

PROCEDURES FOR THE CONTROL AND QUALITY ASSURANCE OF E-LEARNING MATERIALS

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Abstract

With the growing demand for e-learning, as well with the striving for excellence, everyone worldwide is encouraged to improve and ensure the quality of e-learning. Quality assurance requires a supportive environment. The purpose of this paper is to propose procedures for evaluating and controlling the quality of e-learning materials. The article reflects on the approach, which is often mentioned in the field of quality assurance, procedures that characterize the processes, helps to sort them, track their progress sequence and identify those responsible. Clearly, the quality of online learning has many dimensions, but this article deals only with the part that relates to the quality of e-learning materials. In January 2018, experts from European Distance Education Secondary School, Riga Distance Education Secondary School and Riga 1st Distance Education Secondary School were interviewed. The questionnaire included questions about the quality assessment of the study materials. Based on the findings of scientific research literature and taking into account the good practice, procedures for the quality control of electronic learning materials were created. The article offers four procedures that include the use of a web-based checklist developed by the author. Activities of procedures can be divided into areas of responsibility that deal with developers of the material, methodological commission, material evaluators and IT administrator. Distance learning program implementers can use the proposed procedures in the process of making and monitoring electronic learning materials. In addition, the checklist helps to identify important conditions and requirements that affect the quality of the study material.

Key words: e-learning, quality, quality assurance, procedure.

Introduction

Nowadays traditional forms of teaching and learning are often substituted by e-learning to achieve better learning outcomes (Mason & Rennie, 2008). Due to the significant advantages of e-learning such as accessibility, flexibility, portability, etc., the e-learning offer has grown over recent years. This in turn leads to discussions about the quality of used systems, quality of process provision and quality of e-material (Artal *et al.*, 2007). Thus, it is still unclear how to ensure the quality of e-learning. The quality of e-learning is a complex concept, since e-learning includes a number of dimensions (Masoumi & Lindström, 2012) that affect organizational, administrative, teaching and technological risks. Quality improvement and provision are crucial to the success of education institutions involved in e-learning (Inglis, 2005; Ehlers & Pawlowski, 2006).

Several agencies, such as the European Association for Quality Assurance in Higher Education (2009), the Council for Higher Education Accreditation (1998) and Swedish National Agency of Higher Education (2008) have made a major contribution in shaping distance learning quality assurance approaches. These agencies have promoted the implementation of quality management systems nationally and internationally. However, in order to ensure the implementation of quality, the culture of quality must be promoted. The culture of quality results from the quality assurance measures, implementation of the internal quality assurance system and brings responsibility to the public at national and international level (Jung, 2004).

Defined processes can support the product development and implementation of services in several sectors, such as industry, commerce and service areas. Process identification and management is also important for the development of educational products or the implementation of educational services. Quality management is an approach which is borrowed from business and which focuses on continuous improvement and customer satisfaction. According to Becket and Brookes (2005), quality management has the potential to capture the internal and the external perspectives of both stakeholders, enabling a comprehensive approach to quality assurance, facilitating change and innovation. Nowadays process management is widely used and it is considered that in many areas it is necessary to promote the management of human activities for the provision of product or services. In fact, the processes are formal components in many types of organizations and they define the logical order in the production area.

Procedures in the quality assurance systems are for specifying what is to be done, who should do it and on what standards it should be done. In addition, quality assurance is not the same as evaluation. Evaluation is about what is already done. If a distance education course is created, then quality assurance is the process used in creation of the course. The first step in the quality assurance system is the establishment of procedures. Procedures are a description of the way we do things. There are two purposes of the procedure:

- to define what the organization considers to be good practice;

