

# E-Learning in Hospitals: A Project with Young Adult Patients

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**Abstract:** Long-term hospital patients with severe chronic illnesses are likely to suffer from being isolated from their everyday lives. Thus, learning activities that go beyond illness related issues might ease the reintegration upon discharge. Hospital patients are restricted in their time-space coordinates and might hence benefit from the flexibility of e-learning. This article presents the evaluation of a job orientation course for young adult patients suffering from brain cancer and other severe illnesses. The course was offered in the scope of the European project *eHospital*. Evaluation instruments were questionnaires for patients and trainers, interviews with the hospital staff, a focus group discussion with the project consortium, and expert ratings of the online materials. The results indicated high satisfaction of the participants and good learning outcomes. Impeding factors were the organizational and technical conditions in the hospital and insufficient IT skills of the patients.

## E-Learning in Hospital

Patients who are forced to spend long periods of time at hospitals due to severe chronic illnesses are likely to suffer from being isolated from their everyday lives. The daily hospital routine occupies a large proportion of the patients' time. The patients have to undergo several treatments and therapies; however, there is also plenty of unstructured time for the patients to fill.

Although hospitals offer various therapies related to the patients' illness, especially for adult patients, learning activities that go beyond illness related issues are mostly lacking. Hardly any specific e-learning activities for adult patients can be found. Sporadic web-based resources for adult patients concentrate on therapy and health related issues and aim to provide patients with information regarding their respective diseases and support aftercare upon hospital discharge (see e.g. the Nurse Diane portal)<sup>1</sup>. In contrast, classes for children in hospital are common and many educational activities in hospital using e-learning methods can be found (see e.g. the Ait Eile Project in Dublin, Ireland; the Mundo de Estrellas Project in Spain; the Mater Hospital Special School in Queensland, Australia; the Governmental Hospital School in Munich, Germany; or the Virtual Classroom: Learning at the Bedside, Germany).

Yet, also for adult patients, a preoccupation with issues beyond their illness might improve the recovery process and ease the reintegration process after discharge from hospitals. In this specific educational context, e-learning can have a great potential. Hospital patients are restricted in their time-space coordinates and might therefore benefit from the flexibility of e-learning. The use of online communication tools might facilitate joint learning activities with peers and hence foster social integration.

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<sup>1</sup> All URLs are provided in the References.

## The E-Hospital Project

The *eHospital* project is a trans-national pilot project co-funded by the European Commission (see the project website <http://ehospital-project.net>). The overall aim of the project is to promote e-learning activities for adult patients in hospitals in order to

- give the patients access to life-long learning opportunities while in hospital,
- provide them with an educational reference environment for the acquisition of knowledge and skills, for personal development, and social integration,
- ease their return to employment, learning, and society in general, and thus
- support the process of convalescence.

The project is implemented from 2005 to 2008 by a consortium of six partners from five countries, i.e., Austria, France, Germany, Spain, Poland, and Switzerland. Each partner cooperates with one or more hospitals in their respective country. The specific e-learning courses in the cooperating hospitals were developed on the basis of different groups of patients' needs. For example, the following courses were developed:

- Computer and Internet for patients suffering from Alzheimer's disease,
- Online communication for patients suffering from spinal cord injuries,
- Job orientation for young adult patients suffering from brain cancer and other severe diseases,
- Foreign languages by listening to fairy tales for patients suffering from lung diseases, and
- Personal web-publishing and ePortfolio for patients suffering from burn out.

The e-learning courses are offered in a blended learning format combining e-learning with face-to-face meetings. The evaluation of the entire *eHospital* project comprised the evaluation of all local courses. This paper focuses on the evaluation of the course *Job Orientation for Young Adult Patients*.

## Job Orientation for Young Adult Patients

The course, offered in the Vienna General Hospital in Austria, is designed to support young adult patients between the ages 15 to 20 to (re-)enter educational or professional pursuits after a prolonged period of disruption due to severe illness. The aim is to help the young patients to become acquainted with the job market and to foster their job-related self-confidence. The target group are long-term patients with one of the following health problems: brain tumour, metabolic disorders, heart diseases, or kidney diseases (dialysis). The patients are a very heterogeneous group with differing medical and psychological needs.

