according to Molander (1996). It is grounded in the living tradition, founded on dialogue and participation. It originates from the questions to be answered and tasks to be completed within different human occupations. Practical knowledge is understood as a unit of different aspects of learning combining factual knowledge and practical skills together with cognitive, thinking skills such as problem-solving, including clinical and ethical reasoning (Creek, 2007; Creek & Lawson-Porter, 2007; Mattingly & Fleming, 1994; Polanyi, 1983).

Practice together with skilled Occupational Therapists is important for the professionalization process, developing professional skills, language and an Occupational Therapist identity. Lave & Wenger (1991) call this situated learning, and consider it crucial in learning practical skills. By observing several masters and by meeting many different patients, the acquisition of skills is learned in different practical contexts through observation, imitation and supervision. Critique towards apprenticeship learning may be that the quality of the staff determine the quality of learning.

If we examine the process of the students’ learning of skills, the Dreyfus brothers (1986) have a description of skill learning in a 5-stage hierarchy that seems highly relevant. Herbert Dreyfus (2001) expanded it to 7, including skill learning on the internet:

1. The novice learner learns a few, simple elements of a task by rules. Focus is on the technical performance and the learning is context free.
2. The advanced beginner uses rules learned from a practical situation in a specific context, but is not able to modify the rules to other situations.
3. The competent performer masters the rules, notices many different elements central in action and can reflect and evaluate his/her performance, but has problems finding better solutions.
4. The proficient performer has engagement, an overview of the situation and ability to reflect on her/his actions. The person has not enough experience to react automatically, but has to decide what to do by thinking through the rules.

Students rarely enter stage 5-7, referring to expertise, mastery and practical wisdom. The graduates can reach these stages by participating, reflecting on and taking the result to heart. Dreyfus asks critically if and how skills can be learned on the internet, because they presuppose involvement in situations

and embodied competence. Technology takes bodily engagement away. If the body cannot be a part of the learning process, relevance, skills and meaning will fade away (Dreyfus, 2001, p. 7).

Reflective and transformative learning

Reflection, problem-solving and critical reflection are important aspects of developing practical knowledge. Both teachers and students have to become reflective practitioners (Mattingly & Fleming, 1994; Schön, 1987). Reflection is the ability to assess, rethink and critically analyse experience (Nortvedt & Grimen, 2004). For reflection to develop, an environment of trust which accepts trial and failure, and also time as well as space to reflect, is necessary (Biggs, 2003; Creek & Lawson-Porter, 2007; Dreyfus, 2001; Lave & Wenger, 1991). The student's reflection before, in and after action is supported and supervised by the teacher and clinician. Their tasks are to demonstrate skills and supervise and challenge the students' knowledge (Schön, 1987).

Reflection is closely connected to critical thinking by questioning established practice, theory and research (Mezirow, 2000). An element of self-reflection is also important in order to develop sensitivity and a critical attitude towards how one's own values and attitudes affect relational situations (Goffman, 1959). By reflection, the ability to organise and structure thoughts, considering different views, getting new perspectives and constantly exploring other topics and possibilities are included, challenged and enhanced. These are challenging processes, constantly solving problems and questioning one's own attitudes (Bie, 2007). Mezirow (2000) claims that adult learning mostly is based on problem solving. Reflective actions and interaction are based on critical assessment of assumptions by stopping, reviewing and asking questions like: Was this the best action or should I have acted differently?

Whereas the scope of reflection regards the HOW in actions, the scope of critical reflection regards the WHY in actions (Pettersen in Grepperud, 2008). Critical reflections therefore go deeper than reflection, criticizing the foundation of our convictions, and include exploration of conscious and unconscious habitual expectations. When the learner is able through interpretation and analysis to create and find meaning in an experience, a transformative learning occurs related to Mezirow (1991). This demands creativity, initiative and hard work from both students and teachers. The teachers must be role models who facilitate discourses and reflections by constructively critiquing practice (Dreyfus, 2001; Garrison & Anderson, 2003).

In the program for the Occupational Therapist students we wanted to stimulate the development of practical knowledge and abilities in reflection by:

1. Practice and skill training, where the student has to practise different techniques used in assessment and therapy, like teaching a stroke patient to transfer independently from bed to wheelchair.
2. Discussion of and reflection on how to use techniques, thereby explaining in professional terms what is happening. This process includes mental actions in framing problems and working out the best solutions using clinical and ethical reasoning, reflection and analysis.
3. Personal performance in practice. This builds on the OT tradition and is strongly influenced by Occupational Therapist masters, memories, and the stories told, thus creating a professional identity.

Because of the special circumstances for the BU students we needed to develop learning tools regardless of geographical barriers. Video was seen as a medium suited for capturing the essence of practical knowledge, and action research as

a research method capable of dealing with cultural and pedagogical challenges to systematically support and explore the change process.