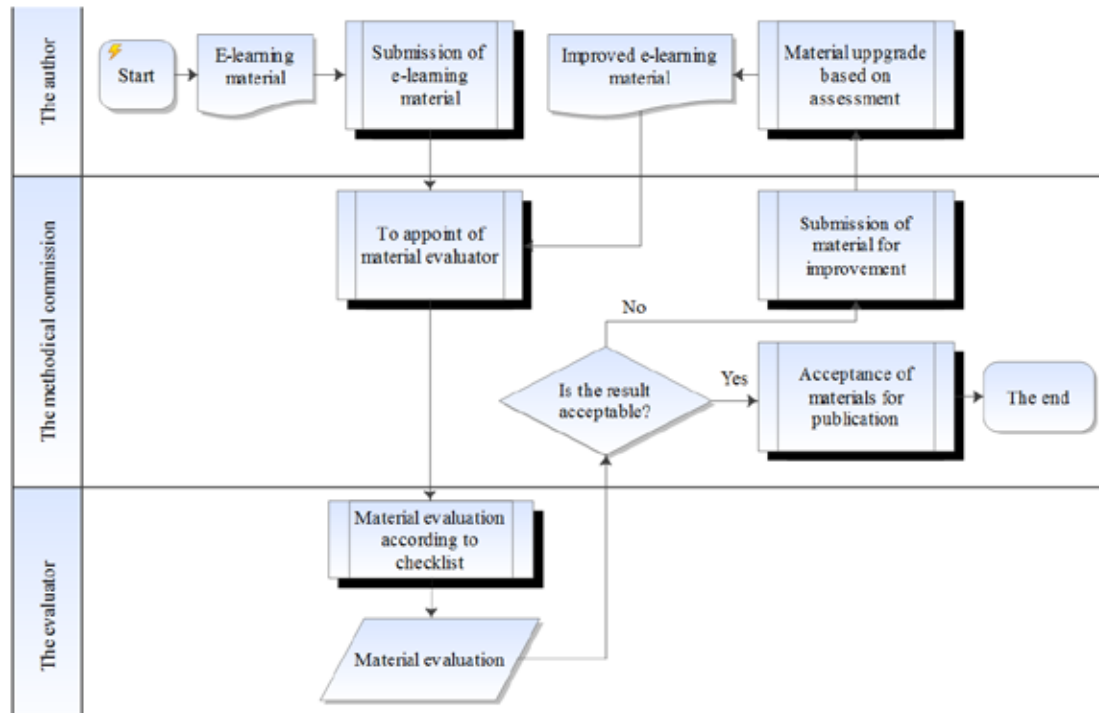


Figure 1. A procedure for the acceptance of e-learning materials.

- to ensure that staff apply that good practice consistently to current projects.

A procedure simply shows how a standard task will be done and who is responsible for that task. A possible procedure for producing a course specification is shown in Figure 1.

A process-oriented standard cycle was introduced analogous to the four management processes. The four phases of the standard cycle of quality management are:

- plan – define goals, define and plan processes,
- do – introduce the process or introduce changes in the processes as planned,
- check – measure, compare performance results, their compliance with the planned results,
- act – search and analyse the causes of irregularities, and also eliminate them in order to improve the performance of the process (Deming, 2000).

As W.E. Deming (Deming, 2000) himself mentioned, this standard cycle was initially developed by W. Shewhart, however, it has gained its popularity directly from W.E. Deming's publications and therefore it is often called Deming Cycle.

The Deming cycle has especially influenced many Total Quality Management approaches where it can be retrieved in several modified versions. The Deming Cycle symbolizes the principle of continuous perfection, which means that never has it been achieved so good that it could not be even better. The principle of continuous improvement is at the heart of any

approach to quality management in the organization, regardless of whether the quality management system is built up to the ISO 9001:2008 standard, or the management system is based on European Foundation for Quality Management (EFQM) or some other excellence model.

The general principles of quality management are:

- continuous improvement (plan-do-check-act),
- process approach (plan, act),
- fact-based decision making (check),
- look for the causes of the problem rather than the guilty (check-act) (Leilands, 2007).

The process of preparing and developing e-materials for the needs of the distance education also has a four-phase cycle. Education materials are the most important element of the distance education (Discenza, Howard, & Schenk, 2002). Therefore, the learning resources should be organized as well as possible. The main quality issues related to learning resources are resource-structured layout of and the quality of the produced material itself (e.g. Hosie, Schibeci, & Backhaus, 2005; Oliver, 2005; Swedish National Agency of Higher Education, 2008).

The aim of the article is to describe the procedure of e-learning material evaluation using a checklist of key quality indicators.

Materials and Methods

Monographic method has been used for this article. Information was searched in electronic databases and printed publications published in Latvia and Europe.

The study analyses the literature of the period from 2005 to 2014. Wide spectrum of scientific literature has been reviewed and analysed on the research of the factors affecting the quality of e-learning and quality assurance issues.

