A USER CENTRED APPROACH TO INFORM LEARNING SPACE DESIGN

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Summary

Design of learning spaces has to go beyond the traditional technological deterministic view that only implies the production of learning tools or physical buildings. Learning space design has to correspond to users’ needs and goals, how current and future practices evolve in learning spaces and appropriation of new technologies.

Financial constraints, increased diversity among students, more and more students taking part-time and flexible learning options, have created new challenges for the design of learning spaces in higher education. In this new context innovative technologies are emerging and the ways people communicate, coordinate and collaborate are continuously transforming and changing, which affect learning space design.

Our empirical data consist of focus group interviews with students and directors of studies. Our purpose was to evaluate the usefulness of a user centred approach to inform the design of future learning spaces. Students prefered spaces that integrate formal learning activities with more informal and leisure activities. Directors favoured spaces that integrate their roles as teachers, researchers and administrators. The result emphasises the importance of a user-centric perspective and the need to widen the scope and include affordances of various technologies and how different actors appropriates learning spaces into their practice.

1. Introduction

During the past two decades technology-enhanced learning has been one of the most prominent innovations of the educational arena. The promise of e-learning to deliver a design-rich, place-independent and fully customizable educational setting can be said to emanate from the marriage of new technologies with new theories of learning. Of course, ICT and learning has much longer history, but in the 1990’s a renewed interest in how the rapidly developing information technology affects how, when and why people learn arose.

At the same time as technology and learning theories have developed societal changes have occurred that have implications for learning spaces at universities. Today many universities struggle with financial constraints that have impact on the amount of time a teacher actually spends in the classroom. In Sweden the compensation for higher education from the government is at the same level as ten years ago. As a consequence the amount of teacher time in classrooms are decreasing to levels that are less than 5-6 hours/week (Markowski,
2009). For students this means that they to a larger extent than before have to act, and learn, in environments outside the formal classroom. Given the developments, and others, described above it seems obvious to conclude that the educational context has become more complex the last decade. Therefore it is important to recognise that designing today’s learning spaces is a quite intricate task, including considerations regarding technology, financial matters, learning theory and students’ preferences. In other words, designing learning spaces require a holistic perspective rather than a narrow focus on specific activities in the educational context (Jones, Dirckinck-Holmfeld & Lindström, 2005). Hence, the purpose of this paper is to investigate whether a user centred approach can help us to design learning spaces in a more holistic way.

2. Learning Spaces
Many describe the current trends of higher education as involving a higher degree of enrolments, increased diversity between students, ubiquitous access to Internet, and an unbundling of faculty roles through employment of more non-tenure and part-time instructional staff. Because of these trends there are rising needs for more, and better, coordination between the various actors involved in the educational context (Levy & Murnane 2004, Paulson, 2002, Schuster & Finkelstein 2004, Greenhow & Belbas 2007).

When students, technologies and learning settings are changing this will also have impacts on learning spaces in general. According to Temple (2007) the concept learning space has not attracted any greater attention from scholars or researchers. Within higher education space has mostly been related to space planning or architecture, rather than being perceived as a crucial resource in teaching and learning. In this paper we adopt Brown’s (2005) definition of learning space: “Learning spaces encompass the full range of places in which learning occurs, from real to virtual, from classroom to chat room.” Moreover, the developments in the blended learning area have led to a situation where more and more learning spaces comprise both virtual and physical elements.

However, the subject of learning space has received more attention during the recent years, see for instance JISC 2006, Oblinger 2006, SMG 2006, Scottish Funding Council 2006. These authors present examples of how to design learning spaces that are more appropriate for students and teachers needs. Most of our current physical learning spaces are based on design models from the 1950s and 1960s, and contain lecture halls/rooms with rows of chairs/tables (Oblinger, 2006). In accordance with new pedagogical models there has been an increased interest to investigate whether space have impact on how we teach and learn, and Monahan (2002) have put forward the concept of built pedagogy in which the central idea is that spaces provide affordances and limitations that affect what is possible or not. Lomas and Oblinger (2006) stress the issue of student habits and practices and argues that they will have impact on future learning spaces. New student's practices that are adopted are for instance the extensive use of information and communication technologies. This creates new requirements for learning spaces. According to quite a few researchers characteristics such as digital, mobile, independent, social and participatory should be taken into account in the discussion of future learning spaces. In their investigation of space and pedagogy Jessop and Smith (2008) found that most of the layout and furniture at their campus favoured a teacher-centred approach. Similar to JISC (2006) they also found that users where reluctant to change the current format of the learning space and hence adopted the learning signalled by the arrangement in the room.

