Ensuring interoperability of e-learning and quality development in king khalid u...

Education, University

In the current scenario E-learning faces two major challenges, first to ensure the interoperability of e-Learning and developing quality learning through e-Learning. This research ensures the interoperability of e-Learning and quality development in learning and teaching. Reference models and the tools of quality matters in developing quality in learning and teaching practices in King Khalid University. This research studies the concept of reference model of E- Learning, interoperability, as well as how E-learning uses the tools of quality matters in enhancing quality in learning and teaching in KKU.

This research is based primarily on secondary data observed from Quality Matters sources and from E-learning deanship. This contribution will address these two questions and provides some first answers how to assure and to improve the interoperability and the quality of e-Learning. A general finding is that standards can support both objectives by providing international accepted solutions. The main objective of this contribution is to start the discussion about the interoperability of e-Learning offers and about the quality development responsibility the quality improvement in e-Learning supported by learning standards and specifications. The particular benefit of learning standards and specifications for interoperability and quality development will be pointed out by proposing the reference model for e-Learning standards concluding with a vision and needs analysis for further activities.

Introduction

If we are talking about e-Learning there are two main challenges: How to ensure the interoperability of e-Learning and How to develop the quality in e-Learning?

This contribution will address these two questions and provides some first answers how to assure and to improve the interoperability and the quality of e-Learning. A general finding is that standards can support both objectives by providing international accepted solutions.

The main objective of this contribution is to start the discussion about the interoperability of e-Learning offers and about the quality development responsibility the quality improvement in e-Learning supported by learning standards and specifications. The particular benefit of learning standards and specifications for interoperability and quality development will be pointed out by proposing the reference model for e-Learning standards concluding with a vision and needs analysis for further activities.

Generally speaking, interoperability means the ability of exchange and re-use of information and resources between different systems. In this way it is a requirement for the quality development in e-Learning facing the access to the best learning, education, and training solutions and their usage. Therefore interoperability is a precondition and a request for quality development that can be described and defined in different ways. Standards are offering a special support and have been accepted widely for the aims of interoperability. Focusing the educational sector, interoperability is an

objective and a task only for few use cases and application scenarios at present. Educational and learning standards providing interoperability have been discussed and developed for only a short time. They can be classified by their focuses on domains, entities, and implementation scenarios. E-Learning as a special lively part of the educational sector has approached open questions of interoperability from the very first, due to the precondition to solve the technological problems. Based on the debate on the development of technological and learning technology standards, interoperability has to be addressed in respect of the quality of learning, education, and training offers and learning processes. So this contribution is structured in several parts:

The first part defines interoperability and describes characteristics of good practice. And also the general preconditions of quality development and quality improvement in e-Learning are focused based on these findings in view to king Khalid University, interoperability of reference model for e-learning and quality development.

The second part provides the fundamentals for a later discussion in detail: Analyzing learning, education, and training in general and especially in the field of e-Learning in King Khalid University the relevant dimensions are differentiated first. Using these distinctions a generic classification model of educational and learning standards is proposed that is applicable for e-Learning.

The third part carries out the evaluation of these categories and classifications. An overview over the e-Learning standardization committees and standardizations initiatives is followed by the description and analysis of their standards and specifications allocated and matched to the dimensions of the classification model. At the end the vision and the further needs of interoperability and quality development are outlined. The perspective will be broadening up to the horizon of future chances for the improvement of e-Learning by the application and implementation of standards and specifications for interoperability and quality development. The contribution concludes with current activities and the identification of the most important topics for research and development in e-Learning standardization.

Interoperability and Quality Development

In this chapter we will define the terms interoperability and quality development first. Then the relationship and interdependence between these two concepts will be pointed out. Finally we will describe the support and the importance of quality standards and specifications for the objectives of interoperability and quality development in King Khalid University. Interoperability and quality development are the main challenges of e-Learning today. The acceptance, the realization, and the success of e-Learning offers depend on their interoperability and quality. In this contribution we will show that interoperability and quality development cannot be prescribed in a specific manner, but there is always the need for an adaptation and specification concerning the given situation. Interoperability means more than technical conformance: It covers the whole

range of requirements and characteristics from any systems and has to be addressed at all different levels and domains. The term ‘ system’ is used here in its broadest sense including human beings, societies, and any kind of technical and natural networks: A system consists of internal communication and relationship between all its elements, entities and members and can be defined against its external environment.