As the treatment in hospital can take up to one year, including periods of day treatment, job orientation is an important topic to help the patients to become familiar with the job market upon leaving the hospital. As face-to-face units are critically important for the target group, the course was offered in a blended learning format. Due to organizational reasons, the face-to-face units were scheduled as bilateral meetings between the learner and the tutor. The online learning management system *Dokeos* provided additional materials, exercises, tasks, and communication possibilities to connect the patients with the tutor and peers and to facilitate flexibility on the time-space coordinates of learning. Virtual communication was intensified by using web cams and VoIP.

## Evaluation Objectives

The evaluation of the course focused on the following aspects:

- (1) the patients' satisfaction with the course,
- (2) the patients' learning outcomes,
- (3) the personal benefit to the patients,
- (4) the support by the trainers,
- (5) the quality of the course's contents, and
- (6) supporting and impeding hospital conditions.

Furthermore, as potential influence factors, the motivation for participation and the expectations toward the course were assessed before taking part in the course. Experience with using a computer, the Internet, and with e-learning were also assessed.

## Evaluation Instruments

To answer the evaluation questions, a combination of various instruments was used. Patients' questionnaires before and after the course were combined with an interview with the hospital psychologist, and a focus group discussion of the project consortium at an international project meeting. Furthermore, a list of criteria was used to assess the quality of the online materials on the learning platform. In the following, the instruments are discussed in detail.

The patients' satisfaction with the course, the learning outcomes, and the benefit to the patients were evaluated by using questionnaires that contained both closed and open questions. The questions assessed whether the course met the needs of the patients, whether they enjoyed taking part in the course, and whether and how they benefited from the course. The learning outcomes were assessed both by the learners themselves and by trainers' questionnaires. Furthermore, the benefits to the patients were addressed in an interview with the hospital psychologist.

The evaluation of the quality of the course focused the following criteria:

- Meeting participants at their level of understanding
- Transparency of goals
- Clarity of the structure of the e-learning materials
- Adequacy of the schedule (face-to-face and online units)
- Utilization of activities and online communication tools
- Support by the trainers
- Quality of e-learning materials

Therefore, patients' questionnaires, provided after termination of the course, were used. The utilization of activities was additionally assessed by the trainers' questionnaires. The quality of the e-learning materials was evaluated by external e-learning experts using a list of criteria. The criteria related to usability and design (navigation, layout, and structure), multimedia and graphic elements, and online activities offered to the participants. Each criterion was assessed by several questions using four point scales and dichotomous answers (yes/no). Additionally, the reasons for the given ratings were entered in an open text box. In order to guarantee valid results, the ratings were done by two independent raters and the percentage of conformance was calculated. When the results did not conform, the raters validated the results by discussing the reasons for the given rating.

The evaluation of hospital conditions that might support or impede e-learning focused on technical and organizational aspects. Evaluation instruments were trainer questionnaires provided after termination of the course, a focus group discussion of the *eHospital* project consortium involved in the cooperation with the hospitals, and an interview with the responsible hospital staff.

In addition, the patients' reason for participation, their motivation and expectations to the course were assessed in the run-up by a brief questionnaire completed by the patients.

## Analysis of the Data

The results of the questionnaires were analyzed by descriptive statistical methods using SPSS for the data analysis. The focus group discussion of the project consortium was recorded and analyzed by the relevant information directly from the audio tape. Additionally, the evaluator took notes during the discussion. The interview with the hospital staff was analyzed directly from the tape in regards to the relevant information. As the entire evaluation of the *eHospital* project comprised several national sub-projects and thus faced different languages, translations of interview transcripts of all interviews would have exceeded the budget for the evaluation.

