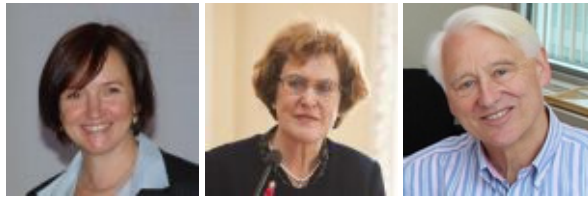


Framework of Quality Assurance of TEL Integration Into an Educational Organization



Airina Volungeviciene¹, Margarita Teresevičienė¹, and Alan Tait²
¹Vytautas Magnus University, Lithuania, ²The Open University, UK

Abstract

This research paper addresses the issues of integration of technology enhanced learning (TEL) into an educational organization. Good practice experience cannot be directly transferred to new organisations due to different contextual conditions. The TEL integration depends significantly upon a very rapid development of services and information communication technologies (ICT). Some organizations have managed to go step by step with the developments and have become leaders in TEL provision, however others, though having successful examples, have not succeeded in reaching the service level they want. While many positive examples exist in research literature, it is rare that institutions have complete strategies or solutions for integrating TEL that meet their specific pre-conditions and satisfy quality assurance parameters at the same time.

The research reported here aims at the development of a theoretical framework for quality assurance of TEL integration into educational organizations. During the research, the development of the TEL concept has been discussed, success indicators for TEL integration in an educational organization have been described, the quality parameters of TEL integration into an educational organization have been identified and the model for TEL integration into an organization has been developed.

Keywords: Technology enhanced learning (TEL); TEL integration; quality parameters; educational organization

Introduction

The mission of academic institutions to ensure up-to-date learning service provision is facilitated by technology enhanced learning (TEL). The strategies and actions taken vary depending on the country, prior experience, and other prerequisites established at each individual institution and the country. The interests of the majority of institutions target improving transparency and quality of learning services, modernizing curriculum through TEL affordances, and meeting the needs of their target learners.

The very rapid development of technological devices and software has been another driving force for decades. Society has become more and more interactive with the help of mediated communication tools at hand. Learners have become aware of the possibilities of receiving learning content at any time and in any place.

Problem

However, the introduction of TEL into an organization remains a challenge. Good practice experience cannot be directly transferred to new organisations due to different contextual conditions. TEL integration depends significantly upon very rapid development of services and information communication technologies (ICT) themselves. Some organizations managed to go step by step with the development and became leaders in TEL provision, however others, though having successful examples, have not succeeded in reaching the service levels they want. Although many examples exist in research literature discussing the strengths and weaknesses of TEL in its different modes (technical skills and accessibility [Anderson, 2008], curriculum designing [Minnaar, 2013; Reeves, Herrington, Oliver, 2002], institutional transformation and management issues [Laurillard, 2002, Bates, 2010], learner satisfaction factors [Shen, Cho, Tsai, Marra, 2013], technological solutions to support learning designing [Ferreira, Andrade, 2011], advancement of open educational resources [Lane, 2008], new learning methods and knowledge sharing options [Law, Ngai, 2008]) and many many others, it is rare that institutions have complete strategies or solutions of integration of TEL to meet their specific pre-conditions and quality assurance parameters at the same time (Bates, 2010; Kukulka-Hulme, Jones, 2012).

This research addresses the problems highlighted above and aims at the development of a theoretical framework for quality assurance of TEL integration into educational organizations.

The aim of the research is to define the quality parameters of technology enhanced learning (TEL) integration into an educational organization.

The objectives of the research are:

1. to define success indicators for the integration of TEL as an innovation in an organization;

2. to propose a model for TEL integration into an organization on the basis of quality parameters.

Method

Research question: What are the quality assurance parameters for TEL integration into an educational organization?

Research Methodology

Ten experts from European professional organizations (European Distance and eLearning Network [EDEN] and European Foundation for Quality Development [EFQUEL]) participated in the research data collection and analysis. The data collection took part in international events, network conferences, and internal meetings online. The researchers invited network members to participate in the qualitative inquiry process. Ten experts agreed to participate in the research.

The experts' age ranged from 27 to 55, and professional experience in distance and e-learning was from 5 to 15 years. They represented the following countries: Italy (2), Slovenia (1), Germany (1), Hungary (2), Lithuania (2), Belgium (1), and the Netherlands (1). This group (further referred to as International Expert Group - IEG) participated in both data collection and inductive and deductive analysis of research data.

Another group who participated in data analysis consisted of 12 experts from the Lithuanian Distance and eLearning (LieDM) association. The experts represented professionals from adult, vocational education and training, and higher education institutions. All 12 experts were professionals who had worked in distance and e-learning for more than 10 years. Their age ranged from 38 to 58. They occupied responsible positions for the organization of distance and e-learning in adult, vocational education and training, and higher education organizations in Lithuania. This group will be referred further in the text as National Expert Group - NEG.

Methods

Qualitative analysis of content as qualitative inquiry was used as the research method.

Following Marchall and Rossman (1998), two methods for data collection were used: 1) analysis of documents and materials, and 2) group discussions (which are termed expert discussions in this research).

For data analysis method inductive and deductive research methods were used (Savin – Baden, Mayor, 2013).

The phases of data collection and analysis, as well as their sequence, are presented in Table 1.

Table 1

Phases of Data Collection and Data Analysis Process

Data collection process	Data analysis process
IEG implemented internal meetings with their organizations in order to review existing regulations for technology enhanced learning. First data was selected for IEG meeting discussion.	During the first EIG meeting, the data were analysed and inductive versus didactic analysis was carried out, in order to define the first categories of quality features for technology enhanced learning integration into an organization.
IEG implemented literature analysis and collected data on TEL quality assurance characteristics.	IEG met to analyse the data and to implement inductive and deductive analysis on TEL theoretical and empirical quality assurance characteristics.
IEG organized national seminars with TEL target groups in order to collect data on quality assurance requirements for TEL.	IEG shared the results and implemented data analysis by measuring the relationships of single criteria with the categories of quality assurance called criteria groups.
IEG presented quality criteria to their national and institutional experts for data validation.	IEG members brought feedback from national expert groups and finalised quality assurance categories for TEL integration.
NEG collected data on the quality characteristics in terms of quality criteria (features) for TEL implementation in vocational education and training, adult education and higher education institutions.	NEG gathered to review experts' results from national vocational education and training, adult learning and higher education organizations to establish relationships of criteria and to group individual criteria into criteria groups.

