IT'S ALL ABOUT VIDEO CONFERENCING- TOWARDS A SUSTAINABLE E-LEARNING APPROACH IN DEVELOPING REGIONS IN BOLIVIA

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Abstract

This paper reports on the current transformation of higher education in Bolivia. The involvement of ICT, e.g. E-learning, has many facets. One is that it offers promising solutions that can help to bridge distance and provide education in rural areas. Another is that e-learning also seems to provide promising opportunities for dealing with problems found on campus. Here, we approach the motivating and initial conditions from a practice-oriented perspective and discuss the possibilities, restraints and expectations of e-learning at a public university in Bolivia. We identify factors that need to be addressed in the coming work to advance e-learning practices.

Introduction

The continuing evolution of information and communication technology (ICT) over the last decades has made an impact on higher education making it possible today to study almost anything at a distance through e-learning. ICT has not only been utilized for distance courses but it is also commonly used in a blended mode for on-campus education. The reasons for adopting ICT for education may seem to be different in various contexts although bridging time and space are commonly mentioned in the literature **(**Andersson, 2001; Salmon, 2004). Although E-learning as a concept includes an array of tools and methods the common denominator is that it is learning or training carried out thought the use of ICT (Francisco & Penalvo, 2008; Salmon 2004; Shimic, 2008).

In Bolivia there is currently a strong trend of decentralisation to enable people to stay and live in the countryside. There are many different reasons for this, one of which being migration into the cities due to the crisis in mining industries over the last decades (Hudson & Hanratty, 1989). On an economic level there have been initiatives for decentralisation with a shift in public investment since the Law of

Popular Participation was introduced in 1994. Poorer districts are now a priority for public investments while at the same time these investments have been more geographically spread than before. Public investment in social services and human capital has grown at the expense of infrastructure and production (Faguet, 2003). Consequently, an underpinning factor in all government objectives is that Bolivia's current situation embraces a social revolution. Indigenous groups are incrementally and actively given rights to participate and influence the development of the country in ways that were earlier suppressed. E-learning is in this context seen as a viable opportunity that would solve some of the problems of decentralisation and enable wider access to education in the future. The academic community can play a crucial role in this development. The case presented in this paper reflects the situation in a Bolivian public university and the aim of this paper is to present and discuss the current situation with a focus on the possibilities, restraints and expectations that e-learning carries in the current transformation of the educational landscape. The underpinning motivation implies a view in search of viable ideas and sustainable approaches that utilise e-learning.

The case presented concerns a well-established public university with more than 10 faculties and 50,000 students enrolled. It is located in one of the larger cities and the university plays an important role, exerting an influence on other universities in Bolivia.

Related Work and Framework

With few exceptions, most universities currently put large efforts into planning and facilitating learning with an aim to expand or strengthen the quality of education. One way to accomplish this is through the effective utilisation of e-learning. In Bates (1997), four of the most frequent reasons for using technology in education are identified as:

- to improve access to education and training,
- to improve the quality of learning,
- to reduce the costs of education, and
- to improve the cost-effectiveness of education.

The move towards e-learning is not easy, and in order for e-learning to function as an educational mode in higher education it is necessary that a set of criteria are met and considered. Two of the most important criteria among many others are that there is a clear understanding of the goal of the introduction of the educational mode and that a view and understanding of the prospective students' needs is established. These criteria are not specific to e-learning as they are relevant to and can be used for all education (Davis, Little, & Stewart, 2008). Introducing e-learning is not only a process of change of student and teacher practice, it is also

implies an organisational change and development which affects the educational arrangement as a whole. It is therefore not easy to determine when intended effects are realised, as it is difficult to identify unintended effects that most certainly will be one of the results of such transformational processes. Thus, it is therefore important to identify the expectations and assumptions placed on e-learning within the organisation and to be aware of the individual and collectively shared knowledge and experience of e-learning. It is a situation which calls for effective approaches that will help to identify such experience and knowledge of e-learning. The implementation process of e-learning involves a reconstruction of roles among faculty members (Govindasamy, 2002).

What does the adoption of e-learning mean for the administration, the teaching practices, and the structures of the university organisation and government? Alexander (2001) states that institutions should develop a system to support e-learning:

> First, they need a plan for e-learning development, a plan which clearly identifies the reason/s for embarking on e-learning development. Without this, faculty are likely to "second guess" the reasons for the initiative, which may lead them to by-pass the significant phases of thinking about learning and what it means for their students, as they move straight to the teaching strategies they believe will address the concerns of the university. (p. 246)

Staff development is crucial, especially in times when new forms of teaching and learning in higher education are introduced. Training and discussion about these new forms are however not something that should be taken lightly. It is a matter to be recognised and taken seriously (Spratt et al., 2000). The introduction of e-learning in traditional educational settings is likely to affect the organisational landscape and its practices on many levels.

