Quality Assurance in e-Learning

Quality assurance is not just controlling of the effects of e-learning, there are also some other influential factors. Here, one should also consider all factors having an impact on both educational settings and products at all stages of e-learning; namely learners, content, tutor, learning outcomes and environment, technological infrastructure, social surrounding, usability of e-learning software, management, learning culture and interaction patterns. Ehlers and Pawlowski (2006) says: "An effective quality assurance has to cover the whole process from the first plan up to the development and implementation until the assurance of transfer" (p. 169). Nonetheless, what quality is should be discussed before quality assurance.

Quality is defined as the grade of goodness, excellence, how well something is, degree of excellence or superiority by different dictionaries. IIEP-UNESCO (2011) provides a very good variation between approaches to these concepts in its report stating that quality is about minimising variability and ensuring that manufactured products conform to clear specifications in manufacturing sector; so quality refers to "zero defects" in this context. However, service businesses deal with both minimising defects and managing emotions, expectations and experiences, and here the quality means "consumer satisfaction". On the contrary, in software and information products, quality usually includes both the conformity and service views; hence, it is a synthesis of conformity, adaptability, innovation and continuous improvement. And lastly, in higher education, as cited in the report by IIEP-UNESCO (2011), Green (1994) considers the quality from five different perspectives:

- in terms of the exceptional (highest standards);
- in terms of conformity to standards;
- as fitness for purpose;
- as effectiveness in achieving institutional goals; and
- as meeting customers' stated or implied needs

Although all definitions are consistent within their context, obviously there is no one common agreed definition and how it is assured. For this reason, the importance and scope of quality assurance in e-learning, basic concepts used in the assessment of quality namely standards, criteria, indicators and benchmarks, and the various methods of quality assessment will be explained and discussed in the next section.

1. Basic Terminology about Quality

Statistics and Indicators

Systematic data collection, including primary and derived data with or without any value-addition, are called "statistics". It means the building blocks of all the value-added specific terms, which will be discussed later. For example, details such as student enrolment, academic calendar and fee structure are called as statistics. When statistical terms or data are interpreted and used to indicate something, then they become "indicators" (IIEP-UNESCO, 2011).

Performance Indicators

The indicators used to evaluate an institution or judge the effectiveness of a programme are often called as "performance indicators". In higher education, this concept has been borrowed from economics. In this sense, the success of a system or institution is related with its productivity regarding with the effectiveness and efficiency. As a result, one may often come across

Effectiveness Indicators and Efficiency Indicators in this context. Effectiveness indicators, such as completion rates, employment rates, graduate rates and student satisfaction, deal with the extent to which an activity fulfils its intended purpose or function while efficiency indicators such as staff-student ratios, space utilisation, time to graduation and unit costs, deal with the extent to which an activity achieves its goal while minimising resource usage (IIEP-UNESCO, 2014).

Standards

In higher education and quality assurance, a "standard" denotes a principle (or measure) to which one conforms (or should conform) by which one's quality (or fitness) is judged. It also has other meanings, such as "degree of excellence required for a particular purpose" or "a thing recognised as a model for imitation". In certain contexts, it means "basic", without any value-addition features, or "average quality" or minimum requirements. It can be described in many ways, quantitatively and qualitatively. So, it refers to "the specification of aspects, elements or principles to which one should conform or by which quality is judged" (IIEP-UNESCO, 2014). For instance, Penn State defined 12 design standards for quality assurance in e-Learning: navigation, student orientation, syllabus, instructor response and availability, course resource requirements, technical support, accessibility requirements, learning objectives, learning activities and assessment, copyright requirements, course functionality, and student input for course improvements (https://weblearning.psu.edu/resources/penn-state-online-resources/qualityassurance/).

Criteria

A criterion is an aspect or a feature by which a concept is evaluated. The International Network for Quality Assurance Agencies in Higher Education (INQAAHE) glossary (www.qualityresearchinternational.com/glossary) defines criteria as "specifications or elements against which a judgment is made". To differentiate between standards and criteria, one may say that criteria indicate the elements or aspects while the standards set the level. The Australian Universities Quality Agency (AUQA) glossary indicates that a function of standards is to measure the criteria by which quality may be judged. In practice, the terms criteria and standards are used interchangeably by QA agencies (IIEP-UNESCO, 2014).

