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The Quality Initiative of E-Learning in Germany (QEG)- Management for Quality and Standards in E-Learning

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Abstract

Quality in E-Learning is a critical success factor that is not easy to determine and achieve. In this paper, we aim to describe the challenges in quality development and show as solution approach, an innovative process management for planning, production and application of e-learning and the importance of quality standards. We will focus especially on small and medium-sized enterprises (SMEs), because in the SME sector, the special optimization potential is what the introduction of explicit quality strategies concerns. This paper illustrates at first the problematic and defines its quality development in education and training. Subsequently, appropriate tools and aids, used by both providers and users, will be demonstrated. The focus will be on quality standards and instruments for their application, which will be developed by the Quality Initiative E-Learning in Germany. In particular, the reference process model of PAS 1032-1 and the subsequent constructive first standard for quality management in education and training (ISO / IEC 19796-1) and the type of Quality Management Support Systems (QSS) are explained.

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1. Introduction

In particular quality standards can help to ensure long term and sustainable the quality of educational services and the quality management more efficient. Especially, small and medium-sized enterprises (SMEs), which have

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generally poor resources available, benefit from quality standards , but require specific implementation aids. The first chapter refers to the development of quality in e-learning and the importance of quality standards, with specific focus of SMEs. The second chapter includes the quality initiative E-Learning in Germany (QED)[1], that was founded in order to support SMEs. Q.E.G. promotes quality development in SMEs and the development of quality standards. Through the development of suitable instruments offers Q.E.G. for SME support in the introduction of quality standards and a process-oriented quality management in education and training.

The demands and the requirements, that SMEs sets as instruments and tools for quality management in education and training, are presented as results of a study. In the focus of the third chapter are tools for quality development in education and training, with special consideration of SMEs. We have a new type of support systems for quality development, Quality Management Support System (QSS), designed as currently existing support systems cover only parts of. In particular, Q.E.D. has a first QSSPrototype, especially made for the quality development in education and further evolvement, based on the requirements analysis for SMEs, and described at the end of the article is: the quality Integration Tool (QIT).

2. Quality in E-Learning

Due to the increasing need for lifelong learning and increasing integration of informal learning at the workplace, takes E-Learning a high role in education and training . Given this fact, the importance of the quality standards are set into focus. This reveals the difficulty to define what is meant exactly by the term "quality" of E-Learning. This paper deals with the various factors in the quality development in education and training, each requiring a circumstance-oriented definition. This has for the process-oriented quality management in education and training further crucial effect, as we will present in this chapter. First, the history and different ranges and fields of application of the various approaches of quality management, will be outlined. This differentiation is followed by the introduction of innovative process management for quality development in education and training. The concept of quality development in education and training, that focuses on the two central criterias of educational processes and cycles of innovation(chapter 2.2), the special support functions of quality standards in general (section 2.2) and the benefits of e-learning Reference process model of PAS 1032-1, will be also presented. This specification is the basis for the first international quality management standard in education and training, ISO / IEC 19796-1 (section 2.3). Finally, there will be outlined the specific requirements for small and medium businesses quality development (section 2.4).

2.1. Quality development

Quality management has become a high important task of corporate management and control and has gradually enforced itself (Manfred, 2004). Four stages can be distinguished, which followed each other in time and at the same time one extension of quality management into broader ranges and subject areas (Frehr, 1993; Seghezzi, 2003; Stracke,2006a; Zollondz, 2002):

- quality assurance ex-post
- in-process quality assurance
- process-oriented quality management
- total quality management

In quality assurance ex-post, the central task consists in the measuring of error rates at the end of a production process chain and their minimization. Process supported quality assurance, however, examines the quality already during the (Production) processes and attempts to ensure clear defined and measurable quality standards within the

1 The project Q.E.G., under the consortium management of the University of Duisburg-Food is financed by the Federal Ministry of Economics and Technology (BMWi).

