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Toward a Systemic Approach to Quality Assurance in e-Learning: An Ecological Perspective

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Challenges brought by applications of advanced technologies in education call for new approaches that can best ensure the provision of quality e-learning experiences. This paper presents an ecological approach as one of such approaches to quality assurance in e-learning that can monitor, assess and improve the effectiveness and the links between the various elements of e-learning. The ecological model for QA in e-learning emphasizes interrelation transactions between elements (e.g. providers, learners, cultures and policies) and systemic integration of those elements, and stresses that all these elements within a QA system play an equal role in maintaining balance of the whole. The model focuses attention both on individual and societal/cultural environmental factors as cornerstones for QA efforts in e-learning. It addresses the importance of QA efforts directed at changing QA transactions from provider-centered to 'all stakeholder-oriented', from one-size-fits-all model to 'globally oriented, locally adaptive model' and from control framework to 'culture creation framework'.

Keywords : ecological model, e-learning, quality assurance

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Introduction

Over the past few years, there has been a dramatic increase in policy and research interest in quality assurance (QA) in e-learning. Some critics argue that external QA encourages accountability and conformity rather than enterprise and diversity and that QA standards tend to focus on providers' considerations and ignore learners' perspectives. Others caution that QA processes and outcomes may be viewed quite differently by different stakeholders and in different social and cultural contexts. And yet others argue that challenges brought by applications of advanced technologies in education call for a new way of thinking about the approaches that can best ensure the provision of quality e-learning experiences. Such diverse interpretations and challenges require new approaches to QA in e-learning. This paper presents an ecological approach as one of such approaches to QA in e-learning that can monitor, assess and improve the effectiveness and the links between the various elements of e-learning.

A social ecological model refers to 'a framework to examine the multiple effects and interrelatedness of social elements in an environment (http://en.wikipedia.org/wiki/Social_ecological_model)' and in an educational environment, it focuses on systemic integration and alignment of the teaching-learning, administrative and communication functions in education and emphasizes all stakeholders' views such integration and alignment. Key attributes of the ecological model for education include adopting a wide-ranging interdisciplinary approach, defining students as active learners who engage in their educational environments, and viewing teaching and learning as an ecosystemic process in which teacher, content and learner relationships are situated in a social and cultural context where their complex transactions influence the learning quality. In this paper, the author shall try to look at some of the key issues related to the quality of e-learning from the ecological perspective. After exploring the development of QA frameworks in e-learning, the

author shall look at how the ecological approach can be interweaved with the existing QA frameworks in e-learning and contribute to the improvement of such QA systems.

Development of quality assurance systems in e-learning

A significant development over the past 20-30 years has been the adoption of QA systems, initially in business and commerce, and more recently, in education. QA is a means of ensuring that providers, customers and other stakeholders are satisfied with the quality and consistency of an organisation's products and/or services. It is also used to benchmark products and services against those of competitors and for the purposes of continuing improvement. With a move from self-regulation to a demand for greater accountability, productivity and efficiency from governments and other stakeholders, QA is now being widely applied in education, and particularly in higher education.

At the same time, we observe that many educational institutions around the world are introducing information and communication technology (ICT) in their administrative services and instruction. As a result, the distinctions between classroom-based and distance education (especially online education) are becoming increasingly blurred in many countries. The accelerating roll-out of technology, the availability of sophisticated learning management systems and the high growth rates of Internet usage by the 1.9 billion or so have contributed to diversified ICT uses in education worldwide. Since the mid-1990s, e-learning has become a popular mode of distance education in several countries. Both synchronous and asynchronous technologies are adopted in e-learning. The University of Phoenix and Cappella University in the US, 18 cyber universities in Korea, Pakistan Virtual University and Asian e-University are but few examples of totally online education

providers around the globe. There are also institutions such as Turkey's Anadolu University and the Korea National Open University that are offering graduate e-learning programs. Many conventional colleges and universities have integrated e-learning in their regular courses as well. Several countries in America, Europe and Asia are experimenting with applications of mobile technologies in education. And distance and e-learning are slowly finding their way into the countries of Central Asia - Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan and Turkmenistan - and even some least developed countries in Asia and Africa including Bhutan, Nepal and Mongolia (Jung & Latchem, 2007). E-tutoring, e-testing, one stop online service, online discussion, and the digital library have been integrated in education as well.

