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Quality in e-learning – a conceptual framework based on experiences from three international benchmarking projects

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Abstract

Between 2008 and 2010, Lund University took part in three international benchmarking projects, *E-xcellence+*, the *eLearning Benchmarking Exercise 2009*, and the *First Dual-Mode Distance Learning Benchmarking Club*.

A comparison of these models revealed a rather high level of correspondence. From this finding and from desktop studies of the current discourse regarding e-learning, a conceptual framework for e-learning has emerged based on a range of critical success factors. This model could be used as a foundation for future e-learning and as an inspiration to develop, implement, evaluate, and internalize e-learning. It shows that various aspects of accessibility, flexibility, interactiveness, personalization, and productivity should be embedded in all levels of management and services within the field of e-learning in higher education. To meet students' expectations, demands, and rights, these critical issues should be taken into account from a holistic perspective with transparency and innovation in mind.

Therefore, successful e-learning requires change from an organizational as well as a pedagogical perspective. One conclusion from this study is that a revolution is on the way and that learning will be reoriented along paradigms of collaboration and networking. Globalization, sustainability, and lifelong learning will be some of the leading concepts in this process.

Keywords benchmarking, e-learning, online learning, quality enhancement.

Introduction

Quality development and evaluation are crucial aspects of the activities of educational institutions today, and benchmarking has become an increasingly commonly used method for performing quality assurance work and quality enhancement. This is exemplified by the recently finalized two-year project entitled *Benchmarking in European Higher Education*. The project, financed by the European Union (EU), was designed to support development and modernization and to make higher education more attractive. Furthermore, the project aimed to draw attention to the goals of the Lisbon and Bologna processes for higher education and lifelong learning (van Vught *et al*. 2008a,b).

Lund University in Sweden has participated in benchmarking projects organized by the *European Centre for Strategic Management of Universities* (ESMU) since 2000. e-Learning was the subject that was benchmarked by ESMU in 2003 when Lund University also participated in the project, and the university has since been involved in a number of projects dealing with benchmarking e-learning.

In 2007, a project was launched at Lund University with the aim of developing international online master's courses (Nilsson & Ossiannilsson 2008). The project

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was highlighted on a national scale by the *Swedish National Agency for Higher Education* (NAHE) and internationally by the *European Association of Distance Teaching Universities* (EADTU). At the same time, a study of the quality of work in e-learning was conducted by NAHE, which resulted in a report proposing that e-learning should be included in any evaluation of higher education. The report also presented a model consisting of ten quality criteria for e-learning entitled the *e-learning quality model* (NAHE 2008). Thus, in 2008, Lund University was appointed by NAHE as a pilot university for EADTU's benchmarking project *E-xcellence+*, with the aim of investigating whether or not e-learning courses can be quality controlled in the same way as so-called traditional campus education (Ubachs 2009). The university also contributed to the project as a traditional and research-intensive university, and by testing the model at the programme level.

This, in turn, led to the university's participation in 2009 in another European benchmarking project, ESMU's *eLearning Benchmarking Exercise*, as a result of an initiative by the University of Southern Denmark and in cooperation with EADTU (Williams & Rotheram 2010).

The motivation to participate in the two projects stemmed partly from a desire to gain a picture of the situation with regard to e-learning at Lund University and partly from the need for an overview of how these conditions appear from a European perspective. The university also intended to take part in the collaborative learning process, which is inherent in the benchmarking method, and to obtain evidence to implement possible changes and improvements, which is another purpose of the benchmarking method.

In 2009, Lund University was invited to participate in the international project entitled the *First Dual-Mode Distance Learning Benchmarking Club*. From its previous experiences, the university was asked to draw comparisons between the different benchmarking models and their criteria in relation to another widely used model, namely the *Pick&Mix*[1] model (Higher Education Academy). The university was also asked to suggest and include potential new criteria in accordance with its experience of European benchmarking processes using Sweden as a frame of reference, which became the focus of international attention through the *e-learning quality model* put forward by NAHE but also through the success of the Swedish Net University (2002–2008).

This study provides a short summary of Lund University's involvement in the projects referred to earlier and of the results, dealing with the areas that were found to be critical for the development, planning, implementation, and quality evaluation of e-learning. This study reflects on their significance in a wider learning context in the form of an emerging conceptual framework. This paper does not aim to reflect on any other benchmarking methodologies.

