

ICT-Based Software as a Supervision Tool in Nursing Students' Clinical Training

Sari Mettiäinen, Anna-Liisa Karjalainen
Tampere University of Applied Sciences
Tampere, Finland
sari.mettiainen@tamk.fi,
anna-liisa.karjalainen@tamk.fi

Abstract—The paper describes nursing students' opinions on how a mobile application and a web-based reporting tool could act as a supervision method during their clinical training. In a Finnish university of applied sciences we selected software called eTaitava to our piloting project. The aim of the project was to find out about the possibility to establish a new supervising method to teaching by using information and communication technology. Lecturers can use this software in supervising and supporting nursing students' learning process. The empirical study was made by a survey in May 2010. All in all 430 students have used this method and been sent a web-based questionnaire. 112 of them answered the survey, which consisted of 33 questions. According to the findings, two thirds of the students thought that answering almost daily to the questions sent by eTaitava was useful for their learning process, including setting of objectives, daily activities, self-assessment and cognitive reflection. They felt it easy and fast to use by computer, only 9 % used it by mobile phone. The first feedback showed that the information and communication technology-based method is a useful and effective way to supervise learning in nursing education. It is worth developing this idea further.

Keywords—*eLearning; mobile application; nursing; clinical training; supervision*

I. INTRODUCTION

In this paper, we describe the results of our pilot project which started with the support of EU-funding and where we tested the possibility to use ICT, or indeed mobile technology in nursing students' clinical training. The software we used was called eTaitava [1].

The ICT-based computer and mobile program could provide an active supervision method for lecturers to supervise many students at the same time. Via such a helpful tool it could be possible for the lecturer to be aware of many students' clinical learning process during the whole training period.

Clinical training is an important part of nursing education in all EU countries. In Finland there are long distances to the clinics and lecturers have lack of time for

supervision. Travelling to the hospitals to meet students, which is the traditional method to supervise students, takes quite a lot of time. Therefore, new methods are needed.

The purpose of the empirical study was to find out nursing students' opinions on how ICT-based software like eTaitava could act as a supervision tool. The studied questions were how the students experienced its use as a tool for reporting their learning process, their feelings and experiences as learners and what kind of significance eTaitava had for their learning process during the clinical training.

We describe first clinical training supervision in nursing education, related use of eTaitava program and its features. Then we present a case study on student views and its findings. The Conclusion part presents a short summary on implementation of our development project, the case study, the most significant findings and further development challenges.

II. SUPERVISION OF CLINICAL TRAINING

Nursing education in Finland comprises 210 ECTS (European Credit Transfer System) Credits. Of these, 75 credits (50 weeks) are performed in clinical sites in hospitals or other health care organizations. In universities of applied sciences training is always supervised by a senior lecturer and a training supervisor. Students have to plan individual objectives for the clinical training period based on theory and the curriculum. The objectives are approved by the senior lecturer at the university of applied sciences and the named supervisor at the clinic. At the end of the clinical training, the student, the lecturer and the training supervisor evaluate together how the student achieved his or her objectives.

The aim of the supervision is to support the students' learning process towards professional growth. Due to the underlying cognitive approach, the aim is to help students to analyse the learnt contents. Supervision is most successful when the relationship between the supervisor and the student is active [2]. The relationship between the nursing student and the supervisor has been the topic of many studies [3], but innovative ICT-based methods have been overlooked.

III. ICT-BASED SOFTWARE ETAITAVA

We utilized software called eTaitava in students' training supervision. It has been developed in Finland for vocational school students' training periods. eTaitava is a multimedia reflection and feedback tool on mobile phones and personal computers. It connects learners, teachers and workplace mentors in on-the-job training environments. Its strength lies in its capability to provide all parties involved with continuous and immediate feedback on the learning progress of trainees [4, 5].

The teacher constructs questions through the eTaitava web-based user interface to map the student's learning experiences and learning progress. The questions are saved and set to be sent on certain days. The daily questions can be either open ended questions or statements formulated e.g. as follows: "I have the basic knowledge of medical diseases" and the student can answer the questions e.g. on a scale of 1-5 (fully disagree – fully agree) or "I have practised giving medical injections" and the answering scale could be 1-5 (not at all - very much). The teacher can formulate diverse series of questions for different clinical training periods.