Research Method

Action research is a strategy which aims at solving problems, acknowledged by a partnership of practitioners and researchers and (at) enhancing knowledge amongst them, as well as generating knowledge related to the processes of change (McNiff, Lomax, & Whitehead, 2003). Action research today includes a wide range of practices where one major difference regards how active the stakeholders are in the research (Furu, 2007). There is a strong bond between researcher and participants which could compromise the analytical and critical stance of the research, and may constitute a reduced validity of a study, according to critics of the research strategy. Levin and Greenwood's (2007, p. 3) definition of action research is relevant to this project:

Action Research is a social research carried out by a team that encompasses a professional action researcher and the members of an organisation, community or network (stakeholders) who are seeking to improve the participant's situation. Action Research promotes broad participations in the research process and support action leading to a more sustainable, or satisfying situation for the stakeholders.

As teachers involved in the education of Gaza students in different ways, our task was to improve the facilitation of practical knowledge in a learning environment where teachers and students had very limited opportunities for direct contact and had quite different assumptions regarding learning. We saw the need for developing flexible forms of learning in general and the creation of an internet tool which could mediate videos in particular. We therefore formed a research team, consisting of 3 female Occupational Therapist teachers working at BU, from New Zealand (NZ), Palestine (P) and Sweden (S) (left midway), and myself. The teachers were familiar with the culture and had experience from clinical work in Palestine and in teaching the Occupational Therapist students both in Bethlehem and Gaza. They did all the teaching, grading and evaluation of the students. My role was to act as a practical facilitator, cooperating with - and supporting the teachers to define their own problems, plan strategies for changes, and to reflect together with the stakeholders on the changes caused by their actions. As action research is a two-sided process, there are actions going on, not only to produce new knowledge, but also to contribute to improvement in the field studied by active participation from the researcher (Kalleberg, 1996). One very important result of the process was the development of Ergonet, an internet-based tool which mediates videos and texts, which was implemented into the OT education in various ways. The leader of the OT programme (NZ) was responsible for the professional development of Ergonet, while I was responsible for design and technological support.

The reflecting circle, developed by Kemmis and Carr (1986), has guided the process of change in facilitating practical knowledge in the Occupational Therapist students. The circle represents the spinning process of planning, action, observation and reflection, a strategy used to monitor the process and intervene together with the teachers in order to improve teaching by using ECT.

The systematic collecting of information, analysis and documentation in the research process was my responsibility. Mixed methods (Greene & Caracelli, 1997) like fieldwork, individual and group interviews, e-mails and the text and videos in Ergonet, were used to collect data. The project lasted from 2005-2007 following the 4th - 8th semester of the OT program. Table 1 gives an

overview and timeline of the two parallel processes: The action using flexible forms of learning and the methods used in the research process were:

Year	Semester	Actions using flexible forms of learning /ECT				Research methods			
		Evaluation videos	Education videos	Developing Ergonet	Implementing Ergonet	Evaluation videos	Education videos	Developing Ergonet	Implementing Ergonet
2005	spring	x		x		x	x		
	fall	x	x	x		x	x	x	
2006	spring	x	x	x		x	x	x	
	fall	x		x		x	x	x	NZ, P, S
2007	spring			x	x		x	x	NZ & P
	fall			x	x		x	x	NZ & P P, NZ

Table 1: Used flexible forms of learning and research methods.

The analysis of the data was done in different phases. The first consisted of sharing reflections and knowledge within the group of teachers; an inside reflection. Further analysis and interpretation in view of theoretical perspectives was mostly done by me after the project was finished (Jentoft, 2009); an outside reflection necessary for creating a distance from the material.

In the following I will discuss the impact the actions had on facilitating practical knowledge in teaching. I will present the result of four “actions” where video was used in teaching for both on-campus and off-campus students:

- Videotaped evaluation of BU and Gaza students after a skill training course.
- Video demonstrating practical transfer skills used for stroke patients made and distributed to all the students on a DVD for practising on their own.
- Development of Ergonet with video sequences, analysed and integrated with a knowledge base
- Implementation of Ergonet in teaching the Gaza students in their final year of study.

Results in action

Evaluating students’ practical skills by video

During the first skill training courses in Egypt the teacher was impressed by the Gaza students’ ability to explain their practical knowledge related to medical conditions, OT assessment and intervention, but as she said: “They did not manage to transform their knowledge into a practical situation” (S). The students showed a lack of embodied knowledge. “They were very hard-handed on each other... you know, not having a grip that is convenient”. The teacher related this to cultural bias: “They are not that used to touching each other”. She recommended that the students practise skills on their own in Gaza which is appropriate when being on the first level of the Dreyfus hierarchy; learning of basic skills in a specific context. The techniques are concrete and recipe based.

Eight months later their skills had not improved to the expected level. It was obvious that they did not manage to practise skills on their own. Another teacher exemplifies this, referring from her experience of role-playing a “patient” without language who needed help during a transfer between bed and wheelchair due to paresis.