Following a brief account of the background to the current discourse and debate regarding e-learning and benchmarking for quality assurance in higher education, an account of NAHE's model of quality criteria for e-learning will be given. After this, the projects (*E-xcellence+*, *eLearning Benchmarking Exercise*, and *First Dual-Mode Distance Learning Benchmarking Club*) will be described. Finally, the emerging conceptual framework will be introduced.

Background to the concepts of e-learning and benchmarking

e-Learning

During the last 10 years, the European Commission has worked strategically with several initiatives and white papers to develop, enhance, and implement e-learning. The fact that e-learning has implications for a vast number of fields has become very clear as a result of the current debate. Johnson *et al*. (2011) demonstrated explicitly in the Horizon Report 2011 that the trends and challenges that will arise in the next five years . . . *are a reflection of the impact of technology that is occurring in almost every aspect of our lives. They are indicative of the changing nature of the way we communicate, access information, connect with peers and colleagues, learn, and even socialize* (p. 4).

Ehlers and Pawlowski (2006) have argued that *quality in e-learning brings together the fields of education, technology and economy in comprehensive concepts in order to contribute to societal development, to innovate formal, non-formal and informal learning opportunities and empower learners as citizens to take part* (p. 1).

With regard to Web 2.0, Adelsberger *et al*. (2008) have argued that it is not simply a change with regard to technological opportunities, but more importantly,

that it has brought about a change in educational approaches. As a result of Web 2.0, e-learning is now more focused on collaboration, interaction, and participation (p. 4066). McLoughlin and Lee (2008) stress that the challenges of e-learning in a networked society mainly concern the meaning of the three Ps: personalization, participation, and productivity. These authors have stated that these dimensions are crucial for successful e-learning, that is, the individual's prerequisite motives and motivation (personalization), the individual's participation in the learning process (participation), and the individual as a co-producer in the e-learning process (productivity).

Often, e-learning and blended learning are seen as synonymous. This was the case in the *eLearning Benchmarking Exercise* project. The definition of e-learning in the project incorporated a blended perspective as well and stressed *an added value of increased accessibility, flexibility and interactiveness* (unpublished observations, *eLearning Benchmarking Exercise* workshop, May 2009).

As the definition earlier states, e-learning has the added value of accessibility, flexibility, and interactiveness (interactivity). Accessibility and flexibility result in opportunities for students to study and share learning resources, regardless of time, space, and place, but also mean that the specific needs of students with various disabilities, such as dyslexia, can be met. Interactivity concerns the interaction with materials and course resources, the interaction between fellow students, and also the interaction between students and teachers.

Benchmarking

Benchmarking deals with changes for quality enhancement but also with identification and implementation of areas of development (Ossiannilsson in press, 2011). Moriarty (2008) defines this method as . . . *an exemplar-driven teleological process operating within an organization with the objectives of intentionally changing an existing state of affairs into a superior state of affairs* (p. 30). Moriarty and Smallman (2009) have further defined it as follows: *The locus of benchmarking lies between the current and desirable states of affairs and contributes to the transformation process that realizes* (sic) *these improvements* (p. 484). The definition that is used by ESMU is as follows: *Benchmarking is an internal organizational* (sic) *process which aims to improve the organization's performance by learning about possible improvements of its primary and/or support processes by looking at these processes in other, better-performing organizations* (van Vught *et al*. 2008b, p. 16).

Benchmarking initiatives are often conducted as self-evaluations, using systematic data and gathering information from predefined benchmarks. The goal of benchmarking is to formulate strengths, weaknesses, and areas for enhancement through a collaborative process (Ossiannilsson in press; van Vught *et al*. 2008a,b). The benefits have been expressed in ten statements by ESMU: *self-assess institution, better understand the process, measure and compare, discover new ideas, obtain data to support decision-making, set targets for improvement, strengthen institutional identity, enhance reputation, respond to national performance indicators and benchmarks*, *set new standards for the sector* (van Vught *et al*. 2008b).