Students can answer the questions using either a computer or a mobile phone. In order to use a mobile phone for answering, eTaitava client has to be downloaded to the phone. The use of mobile phone requires a colour screen and a data connection [4]. To use the software by computer only requires an Internet connection. The software is hosted by Wellworks Oy.

The teacher constructs similar series of questions for the supervisors as for the students. The supervisors respond to the questions once a week by computer and thus participate in evaluating the students' learning progress.

The answers are saved to the database of the eTaitava program, where the teacher can easily see the individual answers and group-specific summaries by means of graphs. The teacher can in real time follow students' learning during the clinical training [4].

Pirttiäho *et al.* [5] have described in more detail the technical features of the program in their paper. Paalanen [6] has studied the first pilot-group who used eTaitava. Those 46 vocational school students were studying forestry, travel services, catering etc. According to the survey eTaitava was considered clear and simple. 71% of the respondents reckoned that answering by mobile phone was pleasing. The attitude towards eTaitava and its use was found positive and only 4% of the respondents did not want to use eTaitava in the future. eTaitava has since been introduced in approximately 30 educational institutions in Finland.

IV. CASE STUDY

eTaitava software has been in use with Finnish nursing students at Tampere University of Applied Sciences since autumn 2009 by suggestion of the authors. It has been in use during surgical, medical, preoperative, public health nursing and basic nursing training periods. The training periods consist of 3–7 weeks depending on the substance area (Table 1).

TABLE 1. CLINICAL TRAINING PERIODS DURING WHICH THE STUDENT RESPONDENTS USED ETAITAVA

<i>Clinical Training Period</i>	<i>Weeks</i>	<i>Number of Students</i>	<i>Number of Teachers</i>	<i>Number of Supervisors</i>
Basics of Nursing	4	27	2	-
Medical Nursing	4	17	4	6
Surgical Nursing	4	6	2	-
Perioperative Nursing	7	22	2	4
Public Health Nursing	3	51	4	-
Home Care	3	53	4	-

Before a training period, students usually have an orientation hour during which they are told about the clinical training objectives and taught to use eTaitava by the authors of this paper, who have taken care of the whole implementation process of eTaitava. The students are invited to answer the questions every day after their shift on the ward.

In all 430 students, 15 lecturers and 10 training supervisors had used eTaitava until spring 2010 when this data was collected. Use of the program has been expanded gradually and supervisors from two special fields only participated in the project when the questionnaire was carried out (Table 1).

All the students were sent a link to the survey by email. They were told that the aim of the survey was to evaluate a new way of supervising training periods by utilizing ICT technology. The students were told that answering the survey was voluntary and they were able to answer anonymously. The survey consisted of 26 structural quizzes, 6 of them concerned background information and 7 were open ended questions.

Qualitative data of the open ended questions was analysed by using thematic analysis and categorization. The analysis was conducted according to a three-step inductive process based on the data [7]. The data was reduced by identification. After that, similar data was categorised. Quantitative data of the structural quizzes was analysed

using frequency distributions, and the results were described using percentage distributions.

V. FINDINGS

A. Information on respondents

112 students answered the survey; the response rate was 26 %. Most of the students who have answered the questionnaires, have used eTaitava in three-weeks training period of public health nursing or in clinical training in home care (Table 1).

83 % of the respondents were 20–25 years old and 95 % of them were female. 94 % of the students who answered the survey had positive attitude towards using information and communication technologies in education.

B. Answering and using eTaitava software

79 % of the students answered the questions almost every day during their training period. 15 % of them answered 3–4 times a week and rest of them once or twice a week. The most important reason for not answering every day was that students did not remember to do it. For 5 % of the students the reason was that they did not consider eTaitava as a sensible method.

9 % of the participants answered the questions via mobile phone, and thus most of the students answered via computer. Students were asked why they did not use mobile phone to answer the questions. The most important reasons were data communication costs and the fact that they felt it was easy to answer by computer. All the answers are described in Table 2.