production processes. In the process-oriented quality management, the quality assurance is compared, so that a process optimization in advance and also in the form of change management as a radical change of the process chain is possible. Total Quality Management (TQM), in turn, provides holistic quality management as cross-organizational management philosophy, that aim to achieve a continuous improvement process (Bleicher, 1999; Zink, 2004). TQM is therefore generally regarded as the considered comprehensive quality management approach and is characterized in distinction to the before mentioned stages of development through five characteristics (Ebel, 2003; Seghezzi,2003; Stracke,2006a):

- customer orientation, taking into account all stakeholders
- use of all sources of knowledge in conjunction with individual and organizational learning
- continuous improvement through both small as well as by radical steps
- quality responsibility by each individual and all team
- work in process

2.2. Quality standards for quality development

Quality standards in all sectors and industries worldwide now recognized and established: for the integral quality management, there are an internationally recognized standars, with the regulations ISO 900x2000[2], who have cross-sector validity. Furthermore, there are many approaches and widespread quality management systems, such as the EFQM Excellence Model (European Foundation for Quality Management, 2003a and 2003b), which also count for wide spread industries for holistic quality management (Stracke, 2006a).

The application of these general quality standards and quality management systems in E-Learning and the education and training, is possible in principle, but as generally described in the service industries with larger work and expense of implementing and adaptation connected (Bruhn, 2004). Therefore, at the national and international level, several initiatives are launched to support available tools for the establishment and development of quality management in education[3].

In the context of E-Learning, exist both prescriptive (eg rules, regulations and requirements) as well as descriptive standards, (eg metadata for learning objects) (Lindner, 2004; Stracke 2006b). These are process-oriented quality standards and their task in education, consists therefore not in the unique and universal provision, but in providing a generic and adaptive description format that each situation, according to the user, must be specified. With the new standard ISO / IEC 19796-1 (= ISO / IEC 2005) is a first internationally defined standard for the quality management on the training and education. It is based on the Specification PAS 1032-1 and its reference model process[4]. Reference process model of PAS 1032-1 provides assistance in quality development in education and training and is therefore described in detail.

2.3. The structure of the reference process model

The reference process model of PAS 1032-1, on which is based also the new standard ISO / IEC 19796-1, is composed of two main components, that it integrates (see DIN 2004):

- a generic process model and

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2 ISO 9000:2000 = DIN EN ISO 9000:2000-12 (2000): “Quality management systems. Fundamentals and vocabulary”/ from German Institute for Reglementation e. V. (Hg.); Berlin: Beuth

3 In addition to the Quality Initiative E-Learning in Germany, presented in Chapter 2, the following initiatives are important to betaken into consideration: at Nnational level DIN-Workshop on "Quality Management and Quality assurance "(see: <http://www.qed-info.de> and <http://www.ebn.din.de>), at european level CEN / ISSS Workshop on "Learning Technologies "(see: <http://www.cenorm.be/isss/Workshop/lt> and at the international level the Working Group 5 "Quality Assurance and Descriptive Frameworks "of the official standards body ISO / IEC JTC1 SC36 (see: <http://jtc1sc36.org>)

4 In the following, we refer to the term reference process model, both to the PAS 1032-1 and the ISO / IEC 19796-1 if it is not explicitly stated otherwise.

- a generic description model.

The reference process model is characterized in particular by the following properties:

- Integration: The reference process model is appealing for both providers, producers, customers and users in E-Learning and is generally applicable in training and education.
- Completeness: The reference process model covers all processes from educational projects to training opportunities.
- Openness: The processes of the reference process model are in terms of their mutual relationships and dependencies of their methods, the participating actors and evaluation criteria.
- Expandability: The sub-processes, objectives and results of individual processes of reference process model are individually extendable.
- Unique: The reference process model IS the basis for the single ISOStandard for quality management in education and training (ISO / IEC 19796-1).

Important to note is, that the reference process model has no temporal sequences, no dependencies and no specific requirements, but operates always as an open format description in the application, based on an individual adaptation to the respective organization and situation.