## Evaluation Results

### Participants

During the period of delivery from November 2006 to April 2007, 18 young adults participated in the course. Out of the 18 participants, four dropped out, mainly due to health reasons. In total, 13 participants completed the

patients' questionnaire at the end of the course. The participants were aged 14 to 20 years; the average age was 17.4 years ( $S=2.14$ ). Six participants were male (46.2%) and seven were female (53.8%).

Nearly all of the participants had no prior experience with e-learning (9 out of 12 who responded to the question). Also, 41.7 percent of the participants had no prior experience with using the internet. The other participants had some experience with using the internet, one third of the participants indicated that they had a lot of experience. Regarding experience with using a computer, one third of the participants indicated that they had no prior experience, 25 percent had some experiences, and 41.7 percent were very experienced.

### **Expectations of Participants and Reason for Participation**

The expectations to the course and the motivation of the patients were quite high. On a five point rating scale (5 being the highest value), most of the patients expected to learn a lot, averaging 4.1 ( $S=1.0$ ); only one participant had negative expectations. Also, the majority of the participants expected the course to be fun with a mean of 3.8 ( $S=1.4$ ); however, there were three patients who responded negatively. The answers to the question whether the patients expect learning in hospital to be a good idea diverged and the mean was 3.5 ( $S=1.3$ ). Out of a total of 17 answers to the question, five individuals had negative expectations in this respect.

The most frequently indicated reason for participation was *suggestion of the hospital staff* (66.7%), followed by *gain new knowledge/skills* (55.6%), and *interest in topic* (50.0%); 38.9 percent of the participants indicated that they were encouraged by their families or friends and one third of the participants (33.3%) wanted to do something useful while in hospital.

### **Satisfaction, Learning Outcomes, and Benefit to the Patients**

In average, the participants were quite satisfied with the course. All participants responded positively to the questions whether the course met their needs ( $M=4.1$ ;  $S=.67$ )<sup>2</sup> and whether they enjoyed taking part in the course ( $M=4.2$ ;  $S=.73$ ).

All patients rated their own learning outcomes positively; the mean was 3.6 ( $S=.50$ ). Also, the trainers were quite satisfied with the patients' learning progress. Despite extreme health challenges, e.g. neurological deficits after brain surgery, more than three quarters of the participants completed the course with positive results.

Most of the patients indicated that they benefited from the course substantially ( $M=3.9$ ,  $S=.76$ ). Only one participant responded negatively to this question. The patients noted the following benefits<sup>3</sup>:

- gained new knowledge and skills
- fun and distraction from health problems
- gained concrete job orientation for myself

The responsible hospital psychologist also pointed out the benefit of the course and indicated that the course could have a great value for the patients, assuming that the organizational and technical conditions in hospital could support the implementation of the course.

### **Quality of the Course's Contents**

All of the criteria rated by the participants revealed positive results, i.e. the comprehensibility ( $M=3.9$ ;  $S=.49$ ), the transparency of the goals ( $M=3.2$ ;  $S=1.17$ ), the clarity of the structure of the e-learning materials ( $M=3.5$ ;  $S=.66$ ), and the adequacy of the schedule ( $M=3.6$ ;  $S=.75$ ).

The online discussion possibilities of the platform were rarely used. The trainers indicated that it was very difficult to engage the participants in online communication with their distance tutor and peers. Yet, the patients often utilized the possibility of online tutoring. Synchronous communication via web cams and VoIP fostered the relationship between the tutor and the patient and intensified the communication. The participants indicated that they benefited substantially from the tasks that they were required to complete ( $M=4.0$ ;  $S=.42$ ). Also, benefits from the multimedia elements provided on the platform (mainly videos) were rated positively with a mean of 3.3 ( $S=.95$ ).