The discussion above indicates that our learning spaces have become larger. Jones, Dirckinck-Holmfeld, Lindström (2008) emphasises this and argues that virtual learning spaces in higher education alone is complex settings that involve management, administration and ICT as well as teachers and learners. Organisational aspects as well as pedagogical aspects influence practices in these environments. However, we lack established methods for evaluating the interrelationships between all the different actors involved in the integration of technology, support, collaboration, teaching, learning, and administration of technology in learning spaces (Greenhow & Belbas, 2007).

To summarise we argue that there exists no design method for learning spaces that cover the social and organisational habits developed in a larger context. Much has been done, i.e.
organisational models and structures for designing virtual universities or solving interoperability problems with learning objects, but methods that analyse affordances of technologies and developmental processes of work practices that change the setting over time are very little explored. Also, the use and design of virtual learning spaces traditionally have had a product focus, that is, a focus on designing devices, artefacts, systems or services. Although there exist attempts to develop spaces that support “communities of practices”, there has been little investigations into how such learning spaces should be designed. In general practices are difficult to design – they tend to evolve and develop dynamically over time. Design should therefore consider the appropriation of technologies and their integration into practices, rather than trying to optimize the product or tool with multiple features.

3. The Usefulness of a User Centred Approach
From the discussion above we can conclude that learning spaces can be intrinsically complex. Regardless of whether the learning space is virtual, physical or blended we believe that it is important to take a student perspective into account. This must include users’ habits and the communication patterns they have developed through the appropriation of technological artefacts. In order to investigate the importance of the user perspective we conducted a pilot project at our university. Our purpose was to inquiry if a user centred approach can be useful in the design of future learning spaces.

The pilot study was conducted in fall 2008 and involved 33 students and 12 directors of studies. The students came from different educational programmes (engineering, social work, business administration, etc.) and were both bachelors and master students. They represented both campus students and students from two of the university annexes. Both are located more than 100 kilometres from the university campus.

The method we used was focus group interviews in which the participants conducted two brainstorming sessions. Our approach is influenced by Stuart (2008) who used a similar method when redesigning the library at the Georgia Institute of Technology. The first session considered the physical part of the learning space, and the second the virtual part. Each focus group interview contained 5-7 persons and took approximate 45-60 minutes. We began all interviews with the physical part. The first thing to do was an individual task where the participants were asked to imagine entering a physical building and make notes of what they would like to find. They wrote their findings on post-it notes and there were no limitations in what they could write; it could be a feeling, things, a reflection, a sentence, etc. Thereafter they individually clustered their notes on a whiteboard. Finally, they worked in groups and clustered their notes and negotiated a common header on each cluster. The same procedure was then made for the virtual part of the learning space. In this session we began by asking the participants to reflect on what they wanted to see when entering their own virtual space at the university.

The data from the focus groups show a clear need for integration of private and public spheres. Neither directors of studies nor students seem to make a clear distinction between their work (directors) and their studies (students) and what they do outside these contexts.

The students described their ideal physical space using concepts as:
- Water; waterfalls, brooks, streams, fountains.
- Colour; warm colours, interesting wallpapers, colour themes in each classroom.
- Sound/Audio; a combination of silence and sound (people talking, music, birds, etc).
- Plants; flowers, green plants, plastic flowers.
- Tempting furniture; sofas, round tables, round rooms.
- Accessibility; computers and printers, wireless, information and service centre in the middle of campus.

The directors of studies had similar reflections on the physical space. They organised their expressions around the following themes.
- Pale and open spaces.
- Flexible spaces that is easy to rearrange according to teaching and more informal learning.
- Mobility and wireless communication.
Both directors of studies and students describe the virtual learning space as more complex than the physical learning space. Their descriptions most often involve an integration of private and public spheres outside the educational context with the virtual learning space. The students describe an integration of private and formal technologies and behaviours and communication patterns that probably have evolved through appropriation of personal technologies, for instance mobile phones, instant messaging and web 2.0 technologies such as facebook, flickr, youtube, blogs, etc. The students’ description of the virtual space were organised around the following themes:

- **Features;** calendar, forums, chat, reservation systems, links to everything connected to my educational programme, history of my performance (e-portfolio), future courses, personal communication, course material, search engines, news, SMS and connections to facebook, youtube, etc.