E-learning and every other form of education is embedded in a social and cultural setting (Carr-Chellman, 2005). How learning and the learning community are to be approached needs to be taken into account before planning and preparing how the adoption of e-learning will be approached. Factors such as computer and information literacy among staff and students will also affect plans and objectives. The work of recruiting knowledge concerning the limitations we can assume will be set by these factors, together with those found in the technical infrastructure and knowledge about its features, are crucial for the further advancement and implementation of e-learning.

Winds of Change in Bolivian Education

Currently, the government of Bolivia sponsors many different e-learning initiatives. The government is working hard to establish centres for educational resources and to create learning materials for TV and radio. They are also currently establishing educational portals that will be available for the public on the WWW. Bolivia is a multi-lingual country and the objective and clear intention is that these education portals and the learning materials they provide will offer these resources in at least the three most common languages. A firm objective supporting this development is to establish 1,000 centres for educational resources around the country by 2010.

The centres will provide an arena where students, teachers and the public can access information and which will facilitate local development and innovation. The intention are that these centres will provide access to computers and other expensive equipment that few people in Bolivia can afford themselves and support lifelong learning (Ministry of Education and Culture, 2009).

These educational portals are virtual spaces for public education where information, learning materials and education services will be provided. A problem which impedes the work of realising this objective and the advancement of e-learning is, however, the low number of computers and Internet users in Bolivia. In 2005 approximately 5 out of 100 people used the Internet in Bolivia (Ministry of Education and Culture, 2005; World Bank, 2009). This could however be explained by the geographical difficulties (i.e. altitude, rainforests) in building infrastructure and the ongoing expenses that follow such vast capital investments.

Another impeding factor is that the telecommunications market for foreign traffic was closed until 2001(Maclay & Reale, 2002). Despite or perhaps because of this difficult situation and history, e-learning is seen as strategically important for the education system as whole.

Higher education in Bolivia is in many respects similar to the higher education found in many other countries; there are both public, autonomous universities and private universities. The public universities are entitled to public national funds and the Comité Ejacutivo de la Universidad Boliviana (CEUB) is responsible for these universities. The ministry of education and culture supervises private universities. In the university system three different levels of study exist. The first level includes Técnico superior, Bachiller, Licenciatura, and where a diploma is awarded after 3–6 years of studies depending on the subject. The second level consists of postgraduate studies and leads to a degree of Maestría, or Diplomas de Posgrado. Third level consists of doctorado and requires a doctoral thesis.

Method

The paper reports on an ongoing case study which aims to follow the development of e-learning over a period of two years. It is the result of a development project which aims to introduce e-learning practices into higher education in Bolivia. We have aligned the study with the discussions on case study approaches (Feagin, Orum, & Sjoberg, 1991; Tellis, 1997; Yin, 1994). The qualitative data was gathered through interviews with representatives from eight faculties (out of thirteen) and three units, central to the implementation of e-learning at the university. Each faculty/unit was interviewed independently and three to eight representatives were present. All interviews were conducted in English and sometimes in Spanish during the spring of 2008. When the representative's found it difficult to explain in English what they wanted to get across, they had the opportunity to talk in Spanish with the help of a translator. The interviews were summarized after each session and transcribed. These transcriptions together with the field notes that were taken make up the main mass of data used in the analysis.

The interviews were semi-structured and the themes followed the structure focusing on the current situation, expectations, approaches, infrastructure, student situation and conditions, and finally the teachers' situation. Initially, the participants presented their work at the faculty, their current courses and educational programs, the problems they were currently facing, the opportunities they had identified, their experience of e-learning, and the vision and expectations they had concerning e-learning. This is the material from which we have derived the themes we present and discuss below.

Results

Current Knowledge and Competence in e-Learning

Current skills and experience of e-learning differs a great deal between the different faculties and educational programs offered by the university. In some of the faculties we visited we found that very few courses or educational programmes utilized e-learning. Some of these faculties had not started to incorporate e-learning in their work at all, whereas we found that some faculties do explore and use e-learning on a few courses, having quite solid concepts which they have developed by themselves.

E-learning is used mainly as an introduction to university studies and to provide students with the preparatory skills they require for their education. These courses have been packaged and distributed via CD-ROM and communication between the participants is typically managed using asynchronous text in a learning management system (LMS). There are also some distance courses delivered

through e-learning techniques that connect learning centres and campus. One educational program in social science had previously used radio to bridge geographical distances and to distribute lectures to students in remote areas of the region and to campus students.