The epistemological (theory of nature or ground of knowledge) problems regarding the recognition of a system by another system can be suppressed here especially if we are focusing on e-Learning. It is impossible for external systems (e. g. teachers or other persons or systems) to observe and follow the internal learning processes of a learner. Learning progress, knowledge and competencies are always built by the learner itself and we cannot prove a causal connection between learning offers and learning processes, we can only assume some relationships and effects. Implying these preconditions we can therefore define interoperability as follows: Interoperability means the ability of exchange and reuse of every kind of information and resources in any way within or between different systems. Based on this definition four different scopes of interoperability can be differentiated in relation to given systems: Internal: The interoperability is only established between the internal elements, entities and members within one system.

- Directional: The interoperability exists in the direction from one system towards another system, but there is no feedback loop or reciprocal relation (e. g. only import without export).

- Mutual: The mutual interoperability allows the exchange between different systems in both directions.
- General: The interoperability looks for achieving exchange between all given systems in general. The different interoperability scopes are applicable for the formal distinction of interoperability.

But interoperability is a complex subject with many facets and dimensions: A detailed differentiation is needed for the application sectors regarding the specific domains and implementation scenarios. That is also true for the multi-dimensional term of quality development. In a general way quality development can be defined as follows:

Quality development covers every kind of measurement, assurance, optimization, and continuous improvement of the quality within given systems. According to interoperability quality development can also be described formally by the chosen scope. Quality is not a fixed characteristic belonging to subjects or systems but depends amongst others on the point of view and the scope. The following differentiation of the scope into three quality dimensions has become widely accepted:

1. Potential dimension: What are the potentials for the quality development in the future?
2. Process dimension: How can the processes be described and optimized for the purpose of quality development?
3. Result dimension: How can the quality development be supported regarding given results and systems?

We focus only on the common characteristics of interoperability and quality development and their relationships in the field of e-Learning. Focusing the educational sector in general interoperability is an objective and a task only for several use cases and application scenarios at presenting in Educational and learning standards. Interoperability have been discussed and developed only for a short time. E- Learning as a special lively part of the educational sector has approached open questions of interoperability just from the beginning due to its need and precondition to solve the technological problems. But the focus was only technological interoperability first. Based on the debate on the development of technological and learning technology standards, interoperability has to be also addressed in respect of the quality of learning, education, and training offers and learning processes. In this understanding interoperability is a requirement and an enabler for the quality development (not only, but especially) in e-Learning facing the access to the best learning, education, and training solutions and their usage and improvement. There is no development and improvement of the e-Learning quality without interoperability between the involved systems (in the broadest understanding): Learners, teachers, and learning objects and technology systems need to exchange and re-use information and resources between each other. Therefore interoperability is a request and a precondition for the quality development: Both can be described and defined in different ways using the same domains, entities and implementation scenarios. Standards are offering a special support and have been accepted widely for the aims of interoperability as well as of quality development.

For the quality development in e-Learning a three steps model has been developed starting from the individual level over the organizational level up to the involvement of all stakeholders.

Generic Reference Model for e-Learning Standards

This chapter provides the Generic Reference Model for e-Learning Standards based on differentiation of the mainly relevant dimensions and categories. After a short survey on standards in general categories of e-Learning standardization are presented pointing out especially the three main dimensions of e-Learning standards on which the Reference Model for e-Learning Standards is based.