Some of them were giving some commands that I could not respond to. A couple used **totally** inappropriate techniques. They were moving me inappropriately. They did not put the brakes on the wheelchair when they were transporting me, and I fell down on the floor. They rolled me off the bed. They... were supposed to get me up but had no idea whatsoever and it became a big argument (NZ).

The students had not even learned the basic rules in stage 1 (Dreyfus et al., 1986), and it was obvious that the knowledge wasn't characterized by familiarity with the environment or incorporated bodily (Alve, 2006; Merleau-Ponty, 1994). This could be due to a socially insecure environment, insufficient learning strategies, the lack of teachers and the absence of Occupational Therapists to stimulate apprenticeship learning. The teachers also experienced that the students had problems in accepting feedback. They decided to try video to enhance the students' abilities in reflection, problem solving and critical reflection.

After the practical skill course both Gaza and BU students had a videotaped exam where they demonstrated their skills with teachers and actors playing “stroke patients”. When they were asked to evaluate their own performance, at least 85% of both groups graded themselves A. The students became very upset when the teachers' grading was lower. “There was a lot of arguing about why they did not get the best grade. I felt like I was getting nowhere, like I was banging my head against the wall” (S). The students' reactions could be related to the concept of honour, with personal and cultural significance, and important to self-perception in the Middle East. “They do not differentiate between doing a critical evaluation in order to learn something from it, and presenting themselves well” (NZ). Because the trial and fail methods are important in acquiring practical knowledge, this attitude constituted a learning barrier. The learner needs to recognise feelings, thoughts and experience by reflecting both in-action and on-action, both on the content and the process. Because of their cultural values, a change in this direction would represent a learning change of transformative character:

I think for Palestinians in general. It is more acceptable in this society for the therapist to be an expert. Looking at what you have done wrong is not something that is kind of inbuilt, because as a therapist, you do not do too much wrong. This is a much stronger mentality in Gaza than it is on the West bank. So it is very difficult for them to make that kind of shift. It is quite difficult for them to criticise each other honestly (NZ).

Since none of the teachers' arguments led to critical reflection, they decided to watch and evaluate the videotaped exam together with the students. When they did this something new evolved. “Then! Then, they could see for themselves. Then they could actually become more self-critical too” (S). Another teacher said: “When we showed them the video, they were able to see why they got the grades they did. They used the feedback that they got and worked very hard” (NZ). Watching and discussing the videos opened their eyes, provoked self-reflection abilities, and made them able to see themselves from an outside perspective. In Berger and Luckmann's (1967) terms, self-reflection is called a *mirror response* to the attitude of the other, a way of reflecting on personal behaviour in encounters with patients. By using the video, the students could study their interaction with another person and

become aware of how their values and attitudes affected the situations. Seeing themselves on the video and reflecting together with teachers brought about an important change and facilitated critical thinking. It became a transformative learning change (Mezirow, 2000). But facilitating practical knowledge still represented a challenge and the teachers decided to make videos to demonstrate clinical skills.

Demonstrating transfer skills by video – enhancing practical knowledge

A very instructive transfer videotape was made, visualising different techniques used by the experienced Occupational Therapist when instructing stroke patients to transfer independently and manage personal activities of daily living. The students got a copy of the video, and could watch it over and over, to try to copy the actions, and practise them until they mastered them. The teacher experienced that the video helped the students to increase their observational skills and become more focused. It made it easier for them to understand, reflect and discuss techniques (in the video.) When the BU students got the opportunity to take the exam again there was a dramatic improvement in their grades. “We would never have come this far without the video” (P). It gave the students an option for repetition and master learning in a specific context (Dreyfus et al., 1986).

In the next practical exam the “clients” had spinal cord injury problems, which represent other challenges than stroke patients. Different knowledge and therapeutic strategies were needed to support clients with spinal cord injury to transfer. But the students came into the room, read the instruction and went straight to the client and used the same transfer techniques they had learned from the video. “They were just flashing in their head and bringing up a picture of the transfer video” (NZ). They had learned it “the traditional Palestinian way” (P). The teachers had to reassess the way of using the demonstration video:

There is a disadvantage in that because they kind of rote-learn it. This has not occurred to me before I sat and watched them actually doing it, because they do not do that. We need to use it in a different kind of way. I think we have to emphasise the problem-solving when we are teaching them (NZ).

The students had learned rules to manage transfer techniques in one context, but they had not learned to modify the rules to new contexts and different problems. Their competence did not exceed the level of advanced beginners (Dreyfus et al., 1986). In this example the apprenticeship learning through video facilitated traditional memorising strategies, something which was insufficient to meet different kinds of transfer problems. The teachers had to provide learning material where the students could experience the importance of adjusting the technique to the context. Obviously neither evaluation nor demonstration videos were sufficient to do this. In other words, if the students were to reach the third level of Dreyfus’s skills hierarchy, they must be challenged to take a leap from a surface- to a deep approach in the learning of practical competence (Biggs, 2003; Marton & Booth, 1997). How could this be stimulated in the Gaza students whose learning context was without Occupational Therapist clinicians to supervise them? The following section describes the development of the internet-based tool Ergonet as the next action that was taken to facilitate practical knowledge and a deep-surface learning strategy.