In January 2018, experts from general educational institutions that carry out distance education programs in Latvia and are a structural unit of a commercial company were interviewed. Based on the information contained in the National Education Information System, there are six schools. Since the aim of the study was to find out how the process of accepting and evaluating the learning materials takes place, such schools were selected, where the number of students is more than 100. Ultimately, there were three schools: European Distance Education Secondary School, Riga Distance Education Secondary School and Riga 1st Distance Education Secondary School. Questionnaires were emailed to these schools and 10 responses were received. The questionnaire included 12 questions about the quality assessment of the study materials. Nine questions were closed questions with multiple-choice options and three were the free-response questions. One of these questions was – name the five most important criteria that determine the quality of electronic teaching materials. The processing of the data takes into account the sequence of the named criteria and are given importance score according to the scale (5 (most important) – 1 (less important)). The results obtained in October 2014 were compared. Twenty learners from the Distance Professional Learning Centre of Latvia were also asked to name the five most important criteria that determine the quality of electronic teaching materials.

During the study, based on the findings of scientific research literature and taking into account the good practice, the procedure for the quality control of electronic learning materials was created.

Results and Discussion

The results showed that all three distance learning schools (n=3) have introduced a specific procedure for the implementation of e-learning materials. However, the environment of the material implementation and quality evaluation are different. The European Distance Education Secondary School materials are integrated into the school's online learning environment and then reviewed. In the Riga Distance Education Secondary School, they are accepted and reviewed both in electronic files (mostly .docx) and then integrated into the online learning environment. It should be noted that the surveyed schools have their own e-environment, specially created for this school. A commission of methodological teaching participates in the process of quality evaluation of the

study materials. This fact was taken into account in the development of procedures.

All respondents (n=10) noted that in the evaluation process it would be useful to use a checklist which contains the main aspects of quality evaluation. This confirms the important role of the checklists in promoting the quality of e-learning materials. Existing research provides a comprehensive overview of various aspects (Kazaine, 2017), which should be taken into account to ensure the quality of e-learning material. This aspect was taken into consideration when designing a number of procedures which deal with the study materials and checklist:

- development of the course material,
- acceptance of the course material,
- evaluation of the course material according to the checklist,
- review of the checklist.

These procedures relate to the use of a web-based self-assessment tool developed by the author of the article. This tool is based on a checklist and includes the indicators affecting the quality of e-learning materials (Kazaine & Arhipova, 2017). Of course, this is just a small part because the organization's operation is characterized by many more procedures.

Procedural activities are divided into areas of responsibility: developer of the material, methodological commission, evaluator (Figure 1). The use of the checklist is included in both procedures: Development of the course material (Figure 2) and Acceptance of the course material (Figure 1). In the first phase, it is used as a self-assessment tool. When reviewing his work, the author of the material can still improve the quality of the material. Indicators affecting the quality of e-learning material can be divided into four categories: formal requirements, didactic, media and usability (Pappas, 2014; Fey, 2015; Kazaine, 2017). Checklist was prepared according to the identified quality criteria and sub-criteria. The checklist has been developed and adapted on the basis of evidence, which results from guidelines, standards and by studying best practices in instructional and web design. This list is also intended to be used as self-assessment and improvement tools used by instructional developers and by instructional technologists. They can be used throughout the process to ensure consistency and efficiency and to promote quality assurance.

In order to identify the current situation and improve the checklist questionnaire, the questionnaire included questions about which criteria are taken into account when implementing the learning material, and which criteria, in their opinion, determine the quality of electronic learning materials. Respondents were offered 15 criteria and they had to indicate which ones were used in the evaluation process of the study