TABLE 2. REASONS GIVEN BY STUDENTS FOR WHY THEY DID NOT USE MOBILE PHONE TO ANSWER THE QUESTIONS

Reason	Number of Mentions
Costs which I should pay	21
It is so easy with the computer which I use daily	20
It was not possible with my phone	19
I did not consider it necessary	15
I do not use internet by mobile phone	8
Loading of the program would have been too difficult	6
I do not want to use my phone for school assignments	5
It is too difficult and slow to use it by phone	5

If the student answered that it was not possible with his/her phone, the reasons were: small screen, too little memory, the phone is iPhone, into which it cannot be loaded, or the phone does not support the software.

The students were asked whether they preferred to use eTaitava via mobile phone if it was cheaper. More than half of them disagreed (Table 3).

TABLE 3. STUDENTS' (N=112) VIEWS ON USING MOBILE PHONE FOR ANSWERING THE QUESTIONS IF USE WAS CHEAPER

Answer	%
Yes	13
Maybe	23
No	46
I cannot say	18

68 % of the respondents reported that it took 5 minutes to answer the questions. Rest of the students estimated they used 10–15 minutes to answer the questions. 83 % of the respondents thought it was easy and rest of them answered it was quite easy to use eTaitava.

C. Opinions on questions and their significance for learning process

The questions used on eTaitava were similar in different weeks. The students were asked what they thought about that. Half of them (46 %) reported they understand that it offers a useful way to follow their development process but 13 % of them did not understand the idea of repeated questions (Table 4.)

TABLE 4. STUDENTS' (N=112) OPINIONS ON THE QUESTIONS BEING SIMILAR IN DIFFERENT WEEKS

Answer	%
I understand it offers a useful way to follow my development process	46
I do not mind even if similar questions repeat week after week	9
I think it is boring to answer same questions repeatedly	32
I do not understand why same questions are asked every day	13

Students were asked what they thought about the content of the questions. Half of them (49 %) estimated them well designed, 12 % estimated them too difficult, 24 % too easy and 15 % thought they were boring.

Students were asked whether the questions supervised their activities on the ward. 8 % of them estimated “quite a lot”, 56 % “somehow” and 36 % “not at all”. The open ended questions asked the students how eTaitava supervised their activities on the ward and what was the significance of eTaitava for their learning process. This question was answered by 53 students.

According to the answers, eTaitava helped the students to construct their learning objectives and update them. They become more aware of what they should learn.

“Helped to understand what should be practised and what should be paid more attention to during the clinical training.”

On the basis of the answers, eTaitava supervised students' work and helped them to pay their attention to the things asked. Answering also reminded of the objectives during the whole clinical training.

"I maybe did some things more frequently as eTaitava reminded of them weekly."

"encouraged to patient contact etc."

eTaitava was also an encouraging factor. It encouraged students to practise even things that were not in their own objectives.

"It gave a buzz to my clinical training as it brought out the development needs"

"I noticed that there was something I had not done at all, and I had not even thought that it could be done"

Answering eTaitava questions also helped students to evaluate their learning experiences and their competence development. It also showed what the student had to practise more.

"It mainly helped to analyse my own learning and clinical training as a whole."

"Guided thinking and evaluation of clinical training...usefulness"

Answering eTaitava questions helped students to think about matters both more independently and with their supervisor.

"And answering the questions and giving vent to my feelings probably helped as I only met the teacher for a couple of times and did not much talk about the clinical training matters to others."

"answering the questions made me think what had happened during the day"

eTaitava questions also helped students to become aware of some matters.

"I more considered the meaning of the work community"

"have you given feedback to your supervisor' made me understand that it can also be done."

According to these themes we can say that the significance of the continuous ICT-based supervision tool for learning during clinical training is that it can

1. supervise students to create better learning objectives
2. supervise students' daily training activities
3. help students in self-assessment
4. inspire students' cognitive learning process.

69 % of the students who answered the questionnaire, saw some benefit of it. 55 % of them reported that eTaitava was somehow useful and 14 % clearly useful for their learning process (Table 5). 74 % of the students thought

eTaitava would be useful if the lecturer only met them in the final evaluation meeting on the ward.

TABLE 5. STUDENTS' PERSPECTIVES ON USEFULNESS OF ETAITAVA

Answer	%
It was clearly useful, I knew what I should learn	14
It was somehow useful	55
It was not useful for me	32

30 % answered "yes" to the question "Are you willing to use eTaitava in future?", 45 % "maybe" and 25 % "no".