Developing Ergonet to facilitate practical knowledge

The aim in developing Ergonet was to visualise OT practice and Occupational Therapist reasoning and practical knowledge. In the Ergonet developing process the teachers' experience from the practical skill courses became valuable input. Videos were made where professional Occupational Therapists handled different clinical situations. Their practice was visualised, as well as described, analysed and discussed, which made their practice and its underpinning rationale open to reflection and critical examination.

Ergonet was developed as a knowledge reservoir to present practical and theoretical competence in experienced clinicians and teachers in different ways. To enter Ergonet a password is needed. After an introductory text (fig.2), the students can choose learning activities from 6 options. In the following I will describe and discuss the development of two of the options: the knowledge base and (video) analysis. They represent the two most valuable learning resources in stimulating practical knowledge and deep approach learning strategies.

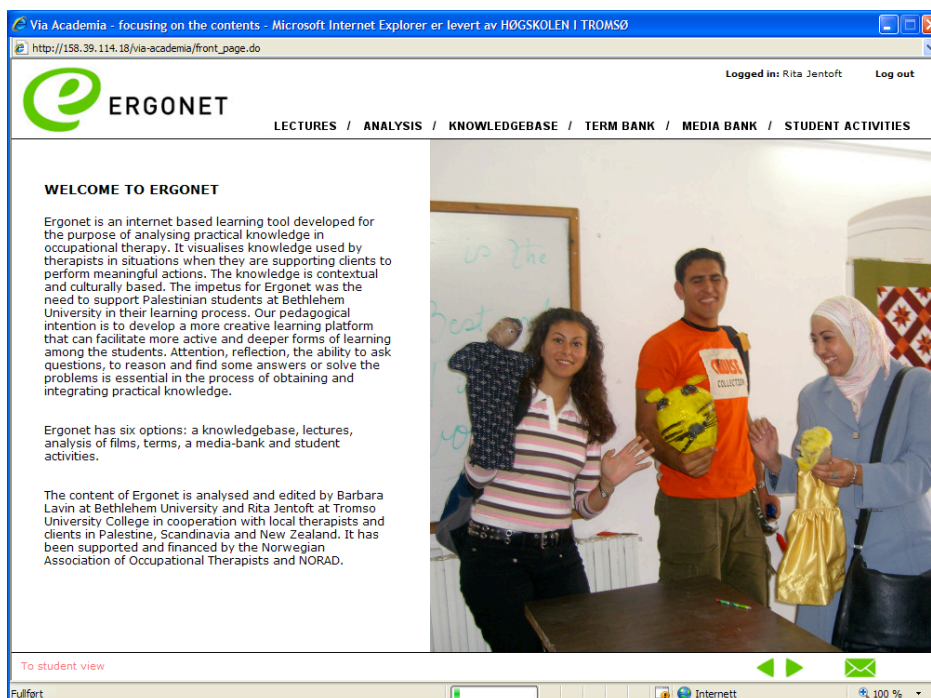


Figure 2: The introduction page.

Developing the knowledge base

We started constructing the knowledge base (fig.3) with key concepts presenting OT in accordance with the Palestinian culture and context. Practical skills include awareness of how cultural aspects affect therapeutic values, attitudes and activities. This is important to counterbalance the influence of textbooks written by western Occupational Therapists. Comparing and reflecting on Occupational Therapists' practice in different cultures and context can sensitise students' own cultural values and attitudes. Our native cultural style is embodied and pervasive which makes it almost invisible to us. Therefore it helps us to contrast our style with other cultural styles and compare how it is learned (Bourdieu, 1992; Bourdieu & Nice, 1990; Dreyfus, 2001). The knowledge base describes factual and experience-based knowledge in a more reflecting way than in textbooks. It provides links to websites and

references that expand the topics. The base hierarchy presents knowledge related to three main professional areas: Environment, Occupational Therapist and Client. Each area is divided into nodes. Environment has three nodes: institutional, socio-cultural and physical. The physical environment is further divided into sub-nodes like natural spaces (fig.4) and built spaces (fig.5).