Categories of e-Learning standards

A lot of categories can be identified focusing on the complex field of E-Learning standards. The reason is that e-Learning standardization has to deal with many dimensions and stakeholders ranging from technical over didactical to quality issues. Before we are analyzing the three main dimensions more in detail other additional categories that could also be addressed are listed in the following. On the one hand it can be distinguished between providers and users of e-Learning that have often different interests, needs, and preferences. E-Learning standards can mainly address and support either the users or the providers, or both. Regarding the organization using or providing e-Learning it is possible to differentiate the organizational levels on which an E-Learning standard is focusing: learning offers (e. g. content, learning objects), processes, and (business units of) the whole organization. This list is not exhaustive, there could be also added

other categories. It serves only the purpose to spotlight the multi-dimensional complexity of e-Learning standards. Next to these listed categories of e-Learning standardization there are three categories of e-Learning standards that can be regarded as the main dimensions. The three main dimensions of e-Learning standards are:

1. Types of e-Learning standards
2. Domains of e-Learning standards
3. Entities of e-Learning standards.

Three main dimensions of e-Learning standards: In the following the three main dimensions of e-Learning standards will be described shortly by their classifications.

Types of e-Learning standards

Three types of e-Learning standards can be differentiated.

Implementation standards: Implementation standards are developed to ensure the interoperability within all domains of e-Learning.

Conceptual standards: Conceptual standards are offering generic and theoretical solutions to compare and harmonize the entities and objects corresponding to the standard.

Level standards: Level standards define the quality level that should be reached by the application of the e-Learning offer and are often used for certification aims.

These three types of e-Learning standards can be attributed to the two main purposes and functions of e-Learning standardization which are interoperability and quality development. Implementation standards are focusing the interoperability within all domains and level standards are addressing the quality development. Conceptual standards can support both the quality development (e. g. by providing generic frameworks or reference models) as well as the interoperability by implementing and adopting the concept.

Results

Quality department at e-learning deanship (King Khalid University) established in the later part of the year 1431 (2010), the main task of this department is to raise the awareness of quality in e-learning, especially the quality of e-courses to achieve the standards and to get the accreditation, while at the same time to promote best practices and stimulate innovation and excellence in teaching and learning online. In addition, the quality department also works at the level of e-learning program by measuring performance and improvement efforts of the initiative.

Objectives were to – Train faculty members on how to apply e-courses standards of quality, Create and implement the accreditation process of the e-courses quality, Measure the efficiency, effectiveness and customer satisfaction for e-learning and Identify gaps and development opportunities in e-learning program and launch appropriate projects to fill gaps and take advantage of the opportunities for improvement.

Overview on Quality standards and Specifications

King Khalid University has adopted international quality standards from the “ Quality Matters” to be the basis for regulating the quality of e-courses. “ Quality Matters” provides a guarantee of quality e-courses, based on faculty and peer review, based on the latest scientific research and practical experience in the field. The quality assurance process designed to reach continuous development and improvement after making sure of the quality level of the e-courses with collaborative methodology.

The requirements of the electronic courses quality

In King Khalid University “ Quality Matters” uses a system based on the measurement tool in the process of reviewing e-courses. This tool was developed based on research, standards, best practices, experiences, and instructional design principles with a focus on consistency and integration of standards 2 to 6 Quality Matters.

The quality standards included in this measurement tool concerned with the e-course design, which is not developed to measure other areas such as the teaching of the e-course, earning management system used to present the e-course, or to assess the faculty member in terms of training or readiness.

Measurement tool consists of eight general standards, and each of these general criteria consists of a number of specific criteria.

Still Interoperability between Quality development and E- Learning in King Khalid University is not yet widen but having bright and strong intensification attempts to achieve through Policies and regulations for capture, reuse, and

sharing of data, learning objects and other learning resources where Practices are still emerging, policies are not yet formulated. Clear Quality development policies and regulations are to be formulated and broadly understood for E- Learning.

For Policies, regulations and norms for student and faculty communication, access to online resources, performance assessment, monitoring, quality assurance and privacy, existing policies and practices are based on traditional learning and are too restrictive therefore has to be reviewed. Also Fresh policies, regulations and practices are crafted, reflecting the realities of the E- Lifestyle Intellectual property policies and processes.

Conclusion

This research broadens the information on interoperability and quality development in e-Learning and on e-Learning standardization in the future for King Khalid University.