The e-learning quality model and the projects

In the following section, the *e-learning quality model* outlined by the Swedish NAHE will be presented in brief (The NAHE 2008). After this, the three projects that Lund University has participated in during the recent years (*E-xcellence+*, *eLearning Benchmarking Exercise*, and *First Dual-Mode Distance Benchmarking Club*), as referred to in the Introduction earlier, will be briefly introduced.

e-Learning quality model

NAHE's study of quality in e-learning emphasized the increase in knowledge regarding the ways in which quality should be evaluated in the context of a quality assurance system. Thus, e-learning should be included as a natural part of any evaluation. Through an analysis of development, research, and networking on an international basis, an evaluation model was developed, namely the *e-learning quality model*. This includes ten quality aspects (which, in turn, include a number of indicators). These quality aspects are *material/content*, *structure/virtual environment*, *communication*, *cooperation and interactivity*, *student assessment*, *flexibility and adaptability*, *support (student and staff)*, *staff qualifications*, *vision and institutional leadership*,

resource allocation, and *the holistic and process aspect* (NAHE 2008, p. 7).

This report states that e-learning must be assessed from a holistic perspective, that is, all ten aspects outlined earlier must be considered and taken into account to an equal extent. Another conclusion is that if a national authority/organization is to evaluate e-learning, quality indicators are not enough. The evaluating authority will need to develop and adapt its own working methods and ensure its own competence. Thus, the report states that *existing methods of quality assessment need to be adapted, quality aspects for e-learning need to be integrated into existing quality assurance systems, internal competence and the provision of information in the e-learning area need to be guaranteed and internal working methods need to be adapted to the special conditions which apply for the assessment of boundless education* (NAHE 2008, p. 10).

E-xcellence+

In the early 2000s, EADTU coordinated the *E-xcellence* project as part of the EU's *e-learning 2004* programme. The project, implemented in collaboration with The European Association for Quality Assurance in Higher Education and the United Nations Educational, Scientific, and Cultural Organization, brought together experiences of lifelong and flexible learning from 13 countries in Europe, as well as experts in quality assurance. Benchmarking criteria regarding management, products, and services were developed, with a specific focus on three particular areas of progress: accessibility, flexibility, and interactiveness. The *E-xcellence+* project is the implementation phase of *E-xcellence*, broadening the implementation of the model and providing feedback at local, national, and European levels (Ubachs 2009).

The benchmarking model *E-xcellence+* includes two tools: Quick Scan and Full Assessment. Quick Scan is a self-evaluation tool to be completed online, preferably as a team within the department. It generates feedback directly. Full Assessment means that the evidence-based self-assessment is peer reviewed, often including a site visit. If the criteria are considered to be met at the level of excellence, an *E-xcellence Associates label* is issued.

The benchmarking criteria have been grouped into three categories – management, products, and services – covering the institutional, pedagogical, technical, ethical, and managerial aspects of e-learning. These three categories include six areas. The managerial category includes strategic planning and development at both an institutional and programme level. The product category includes the curriculum/syllabus design, the course design, and the course delivery. Finally, the services category includes support for teachers and staff as well as student support. A total of 33 benchmarks with indicators, including a description of what can be regarded as excellence, are available for use.

During the project, the two selected master's programmes at Lund University, the *Lund University Master's Programme in Geographical Information Systems* and the *Master's Course in Environmental Management and Policy*, were processed using these benchmarks. In addition, benchmarking processes were also conducted at the management level, that is, within the infrastructural units, which were responsible in various ways for the common e-learning resources at the university (for example, the Centre for Educational Development, the Library Head Office, the Student Division, and the Student Union).

A concrete and very positive outcome of the *E-xcellence+* benchmarking exercise at Lund University was that the two master's programmes were the first European programmes of higher education to be awarded the *E-xcellence Associates label*. This label focuses on the development and innovation in the three defined and prioritized areas of progress in higher education referred to earlier (i.e. accessibility, flexibility, and interactiveness). In addition, the *E-xcellence Associates label* emphasizes a field that has recently emerged as being important in this context, namely personalization (i.e. the personalization of learning at different levels). Obtaining the *E-xcellence Associates label* indicates that a quality-controlled e-learning education is being provided, which is considered to be in the forefront of development and innovation.

eLearning Benchmarking Exercise

With regard to ESMU's *eLearning Benchmarking Exercise*, the initiative aimed to identify best practices in e-learning through collaborative learning processes within the partnership and to formulate action plans for development and improvement. The project combined ESMU's collaborative benchmarking practices with

EADTU's more individualistic approach. Lund University participated together with eight other European universities, namely Aarhus, Copenhagen, Odense, Kuopio, Oulu, Bologna, Porto, and Latvia (Williams & Rotheram 2010).