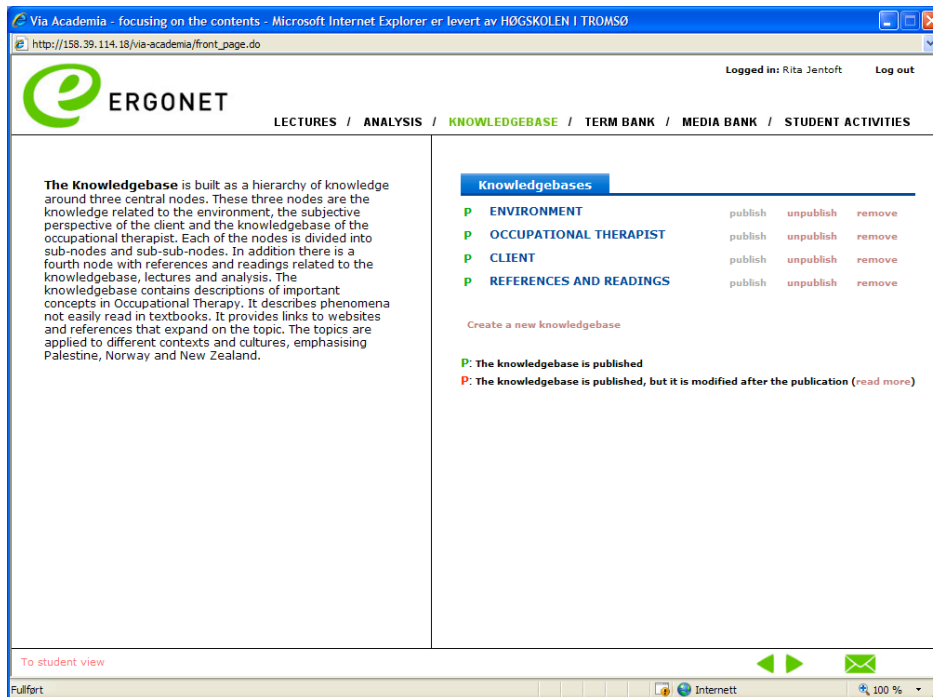


Figure 3: The knowledge base.

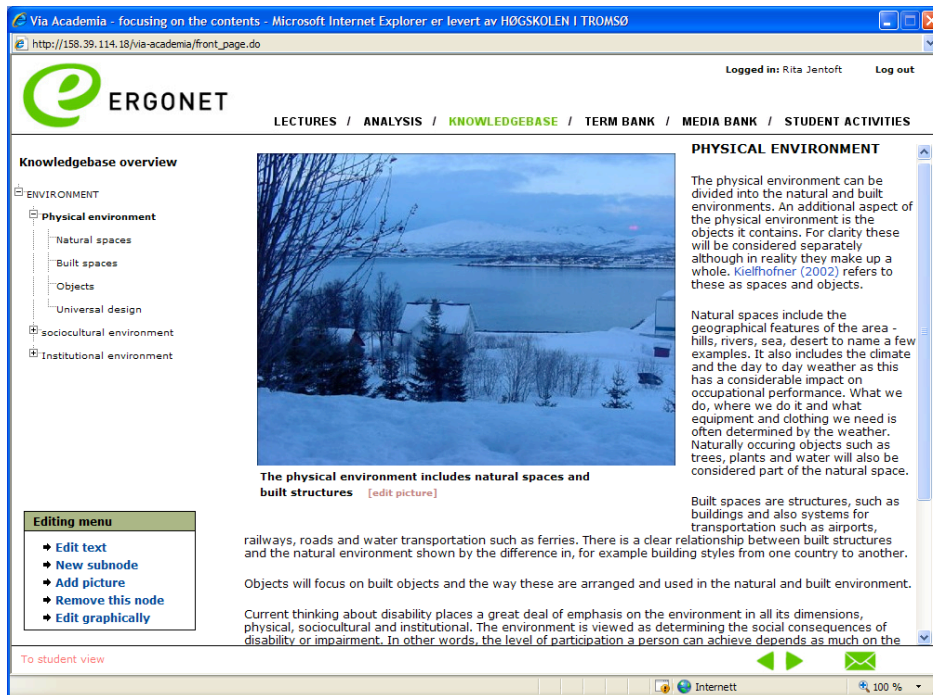


Figure 4: Physical environment in the knowledge base.