QA in e-learning is becoming one of the prime concerns for both the developed and developing countries in the world as e-learning prevails in both conventional and distance education and cross-border exchanges of education increase with the development of e-learning. But only a few countries have initiated QA mechanisms in e-learning, and the remaining are still in the process of evolving policies and strategies. In the US, the Commission of Institutions of Higher Education publishes Best Practices for Electronically Offered Degree and Certificate Programs. In Korea, the Ministry of Education, Science and Technology (MEST, 2008) has developed detailed quality criteria for cyber universities. The Swedish National Agency for Higher Education (2008), basing this on the extensive review of existing models of e-learning quality, offers a model for quality assessment of e-learning (ELQ). The UK's Quality Assurance Agency for Higher Education has published *Distance Learning Guidelines* and a *Code of Practice for the Assurance of Academic Quality and Standards in Higher Education, Section 2: Collaborative provision and flexible and distributed learning (including e-learning)*. In South Africa, the National Association of Distance Education Organizations of South Africa (NADEOSA) has developed Quality Criteria for Distance Education in South Africa, which also includes case studies in e-learning. These QA systems, although they are different in

wordings and emphasis, tend to adopt similar procedures and criteria. Most procedures for QA include self-report, external review and public reporting on the evaluation results. Common criteria to assess e-learning quality are institutional planning, infrastructure, course development, teaching and learning, student support, faculty support and evaluation (Jung, in press).

Multiple stakeholders and features in QA in e-learning

QA in e-learning is not without its challenges and critics. Some hold that quality in e-learning should be judged by the same criteria and methods as in face-to-face education. Others assert that e-learning deviates so markedly in its operations and methods that conventional QA assumptions and mechanisms are inapplicable (E-Learning Advisory Group, 2002; Stella & Gnanam, 2004). Others argue that that certain general principles for quality should apply to both conventional and e-learning, but that there are certain features unique to e-learning that should also be addressed in QA processes (Jung, 2008). Moreover, because e-learning typically relies to a greater extent on learners' interactivity and collaboration, success is more likely to depend on learners' motivation and effort, and therefore makes it more difficult to gauge the quality of e-learning. And not everyone agrees that QA in e-learning is an intrinsically good thing. The ecological perspective recognizes that QA in e-learning is a multi-faceted, multi-level, and multiple stakeholder endeavors. Now let's turn our attention to this ecological idea.

From the ecological perspective, a QA system in e-learning consists of a number of elements in three key subsystems - stakeholders, societal/cultural environment and policies. The *stakeholders* are all of those people who are engaged in and stand to gain in some way from the QA practices. They include providers (e-learning institutions including instructors and staff), learners and the third group

(governments, accreditation agencies, parents and employers and professional associations). The *societal/ cultural environment* is the context wherein the QA is carried out and affects e-learning practices at three levels – institutional, national, and global. *Policies* are formal scaffolds that shape QA practices. These comprise three elements - QA methods, criteria and outcomes. In this e-learning QA system, applying an ecological approach is best understood as examining all of the elements of the QA system and identifying and intervening on strengths and weaknesses in the transactional processes between these elements. Figure 1 presents the interrelational processes between the elements of a QA system in e-learning.