At Lund University, ESMU's *eLearning Benchmarking Exercise* was conducted only at the management level and not at the programme level. The material collected by Lund University was based on that which was submitted for *E-xcellence+*, but it was updated and revised in accordance with the direction of the project. The project involved the organization of two workshops, which experts in e-learning also attended.

The project was based on self-assessment using EADTU's online tools, as described earlier. During the first workshop, the self-assessments were examined. This resulted in a review and some of the benchmarks and indicators being revised, resulting in a stronger focus on blended learning, approaches to learning and teaching, the personalization of learning resources, and library resources. Thereafter, the Full Assessment was conducted by all participants. Documents, links, etc., which were used to substantiate the responses in relation to benchmarks and indicators, were published in a project database.

The contents of the Full Assessment formed the basis for a second workshop. For this, all of the institutions prepared action plans based on their own strategies and policies, as well as on the feedback they had received and on examples of good practice from the other participating institutions. The workshop included discussions of key success factors but also potential areas for criticism and development in relation to the various action plans.

The First Dual-Mode Distance Learning Benchmarking Club

The *First Dual-Mode Distance Learning Benchmarking Club*, the first international benchmarking club to use a blended learning approach, was launched in 2009 but was conducted mainly in 2010. Lund University participated together with six other universities: the University of Leicester (coordinator) and the University of Liverpool from the United Kingdom; the University of Southern Queensland, Australia; Massey University, New Zealand; Thompson Rivers University, Canada; and the Royal Institute of Technology, Sweden. Lund University was invited to contribute because of its competence and the recognition that it had previously received concerning benchmarking e-learning in higher education.

Benchmarking in this project had its point of departure in the *Pick&Mix* model, a benchmarking method that is especially well known in the United Kingdom but is also used in Australia and New Zealand. This method has recently been adapted to fit the current developments in the field of e-learning and has been examined by international experts through the *Re.ViCa* project (Schreurs 2009), guaranteeing a high level of quality.

Pick&Mix consists of 100 benchmarks. This number provides flexibility, and universities can choose for themselves which benchmarks they will consider. Eighteen of them, however, are critical success factors (i.e. factors that are of special importance for success in e-learning). All of the benchmarks are valued according to six levels and, through going through the benchmarks, a coloured matrix is produced. Through the matrix, the state of an institution/department becomes explicit.

The project was aimed at disseminating and implementing the *Pick&Mix* model. The participating universities carried out the benchmarking process. Within this process, generic and critical success factors were explored. Based on the accumulated expertise in the field of benchmarking and with regard to NAHE's *e-learning quality model*, the purpose of the participation of Lund University was slightly wider and, to some extent, different from the others in the project. Apart from carrying out the benchmarking process, Lund University considered the previously defined critical success factors and suggested others based on its experiences and on the results of EADTU's *E-xcellence+* project and ESMU's *eLearning Benchmarking Exercise*, and correlated *Pick&Mix* with the other models.

To consider and define critical success factors, all of the benchmarks were consciously discussed, reflected on, related, and validated. According to our experiences of *E-xcellence+,* the *eLearning Benchmarking Exercise*, and the *e-learning quality model*, as well as the ongoing debate and discourse in the field, our research resulted in three remaining core criteria. Of all the *Pick&Mix* benchmarks, 17 new core criteria were

Table 1. List of suggested critical success areas from the project entitled the *First Dual-Mode Distance Learning Benchmarking Club*.

Remaining critical success areas from existing benchmarks in *Pick&Mix*	Selected critical success areas from existing benchmarks in *Pick&Mix*	Added critical success areas suggested by Lund University
Strategic management (formerly management style)	Accessibility	Constructive alignment
Market research	Benchmarking	Democratic processes
Reliability	Computer-based assessment	Flexibility
	Eco-sustainability	Legal security
	Employability	Interactiveness
	e-portfolios	Participation
	Information literacy of students	Productivity
	Integration	Services; staff and students
	Learning material (formerly learning objects)	Transparency
	Library services e-resources	
	Organizational learning	
	Pedagogy	
	Personalization	
	Plagiarism (formerly plagiarism avoidance)	
	Quality assurance	
	Staff recognition and rewards	
	Widening participation	

chosen, as they represented important areas for Lund University within a Swedish context. Finally, nine totally new critical success areas were added. They are constructive alignment; democratic processes; flexibility; legal security; interactiveness; participation; productivity; services for students and staff; and transparency. In total, our collection of critical success areas ended up with 29 items (Table 1).