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<sup>2</sup> All ratings were done on five point rating scales, 5 being the highest value

<sup>3</sup> The open answers were classified into categories

The evaluation of the e-learning materials by two external raters suggested some improvements. The evaluation of navigation, structure, and course layout was determined to be inadequate; the usability of the employed folder structure that contains files provided for download was evaluated to be not ideal for fostering self-directed learning. For this purpose, the raters proposed to replace the folder structure by a module structure. With a few exceptions, the quality of the multimedia elements was rated to be very good. Regarding online activities, no instructions for tasks or quizzes were available on the platform. The opportunity for asynchronous online communication was provided; however, the patients very rarely used the asynchronous discussion forums. Instead, synchronous communication via VoIP and web cams was used frequently. The correspondence of the two independent raters was high with 85.7 percent (12 of 14 ratings).

### **Supporting and Impeding Conditions for E-Learning in Hospital** *Organizational Aspects*

The results of the focus group discussion of the *eHospital* project consortium, the trainers' questionnaires, and the interview with the hospital staff pointed to difficulties with regard to organizational aspects and communication. The main contact person in the Austrian sub-project was the hospital psychologist. The recruitment of participants was done by the team of psychologists that were in close contact to the patients. The psychologists had initial conversations with the patients regarding the e-learning course and established the contact to the trainers.

Due to a lacking formal contract with the hospital management, the communication and cooperation with the hospital was difficult. However, the contact person was a substantial "bottleneck" that impeded the communication with the management and contact to the head of the psychological department was difficult to establish. Out of five hospital wards involved, only one made efforts on their own to recruit patients. Generally, the communication was very slow. Furthermore, due to the rigid hierarchy of the hospital, several organizational issues were challenging (e.g. technical equipment and assignment of patients). Hence, the project members pointed out that a formal agreement with the hospital management would be an important factor in order to support the commitment of the hospital and ease communication processes within such a large hospital. The project partners involved in the cooperation with the hospital also agreed that a two level communication system would improve the process: first, the official contact with the management and second, one or two persons that have more time and support the patients regarding their participation in the course.

Another challenging aspect was the hospital routine. The patients are admitted and discharged, i.e. periods of hospitalization alternate with day-care treatment and home care (e.g. chemotherapy patients). The interview with the hospital psychologist also pointed out that the daily hospital routine and acute medical conditions requiring immediate attention made it difficult to establish a structure for the participants.

Regarding the organization of the schedule, the trainers had to adapt the course to the individual needs of the patients. Moreover, the patients started the course at different times. Thus, much flexibility of the trainers regarding time and space was needed.

### *Technical Aspects*

The trainers' questionnaire, the focus group discussion, and the interview with the hospital staff pointed to difficulties in the technical infrastructure of the hospital. In the beginning, Internet access was not available in all wards and applications like Skype were not allowed. Also, the availability of adequate hardware (laptops) was not always given. However, these problems were solved.

The *Dokeos* platform was adequate for the target group. It was chosen due to its simple structure and ease of handling and the patients managed to use it; however, the handling of the platform was still challenging for many learners and a technical coaching was necessary. In the scope of the consortium meeting, the project partners concluded that both the technical infrastructure and the lacking IT skills of the patients are critical issues that have to be taken into account carefully when delivering e-learning courses in hospital.

## Conclusions

E-learning activities in hospital face many challenges. Patients suffering from severe illnesses have specific needs and require much support and individual coaching. Lacking IT skills also are a challenge that has to be carefully taken into account when implementing an e-learning course. Furthermore, organizational and technical conditions in hospitals often impede the implementation of e-learning. Rigid hierarchies and rules in hospitals, the daily hospital routine, and acute health conditions requiring immediate attention, are all aspects that make the implementation of learning activities difficult.

The goal of the course *Job Orientation for Young Adult Patients* was to support the patients in their educational or professional pursuits following a long period of disruption due to severe illnesses. Despite unfavourable organizational and technical conditions in the hospital and extreme health challenges for several patients, the results of the evaluation clearly indicated that the course was beneficial for most of the young adults. The participants indicated that the course met their needs, that they benefited from the course, and that they gained new knowledge and skills. The hospital psychologist also pointed to the benefit of the course and indicated that the course could be even more beneficial to the patients, provided that the organizational and technical conditions in the hospital would entail better support for the implementation of the course.

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