The students gave many useful ideas and feedback on how to develop the questions which are sent by eTaitava in such a way that they could support students' learning process even better.

VI. CONCLUSION

With the traditional method, lecturers met students maybe once or twice during a clinical training period. Via the ICT-based program the lecturers were able to follow and supervise students' learning process step by step. The challenge for the lecturers is to create right and appropriate questions for different training periods.

eTaitava was introduced in Tampere University of Applied Sciences in autumn 2009. During the first academic year, it was used by a total of 430 students, who were sent a questionnaire in May 2010 in order to map their experiences on the program. 26 % of them answered the questionnaire. The low response rate may have been influenced by the fact that more than six months had gone since some students had used the eTaitava program and some students had already started their summer holiday. Due to the low response rate, the findings cannot be generalised, but they however provide valuable information for further development and research on training supervision.

Two thirds of the students who have answered the questionnaires thought eTaitava was useful for their learning process. It supervised students in creating better learning objectives and in their daily training activities. It helped students in self-assessment and inspired students' cognitive learning process.

75 % of the respondents were willing to use eTaitava in future. It was surprising that so few students were willing to use mobile phone to answer the questions. 91 % of the students used eTaitava by computer and only 36 % thought it could be sensible to use it by phone in future. Answering the questions via computer was experienced easy and it took about 5 minutes a day. These findings differ from the findings of Paalanen [6], where 71 % of the respondents felt the mobile phone was a good way to report their experiences. If students use computer daily, they maybe think they do not need other methods to answer. On the other hand, when students do not have experiences of mobile use of eTaitava, they have not found the benefit

which it maybe could offer. We believe that in a few years web-based use of mobile devices increases considerably and thus enables increase in using mobile devices also in studies. That is the topic which should be studied in future.

Most teachers who participated in the pilot project experienced the program useful, which was manifested in discussions with them. The responses showed which of the students needed personal supervision. The teachers also considered it was easy to use the program but it took time to follow it weekly. Efficient utilization of reports thus also calls for learning.

As project coordinators we consider it important to integrate the program to a learning environment used in the educational institution, such as Moodle. In this case, separate user identifications would not be needed for the program. Otherwise, usability of the program is good.

We have also used web-based discussion in clinical training supervision with some groups. Activation of students to discuss is sometimes difficult, but if it succeeds, web-based discussion is a workable method. It was easier to activate students to use eTaitava, almost all students used it several times every week.

The purpose of this study was not to investigate features of the eTaitava software but its benefits for learning. This pilot study yielded results that were particularly encouraging, indicating that the project is worth further development. Anyway, attention should be paid to the software features,

such as user-friendliness, in program introduction. We believe this can be a useful supervision method in all fields of education.

REFERENCES

- [1] Quality and transparency for on-the-job learning. Wellworks Oy. <http://mobiilioppiminen.files.wordpress.com/2011/01/etaitava.pdf> 20.01.2011
- [2] R. Vuorinen, R. Meretoja, and E. Eriksson. "Contents, prerequisites and effects of supervised clinical training in nursing. A systematic review.", *Hoitotiede*, Vol 17, No. 5, pp. 270-281. 2005.
- [3] B. Lindgren, C. Brulin, K. Holmlund, and E. Athlin. "Nursing students' perception of group supervision during clinical training", *Journal of Clinical Nursing*, Vol 7, No. 4, pp 822-829, 2005.
- [4] eTaitava. Ao Jyväskylä Vocational Institute. http://www.peda.net/img/portal/664066/eTaitava_en.swf?cs=1164287053 15.01.2011.
- [5] P. Pirttiäho, J.-M. Holm, H. Paalanen, and T. Thorström. eTaitava – Mobile Tool for On-the-Job-Learning. 2007. http://www.iadis.net/dl/final_uploads/200706C036.pdf.
- [6] H. Paalanen. User acceptance in eTaitava mobile service. Pro gradu -työ (Master's thesis), in preparation. Department of Computer Science and Information Systems, Faculty of Information Technology, University of Jyväskylä, Finland. 2007.
- [7] M.B. Miles and A.M. Huberman. *Qualitative data analysis* (2nd edition), Sage, California. 1994.