- **Design;** “clean”, fresh, nice colours, easy search, programme oriented rather than course oriented, personal, practical, structured.

- **Services;** buy and sell, contacts with other students, dinner proposals, cultural events, maps over free wireless connections, collaborations with companies and public authorities, translations, pod-casts, TV-guide, job advertisements, student union, time tables for bus and trains, dissertations, links to associations and other non-profit organisations.

The ideal virtual learning space for the directors of studies seems to be more complex than the students’ ideal virtual space. The directors describe their ideal space as a space that is able to integrate much of the support they need in their roles as teachers, administrators and researchers. They describe the virtual space using the following themes:

- **Teaching and learning environment;** integrating all the resources related to a course.

- **Information space;** contacts with colleagues at the department, the faculty, the university as a whole, the vice chancellor, news and regulations from the government.

- **Project space;** common information space for different kinds of projects, “memory spaces”, my own documents and resources.

- **Research;** links to my research field, networks, forums, library connections.

4. Concluding Discussion

Our focus group interviews show that both students and directors have goals and interests that is not in accordance with current learning spaces. Students prefer spaces that integrate formal learning activities with more informal and leisure activities. Teachers, on the other hand, prefer spaces that provide flexible settings appropriated to their pedagogical approaches and their other roles as researchers and administrators. Similar results can be found in other investigations. At the University of Technology in Sydney, the students reported that the following activities was of importance in learning: a) Quiet spaces to study alone, b) Spaces to socialise with other students and friends, c) Spaces to study with others, and d) On-campus shops. In the same study the participating teachers claimed that they had shortages of flexible spaces and breakout spaces (TLC, 2005). Chism, et al (2005) describes a similar picture in which the students valued comfort, colour and design.

In design of learning spaces there seems to exist a belief in a straightforward link between artefacts and outcomes. It appears to be a tool perspective behind the idea of designing virtual learning spaces and a technological deterministic perspective behind the design of physical learning spaces. However, these perspectives do not take into account that the appropriation of a learning space is a complex process. A more comprehensive view is to put forward that the design of learning spaces should not be limited to development of artefacts or physical buildings. It should also take into account the space as a whole and deal with user-centred continuous transformations of practices.

The artefacts included in the learning space must be considered as a unit. Often they are developed and designed independent of each other, but can sometimes complement each other and create a common unit for the fulfilment of students and teachers goals. Other times they can come into conflict with each other when users have discrepancies in activities and how they can be mediated through digital artefacts and physical spaces. This means that we always have to take the space as a whole into account. By including artefacts in the learning space we create an opportunity for teaching and learning, but including new artefacts may
also bring transformations of practices or disturbances in current practices. We may also get into a situation where the artefacts are not used. Even if the artefacts offer the latest technology in social software or communication tools for informal learning it is difficult to anticipate their use. Before entering the learning space informal communication among users has evolved in other contexts. This communication may be facilitated by other digital artefacts and spaces, which have properties that better fulfil users’ goals and actions.

Therefore, we have to investigate what kind of interdependencies and dependencies that already exist or may be created when users appropriate a certain learning space. When teachers and students enter a learning space they rely on earlier experiences and practices. Transformations of practices seem to be related to individuals’ actual needs, motives, goals, and problems in the specific space. The learning space can therefore be affected in two ways. Firstly, the learning space can inform current practice among the users in such a way that it transforms to a new practice. Secondly, the current experience among the users of the space can influence the choice and use of artefacts, which then will affect the learning space. If users want to solve a problem or see an opportunity within a learning space they are motivated to transform their practice. If the current learning resources are insufficient for this transformation they search for other resources to fulfil their objectives. If the learning space does not correspond to users’ needs and goals they enter other spaces that are more appropriate. Hence, it is essential to understand both users’ practices, their needs and goals and their use of learning resources in order to design useful learning spaces.

References