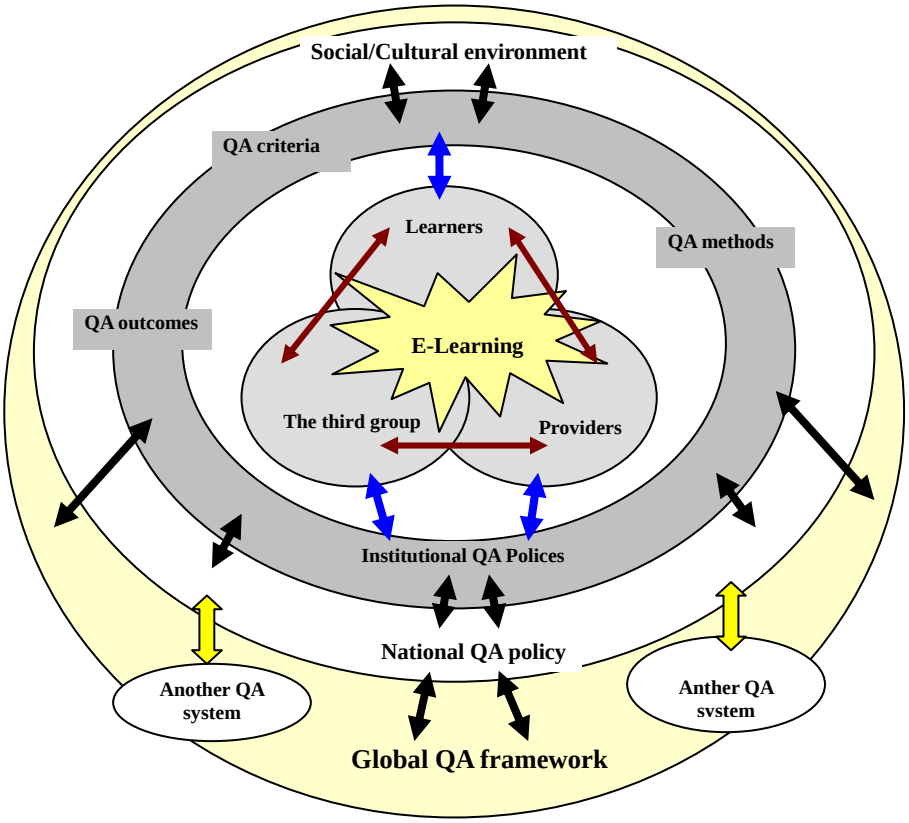

Figure 1. An ecological model of QA in e-learning

An ecological QA framework

From provider-centred to all stakeholder-oriented QA

When we examine the QA criteria developed in various settings, we find that these are mainly concerns of the e-learning institutions, instructors, assessors and funding bodies. For example, in Europe, the E-xcellence project was undertaken under the auspices of European Association of Distance Teaching Universities (EADTU) to supplement existing systems of quality assurance on e-learning. Its self-assessment tool contains 33 benchmarks in six categories, including strategic management, curriculum design, course design, course delivery, staff support, and student support. Sweden's ELQ is made up of 10 quality dimensions when assessing quality in e-learning. Those dimensions include material/content, structure/virtual environment, communication, cooperation and interactivity, student assessment, flexibility and adaptability, support (student and staff), staff qualifications and experience, vision and institutional leadership, resource allocation and the holistic and process aspect. These are all inputs rather than outputs. The Institute for Higher Education, with support from National Education Association and Blackboard, developed 24 common benchmarks for high quality online education in seven categories – institutional support, course development, teaching/learning, course structure, student support, faculty support, and evaluation and assessment (Phipps & Merisotis, 2000). After analyzing the literature on QA, Frydenberg (2002) summarized nine quality domains: institutional commitment, technology, student services, instructional design and course development, instruction and instructors, delivery, finances, regulatory and legal compliance and evaluation. All these domains or dimensions identified in the studies above focus on design and delivery aspects and emphasize management, finance and legal considerations from the provider's and assessor's perspective. As Frydenberg (2002) pointed out, current QA criteria are primarily influenced by the

provider group including professional faculty associations, accrediting agencies that have the charge of guiding and evaluating e-learning institutions and university faculty and administrators.

From the ecological perspective, existing provider-centered approach to QA in e-learning is unequal and ignores the interrelational nature of the system. Quality is a relative and value-laden concept and is viewed differently by various stakeholders (Dondi, Moretti, & Nascimbeni, 2006). While inputs from the providers, assessors and governments are valuable in examining and promoting the quality in e-learning, it is critical to understand learners' views since the success of e-learning typically relies to a greater extent on learners' motivation and engagement.

Evidenced by empirical data from European countries, Ehlers (2004) shows that course-related dimensions such as presence, didactics and collaboration are more important to learners than institutional considerations such as vision, planning and finance in assessing the quality of e-learning and argues that a quality learning experience is not something that can be delivered to a learner by an e-learning provider but is a co-production process between the learner and the learning environment. In a Korean context, Jung (in press) finds 'learner support' as being the most significant factor explaining learners' perceptions of e-learning quality. From the learners' perspective, a strongly personalized learner service system is the most important criterion in assessing the quality of e-learning environment. An ecological approach to QA in e-learning demands us to gather more research data on the learners' perception of e-learning quality across various contexts. This will help us recognize the conflicting perspectives of the providers and the learners, identify the differences and similarities, balance both views, and thus devise improved QA frameworks for e-learning.