Tools

Collaborative online tools were used for data collection and analysis during the whole process of research. Google documents and forms, as well as Excel spreadsheets were used for this purpose. Qualitative research data were entered into the document after each phase. The key question addressed during the meeting with both the IEG or NEG was “How is TEL introduced in an educational institution, what are the stages and important factors, what are the quality criteria of this process?” All IEG and NEG meetings were recorded and data collected were inductively inserted in the document. If experts were not able to participate in the meeting, the online form was sent to them to be filled in with the open answer. These answers were again transcribed and copied into the data collection document.

During the data analysis phases, the data were deductively analysed and intermediate results were presented in the collaborative working document (Google doc or Excel spreadsheets). All editing versions were saved and reviewed during the data analysis, and editing history was used. Online collaborative documents were used among these two groups only.

Ethics

All data collection and data analysis records were used anonymously outside the groups. Data collection was implemented using all ethical standards and rules. If data were collected during international expert group meetings with other professionals, outside the group, all discussions were recorded and transcribed anonymously for research purposes only.

Results

TEL Services Offered by Organizations

The term technology enhanced learning (TEL) is used extensively throughout the educational world. It is the latest in an assortment of terms that have been used to describe the application of information and communication technologies (ICT) to learning and teaching. Unlike other terms such as e-learning or on-line learning, technology enhanced learning implies a value judgement: the word “enhancement” suggests an improvement or betterment in some way (Price & Kirkwood 2010).

According to the authors, TEL seeks to improve the student learning experience by aiding their engagement, satisfaction, and retention, helping to provide skills to compete in a global business environment, encouraging innovative teaching, personalising learning, promoting reflection, and delivering and supporting internationalization.

In this paper, the concept of TEL is treated as the broadest concept, following the definition by Price and Kirkwood, meaning that it embraces e-learning, on-line learning, and other forms of TEL. Following this approach, TEL has developed along with generations of distance education and now creates new forms or is the means for the realization of innovative learning and teaching scenarios using information and communication technologies (ICT).

According to Anderson and Dron, “distance education evolved from a Gutenberg-era print and mail system to one that supports low-cost, highly interactive learning activities that span both time and distance with equal facility” (2012, p. 1). Distance education, according to the authors, does not follow a single paradigm mode, but is

rather diverse and depends upon pedagogy solutions. The authors provide arguments for the classification of distance education pedagogy into three generations of pedagogies that provided solutions for technology affordances and learning scenarios.

E-learning (“terms commonly used for online learning include e-learning, internet learning, [...] web-based learning, and distance learning. All of these terms imply that the learner is at a distance from the tutor or instructor, that the learner uses some form of technology (usually a computer) to access the learning materials, that the learner uses technology to interact with the tutor or instructor and with other learners, and that some form of support is provided to learners”, Anderson, 2008) is one of the most popular forms of TEL service in universities, vocational education and training, as well as adult learning institutions. According to Govindasamy (2002), many institutions use e-learning to solve authentic learning and teaching problems.

Blended learning is the most popular form of TEL. Garrison, Kanuka (2004), Laurillard (2002), and others proved that integration of blended learning in an organization is an effective and low-risk strategy for an organization to reconceptualize and reorganize pedagogical strategies, even though all blended model designs are absolutely different and no identical strategies exist. However, the unique characteristic in the introduction of blended learning approaches within an institution is that there is one very significant factor, that is, the engagement of academic community.

Besides on-line learning, e-learning, and distance learning (which dominated for the last decades), new forms of TEL emerged. Universities introduced innovative solutions, such as open educational resources in order to widen participation possibilities (Atkins, Brown, Hammond, 2007; Lane, 2008) or virtual and blended mobility forms to contribute to intercultural and multilateral collaboration scenarios (Volungevičienė, Teresevičienė, & Daukšienė, 2011). The TEL concept has significantly changed existing dominant practices, introduced innovations, and continues to change the landscape of learning services at education institutions. Thus today the TEL concept carries a broader focus than the previous ones, which would concentrate on online, distance, or e-learning, and it should be re-considered in the light of common practices.

Summing up the novelty of TEL services offered by educational organizations one could say that a broader concept of TEL has emerged out of e-learning, on-line learning, and distance education. The new TEL concept implies the value of judgement of improved learning services for students and new, innovative scenarios in learning and teaching. Though new forms of TEL emerged, like open educational resources and virtual mobility, blended learning forms remain the safest for organizations.

Quality Assurance of TEL Integration

Bates (2010) argues that TEL is not engaged with by senior management, or that quality assurance procedures do not seem to be enforced with the same rigour as for other courses. This may arise from an unwillingness to confront risk as an essential part

of innovation, rather than develop procedures able to manage this risk appropriately. Consequently, these innovations are seen as inherently risky, are treated as special cases, and simply excluded from oversight. Mellar and Jar (2009) suggest that “higher education institutions need to re-examine the way that they approach the quality assurance and enhancement of e-learning courses” (2009, p. 30). Institutions need to develop approaches to the quality management of innovation (and especially innovation involving technology) that support innovation rather than stifle or sideline it.

Different standards and quality guidelines are available and used with regard to quality assurance in different countries (Stracke & Christian, 2010; Canadian Recommended E-Learning Guidelines, 2002). The standards for quality assurance guidelines for different levels of education institutions also exist, but, for example, specific TEL (including online and e-learning quality assurance guidelines) do not agree with more general, for example, European quality assurance guidelines for higher education institutions (see European Association for Quality Assurance in Higher Education website, <http://www.enqa.eu/index.php/home/esg/>). Moreover, higher education quality assurance guidelines in Europe do not suggest specific criteria for TEL service provision or integration within an organization.

Ferreira and Andrade (2011) discuss the "E-learning quality - ELQ" model developed by the Swedish National Agency for Higher Education. The model was identified through the analysis of the following: i) policies, projects and working networks developed by several European organizations; ii) policies of governmental agencies and national organizations dedicated to quality assurance in higher education, especially in e-learning; iii) published scientific articles. The model consists of 10 dimensions: 1. material/content; 2. structure/virtual environment; 3. communication, cooperation and interactivity; 4. student assessment; 5. flexibility and adaptability; 6. support: student and staff; 7. staff qualifications and experience; 8. vision and institutional leadership; 9. resource allocation; and 10. the holistic and process aspect.

The Australasian Council on Open, Distance and e-learning (2014) set eight benchmarks to support continuous quality improvement in TEL. The approach reflects an enterprise perspective, integrating the key issue of pedagogy, with institutional dimensions such as planning, staff, and student development and infrastructure provision. The benchmarks were developed for use at the organisational level. The benchmarks cover the following eight topic areas: 1. institution-wide policy and governance for TEL; 2. planning for institution-wide quality improvement of TEL; 3. information technology systems, services and support for TEL; 4. the application of TEL services; 5. staff professional development for the effective use of TEL; 6. staff support for the use of TEL; 7. student training for the effective use of TEL; and 8. student support for the use of TEL.