2.4. Quality development in SMEs

E-Learning has been identified in small and medium-sized companies still as the exception. This is evidenced by the few comparative tests that are currently available (Reglin, 2003; Severing, 2004; Stracke, 2005; Zinke, 2003). SMEs have a higher level of acceptance of E-Learning rather than the large companies. This fact relates to the preferred type of informal and workplace-based learning in SMEs (Severing, 2004; Stracke, 2005). Small and medium companies need E-Learning solutions, tailored to their needs. They must take into account their specific training and educational situations . A detailed study of their E-Learning requirements has not been done.

Only first assessments and requirements of SMEs, as potential users of E-Learning (Stracke, 2005), can be formulated. The essential characteristics, that must be integreated during and after the implementation of E-Learning, are:

- integrablity: E-learning must be easily integrated into the process of working and can be accessed there.
- a brief form: The work processes must not be interrupted too long.
- informations of the workplace: Specific references to the workplace and work processes must be met.
- transferablity: The acquired knowledge must be directly implemented in the work practice and must be applicable, as often as possible.
- flexiblity: Didactic design and technical content must comply with the requirementsand must be adaptable in the company.
- industry-specific: The provision of industry-specific content and guides facilitate the application.
- low cost: Last but not least decide the cost-benefit ratio of the adoption and use of E-Learning in general.

3. The Quality Initiative E-Learning in Germany (Q.E.G.)

The Quality Initiative E-Learning in Germany (QEg) was established, to support[5] the quality development in education and training. Here, Q.E.G. is directed specifically to the target group of SMEs, taking into account securing their international competitiveness. The objective of Q.E.G[6]. is the development and establishment of

5 Further informations on the Q.E.D. website: <http://www.qed-info.de>

6 Involved in the development are the following project partners: DIN German Institute for Standardization, FBD Education Park Fraunhofer

reference models and international quality standards in E-Learning. One focus is the design and provision of instruments and support mechanisms, specifically designed for use in SMEs. For this purpose, the needs of SMEs for the quality development and quality management in E-Learning were examined. Therefore, the key objectives of QEG were derived:

- development of internationally recognized quality standards for E-Learning First point
- dissemination of standards through the creation of application guidelines and the development of user-friendly tools
- help with the introduction and increasing use of E-Learning in SMEs
- ease of use and automation of standards for complex multimedia applications
- further development of the future field of mobile learning
- pooling of interests of suppliers and users of E-Learning and representation in international standardization bodies

4. Conclusions

Quality in E-Learning is a complex topic, since many aspects, perspectives and requirements of the various stakeholders must be considered and brought into agreement. For the quality development in education and training has been presented a definition, on basis of the two central criteria: the learning processes and the innovation cycles. Quality standards provide assistance in developing quality in education and training and especially in E-Learning. The reference process model of PAS 1032-1 was developed as an industry-specific specification for education and training. General quality management approaches here only with great involvement. With the standard ISO / IEC 19796-1, based on the reference process model of PAS 1032-1, is the first quality management standard for the training and education.

There is a need to support tools, suitable for practical application and implementation of quality standards for the quality development in E-Learning. A prerequisite for the use of PAS 1032-1 or ISO / IEC 19796-1 is the reduction of the levels of abstraction through tools, sound guidance and assistance for the application of specific methods and tools of quality management. A first QSS was in the Quality Initiative E-Learning Germany (QEG) for use in the quality development in education and training, especially designed and developed for E-Learning: This Quality Integration Tool (QIT) has the address of different objectives in quality management and at the same time involves all stakeholders. In addition, all participants can, on the common vision and strategies for quality development, inform, share and vote for their implementation. QSS can therefore contribute, in general and in particular, within an organization, at the quality of development and the quality management in education and training. All processes, actuators and management levels include a continuous and a experienced improvement process. Quality Management Support Systems consequently, are a tool for participatory quality development and for holistic quality management in education and training.

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