Competence and knowledge of e-learning among the staff is not shared but is rather scattered in the organisation, located in small islands where only a few teachers have experience of teaching through e-learning. There is a true interest in e-learning among the teachers, especially among those with good computer literacy. However, they do not find the support they need as awareness of what e-learning is and involves is, with a few exceptions, relatively low among deans and other administrators. A general focus and expectation which is often repeated involves the great benefits that video-conferencing is expected to provide.

Organisation

The university currently lacks a central organisational unit that could manage the development of e-learning. We found that it applies for the university as a whole including the faculties. The initiatives that do exist are managed and run by individual teachers who in their own interest and on their own initiative choose to use e-learning in their teaching. There are also some initiatives that are supported by external donor projects. This text is part of such a project. The people involved in e-learning are true enthusiasts and important resources in the process of taking the development of e-learning forward. E-learning is not a top priority at this university; in fact it is rather an invisible issue. Among administrators it is discussed as a matter of computer hardware and bandwidth, not as an issue that concerns organisational development and change of practice. Despite this fact we identified a broad consensus on the need for organisational change to enable an increase in the use of e-learning among the teacher representatives. There are of course many different opinions on how this can be managed, but almost everyone agrees that it will be a positive and necessary development for the university. Two different strategies for such development are revealed: The first of these is that the faculties should organise themselves to handle e-learning issues independently. The second strategy implies that it should be managed on a broad university level and that e-learning will be utilised in all faculties in similar ways following a common strategy and e-learning policy.

It is of course a matter of resources and there is general agreement that the need for financial support is substantial. Trust in external project resources is a driver in the process, but it also creates an unhealthy relationship. It impedes organisational commitment to the strategic development of e-learning. This is an important issue to manage if a positive development of e-learning is to be attained. Today it is difficult to allocate resources for all types of education, but in this context, the

problem of assimilating e-learning is a far more crucial concern than resources that support sound development.

Another note on structural changes concerns how work with the support of e-learning should and could be organised. The teachers involved in the different educational programmes should be developing their own e-learning courses, which from our perspective is a reasonable point of departure. However, most of the participants identified the need for supporting units or services that can assist in the production of teaching materials, graphics and software for e-learning. Over time this might be a centre that is established in the different faculties through interest groups among the teachers, but in the near future, a central unit or core group of engaged people is a more realistic solution. The demand for policies concerning e-learning is high and the democratic process is emphasised. It is important for the university to tackle these issues in the near future.

Technical Infrastructure

The technical infrastructure and access to computers differs between the faculties. Some departments have both a network and access to a number of computers, while others lack both or have very old and obsolete equipment. There is currently a donor project which aims to develop the network and increase the availability of computers within the university. The university is not located in one building but is rather scattered in many different buildings in the city, which is a constraining factor in the design, implementation and maintenance of the network. The internal network has a connection to the Internet but at present it has a very limited bandwidth (about 10Mbit/s) because of the high costs associated with an Internet connection for the university. Our interviewees hoped and believed that the prices would soon decrease or at least be reduced for academia and educational institutions since they are having a negative effect on the development of e-learning.

Internet access at home is relatively rare in Bolivia. It is therefore understandable that most students use the services offered by Internet cafés when they are off-campus. There are many such cafés all over the city and they offer acceptable prices for access to Internet services. Our interviewees believed that distance students would have good opportunities to connect to the university for at least an hour per day from internet cafés, which would offer enough time to manage communication with both peers and different tutors. Bandwidth is of course a problem and makes some technologies difficult to use, but the use of text and graphics should not be a major problem. University libraries are pointed out as important resources and possible centres for e-learning. A lot of the material that the libraries have is currently digitized. It is an initiative that will provide students access to an electronic library service from internet cafés and even from home.

The Promises of E-learning

As we discussed and demonstrated above, there is a true interest in e-learning which is based on many different reasons. These many reasons for the interest in e-learning seem to a large extent to be associated with a lack of suitable buildings, problems with the completion rate of students, and the need to reach out to new student groups. The expectations of this educational mode are high and e-learning is expected to contribute to the solution of a number of problems currently faced by the university. The staff seem to have a clear idea of how e-learning can be used to improve and facilitate education regardless of if they have any practical knowledge or experience or not. Today, there are in some cases severe shortages of space in teaching facilities, which makes it difficult to carry out teaching since the lecture halls are full to bursting point. On some courses the number of students is more than 400. The staff also think that it is difficult to get lecture halls equipped to carry out all the desired education. E-learning is seen as an opportunity to improve the situation on campus and to give students access to a more flexible education.