From one-size-fits-all model to globally oriented, locally adaptive model

In the past ten years or so there has been a noticeable surge in the export of educational services around the world. E-learning is one of all manifestations of the current trend and has been steadily gaining ground. For example, universities in Australia, UK and USA have more actively exported their e-learning programs to other countries. In Asia, China, Hong Kong, India, Malaysia and Singapore are among the major importers of those programs. However, Hong Kong, India and Malaysia have also become exporters of programs to other countries such as Bangladesh, China, Indonesia and Sri Lanka. Global for-profit providers have also entered the e-learning market especially in higher education and professional development (Jung, 2009). Not all of these have met with success. U21 Global, an international network of 21 leading research universities in 13 countries, aimed to offer an online MBA and other online programs in business and ICT management throughout Asia and other regions but its promise has not been realised. EducAsia, Inc. claims that it offers management e-learning courses to more than 1,000 executives per year around the globe. Apollo International, Inc. delivers the fully accredited online business studies and technology bachelor's and master's degree programs of Western International University into India and China in Asia. Skillsoft, acquired Thomson's NETg (an e-learning provider in ICT skills) in 2006, has been providing e-learning courses over 45 countries across different regions.

While borderless e-learning has not to date been an unqualified success, regional and international bodies have responded to the trend and have begun to develop sets of QA standards or indicators common to one or more regions. For example, in Europe, as a result of the Bologna process, courses are being modularized and the European Credit Transfer and Accumulation System (ECTS), developed by the European Union support and facilitate student mobility within Europe. In

association with these changes, the European Association of Distance Learning (EADL) has developed the *Quality Standards and Code of Conduct* for Europe-wide membership as a seal of quality. UNESCO Institute for Statistics (2009) has released the *Guide to Measuring Information and Communication Technologies (ICT) in Education*, suggesting a comprehensive set of internationally comparable indicators on the use of ICT in education in pursuit of improving the quality of norms and procedures for teaching and learning. The Asia Pacific Quality Network (APQN) has launched a project to build up common indicators of quality framework (IQF) for higher education in Asia and the Pacific region (Stella, 2007).

While these collective efforts to devise a common quality framework certainly contribute to promoting mutual recognition possibilities in the age of the rapid development of cross-border e-learning, they also present some challenges. The challenges concern social and cultural diversity in QA concepts and activities. Different countries have developed and applied their own QA model for education based on their social environment and cultural values (Holmes, 2006). There are therefore variations in the QA policies, criteria, and methodologies they propose. Furthermore, they are at different stages of educational and technological development and adopting new and innovative approaches to teaching and learning. If all of these diversities in regional and international QA frameworks are incorporated into a common framework, this may then become too generic and generalised to serve its intended purpose. On the other hand, the social and cultural diversity in QA and e-learning practices are ignored, the common framework cannot be applicable adopted in local contexts. So the challenge is to achieve balance in the social/cultural diversity and regional/international cooperation. Neither a local (institutional and national) model nor a general model is the ecological solution for QA in e-learning.

The ecological approach would promote a QA system in e-learning to achieve

cross-cutting institutional, national, and global benefits. A general model of QA in e-learning does not entirely apply in all countries, but previous studies, for example Jung (2004), reveal that most of the key elements do in fact apply in most countries even though some countries depart further than others from the general model. The open and borderless nature of e-learning requires a QA system that aids comparability between countries and regions and helps give credibility to courses offered by national institutions in each country. At the same time, each society needs a QA system to address its own issues. This suggests the need to use a common or general QA model as a starting point from which to map differences and divergences, and to which each country adds own QA dimensions and elements, modifies procedures and methods, or omits some components of the model. These deviations will be determined by cultural and other attitudes towards e-learning and learning in general, the stage of technological development, the flexibility of the legislative system of QA and other practicalities. The general model can also be developed and refined by examining and including some of the common features of national QA systems. This ecological approach to QA in e-learning can enable us to use the general model as a basis for adapting QA in e-learning to the unique context in our own country seeking borderless provision and global recognition.

From control framework to culture creation framework

Professor Denise Bradley who was a Vice Chancellor and President of University of South Australia at the time of her keynote address at INQAAHE Biennial Conference in 2005 argued '*current systems of external quality assurance have been established to enable government to gain greater control over higher education institutions in an international policy context which now sees higher education as critical for national competitiveness* (Bradley, 2005, p.1). She argued that when a new national QA system is established, its intention is to make certain that external examination is carried

out to bear on institutions that have been largely closed to this type of public scrutiny. Institutions' self improvement is often ignored at the cost of accountability. Even more serious consequences are related to academic staff's negative perceptions toward the overall QA system. A study addressing the issues of trust, control, professional autonomy and accountability in higher education QA in the UK revealed that academic staff perceived QA as a form of government control and felt controlled, less trusted and less autonomous in their professional activities. They also indicated that QA criteria were not directly related to quality enhancing activities such as teaching preparation (Hoecht, 2006).