Bacsich (2009) reviews benchmarking methodologies used in United Kingdom universities, and references parallel work in New Zealand, Australia, Sweden, and EU based organisations. Typically these methodologies specify sets of criteria which are scored by evaluators. They differ mainly in how the criteria are set and the ways in

which the scores are arrived at. They are all outcome-based, and do not prescribe how a project should be set up or e-learning materials developed.

In sum, quality assurance models are under discussion in the research literature. Available examples suggest sets of benchmarks to support quality improvement for TEL and e-learning services. The uptake of quality assurance procedures for TEL services by senior management is identified as problematic in practice. TEL service introduction is not fine-tuned yet nor treated adequately as integration of innovation in an organization.

Success Factors for Integration of TEL as an Innovation in an Organisation

Having analysed successful innovations and their cases, Tidd and Bessant (2009) provide the following successful innovation implementation criteria identified in their empirical research:

- product advantage (superiority in the eyes of the customer);
- market knowledge;
- clear product definition (including target markets, benefits, positioning strategy, product requirements);
- risk assessment (market, technological, manufacturing and design sources of risk);
- project organization (cross–functional, multidisciplinary teams);
- project resources (financial, material resources, human skills, management and technological skills);
- proficiency of execution (quality assurance and pre-commercialization business analysis);
- top management support (from concept to launch).

The authors claim that “these factors have all been found to contribute to new product success, and should therefore form the basis of any formal process of new product development” (2009 , p. 160).

According to Groff and Mouza (2008), there exist six critical factors influencing the integration of technology and innovation in the classroom: legislative factors (McMillan-Culp, Honey, Mandinach 2005, cited in Groff, Mouza, 2008), institutional level factors, factors associated with the teacher staff in this research (McKenzie 2003, cited by Groff and Mouza, 2008), technology enhanced project factors (Honey,

McMillan, Carrigg, 1999, cited by Grodd, Mouza, 2008), student factors, and factors inherent to technology itself.

The authors agree on the outcomes of the research and indicate the following obstacles to successful integration of technology enhanced projects in the classroom: lack of teacher input on the development of innovations, insufficient support in the form of resources, time, professional development, human and technological infrastructure, inadequate institutional culture, teacher attitudes and concerns about technology use – inexperience, technology itself, and others (Groff, Mouza, 2008, 42).

It should be noted that this research is implemented on the level of an organization, focusing upon the main areas of its activity. The authors recognize the prominence of a learner – as the key actor in researching and identifying success or failure of a learning service provision. Learner satisfaction factors (discussed by Shen, Cho, Tsai, & Marra, 2013), technological solutions to support learning designing (Ferreira & Andrade, 2011), interaction (Woo & Reeves, 2007) and knowledge sharing ((Law & Ngai, 2008), and many other factors influencing learning success are not left behind by the authors.

Moreover, during this research, the authors focused on the institutional activity areas and the decisions that should be accepted in order to change existing practices within an organization so that they are all in favour of a learner and its support.

Having analysed the factors indicated by Tidd and Bessant (2009), as well as critical factors and obstacles by Grodd and Mouza (2008), the following representation of TEL integration quality criteria groups can be derived and tested.

Table 1

TEL Integration Quality Criteria Groups

Theoretically supported successful innovation implementation criteria (by Tidd and Bessant, Groff and Mouza)	TEL integration quality criteria groups (derived)
Legislative (and top management support)	Strategy and management
Technology (and resources)	Information technologies and infrastructure
Teacher (and proficiency of implementation)	Continuous professional staff development
TEL Project (also product advantages, clear product definition)	TEL curriculum
Student	Support systems
Institutional level factors (and proficiency of implementation, time and support with resources, culture issues)	Quality assurance
Market knowledge	Marketing and business development

The criteria of risk assessment and TEL organization will be analysed within the scope of the integration concept, rather than parameters for qualitative service development.

By applying theories of integration of innovation in an organization, the main criteria groups of TEL integration quality assurance have been identified and listed below in the following sequence: 1) strategy and management, 2) information technologies and infrastructure, 3) continuous professional staff development, 4) TEL curriculum, 5) support systems, 6) quality assurance, and 7) marketing and business development.

Strategy and Management

Many organisations are still in the initial stages of incorporating TEL into their repertoire of capacity strengthening. TEL creates new variables, constraints, and issues, making it fundamentally different from face-to-face learning environments (Veletsianos & Kimmons, 2012). As they gain experience incorporating TEL into their practice and learning, institutions will begin to find their niches in the new virtual environment. Yet, documentation of the issues, constraints, and challenges in implementing online courses continue to be limited both in educational institutions and business organisations.

While TEL implementation in educational institutions is in a more advanced position, in business organisations it still is in its infancy, with researchers identifying success factors, frameworks, models for organisational context (Nichols, 2008). Notably, results show (Liu, Huang, & Lin, 2012) that management support, organisational learning culture and institutional policy are crucial for the implementation of TEL.

Bates (2010) argues that resistance to change and barriers to TEL integration arise from the issues related to funding, vision development, and TEL organization. Kukulska-Hulme and Jones (2012) state that restriction also originates from the inability of universities to design new models of learning and emphasize resource constraints and reduction of staff student ratios.

It is clear that to ensure success the integration of TEL needs careful and systematic planning. Minnaar has analysed how ODL can be implemented in a university and pointed out that “planning starts with strategic planning, followed by the development of ODL policies for alignment with efforts, strategies, and processes” (2013, p. 104). Technologies are chosen by individuals with different experience, sometimes long before the management has delivered solutions. This is in contrast to effective technology integration, which, according to Iansiti (1998), should start with the decision makers’ visualization and perspective planning, including technological outlook.

It can be summarized that support from management, strategic planning, and TEL service policies in an organization are crucial factors for TEL service development. Resistance to new forms and services may result in issues related to the lack of resources and reduction of staff.

Infrastructure and Technological Resources

New technologies have altered the way students interact with their instructor and classmates; internet self-efficacy has been shown to be a significant predictor of students' satisfaction in fully online learning settings (Kaminski, Switzer, & Gloeckner, 2009; Kuo, Walker, Beland, & Schroder, 2013).

