Impact of Lifelong E-learning

Evidence and Guidance

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Abstract. This paper deals with lifelong learning. Based on a three-year case study it provides evidence of innovations in this area. The paper aims to add to the body of work in blended learning by providing evidence of knowledge, persuasion, decision, implementation, and confirmation of learning innovations. In particular, the paper provides guidance for future development.

1 Introduction

An innovation is considered to be an idea, a practice, or an object that is perceived as new by individuals or other units of adoption [1]. What matters is the *perceived* newness. Lifelong learning and blended e-learning – the topics of this paper – are relatively new to many individuals. Currently, many individuals are learning to deal with this innovation. For example, they experience a process of development with interrelated education, training, work and retirement (Figure 1).

Moreover, many individuals experience that focus is increasingly shifting from the content to be learned to the definition of competencies to be acquired [2]. Many people thus have to learn to identify their need for competencies in a lifelong perspective.

In addition, they experience that face-to-face education is completed by self-directed learning in a three-way interaction among participants, tutors, and a technology cluster. The cluster being the third partner can be defined as some distinguishable elements of technology that are perceived as being closely interrelated [1]. For example, a frequently-used e-learning cluster encompasses e-mail, learning management systems, and web-based materials.

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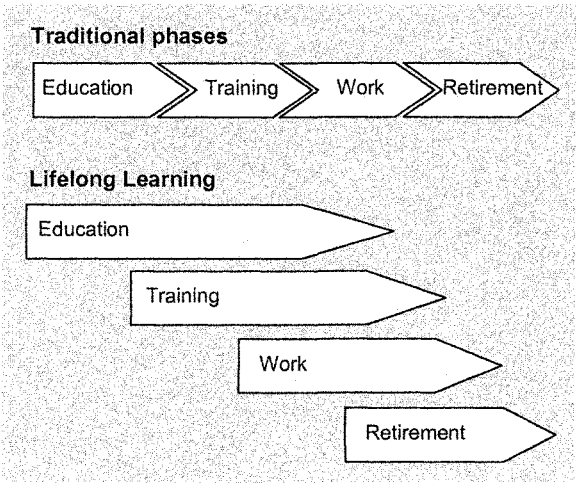

Figure 1. Lifelong learning [3].

This paper gives an account of a case study concerning a three-way partnership of face-to-face, self-directed learning and technology cluster (blended e-learning) in the field of occupational health, which has long been one of the three Danish in-service educations most in demand [4].

The study had the following main stages:

1. Designing and conducting an exploratory case study concerning innovative pilot courses;
2. Analyzing the pilot study evidence and developing the recommendations and implications;
3. Designing and conducting an impact case study;
4. Analyzing the impact case study evidence and developing the conclusions and final recommendations.

2 The Role of the Change Agent

At first, the study examines the crucial role of change agents. The notion of *change agent* is defined as an individual or decision-making unit that influences innovative decisions in a direction deemed desirable by this agent [1]. In this case, a change agent, the Labour Markets Bureau of Service, provided learning objectives, i.e. competencies to be acquired by the participants, and e-resources including learning materials. In addition, the change agent coached the course providers.

This coaching occurred over time and consisted of a series of different events. To begin with, a handful – out of the more than one hundred – of course providers decided to implement the blended-learning approach.

The decision-making process these course providers used included the following stages: knowledge, persuasion, decision, implementation, and confirmation.

Knowledge was created when the course providers were exposed to the existence of the innovation and gained an understanding of how it functions. Initially, the change agent provided knowledge about the new concept. This included the course flow, i.e. the mixed organisation of face-to-face seminars and self-directed learning using web-based course materials and a learning management system.

Persuasion occurred when the course providers formed a favourable attitude towards the innovation. For example, the course providers asked questions about the new concept similar to the questions mentioned in the theory of diffusion of innovations by Rogers [1], e.g.:

- How does the innovation work in our practice?
- What are the intended consequences of the innovation for our practice?
- What will its advantages and disadvantages be in our situation?

In order to provide answers to these questions, the change agent had a crucial role. The answers provided fostered a favourable attitude towards the new course concept and the decision to adopt it.

The *decision* took place when the course providers engaged in activities that led to the adoption of the innovation.