The exactly same criticisms can be easily made for QA in e-learning. This is not suggesting that a formal QA system in e-learning should not be introduced. Instead, I am supporting the argument that QA should move from control to culture creation (Ehlers, 2010). QA is essential in education and urgently needed in distance education and e-learning. Both of these can be adopted for all the wrong reasons – to cut costs or increase profits. The WTO/General Agreement on Trade in Services (GATS) creates increasing pressure for augmented efforts in reviewing the existing QA frameworks of DE at national and institutional levels, and maybe in strengthening them in view of cross-border challenges. Quality is a common concern both for exporters and importers of cross-border education. Quality is critically important in DE and e-learning. Fraud by degree mills or accreditation mills is more serious with cross-border e-learning since off-shore providers can more readily escape the QA regulations of nations.

Countries need to ensure that people receive quality education when they enroll in 'virtual' institutions or programs. In fact, learner protection rationales extend to the socio-economic level (Jung, 2005). Those who have been involved in fraudulent or poor quality DE programs may have adverse effects on national economies (OECD, 2004). In these regards, QA mechanisms in e-learning are likely to be more

firmly established at institutional, national, and international levels. We all agree that QA in e-learning should be fair, transparent, accountable and helpful for self-improvement. The question is whether the existing external audit-based, control framework can deliver this kind of QA in e-learning.

A top-down policy direction intended to control cannot guarantee the quality of teaching and learning which is at the core of education. There are many elements, maybe even more in e-learning environments, that cannot be easily measured by external evaluation. E-learning promises pedagogical change in the form of learner-centered and participatory learning. Unless the teachers and the learners are both willing and able to makes changes to their values and practices in teaching and learning, e-learning will not contribute to quality improvement. A new QA framework is called for to evaluate and improve the quality of e-learning. This framework needs a bottom-up policy direction aiming to create a quality culture in institutions, managers, teachers and learners which is concerned with continuous improvement and intrinsic rather than extrinsic reward.

Conclusion

Recognizing that there is a lack of QA mechanisms and even agreed upon criteria for judging the unique features of e-learning such as the provision of learner-centered environments, access to multimedia-rich learning resources, extended and diversified interactions, support for social community building, improved peer and self assessment, and responsiveness to individual needs (Anderson, 2004; Dede, 2004; Jung, 2001; McConnell, 2002; Wahlstedt, Pekkola, & Niemela, 2008), this paper suggests a new approach to QA in e-learning from an ecological perspective. In doing so, the paper considers that QA in e-learning is an issue of significance for learners as well as providers and policy makers and disputes

that the learners' thoughts and views on the quality of e-learning need to be understood and incorporated with those of the providers to define quality and QA in e-learning. Moreover it argues for a 'globally oriented, locally adaptive' QA model in e-learning that is 'quality culture focused'. It is hoped that this paper has provided some useful insights into, and directions for, the development of future QA systems in e-learning.

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References

Anderson, T. (2004). Toward a theory of online learning. In T. Anderson & F. Elloumi (Eds.), *Theory and practice of online-education* (pp. 33-60). Canada: Athabasca University.

Bradley, D. (2005). *Quality assurance and diversity.* Paper presented at the INQAAHE Biennial Conference (29 March-1 April 2005). Wellington, New Zealand. Retrieved March 14, 2010, from http://www.unisa.edu.au/cha/vcoffice/vcspeeches/2005/0329%20Effectiveness%20of%20Quality%20Assurance%20SPEECH.doc

Dede, C. (2004). Enabling distributed learning communities via emerging technologies. *THE Journal*, *32*(2), 12–22.

Dondi, C., Moretti, M., & Nascimbeni, F. (2006). Quality of e-learning: Negotiating a strategy, implementing a policy. In U.D. Ehlers, & J.M. Pawlowski (Eds.), *Handbook on quality and standardization in e-learning* (pp.31-50). Berlin, Heidelberg and New York: Springer.