Regarding the second task of Lund University, the result of the comparison between the various benchmarking models revealed a fairly high degree of concordance. For example, a degree of consistency between the different benchmarking methods and some common critical success factors emerged, such as the student perspective, management, and strategies, and educational and technical support. However, different ways were found to express these phenomena, possibly partly because of cultural and linguistic differences. It became obvious that the vocabulary being used tended to be somewhat old-fashioned, that the benchmarks did not appear to fit the Swedish context with regard to e-learning/blended learning, and that they did not correspond to the current terminology in relevant studies of e-learning today.

In confirming and trying to be creative and innovative in the process of working with the correlation between the benchmarking models, the current discourse and debate regarding e-learning has permeated our reflections and validations.

Observations and reflections

In the following section, the three categories of our revised and suggested list of critical success areas model (Table 1) will be discussed. First, it has to be said that some of the current benchmarks of the *Pick&Mix* model are too self-evident. For that reason, some benchmarks could easily be discarded, such as Valid Learning Management System. With regard to the category of remaining critical success areas, these three original benchmarks are also fairly obvious, but on the other hand, they need to be emphasized. This is especially valid for Management Style, which we chose to rename Strategic Management. In *E-xcellence+*, the *eLearning Benchmarking Exercise*, and the current discourse and debate, this area is crucial and also of great importance to whether or not successful e-learning can be reached and maintained.

The category of selected critical success areas is of great importance, not least from the students' perspective, as it concerns, for example, library services, personalization, issues of pedagogy, open educational resources (OER) and other learning materials, and teachers' competences and skills. Finally, the nine

added critical success areas, according to experience, comparisons between benchmarking models, and the current discourse and debate in the field of e-learning, are clearly important for successful e-learning and boundless education, and could be considered as part of an emerging conceptual framework for successful e-learning, not least from the students' point of view and with regard to their involvement.

A tangible result of the work carried out so far is the notion that a contextual perspective of all aspects of e-learning is of paramount importance and that its complexity is significant. The ongoing discourse and debate surrounding e-learning also emphasizes the importance of taking into account a holistic approach, as well as the complexity of e-learning. A holistic approach, in this context, means that all of the benchmarks included need to be viewed together, so that they influence one another and provide a sense of consistency.

The EU-funded project, Learnovation, has recently published the report, *Vision for Learning in Europe in 2025* (Aceto *et al*. 2010). The purpose of the project was to examine how learning is changing, thanks to Information and Communication Technology (ICT), and how this style of learning, in turn, lends itself to innovation. The report discusses the future of learning from an innovation-oriented perspective. Proposals for urgent measures to be taken to achieve positive changes in the field of higher education were presented. These relate to lifelong learning and the implementation of student-centred learning. They also stressed the importance of quality and virtual mobility. Furthermore, the need for research on the strategic integration of innovative learning and assessment with new structures for quality assessment in higher education was pointed out. Bates (2010a) presented a framework concerning the ways in which higher education should relate to the integration of ICT. This study was based on 11 universities in the United States and in Europe. Bates found that similar areas to the ones discussed in this paper were critical in the benchmarking models and the current discourse.

Personalization is, as mentioned earlier, one of the prerequisites for receiving the *E-xcellence Associates label* from EADTU. Wheeler (2010) extended the meaning of personalization and emphasized personalization in terms of when an individual is a part of her/his own personal learning environment. For higher education, such an interpretation will lead to challenges regarding the ways in which education needs to be reconstructed. The discourse clearly shows another emerging paradigm in higher education with regard to the need to meet these demands. This paradigm is particularly focused on personalization, attractiveness, and learning on demand in a lifelong learning context.