Usefulness and ease of use are compulsory for TEL services (Sela & Sivan, 2009) and system quality proves positively related to service quality (Kettinger, Park, & Smith, 2008). An easy to use system gives users a greater perception of usefulness and promotes a positive attitude towards the system, which implies that a system with better quality (such as better response time, reliability and accuracy) can deliver better services.

Learning management systems make up the critical element of an institutional online learning infrastructure. Salinas claims that it is perhaps the most widely used and most expensive educational technology (Salinas, 2008). An e-learning environment is more than just the sum of a technical system and quality learning 'content'; its success, or otherwise, is strongly mediated by actions taken in management of the system (Hilgarth 2011). Palmer, Gosper, Sankey, and Allan suggest "distributed models of leadership" for virtual learning environments that would be "proposed as appropriate for the good governance of both large IT systems and higher education" (2013, 73). The authors conclude that this is an important insight into the quality management of virtual learning environments.

Blumenfeld et al. (1991, cited by Edelson, Gordin, Pea, 1999) have identified six contributions that technology can make to the learning process: 1) enhancing interest and motivation; 2) providing access to information; 3) allowing active, manipulable representations; 4) structuring the process with tactical and strategic support; 5) diagnosing and correcting errors; 6) managing complexity and aiding production.

It can be stated in summary that infrastructure, learning management systems, technological solutions make up critical elements directly related to the quality of TEL services. Various models of IT solutions exist on the basis of management model needed, each of them having direct impact upon the TEL process.

TEL Curriculum and Programs

Morrison and Anglin (2012) argue that curriculum authors should have attributes and affordances to create efficient and effective instructional strategies. The authors claim that curriculum designers should be supplied with applicable technologies for presentation of information, for interactions, and for pacing of the instruction. Feedback should be ensured in any type and manner, and pacing possibilities should ensure full control over curriculum sequence and openness.

The characteristics of an effective activity design were described by Macdonald and Black (2010) claiming that effective activity design makes use of interaction in an online community, when participants have a sense that they belong to an active group of fellow participants.

Reeves, Herrington, and Oliver (2002) identify guidelines for educational applications of authentic activities within online learning environments. They describe authentic activities as characterised by the following features: having real-world relevance, comprising complex tasks to be investigated by students over a sustained period of time, providing the opportunity for students to examine the task from different perspectives, using a variety of resources, establishing the opportunity to collaborate and reflect, having the capability of being integrated and applied across different subject areas and lead beyond domain-specific outcomes, being seamlessly integrated with assessment, creating polished products valuable in their own right rather than as preparation for something else, and allowing competing solutions and diversity of outcomes.

To conclude, TEL curriculum design represents the key component to create efficient and effective TEL services. TEL authors should ensure effective activity design scenarios, openness of the learning process, integrated assessment solutions, and authentic activities online.

Continuous Professional Development of Staff

Many faculty members who are currently teaching online courses may not previously have taken online courses, since TEL offerings were not available then. Therefore, it seems necessary for instructors who are planning to teach online to consider taking at least one online course plus some ongoing faculty development training on issues of e-learning.

Web-based technologies can improve access, equity, and quality of professional learning opportunities; at the same time establishing online cohorts of teachers in courses can provide rich interactions and ongoing or work-embedded support (Robinson, 2008; Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009, p. 9).

Researchers (Moore & Kearsley, 2005) stress that implementation of TEL might be good to start with teacher education since teachers are invariably keen, disciplined TEL students.

Bawane and Spector (2009) identify eight main roles of the teacher performing online:

1. pedagogical (content expert, organizer, instructional designer, tutor);
2. social (supports students, facilitator);
3. evaluator (monitors and assesses students);

4. administrator/manager (manages time and course);
5. technologist (selects the appropriate resource for learning, demonstrates awareness of synchronous and asynchronous communication tools);
6. advisor/counselor (provides guidance, motivates students);
7. personal (positive attitude to e-learning, sensitivity to students);
8. researcher (research in classroom teaching, reflection about teaching practice).

According to Angeli and Valanides (2009) teachers need to be explicitly taught about the interactions among technology, content, pedagogy, and learners in order to effectively use technology to improve learning. Pedagogic change in online learning might be understood in terms of the development of the teacher's knowledge of how to teach effectively with technology.

Georgina and Olson (2008) carried out a study to determine how faculty literacy and technology training impact their pedagogy, which, according to the study, is directly correlated. Moreover, the researchers stated that technology training may be maximized for the integration of pedagogy. By technology training the authors use the concept of technological literacy defined by Shackelford, Brown, and Warner (2004, cited by Georgina & Olson, 2008) as "the capacity to "design, develop, control, use and assess technological systems and processes" (p. 7). The researchers conclude that the most effective training is peer to peer training, however, discussion forums, workshops, and other forms of training are recommended by the authors.

It can be concluded that staff need to be consistently trained and given professional development in order to create new pedagogical models for TEL and integrate them in TEL service provision. A range of staff roles are identified for TEL service provision, which demand constant improvement of skills for TEL design.

Support Systems

Woo and Reeves (2007) claim that instructional designers lack theoretical knowledge about interaction. Rovai (2002), Thompson, and MacDonald (2005) and Shea (2006) explain the role of community in supporting online learning in relation to three elements in particular: social presence, teaching presence, and cognitive presence. Social presence is understood as the degree to which learners feel socially and emotionally connected with others in the virtual environment; cognitive presence means the ability of learners to construct and confirm meaning through sustained discourse and reflection; teaching presence means the design, facilitation, and, most importantly, the direction of cognitive and social processes in order to achieve learning outcomes.

Woo and Reeves (2007) argue that not every interaction is meaningful; nevertheless, it is one of the key components of good pedagogy, no matter whether technology is used or not. They claim that “interaction is ... fundamental process for knowledge acquisition and the development of both cognitive and physical skills” (p. 15) and should be used in learner support, but only when it is reconceptualized in terms of learning theories. The authors claim that interaction is meaningful when it has direct influence on learners’ intellectual growth.

Shen, Cho, Tsai, and Marra (2013) argue that self-efficacy is affected by prior experience, by student participation in learning activities, by social interaction of students, by students’ ability to handle tools and content management systems, and by gender differences.

It can be stated in conclusion that interaction and support are critical elements of TEL service design and provision. Designing effective presential modes of teaching, planning, and implementing interaction with students to monitor their learning progress and to handle interactivity and support with technological tools make up success factors for efficient and effective support in TEL.