Benchmarks

A benchmark is a point of reference to make comparisons. A benchmark was originally a surveyor's mark on a wall, pillar, or building which was used as a reference point to measure the altitudes. Today, the term is used for all comparison activities. INQAAHE glossary defines it as a point of reference against which something may be measured. In the simplest definition, benchmarking is the process of learning by making comparisons. Comparisons have been made for centuries in many informal ways; yet it has nowadays it has come to represent a formal process of comparing two or more things in order to generate ideas for major improvements. The American Society for Quality defines benchmark as an improvement process in which an organisation can measure its performance against that of the best-in-class organisations, determine how those organisations achieved their performance levels and use the information to improve its own performance. Finally, it is defined in INQAAHE glossary as a process that enables comparison of inputs, processes or outputs between institutions (or parts of institutions) or within a single institution over time (IIEP-UNESCO, 2011).

2. Quality of e-Learning

The Swedish National Agency for Higher Education (2008) have developed a model named as ELQ (e-learning quality), based on the investigation of European policies, projects and practices from national organisations and together with the current research. This model contains criteria for quality assessment of e-learning in higher education. These 10 criteria are:

- 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
- The holistic and process aspect

Table 14.1. E-Learning Quality Model of Swedish National Agency for Higher Education

Aspects	Explanation	Example of Quality Criteria
Material/content	Content, either digital or printed, is of major importance to the quality of e-learning	Policy and guidelines for selection and production of digital materials having both pedagogical and technical points of view
Structure/virtual environment	Selection of virtual environment should be based on pedagogical considerations and institution's and learners' technical infrastructure	A virtual environment that sounds pedagogically, reliable and robust
Communication, cooperation and interactivity	Planning has vital importance for facilitating the communication and interaction throughout the course	Well defined strategy for communication, cooperation and interaction that meets expectations and pedagogical needs
Student assessment	Assessment shapes to what extend learners gain knowledge, encourage critical thinking and creativity	Strategy for pedagogically aligned assessment with policy for plagiarism
Flexibility and adaptability	Learning process should be flexible in terms of location, time, duration, scope, and material type	Strategy for increasing flexibility of the learning process according to individual needs

Support (student and staff)	Learners should be provided with administrative, technical and social support	Strategy for learner support based on learner expectations
Staff qualifications and experience	Tutors' ICT knowledge and experience in online learning is key to success	Strategy for staff competence development
Vision and institutional leadership	A long-term vision which leads to a common understanding together with technological leadership shapes management processes	A strategy plan including quality assurance and development activities with short and long-term goals and continuous revisions
Resource allocation	Planning of human, physical and technical resources is very crucial point in e-learning design and delivery	A strategy for allocating necessary resources for meeting the needs for e-learning
The holistic and process aspect	All the quality aspects should be perceived as system approach and a holistic approach should be adopted for success	A functional and systematic approach for e-learning implementation / evaluation for all previously mentioned aspects

In the report written by Academic Partnerships (2014) ten common aspects are defined for quality experience in online learning environment as:

- Institutional support (vision, planning, & infrastructure)
- Course development
- Teaching and learning (instruction)
- Course structure
- Student support
- Faculty support
- Technology
- Evaluation
- Student assessment
- Examination security

Although terminology and classifications may change, all studies focus on similar aspects for controlling and enhancing the quality of e-learning. One of the main issues, however, is defined as staff qualifications and experience or faculty support, the competencies of tutors.

3. Competencies of e-Tutors

Online teachers (called as e-instructors or e-tutors) should possess more qualities and skills, especially regarding with technological innovations, than a traditional teacher does (Davis & Robyler, 2005). These qualities and skills systematically construct the e-competencies of online teachers. Guasch, Alvarez and Espasa (2010) used competency as an operative concept in their studies. They defined it as "…a system of complex actions including the knowledge, abilities and attitudes required for the successful completion of tasks" (p. 200). According to Coppola, Hiltz, and Rotter's study (2002), the role of teacher has changed from subject expert to performance coach. In online learning, cognitive, affective and managerial were three specific roles of the teachers. Moreover, Williams (2003) categorised the e-competencies of teachers as communication and interaction, instruction and learning, management and administration, use of technology. Smith (2005) described 51 e-competencies for teachers. Overall, all these e-competencies are categorised into three main headings: competencies needed before the course, competencies needed during the course and competencies needed after the course.

Berge (1995) described the role of the online instructor as "facilitator" whose main role is modelling effective teaching and delivering e-content that should be based on four dimensions as: pedagogical, social, managerial, and technical. Here pedagogical dimension refers to the subject expertise, coaching and assessing; the social dimension refers to interpersonal, communication and facilitation skills; the managerial dimension refers to administrative and leadership skills; and finally, the technical dimension refers to technological literacy.