Ehlers, U. (2004). Quality in e-learning from a learner's perspective. *European Journal of Open and Distance Learning, I.* Retrieved March 14, 2010, from http://www.eurodl.org/materials/contrib/2004/Online_Master_COPs.html

Ehlers, U. (2010). National QA guidelines and policies for ODL in Europe. Unpublished draft.

E-Learning Advisory Group (2002). *Highways and pathways: Exploring New Zealand's e-learning opportunities.* Retrieved March 14, 2010, from http://cms.steo.govt.nz/NR/rdonlyres/3B455FA8-586B-447B-A239-75C523841021/0/highwaysandpathways.pdf

Frydenberg, J. (2002). Quality Standards in e-Learning: A matrix of analysis. *The International Review of Research in Open and Distance Learning, 3(2).* Retrieved March 10, 2010, from http://www.irrodl.org/index.php/irrodl/article/viewArticle/109/189

Hoecht, A. (2006), Quality Assurance in UK Higher Education: Issues of trust, control, professional autonomy and accountability. *Higher Education*, *51*(4),

541-563.

Holmes, B. (2006). Quality in a Europe of diverse systems and shard goals. *In U.D.* Ehlers, & J. Martin (Eds.), *Handbook on Quality and Standardisation in E-Learning* (pp. 15 – 28). Springer.

Internet usage in Asia. (2010). *Internet World Stats*. Retrieved March 14, 2010, from http://www.internetworldstats.com/stats3.htm

Jung, I. S. (2001). Building a theoretical framework of web-based instruction. *British Journal of Educational Technology*, *32*(5), 531-540.

Jung, I. S. (2004). Convergence and diversity of quality assurance systems in distance education. *The SNU Journal of Educational Research, 13*, 75-106

Jung, I. S. (2005). Implications of WTO/GATS on Quality Assurance of Distance Education (including e-learning) for Higher Education. A paper presented at the UNESCO Regional Seminar on Implications of WTO/GATS on Higher Education in Asia and the Pacific. 27-29 April 2005. Seoul, Korea

Jung, I. S. (2008). Quality assurance and continuous quality improvement in distance education. In T. Evans, M. Haughey, & D. Murphy (Eds.), *International handbook of distance education* (pp. 609-624). London: Emerald Group Publishing Limited.

Jung, I. S. (2009 March/April). The emergence of for-profit e-learning providers in Asia. *TechTrends, 53*(2), 18-21.

Jung, I. S. (in press). The dimensions of e-learning quality: From the learner's perspective.

Jung, I. S., & Latchem, C. (2007). Assuring quality in Asian open and distance learning. *Open Learning, 22*(3), 235 – 250.

McConnell, D. (2002). The experience of collaborative assessment in e-learning. *Studies in Continuing Education*, *24*(1), 173-92.

MEST (2008). *A report on comprehensive evaluation of cyber universities in 2008*. Korean Ministry of Education, Science and Technology, Seoul.

OECD (2004). *Internationalisation and trade in higher education: opportunities and challenges*. Paris.

Phipps, R. A., & Merisotis, J. P. (2000). *Quality on the line: Benchmarks for success in*

internet-based education. Retrieved February 24, 2010, from http://www.ihep.org/Publications/publications-detail.cfm?id=69

Stella, A & Gnanam, A. (2004) Quality assurance in distance education: the challenges to be addressed, *Journal of Higher Education, 47*(2), 143-160.

Stella, A. (2007). *Understanding quality assurance in the Asia-Pacific region: Indicators of quality*. Report of APQN Project Group on Indicators of Quality, APQN. Retrieved March 14, 2010, from http://www.apqn.org/files/virtual_library/project_reports/indicators_of_quality_-_survey_report.pdf

Swedish National Agency for Higher Education (2008*). E-learning quality aspects and criteria for evaluation of e-learning in higher education*. Report 2008:11 R. Stockholm: Högskoleverkets rapportserie. Retrieved March 14, 2010, from http://www.hsv.se/download/18.8f0e4c9119e2b4a60c800028057/0811R.pdf

UNESCO Institute for Statistics (2009). *Guide to Measuring Information and Communication Technologies (ICT) in Education*. Montreal: UNESCO Institute for Statistics. Retrieved March 17, 2010, from http://unesdoc.unesco.org/images/0018/001865/186547e.pdf

Wahlstedt, A. Pekkola, S., & Niemela, M. (2008). From e-learning space to e-learning place. *British Journal of Educational Technology, 39*(6), 1020-1030.

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