Quality Assurance

Skeptics continue to question the quality of electronically delivered educational programs. It is not always clear how the participants who get education through online courses fare compared to those who receive face-to-face course content in formal settings (Ogunsola 2010). Mulwa, Lawless, O’Keeffe, Sharp, and Wade (2012) state that the reasons for evaluating learning provision might include: (a) determination whether the TEL solution is accomplishing its objectives; (b) identification of who benefited the most or the least from the TEL program; and (c) clarification of areas for improvement. Evaluation provides valuable feedback about potential users’ perceptions of the TEL system, how well the software is written, and the extent to which the system really does support decision making (Jiang & Klein 1999).

Mulwa, Lawless, O’Keeffe, Sharp, and Wade (2012) summarized the scientific literature (Ehlers et al., 2005; Drachslar et al., 2010; Breitner, Hoppe, 2005; De Jong, Schellen, 1997; Nielsen 1993; all cited in Mulwa et al., 2012) and proposed a summary of quality assurance approaches for TEL services, including quality assurance based on the survey approach, the lifecycle approach placing evaluation at the centre of the development process, combined and layered evaluation approaches used to measure the impact of TEL recommendations, the pedagogical objective approach, the user-centred evaluation approach, empirical approach, and the utility approach where ICT solutions are implemented for internal quality assurance level (surveys, communication, etc.).

It can be summarized that TEL services need quality assurance procedures to give credibility for innovative service quality assurance, as well as to leave no doubt that

innovative methods deliver, and importantly, highlight and reveal all quality aspects in TEL curriculum and programs.

Marketing

An ongoing market research study carried out by Lawless, O’Keeffe, Sharp, and Wade on e-learners (clients) can provide institutions with comparative advantage over others in their e-learning offerings. Market researchers and recruiters (salespersons) should be part of the overall e-learning initiative. The scope of this marketing operation may depend on institutions’ e-learning policies and types of clients (learners). One of the important marketing strategies is to make accurate and updated information about their e-learning offerings known to as many potential learners as possible. This can be accomplished by registering e-learning sites with search engines, banner advertising, postings, and list servers, endorsement by credible people and institutions, and so on. Effective marketing will help institutions to attract and recruit students for their courses and programs (Khan, 2005).

Martin and Matlay (2003) discuss how organizations can gain considerable competitive advantage from Internet usage if they achieve the right mix of managerial capacity and marketing focus in terms of image, brand, and customer needs. Their human resource base could allow such organisations to “reinvent” themselves, mainly by effectively accessing and embedding new knowledge.” It appears that organisational culture facilitates and supports wider access and application of new knowledge through organisational learning mechanisms.

Law and Ngai (2008) state that business process improvement and product and service offerings are positively associated, and, in their turn, they are positively related to organizational performance. The findings reinforce the importance of knowledge sharing and learning to companies. Executives should encourage knowledge management and organizational learning activities within their firms, and give proper considerations to the strategies and implementation of programs supporting these activities in order to enhance a company’s performance.

To summarise the need for marketing and business plan development, one could say that improved and increased accessibility reveals new managerial capacities and possibilities to share and market TEL services. Marketing strategies should be developed at strategic and managerial levels to foster TEL service provision and new organizational learning modes.

The Model of TEL Integration into an Organisation

As discussed above, TEL should be introduced into an organization responding to the needs of an organization and taking into consideration existing contextual preconditions. TEL integration into an organization will be affected by seven

organization activity areas (see Figure 1) which are described in the model as seven quality criteria groups.

An organisation which is willing to integrate TEL in an educational organization should see the process of integration as embedded into the issues that an organization can and cannot control. The first block represents the quality parameters that an organization cannot control. It is called “Identifying preconditions” in Figure 1. However, this is exactly the first step that should be made in the process of TEL integration in an organization. The preconditions, such as global and regional trends and dimensions in education policy, TEL demand, and information technology infrastructure in terms of internet permeability in the country, new devices and trends, should be examined and described.

As a second step, an institutional case should be developed. Self-assessment based on the seven key quality parameters of TEL integration (namely, 1. Strategy and management, 2. IT infrastructure, 3. TEL curriculum and programs, 4. Staff continuous professional development for TEL service design and provision, 5. Support systems for TEL participants, 6. Quality assurance of TEL services, and 7. Marketing and business plans) should be implemented by the organization, which would result in a case study report. The case study report should describe how TEL is addressed by all seven key areas and how it meets quality criteria: how TEL is represented in the strategy of the organization, how information technology infrastructure is developed, what experience the organization has in TEL curriculum and program development, what policy and practice are implemented in the area of staff continuous professional development, what kind of teacher and learner support system is implemented, how quality assurance systems work for TEL and innovations in the organization, and if new TEL services are linked with marketing and business development (see Figure 1).