Implementation took place when the course providers put the new approach to use. In the implementation phase, the course providers trained their tutors and applied the learning management technology to a professional development setting.

Finally, *confirmation* took place when the course providers sought reinforcement of the decision already made. Among other things, they examined the results of some pilot courses.

At first, the change agent and course providers considered outcomes of six pilot courses in order to re-invent the course concept. In this context, the notion of *re-invention* refers to the degree to which the original self-directed learning concept was changed in the process of development and adoption. Since most participants were unfamiliar with the learning concept, the general information about the courses had to be revised in order to foster realistic expectations about the learning activities. In addition, the learning tasks had to be revised before they were used in a two year trial period (Table 1).

Table 1. Case study concerning e-learning in the field of occupational health

Type of course	*No. of courses*	*No. of enrolled individuals*
First year pilot courses	6	50
Year 2-3 courses	52	735
Total	58	785

3 For better or for worse?

The study was based on quantitative and qualitative data from former participants regarding their learning processes, i.e. knowledge and methods of analyses and improvement of the health and security of their workplaces. By comparing these data, the study provided evidence – as opposed to assumptions – of what works in the field of lifelong e-learning.

In addition, the outcome of the e-learning courses was compared to the outcome of a traditional face-to-face course with identical objectives and content. In both learning scenarios, more than 90 pct. of the participants considered their previous knowledge a starting point in their learning processes and they agreed that the course met their needs for knowledge, skills, and values as well as their expectations and objectives [5].

Furthermore, almost all agreed that the course fostered their development of important competencies in an ongoing learning perspective.

It also prepared them to search for and use information and to analyse and take action.

The e-learning concept has its drawbacks in terms of comprehensiveness. The learning achieved by the participants in the regular course amounts to little more than the general knowledge about the subject achieved by the participants in the blended course.

However, there was a significant difference regarding the learning breadth/depth. The e-learning approach had an advantage, since it allows for greater depth in the learning. The flexible learning concept assigned a sufficient amount of time to complete deeper analysis and elaborate problem solving tailored to local challenges.

These findings are considered evident, since they are generally documented over a three-year period.

4 Intended and unintended Consequences

The impact study addressed the question of the development of competencies in a lifelong learning perspective. Did the blended learning event really influence the lifelong learning of the participants? In order to answer this crucial question, the change agent collected information about the long-term outcome of the e-learning approach in terms of the participants' knowledge, attitudes, and ability to put into practice what has been learnt.

The impact study was undertaken half a year after the last day of the course. The impact was judged with respect to the participants' needs for a broad spectrum of competencies including:

- Communicating and negotiating;
- Searching and using information;
- Analysing and monitoring;
- Investigating and reporting;

The value of the course work with respect to these competencies is shown in Table 2, which indicates that in general, recognised and measurable learning outcomes are achieved during course work.

Table 2. E-learning impact [4].

Activity	*Undertaken the activity*	*Highly or some degree of experienced utility value*
Influencing (communication with colleagues)	71 pct.	81 pct.
Searching (information about working environment)	68 pct.	64 pct.
Monitoring (working environment)	61 pct.	83 pct.
Investigating (accidents and illness due to work)	41 pct.	80 pct.

In particular, the impact study provided evidence of the value of the use of ICT to foster learning. As part of the course work, the partakers used a technology cluster including e-mail, learning management systems, and web-based materials. The participants greatly appreciated using it to share knowledge and distribute information about course work. During the course, they were not just inspired by their tutors but also by the work of other participants, which they accessed through the learning management platform.

In order to benefit from the digital communication the participants needed fluency with respect to the cluster of technology. Since the working environment for some professions does not provide access on a regular basis to a cluster of technology, it is evident that the e-learning approach holds some drawbacks for these groups of professionals.

A desired consequence, however, was increased ICT literacy, i.e. competencies related to the use of ICT, and information literacy, i.e. knowledge on how and where to search and find relevant information. Two-thirds of the participants considered the technology-related competencies they acquired very useful.

4 Conclusion

This paper reports a case study regarding innovations in the field of lifelong learning. Among other things, it provides evidence of professional development, e.g., how to make innovations in learning with deeper learning outcomes and long-term impacts.

In addition it reports evidence of how to foster the development of digital literacy and information literacy, and these results can be used for future innovation in professional development and lifelong learning.

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