Many courses suffer from poor completion rates because the students cannot afford to complete their studies and they are often forced to move home to their village or city and work to earn their living. The staff believe that students could pursue their studies via e-learning and thereby get their diploma. Another hope for e-learning is to reach new students that live in the countryside in order to increase the university's presence in these areas. Reducing the load on campus facilities by enabling new students to study at a distance is another benefit the staff think that e-learning could render possible.

Regarding the hope of technical solutions that could be used to conduct e-learning, the highest hopes are for video conferencing and live lectures with audio and video. The reason for this seems to be that there is a strong oral tradition in the country and at the same time a very teacher-centred educational culture. The staff also point out that since teaching is done in Spanish and not all students are literate, the use of text only could be a problem for some students. This makes videoconferencing attractive since both aspects can be easily expressed.

Discussion

Identified Needs and Possible Solutions

It is clear that e-learning is a core concept from which a lot can be expected. The situation at the university is however special. The underpinning motives for E-learning do not relate primarily to economical objectives. Rather, it is seen as a means that would give new options for dealing with current problems found in campus education and to make distance and decentralized education a feasible reality. Two crucial roles of e-learning can be identified:

- E-learning can be seen as a means of developing distance education. Because of the insufficient infrastructure in universities, working with learning centres might be a more accessible way than relying on Internet cafés and private connections. Learning/community centres might play an interesting role in the local community and perhaps could contribute to decentralisation. How the university best can serve and meet such demands is unclear and both policy and organisational matters must be considered.

- E-learning can also be seen as a means to support and facilitate campus education. Large classes and few teachers are a common problem. It means that the lack of premises is evident as well as the time a teacher can give every student. It is important to be aware that bringing only e-learning to the table cannot solve this problem. It is also an organizational problem that needs to be addressed as such and not by adding yet another burden to teachers and administrators. If a university aims to maintain quality in education it is not reasonable that a teacher has 400 students on one course. The challenge here is to identify e-Learning concepts that would efficiently ease and support campus education.

In forthcoming work the university will have to deal with a number of different applications of e-learning. It will be necessary to distinguish between these applications and be aware of their differences and similarities when addressing the challenges that implementing e-learning entails. Initiatives, applications and knowledge that already exist have a lot to offer and might be a feasible way to approach e-learning in broader terms. Since knowledge about these applications is not widespread in the organisation further work and discussion of how these can be used might be needed to achieve the goals. The potential of many of these applications lies in that they can support both campus and decentralized education since they already work in both these contexts.

Critical Factors and Concerns — Towards a Sustainable Approach

We would in the light of the aspects discussed above focus attention on factors that currently slow down the further development of e-learning. These are not necessarily issues that require an immediate solution; they are more of a kind that they should be addressed from a strategic and long-term perspective.

A critical issue is the current infrastructure, which is under development. One concern is the bandwidth that is currently low and thus a constraining factor for

further development when it comes to reaching out to rural areas, especially where the use of audio-visual tools such as videoconferences is concerned. Using text based e-learning only could bar a lot of people, so the use of Blended learning, pre-packaged lectures on CD-ROM and similar solutions must be used to limit such effects. The libraries efforts to digitalize materials are interesting but suffer the same problems with text as a medium. It is surprising that the staff place such hope on this resource considering the conditions.

To improve the conditions for e-learning on campus the number of available computers needs to increase. The national initiatives with learning centres and educational portals can be key factors in enabling higher education through e-learning even if the initiative isn't directed towards higher education. Using the infrastructure provided by these centres could support the work involving people in the countryside and help them to enrol on university courses.

Currently, views on e-learning are very positive, and tools such as video-conferencing are attractive and are seen as true problem solvers for a wide array of problems. There are not many critical voices raised at this point. It is a situation which could be problematical if this gap between the rhetoric and ideas and the actual conditions is maintained. We assert that a critical voice is crucial for successful implementation and continued work in utilising e-learning.

An evaluative and reflective approach supporting the coming phases would be a promising way to avoid major setbacks. Inter-organisational collaboration is currently problematic when faculties seek opportunities to manage their work with e-learning at their own pace and on their own terms. This unfortunately hampers the establishment of a shared arena that could support development and strategic work with e-learning on a broad scale. This development will depend on the staff taking ownership of the process, which is crucial if the university aims to provide education through e-learning with a similar quality to the ordinary campus education.

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