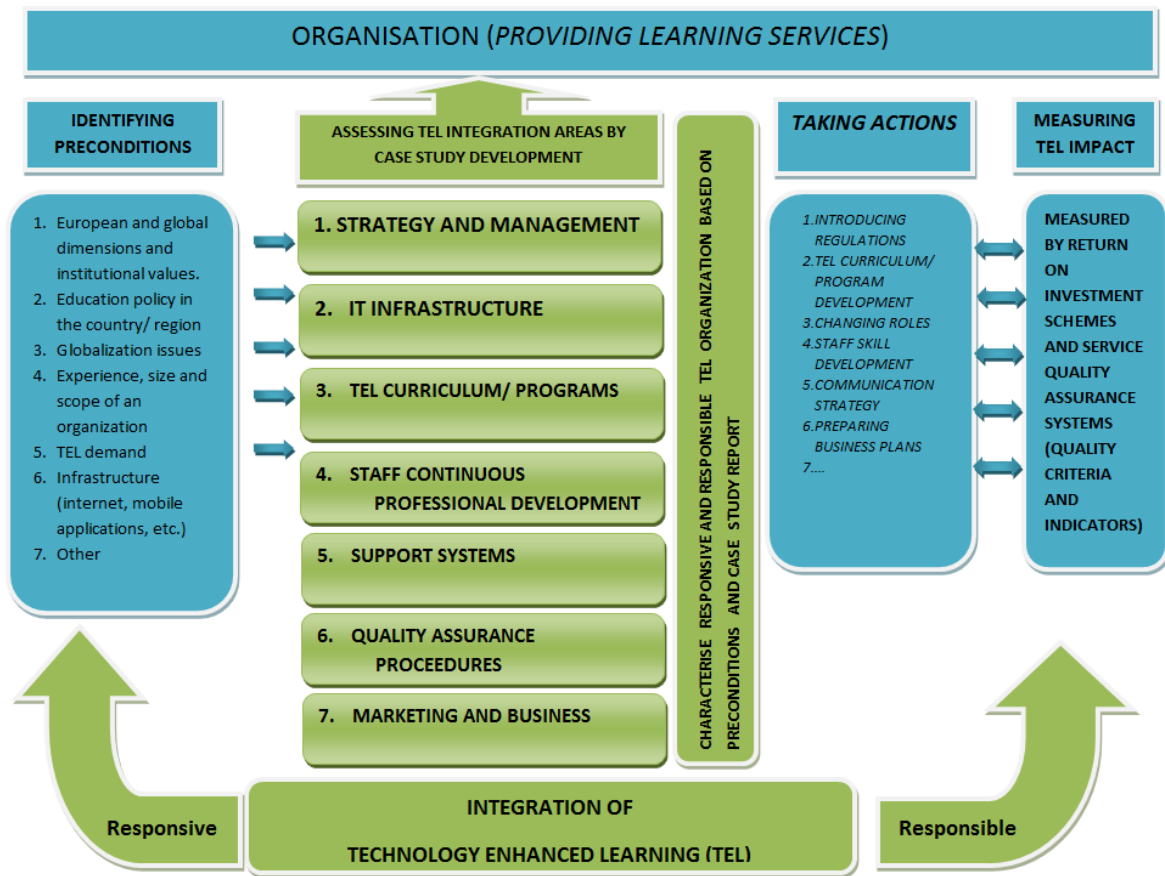


Figure 1. The model of TEL integration in an organization.

The case study report should characterize TEL development status in an organization, as well as include the needs described by all stakeholders of the organization. When the needs and the demand are agreed and described in the case report, the process of integration becomes *responsive* to existing preconditions, the needs and demand of the organization stakeholders and potential target groups, and is described by the case which records all this data. As the case is developed against TEL integration quality parameters (the seven key quality criteria groups), the case and the process of integration becomes *responsible*, as it carries the information of the primary causes and ensures that they are taken into account and are credited for further case development.

Following the logical sequence of the model, the results of the case report are presented for the next phase of TEL integration, namely, for reviewing the case report by an expert or experts and preparing the *action plan* for case further development. Characteristics and pre-conditions for TEL integration in an organization represent the data, the expert(s) implement data analysis, and the action plan is the outcome of the expertise. The organization should consider the action plan as direct recommendations for TEL integration.

The following steps can be recommended for an organization in application of the model: 1) identify and assess pre-conditions existing in global, regional, national, and institutional contexts; 2) implement a case study and prepare the case study report covering institutional preparedness for all seven areas of activity; 3) prepare the action plan to integrate TEL; 4) integrate TEL in the organization; 5) continue monitoring of TEL integration and measure TEL impact upon the core services provided. The process of TEL integration has the aspiration to be characterized as responsive (towards preconditions, organization needs, and demand from the market), as well as responsible (as case development is based on quality parameters and is implemented in organizational context). Moreover, there is one more step in the process of TEL integration, namely, the phase of measuring TEL impact upon the organization activities, success, and service quality. Even though this research does not propose recommendations on how to measure TEL impact upon an organization, this is an important phase of the process of TEL integration. Where the model is applied by experts, it is important to include negotiation and agreement with an organization into which TEL is being integrated about the possibilities of and measures on how TEL impact can be measured within a specific due time.

Discussion/Conclusions

This research addressed the problem of TEL integration into educational institutions aiming to develop a theoretical framework of quality assurance parameters. Inductive and deductive research data analysis was used by the authors, who, using qualitative analysis of content research method, collected research data during meetings with international and national expert groups. Theoretical scientific research literature analysis was analysed, as were existing frameworks, benchmarking methodologies, quality assurance models. Institutional practices and documents were analysed during the meetings with the experts, during international (European Distance and eLearning network [EDEN], International Council for Distance Education [ICDE], and European Federation for Quality in eLearning [EFQUEL]) conferences, workshops, and seminars. Moreover, TEL was discussed and analysed on the basis of the theories of integration of innovations.

As a result of the qualitative and theoretical research, the model of TEL integration in an organization was developed by the authors of this paper, describing the process of TEL integration in five main phases: a) identifying preconditions for TEL integration, b) developing the case of the institution on the basis of seven TEL quality assurance criteria groups, c) reviewing the case and characterizing responsive and responsible TEL integration in the organization based on preconditions and case review results, d) taking actions to integrate TEL in the organization, and e) measuring TEL impact upon the quality of organization services.

The process described in five phases in Figure 1 highlights the principles to be applied during TEL integration, that is, the process of integration being responsive and responsible. The principle of responsive integration ensures the reflective character of the process and decisions taken during it. It implies the need to reflect upon the preconditions existing and demand expressed by the stakeholders of the organization before any decision taken for change or innovation integration. During step three, when the case should be reviewed and TEL integration should be characterized in a responsive manner, consistency is ensured between the preconditions existing (within and outside the organization, needs of the organization, the demand, etc.) and further actions to be taken.

The TEL integration process can be described as well-managed, if the case development is based on the framework of quality assurance criteria groups and if taking actions are agreed and confirmed by both external experts and stakeholders of the organization. Otherwise, it can hardly be treated as responsive to the needs and responsible in terms of carrying responsibility or targeting changing the primary cause/situation and seeking agreement on the actions proposed.

The most difficult phase of the model proposed is the phase of measuring TEL impact upon the quality of organization services. First, it should be decided what data should be collected at which stage and measured. Second, the organization should give consent and allow measurement of change. Subjective and objective measurement should be implemented, at different stages of TEL pre-per and post integration.

The seven quality assurance parameters have been identified during the research: 1) Strategy and management, 2) IT infrastructure, 3) TEL curriculum designing, 4) Staff continuous professional development, 5) Support systems, 6) Quality assurance procedures, and 7) Marketing and business. All these criteria groups do not carry direct subordination to each other, however some groups are prior in the process. The first internal pre-condition in the organization is to have TEL identified in the strategy and on the management level. Second, IT infrastructure needs to be established, as well as support systems and quality assurance regulations put in place. Third, staff development should be in place and running, and TEL curriculum designing implemented. Even though quality assurance procedures would be running after TEL curriculum is designed, the quality criteria are needed well in advance in order to set the requirements for the curriculum design. Marketing and business planning should be running from the very beginning of the process.

All the seven quality assurance criteria groups have direct correlation to preconditions of TEL integration, to case development and action plans. All the criteria groups and their development will have direct impact upon TEL impact within the organization and TEL success indicators.

It must be noted that the model itself highlights the areas of organization activities that will be affected during the integration of TEL. This paper does not suggest the solutions

for organizations, but highlights where changes will be needed and which activity areas will have to be adapted to new modes of service delivery. The model also illustrates interoperability of the areas with the pre-conditions (coming from the more global context) and related with the consequences and impact of TEL integration.