An emerging conceptual framework

Throughout our work, and frequently exemplified in the current discourse and debate, certain concepts of e-learning/blended learning have become explicit. Although the terminology may vary, the meaning remains similar. The frequent and consistent appearance of these concepts and their meanings constitute a foundation for the formulation of a conceptual framework for quality assurance, consisting of a number of critical success areas of e-learning in higher education.

The emerging conceptual framework introduced below expresses both the complexity that characterizes the critical success areas of e-learning in higher education and the importance of a holistic approach. The framework is to be further developed and explored (Ossiannilsson & Landgren forthcoming). However, in a developed state, the model may be used, for example, as a foundation for future e-learning and as inspiration to develop, implement, evaluate, and internalize e-learning in education within an embedded approach. In addition, the emerging framework may inspire institutions to take stock and may function as a reminder of how holistic and contextual approaches need to be taken into consideration.

Four criteria for excellence have already been stated by EADTU through the *E-xcellence+* project, namely accessibility, flexibility, interactiveness, and personalization. These concepts were also applied within the *eLearning Benchmarking Exercise* project, and were thereby confirmed as being crucial. Personalization was also pointed out as being of particular importance for quality in e-learning by McLoughlin and Lee (2008), together with participation and productivity. This resulted in the formation of the three P's pedagogy for the networked society. Like EADTU, Flate Paulsen (2010) emphasized the importance of flexibility, but also of cooperation, which is close to participation in meaning. He also stressed transparency as a third factor for success in e-learning. All of these concepts

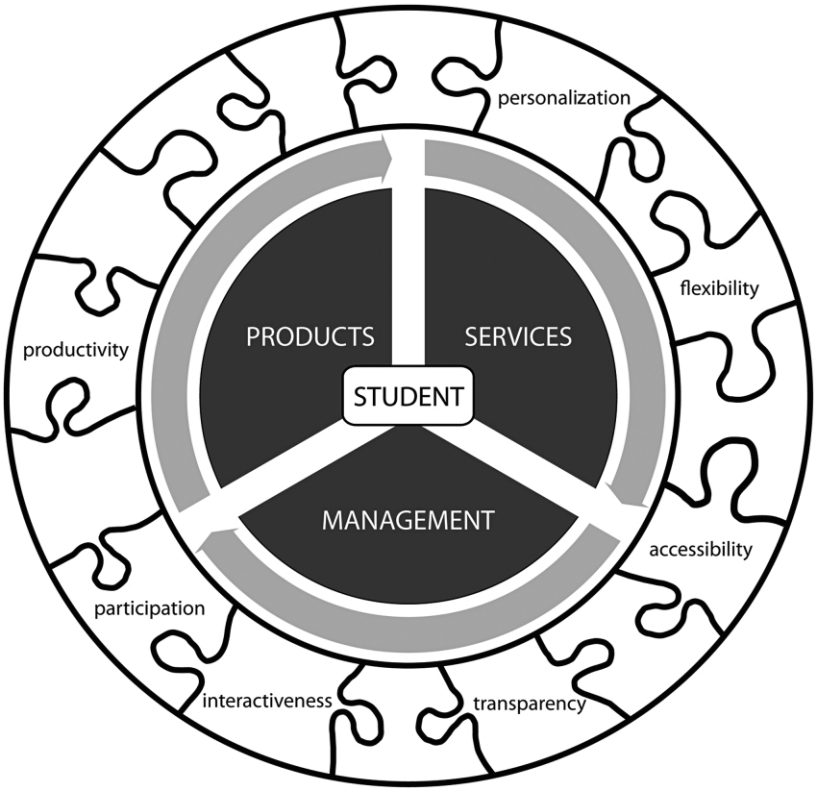

Fig 1 An emerging conceptual framework for quality in e-learning from a complex and holistic perspective.

combined, as listed in Table 1, together with some others, could be seen as the foundation for an emerging contextual framework for quality in e-learning in higher education (Fig 1).

Let us exemplify how such a conceptual framework could be interpreted from an individual's point of view. Meet Maria, a 22-year-old student from Italy, studying at the Department of Geology at Lund University, Sweden.

If Maria's studies are to be successful, not only from an academic and educational point of view but also with regard to her personal and social life, her education needs to be *flexible* in terms of time, space, place and pathways, as well as with regard to learning styles. For example, it should be possible for her to reach and work with her learning management system or rather her own personal learning environment, the library resources, and other study materials and resources in connection with her academic and personal networks (communities) 7/24/365 (i.e. seven days a week, 24 hours a day and 365 days a year) wherever she is.