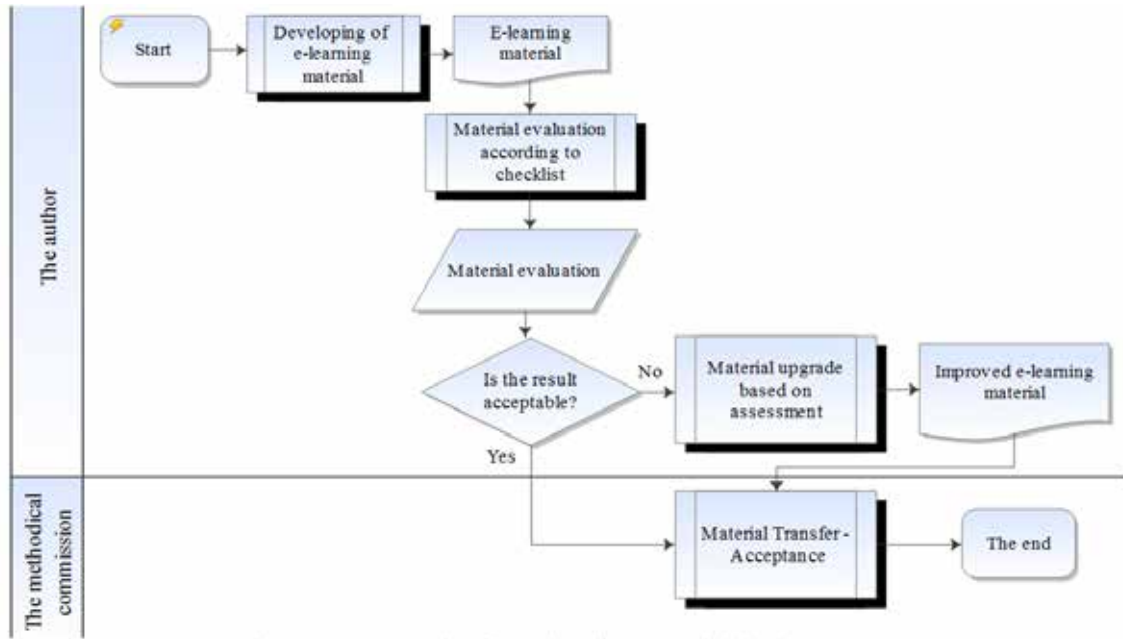


Figure 2. A procedure for e-learning material development.

material. The results (n=10) showed (Table 1) that when evaluating the material the following things are being looked at: compliance with the curriculum, existence of self-assessment tasks, and reference to other sources of information.

However, referring to the importance of the criteria, the opinions are different. By summing up the proposed criteria and the opinions of the respondents, selecting the ten most important criteria (Table 2),

it can be concluded that from the teachers' (n=10) perspective the most relevant criteria are: material must be motivational to the students, the content should be easy to read, and it has to comply with the curriculum. In contrast, from the learners' (n=20) perspective the most relevant criteria are: easy to read, topicality, and structured layout. It should be noted that the students did not mention the motivation at all. The fact that the teaching material must be structured and

Table 1

Summary of the use of quality criteria in the evaluation process of the study material

Criteria	Frequency
Content compliance with the curriculum	10
The learning material includes self-testing tasks	9
The study material includes reference to other sources of information	8
Corresponding topic breakdown	7
The study material includes self-monitoring questions	6
The study material includes independent work	6
The study material motivates to learn its content	6
The quality of media (image, video, audio) in the study material	6
Design	6
Breakdown of implementation forms (contact hours, independent work in e-environment)	5
Topicality, modernity	5
At the end of the units there is a summary	4
The study material includes a glossary	4
Structured layout	4
Match text to target group	3

Table 2

Criteria importance the quality of electronic materials

Criteria	Teachers (n=10)	Average rating	Highest rating	Lowest rating	Learners (n=20)	Average rating	Highest rating	Lowest rating
The study material motivates to learn its content	6	4.5	5	4	0	0.0	0	0
Easy-to-read content	6	4.2	5	2	14	4.2	5	3
Content compliance with the curriculum	10	4.0	5	2	6	3.5	5	1
Structured layout	5	3.7	5	2	6	3.7	5	2
Design	6	3.5	5	1	6	2.8	5	1
Topicality, modernity	4	3.0	3	3	4	4.0	5	1
At the end of the units there is a summary	2	3.0	3	3	3	3.3	5	2
The quality of media (image, video, audio) in the study material	4	2.5	3	2	14	2.7	5	1
The learning material includes self-testing tasks	8	2.2	3	1	2	1.5	2	1
The study material includes reference to other sources of information	5	1.7	2	1	3	1.3	1	1

easy to read proves that both groups of respondents think similarly.

The current checklist includes questions about the explanation of terms and a summary, which were not mentioned by the respondents. This means that the importance of checklists can change and it needs to be reviewed. For this purpose, a procedure was developed for reviewing the checklist, which involves the methodological commission and the administrator. The planning, production and delivery of e-learning requires the collaboration of several specialists (teachers, methodological and technical support) working together in a team environment (Phillips, 2005). Information technology specialist is the one who technically makes changes to the web-based checklist.

Conclusions

Proposed procedures provide a framework for action that promotes quality assurance as a daily

practice. Consequently, the application of the procedures should be the responsibility of the head of the institution, as well as checking whether they are being used. The use of the checklist in these procedures provides continuous improvement opportunities to ensure an effective learning process. High quality materials arise from the day-to-day, consistent application of good practice and from discussion and testing.

Further work should be done on improving the web-based checklist tool, by adding to the possibility of keeping track of the evaluations and to generate reports. It is also necessary to regularly review the list of criteria and the importance of the criteria.

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