The complexity of the process of quality assurance must be emphasized in this discussion. Further research must be conducted to identify and validate quality criteria and descriptors for each quality parameter. In this way, an organization applying the model of TEL integration quality parameters would be facilitated to identify criteria of qualitative integration of TEL and would be able to prepare and accept proper decisions to adapt and change operating areas of activities. Thus it can be presumed that with good professional skill development of the staff, updated institutional strategy oriented for TEL services, proper methodology for TEL curriculum and program designing, learning support system available and running, quality assurance processes with all stakeholders involved, as well as marketing strategies employed, the TEL integration process should be successful in an education organization. However, each of these tasks is complicated and should be further researched and described. Success factors, costs, impact factors, and other interactive variables remain open for international research and review.

Moreover, the roles of all stakeholders should be discussed in further research. The learner as undertaking the prominent role and decisive position on the success of TEL services remains undoubtedly the key actor in the process and research. On the other side, teachers and institutional administration representatives are the target groups for early validation of the model in the future research, to bring more variables and to validate already drafted quality criteria descriptors for each of the quality parameters.

Last, but not least, facilitation of TEL integration in an educational organization has been researched and created as a result of this paper. Even though the model of TEL integration in an organization has already been approved by experts and professionals contributing to data collection and analysis during this research, the authors of the paper identified the need for further discussions on application of the TEL integration model in future international events and gatherings.

Acknowledgements

This research is funded by the European Social Fund project (VP1-3.1-ŠMM-07-K-03-045) under the Global Grant measure.

References

- Anderson, T. (2008). *Theory and practice of online learning* (2nd ed). Athabasca: AU Press. Retrieved from <http://www.aupress.ca/index.php/books/120146>
- Anderson, T., & Dron, J. (2012). *Learning technology through three generations of technology enhanced distance education pedagogy*. Retrieved from <http://files.eric.ed.gov/fulltext/EJ992485.pdf>
- Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computer and Education*, 52, 154-16.
- Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities. Retrieved from <http://www.hewlett.org/uploads/files/ReviewoftheOERMovement.pdf>.
- The Australasian Council on Open, Distance and e-learning website. <http://www.acode.edu.au/>
- Bacsich, P. (2009). *Benchmarking e-learning in UK universities: The methodologies. Transforming higher education through technology-enhanced learning*. Edited by Mayes, T., Morrison D., Mellar., H., Bullen P., Oliver, M., 90-107. Retrieved from <http://www.heacademy.ac.uk/assets/documents/learningandtech/Transforming.pdf>.
- Bates, T. (2010). A critique of Tapscott and William's views on university reform. E-learning and Distance Education Resources. Retrieved from <http://www.tonybates.ca/2010/02/14/a-critique-of-tapscott-and-williams-views-on-university-reform>
- Bawane, J., Spector, J. (2009). Prioritization of online instructor roles: Implications for competency-based teacher education programs. *Distance Education*, 30(3), 383-397. Doi:10.1080/01589190903236536.
- Canadian Recommended E-learning Guidelines (2002). Prepared by Dr. K. K. Barker. Retrieved from <http://www.futured.com/pdf/CanREGs%20Eng.pdf>
- Dede, C., Ketelhut, D., J., Whitehouse, P., Breit, L., & McCloskey, E. M. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education*, 60(1), 8-10.

- E-learning quality Aspects and criteria for evaluation of e-learning in higher education (2008). Report by Swedish National Agency for Higher Education. Retrieved from <http://www.hsv.se/download/18.8f0e4c9119e2b4a60c800028057/0811R.pdf>
- Endelson, D.C., Gordin, D.N., Pea, R.D. (1999). Addressing the challenges of inquiry - based learning through technology and curriculum design. *The Journal of the Learning Sciences*, 8(3/4), Retrieved from <http://www.worldwatcher.northwestern.edu/userdownloads/pdf/JLSEdelsonetetal.pdf> .
- European Association for Quality Assurance in Higher Education website <http://www.enqa.eu/index.php/home/esg/>
- Ferreira, S. A., & Andrade, A. (2011). Systematic analysis of quality technology enhanced learning environments in higher education: An organizational perspective 2.0 Retrieved from <http://www.formatex.info/ict/book/428-439.pdf>.
- Garrison, D., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95-105.
- Georgina, D. A., & Olson, M. R. (2008). Integration of technology in higher education: A review of faculty self-perceptions. *The Internet and Higher Education*, 11(2008), 1-8.
- Govindasamy, Th. (2002). Successful implementation of e-Learning. Pedagogical considerations. *The Internet and Higher Education*, 4, 287-299. Pergamon.
- Groff, J., & Mouza, C. (2008). A framework for addressing challenges to classroom technology use. *AACE Journal*, 16(1), 21-46.
- Hilgarth, B. (2011). E-Learning success in action! From case study research to the creation of the cybernetic e-learning management model. *International Journal of Computer Information Systems and Industrial Management Applications*, 3, 415-426.
- Iansiti, M. (1998). *Technology integration: Making critical choices in a dynamic world*. Harvard Business School Press.
- Jiang, J. J., & Klein, G. (1999) 'User evaluation of information systems: by system typology'. *IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans*, Vol. 29, pp.111-116.

- Kaminski, K., Switzer, J., Gloeckner, G. (2009), Workforce readiness: A study of university students' fluency with information technology. *Computers and Education*, 53(2), 228-233.
- Kettinger, W., J., Park, S.-H.S., & Smith, J. (2008). Understanding the consequences of information systems service quality on IS service reuse. *Information and management*, 46(6), 335-341.
- Khan, B. (2005). *Managing e-learning: Design, delivery, implementation, and evaluation*. Information Science Publishing USA.
- Kukulska-Hulme, A., & Jones, Ch. (2012). The next generation: Design and the infrastructure for learning in a mobile and networked world. In A. D. Olofsson, J.O. Lindberg (Eds.) *Informed design of educational technologies in higher education. Enhanced learning and teaching*. IGI Global: Hershey PA.
- Kuo, Y., Walker A. E., Beland, B. R., & Schroder, K. E. E. (2013). A predictive study of students satisfaction in online education programs. *The International Review of Research in Open and Distance Learning*, 14(1), 17- 39.
- Lane, A. B. (2008). Widening participation in education through open educational resources. In Ilyoshi, T. Vijay Kumar, M.S. (Eds.), *Opening up education: The collective advancement of education through open technology, open content, and open knowledge*. MIT Press.
- Laurillard, D. (2002). *Rethinking university teaching. A conversation framework for the effective use of learning technologies*. Routledge Falmer: London.
- Law, CH., C., H., Ngai, E., W., T. (2008). An empirical study of the effects of knowledge sharing and learning behaviors on firm performance. *Expert Systems with Applications*, 34(4), 2342 -2349.
- Liu, Y. CH., Huang, Y.A., & Lin, CH. (2012). Organisational factors' effect on the success of e-learning systems and organisational benefits: An empirical study in Taiwan. *The International Review of Research in Open and Distance Learning*, 13(4), 131- 151.
- Macdonald, J., & Black, A. (2010). Disciplinary knowledge practices in distance education: Testing a new methodology for teaching enhancement in history. *Arts and Humanities in Higher Education*, 9(1), 69–86.
- Marshall, C., & Rossman, G. (1998). *Designing qualitative research*. 1000 Oaks, Sage: Canada.
- Martin, L., M., & Matlay, H. (2003) Innovative use of the Internet in established small firms: The impact of knowledge management and organisational learning in