Table 14.2. Categorisation of Competencies

Researcher(s)	Categories
Berge (1995)	Pedagogical dimension (subject expertise, coaching and assessing); social dimension (interpersonal, communication and facilitation skills); managerial dimension (administrative and leadership skills); technical dimension (technological literacy)
Richey et al. (2001)	Professional foundation; planning and analysis; design and development; implementation and management
Williams (2003)	Communication and interaction; instruction and learning; management and administration; use of technology.
Dennis et al. (2004)	Pedagogical; communicational; discipline experts; technological
Klein et al. (2004)	Professional foundations (communications, professional development, law and ethics, and credibility); planning and preparation; instructional methods and strategies (motivating, presenting, facilitating, questioning, clarifying and correcting, skill retention and transfer); assessment and evaluation; management (managing the environment and managing appropriate technology use)
Shank (2004)	Administrative; design; facilitation; evaluation; technical
Smith (2005)	Competencies needed before the course; competencies needed during the course and competencies needed after the course.

Guasch, Alvarez and Espasa (2010)	Design/planning function, social function, instructive function, technological domain, and management domain.

Guasch, Alvarez and Espasa (2010) identified teachers' e-competencies from literature as design/planning function, social function, instructive function, technological domain, and management domain. To summarise this categorisation, teachers should plan the design of instruction from objectives to evaluation of the lesson, should improve their relationship and communicate with their students, should instruct and facilitate learning in a deep, complex and critical manner, should use the necessary technology, and should organise and modify the online process. Mishra (2010) proposed a strategy list for teachers that will teach online. According to the list, educational institutions should establish e-technologies labs, offer peer supported e-training, develop e-bonding among teachers, ensure e-mediated teaching, promote e-sharing among teachers, and reward e-activities of teachers. All these categorisations can be summarised in a table below.

4. Learner Satisfaction

Satisfaction of online learners is one of the crucial factors affected from the whole process, which has direct evidence about the quality of e-learning. It may also be considered as a determinant of how successful the course, programme, instructor as well as selected technologies and design is based on the scope of the questions asked. Beqiri, Chase and Bishka (2009) conducted a study to unveil the factors affecting satisfaction and found out that those learners having positive attitudes towards online technologies and donated with enough ICT competencies were more satisfied when compared to others. Similarly, Pena and Yeung (2010) investigated a similar phenomenon and concluded that if satisfaction decreases, then ICT competencies also decreases.

Jung-Wan and Mendlinger (2011) examined the effect of perceived self-efficacy on perceptions of ease of use and usefulness of online learning systems together with its effects on behavioural intention toward online learning acceptance and student satisfaction. They concluded that perceived self-efficacy was important for online learning acceptance and perceived usefulness of online learning systems influences student satisfaction positively.

Regarding with factors contributing to the learner satisfaction, Palmer and Holt (2009) used a survey composed of various headings namely; organisation and structure, teaching and learning, teaching staff and other students, assessment, attribute development and unit performance. They concluded that how confident they felt about their ability to communicate and learn online, having a clear understanding of what was required to succeed in the unit and how well they thought they were performing in the unit were explaining a huge portion of learner satisfaction.

According to another study conducted by Machado (2007), it was found that if the opportunities provided and competencies of administrative and academic staff increased, satisfaction of the learners also increased. Moreover, technological competencies of learners are also affecting satisfaction level of learners (Machado, 2007). Hye-Jung and Rha (2009) investigated the influence of structure in terms of instructional design and interaction regarding with management style on student achievement and satisfaction in a web-based distance learning environment. They concluded that learners participated in the structured course were more satisfied with structure, whereas learners participated in the interactive course were more satisfied with interpersonal

interaction. On the other hand, Palmer and Holt (2010) stated that learners valued the features of Learning Management System (LMS) and their satisfaction could increase based on the features LMS offered.

Overall, it can be concluded that technical competencies of learners, teaching process, instructional content, technical and pedagogical competencies of e-tutors, instructional technologies attitudes towards e-learning approach, usability of LMS and interaction levels can play an important role in learners' satisfaction.

5. Conclusion

There are many aspects of an e-learning system if you really want to guarantee success in your online programme. You have to evaluate many aspects such as your learner, content, tutor, programme, infrastructure, human resources. If you want to evaluate your online course, then you can use the guidelines suggested by Wright (2010). On the other hand, if you want assess satisfaction of your learners you can consider the criteria suggested by Rothman et al. (2011) as: (1) Appropriateness of Readings and Assignments, (2) Technological Tools, (3) Instructor Feedback and Communication, (4) Course Organisation, (5) Clarity of Outcomes and Requirements and (6) Content Format.

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