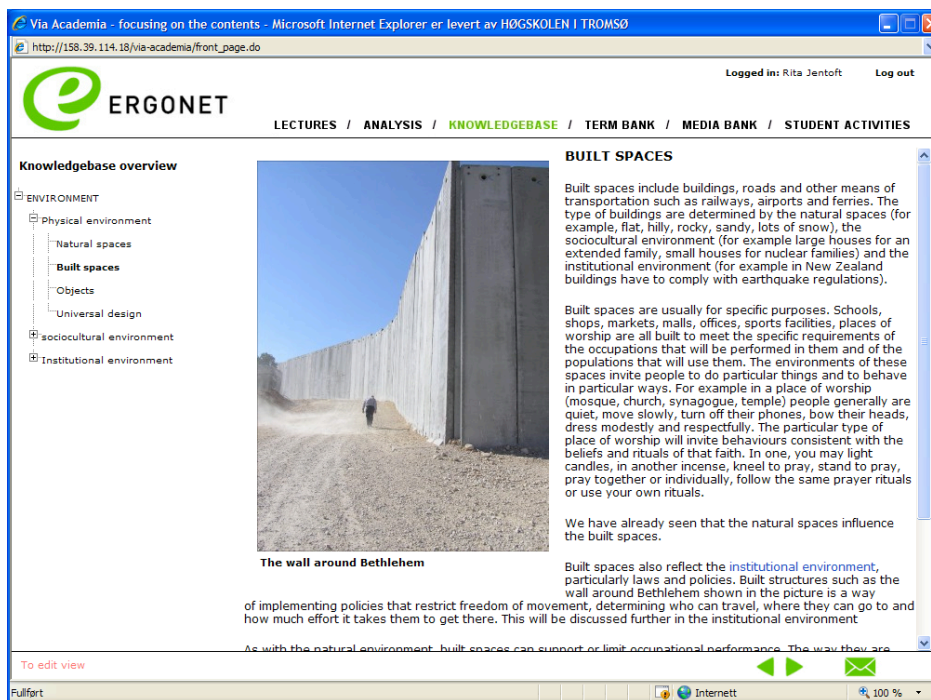


Figure 5: Built spaces in the knowledge base.

Initially we decided on the key concepts and the hierarchical organisation of them in Ergonet. Choosing concepts and structuring OT knowledge was a difficult but interesting and stimulating process, full of challenges. Because we had to be accurate with reference to expert clinicians, articles, books and internet, the work was time consuming. During this process we became aware that we followed the typical way of learning in the Western world today: first learning the concepts and later how they can be implemented to guide practice (Hermansen, 2006; Molander, 1996). We had a transformative learning experience and decided to turn our strategy upside down: “Developing the knowledge base is through the videos rather than the other way around” (NZ).

Making and analysing videos

To meet the needs of the Gaza students and criteria of the curriculum, clinical videos presenting OT assessment and intervention for children and adults with neurological diseases were our first priority. Occupational Therapists and the teachers presented clinical situations with patients (or actors) in institutions, society and in their homes. The videos were made in three different languages: English, Arabic and Norwegian (English sub-text). They were edited and divided into short clips with text (fig.6). The text combines descriptions, analyses and reflections on attitudes, skills and knowledge needed in the clinical situation at hand. Photos and central concepts from the knowledge base were hyperlinked into, and could be opened in, the text. The green coloured word “doing” is linked to the term bank, a dictionary with a description of the word that can be opened directly (fig.7). The blue words “compensatory approach” are linked to the knowledge base for more detailed information (Fig.7). Fig. 6, 7 presents videos and analysis of two of nine sequences from a gross motor assessment. Ahmad is 10 years old, lives in an institution and suffers from spastic Cerebral Paresis. For ethical reasons there is no picture visible.

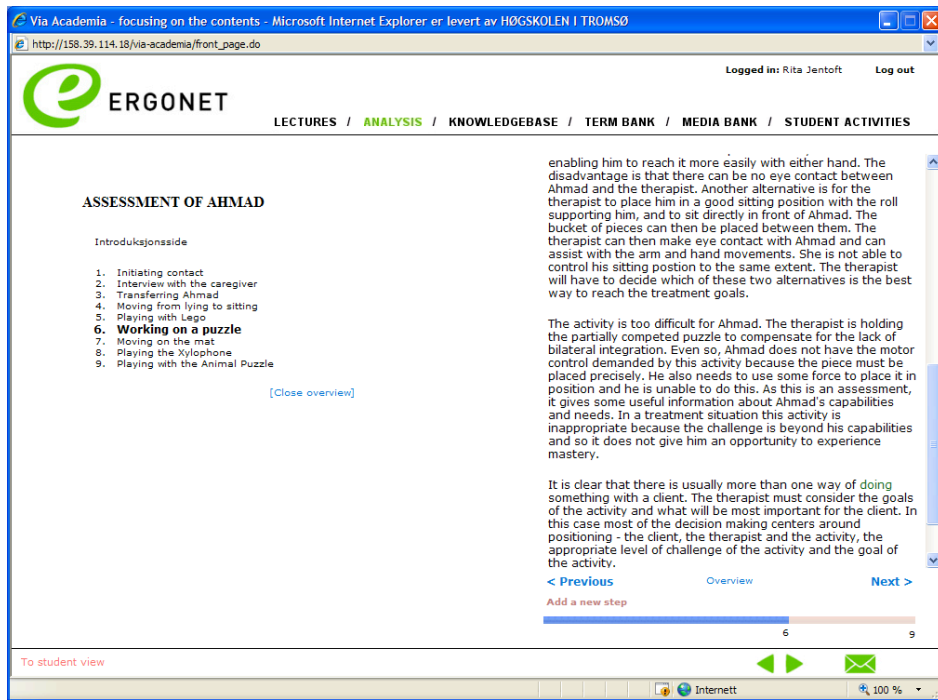


Figure 6: Overview of video sequences and text from the Assessment of Ahmad in analysis.