- accessing new opportunities. *Qualitative Market Research: An International Journal*, 6(1), 18 – 26.
- Mellar, H., & Jar, M. (2009). Quality assurance, enhancement and e-learning. Transforming higher education through technology-enhanced learning. Edited by Mayes, T., Morrison D., Mellar., H., Bullen P., Oliver, M., 19 -32 Retrieved from <http://www.heacademy.ac.uk/assets/documents/learningandtech/Transforming.pdf>.
- Minnaar, A. (2013). Challenges for successful planning of open and distance learning (ODL): A template analysis. *The International Review of Research in Open and Distance Learning*, 14(3), 81- 108.
- Moore, M. G., & Kersley, G. (2005). *Distance education. A systems view*. Belmont: Wadsworth.
- Morrison, G. R., & Anglin, G. J. (2012). Instructional design for technology-based systems. In A. D. Olofsson, J.O. Lindberg (Eds.), *Informed design of educational technologies in higher education. Enhanced learning and teaching*. IGI Global: Hershey PA.
- Mulwa, C., Lawless, S., O'Keeffe I., Sharp, M., & Wade, V. (2012). A recommended framework for the evaluation of end user experience in adaptive technology enhanced learning. *Int. J. Technology Enhanced Learning*, Vol. 4, Nos. ½, 2012.
- Nichols, M. (2008). Institutional Perspectives: The challenges of e-learning diffusion. *British journal of Educational Technology*, 39(4), 598-609.
- Ogunsola, A. (2010). Face to face tutoring in open and distance learning. The Nigerian situation. *International Journal of Open Distance Education*, 20-29.
- Palmer, S., Gosper, M., Sankey, M., & Allan, G. (2013). Exploring distributed leadership for the quality management of online learning environments. *European Journal of Open, Distance and eLearning (EURODL)*. 2013, vol. 2.
- Price, L., Kirkwood, A. (2010). Technology enhanced learning: where's the evidence? *Proceedings ascilite Sydney 2010: Concise*: Price & Kirkwood, 772. Retrieved from <http://www.ascilite.org.au/conferences/sydney10/procs/Price-concise.pdf>
- Reeves, T., Herrington, J., & Oliver, R. (2002). Authentic activities and online learning , in Quality Conversations, *Proceedings of the 25th HERDSA Annual Conference*, Perth, Western Australia, 7-10 July 2002, 562.

- Robinson, B. (2008). Using distance education and ICT to improve access, equity and quality in rural teachers' professional development in China. *International Review of Research in Open and Distance Learning*, 9(1), 1-17.
- Rovai, A. P. (2002). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *The Internet and Higher Education*, 5(4), 319-332.
- Salinas, M. F. (2008). From Dewey to Gates: A model to integrate psychoeducational principles in the selection and use of instructional technology. *Computers & Education*, 50(3), 652-660.
- Savin-Baden, M., & Mayor, C. (2013). *Qualitative research: The essential guide to theory and practice*. London: Routledge.
- Sela, E., & Sivan, Y.Y. (2009). Enterprise e-learning success factors: An analysis of practitioners perspective (with Downturn Addendum). *Interdisciplinary Journal of E-Learning and Learning Objects*, 5, 335-344.
- Shea, P. (2006). A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Networks*, 10(1). Retrieved from <http://sloan-consortium.org/jaln/v10n1/study-students%E2%80%99-sense-learning-community-online-environments>
- Shen, D., Cho, M.H, Tsai, Ch.L., & Marra, R. (2013). Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction. *The Internet and Higher Education*, 19(2013), 10-17 .
- Stracke, Christian M. (2010): "Quality Development and Standards in Learning, Education, and Training: Adaptation Model and Guidelines for Implementations"; in: Информатизация образования и науки [= Информике (Informika), ISSN 2073-7572]; Vol. 7 (3), 2010. Moscow (Russian Federation). S. 136-146. Retrieved from <http://www.qed-info.de/downloads>
- Tidd, J., & Bessant, J. (2009). *Managing innovation: Integrating technological, market and organizational change* (4th ed). Retrieved from http://www.amazon.co.uk/Managing-Innovation-Integrating-Technological-Organizational/dp/0470998105/ref=dp_ob_title_bk/276-4925781-8172664.
- The Australasian Council on Open, Distance and e-learning (2014). Retrieved from http://www.acode.edu.au/pluginfile.php/550/mod_resource/content/3/TEL_Benchmarks.pdf.

Thompson, T. L., & MacDonald, C. J. (2005). Community building, emergent design and expecting the unexpected: Creating a quality eLearning experience, *The Internet and Higher Education*, 8(3), 233- 249.

Veletsianos, G., & Kimmons, R. (2012). Assumptions and challenges of open scholarship. *The International Review of Research in Open and Distance Learning*, 13(4), 166- 189.

Volungevičienė, A., Teresevičienė, M., & Daukšienė, E. (2011). Curriculum design for virtual mobility - significance of teacher-student interaction. In (Eds.) M. Teresevičienė, A. Volungevičienė, E. Daukšienė, *Virtual mobility for teachers and students in higher education. Comparative research study on virtual mobility*. Vytautas Magnus University: Kaunas. Retrieved from http://www.teacamp.eu/sites/default/files/Teacamp_book_final_final20110606.pdf

Woo, Y., & Reeves, Th. C. (2007). Meaningful interaction in web-based learning: A social constructivist interpretation. *The Internet and Higher Education*, 10(2007), 15 – 25.

© Volungeviciene, Tereseviciene, Tait

Athabasca University 



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).