Furthermore, to benefit her learning and as an important motivating factor, a large amount of the course material should be inviting and attractive. This could be achieved by giving her the opportunity to interact with the material, with her fellow students and with her teachers, thus contributing to her knowledge in a global context (collaboration, interactiveness, participation, personalization, productivity). As Maria is dyslexic, she has special needs for which the university must have sufficient resources (accessibility). In addition, Maria must easily be able to gain an overview of her courses through, for example, good infrastructural resources (transparency).

As Maria is taking a distance course, and is therefore physically far away from her classmates and teachers, all of the aspects of a boundless education are of utmost importance for her. Certainly, her class is a large and diverse group. All of the experiences of the group members, including individuals from all over the world, need not only to be taken into consideration in the course but also to be used as a knowledge base in accordance with a virtual mobility approach. Maria's investment in terms of time, money, and her personal efforts naturally means that there is a demand for Lund University to support her legal rights, that is, her rights to

influence (for example, through representation on various boards), to a study environment (in this case, a virtual one), to supervision during tasks and subsequent feedback, to evaluate the courses, etc.

The various concepts discussed earlier give clear expression to the meaning of education from a student's points of view. It has recently been stated by Jaldemark (2010), among others, that, in order to succeed and to meet the demands of the students of today, a boundless education must be achieved. Eco-sustainability seems to be a fundamental feature of today's global perspective, and is therefore crucial in a 21st-century society. As has been exemplified in Maria's story, it is crucial that the university considers the individual and her/his situation in all its complexity, and this must be done from a holistic perspective.

Conclusion

From our examination of the various benchmarking models, a great deal has been learned regarding the different approaches. During the concordance process in the *First Dual-Mode Distance Learning Benchmarking Club*, a rather high level of correspondence was found between the different models. Similar issues were expressed in various benchmarks, but with differences in their expression due to languages, linguistics and interpretations.

During the work, certain critical areas became explicit (Table 1). The current study shows that these areas have to be taken into account for the development, planning, implementation, and quality evaluation of e-learning. Furthermore, this study has reflected on their significance in a wider learning context within an emerging conceptual framework (Fig 1).

An understanding of the importance of a holistic and contextual approach to e-learning has been gained. Furthermore, the fact that current research and the contemporary discourse ought to influence the issues of benchmarking e-learning to a higher degree has also become obvious. During the processes, it has also become apparent that benchmarks have to be seen to a great extent from the students' perspective and with regard to their involvement, and not (as has been the case until now) from a more technical point of view or from the perspective of the university's management. Although it has become clear that strategic management, vision, and leadership are crucial (Bates 2010a,b), these aspects have to be seen from the perspectives of students, teachers, and universities.

As suggested by Jaldemark (2010), the meaning of a boundless education needs to be taken into consideration and to be implemented in all contexts and levels of institutions of higher education. e-Learning/blended learning and the use of new technology, social media, and OER will open up entirely new methods of education (Conole 2010), and for this reason, universities need to undergo structural and innovative changes (Bonk 2009; Bates 2010c; De Jonghe 2010; Ossiannilsson 2010; Robinson 2010).

Ehlers and Schneckenberg (2010) argue for comprehensive change in the culture of future universities to adapt to technology-based teaching and learning. They also argue that drivers for change are found among several groups: students, teachers, the university administration, the government, and civil society. This shows that changes regarding, for example, e-learning concern various stakeholders. Because of such demands, stocktaking and highlighting critical success factors are of the utmost value for raising awareness and increasing readiness to change processes.

One conclusion that can be drawn from our current study is that a revolution is on its way. Learning will be reoriented along paradigms of collaboration and connectivity (Siemens 2005; Downes 2010). Networking, globalization, sustainability, student involvement, and lifelong learning will thus become some of the key elements in this process.

Note

[1]*Pick&Mix* is a benchmarking methodology developed in 2005. It has been used in all three phases of the Higher Education Academy/JISC Benchmarking Exercise 2005–2008, and by all four Welsh universities in the Gwella benchmarking programme in 2008–2009. It is currently (Spring 2009) being used by universities in the United Kingdom and Australia for benchmarking and re-benchmarking.

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