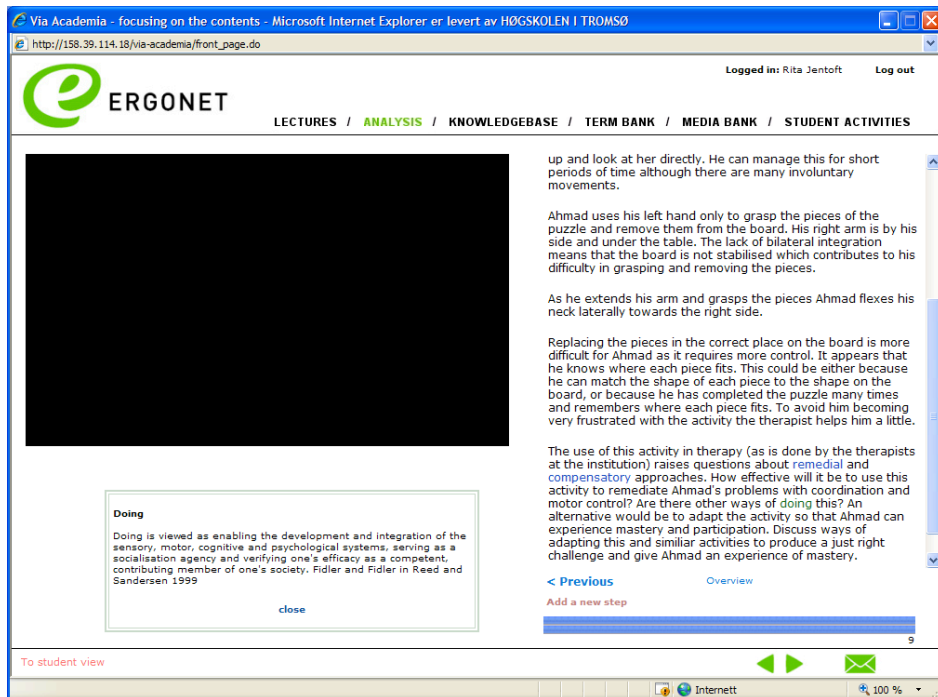


Figure 7: The combination of film and text with concepts hyperlinked from the knowledge base and terms.

The teacher's analyses of the videos were based on an interview with the therapist combined with her own knowledge and factual knowledge from books and articles. In making an analysis the teacher watched the video several times to find the main issues which were later analysed step by step, to make OT knowledge more open (fig.6). In principle the videos can be analysed

over and over again by different Occupational Therapists. It will never be completed because praxis can not be captured by words only. When words come to an end only praxis is left. There is always something more hidden (Wittgenstein, 1967).

Being involved in the production of videos was a learning process for the Occupational Therapists. "Seeing ourselves in the video helps us to reflect more critically and next time make changes"(P). For instance major cultural differences in handling children with cerebral palsy were discovered when the situations were compared. The Norwegian therapist worried after the assessment whether she had interfered too much in the situation, while the Palestinian therapist talked and interfered continually through the assessment. The differences were obvious to both of them, and contributed to reflection also among students and teachers about therapeutic attitudes and cultural differences in upbringing and the belief in physical and verbal stimulation as motivational cues to initiate action. This serves as an example of how videos can be used to enhance more consciousness about how culture shapes behaviour by comparing different cultures (Dreyfus, 2001).

In the texts following the clinical videos the teachers critically questioned their own performance. It was unfamiliar to the students that teachers and/or clinicians could question or criticise themselves. "They think I think about myself as perfect"(S) in the text. Rather than aiming at "perfection", the critical reflection opened up new perspectives, something which was considered to be the most important learning approach. Could the teachers' own transformative learning experience from making and analysing videos in Ergonet be helpful to facilitate practical knowledge and enhance reflection, problem solving and critical reflection among the Gaza students?

Implementing Ergonet in teaching

The students got access to Ergonet in the 8th semester. Their first assignment was to plan and videotape a clinical assessment situation with children in Gaza. The teachers evaluated their videos and gave them detailed feedback needed for their next assignment; to plan and videotape OT intervention with the same child. These videos were meant to be the main pedagogical tool on the last trip to Egypt. Unfortunately Egyptian restrictions only allowed half the group to cross the checkpoint.

The students had to analyse 5 minutes of the intervention video using Ergonet as "role model". The first exploration of Ergonet's possibilities was done at an internet café, not an ideal place for learning, but the only access to internet. The students did not seem familiar with Ergonet, indicating that using it on their own was not successful. The teacher decided to explore the two films of the children with cerebral palsy with the Palestinian and Norwegian Occupational Therapist. The objective was to discuss the films and the accompanying text, facilitating reflection, critical reflection and problem solving. "This was very helpful for them, to a certain level"(P).

But even with teachers' additional detailed feedback, the students were still unsuccessful in making their own analysis in an analytical way. "They did a two-page written description saying that the therapist did this, and the child did that. They thought this was a waste of time, they had already done this"(NZ). Because the intervention videos did not reach the therapeutic standard expected and most of the analyses were superficial and descriptive, the teachers had to realise that: "Some of them completely misdiagnosed the problem and did not pick up important aspects (NZ). They started working in the classroom with the cases most obvious misdiagnosed. In the beginning the students defended themselves as usual. "When we started it was like this "no, no, no, no"(P). When the teachers stopped the video and gave concrete

examples, a change happened. “It really was not before we were in the classroom, and presented their analyses, that they could see the difference between the way they were thinking and the way we were thinking and looking”(NZ). The teacher noticed changes in the students’ self-reflection and problem-solving strategies. The students started to pay attention and ask questions: “Was this the right thing to do at the moment? How can I do this differently? What kind of things do I need to change for the client to be more functional, to have fewer functional problems? Yes, I think it was very helpful”(P). Critical reflection and problem solving were initiated.

The transformative learning change in the students is related to several factors. Being able to watch the videos and analyses repeatedly and getting written feedback from the teachers related to their own videos was helpful, but not enough. Most important for change was analysing their own intervention videos together with the teachers. The videos represented a sort of mirror for their own embodied and situated practice, which became a source of learning where they could stop and look into sequences. Research shows that students become more reflective when making their own videos (Aars, 2006) and that learning becomes more flexible, personal and active compared to using educational videos, role plays and workshops (Ramirez Martinel, 2009). The teacher was pleased with the end result: “There was a total change in some of their analyses, in their result and in the skills they demonstrated with the client”(P).

The process of change in the development and pedagogical use of flexible forms of learning, from videotaped evaluations and demonstrations to the construction of Ergonet with possibilities of visualising professional knowledge as well as discussing students’ own practical knowledge, was probably successful because of the action research approach which enhanced the process. In the project group we took time to stop and reflect, evaluate and discuss the relationships between students’ learning and their own actions as teachers, and to plan other actions to stimulate their abilities in practical problem-solving and reflection. At the stage we arrived at at the end of the project period, the students had to make their own clinical videos and analyse them in terms of factual and experienced-based knowledge.

Our own way to deal with the construction of Ergonet, from describing theoretical concepts to beginning with practice, actually proceeded in a similar way when the pedagogical use of Ergonet was developed. We first tried out Ergonet with the focus on copying and discussing masters’ competence in OT, but found that the teacher – student discussions of students’ own work made a much stronger impact on the learning of critical reflection. Clark (2001) claims that the important key to success for distance students is participation in active learning. Only active interaction is a significant indicator of an online student’s perception of his/her learning.

All of the Gaza students graduated in December 2007 with only 8 months delay. Under extreme conditions they had impressively managed to obtain the knowledge and practical skills acceptable to perform professional occupational therapy. Some of the students managed to enter stage 4 of the Dreyfus hierarchy and became competent practioners. “They are looking at several perspectives. They are looking at how to assess these people to have better quality of life... So it is a total shift”(NZ). They managed to reflect on their performance and how they could do things differently. Their ability for critical reflection and problem-solving increased and transformative learning occurred.

Conclusion

In an action research strategy different forms of flexible learning were tried out over a period of 3 years to make up for the distance between students and

teachers in facilitating practical knowledge and close the gap between theory and practice in a group of Palestinian students. Most of the time was spent in developing the content and pedagogical use of Ergonet. This period represented a journey of learning for all participants involved; practitioners, teachers and students. Today Ergonet contains clinical videos analysed with texts from several masters' perspectives, and central concepts in OT, highlighting Palestinian culture. The students and teachers highly value Ergonet. Working on the development of Ergonet motivated the teachers in a difficult and unpredictable situation with a high workload. It helped them to become more structured and professional in their work, developing their critical and reflective teaching. "It was a very big challenge, but it has been one of the very most enriching experiences in my professional life"(P).

Facilitating practical knowledge in the students from a great distance was not surprisingly found to be difficult. Access to videos and Ergonet which structured and visualised OT practice presented and analysed by masters seemed to narrow students' perspectives. We failed to recognize the importance of contextual aspects in learning and that masters' knowledge does not necessarily facilitate problem-solving and critical reflection. "You cannot just send the students off to use it"(NZ). By using Ergonet as "role model" for the students when they analysed their own practice on the other hand seemed far more successful when it comes to stimulating practical knowledge and critical reflection. Then the transformative learning came about, and made the students capable of choosing the best professional and ethical actions for a particular client and discussing how environment and occupations can influence a client's occupational performance, recovery and health.

For professional reasons, not technical, we chose a content management program as the basis for Ergonet. Through the process we also developed the software program to suit our pedagogical needs. To me it seems that Ergonet has high pedagogical potentials, and we hope to develop it further to support education and get users around the world. The action research is finished, the Gaza students graduated, but Occupational Therapists in New Zealand, Palestine and Norway are still cooperating and developing Ergonet.

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