THE LEVEL OF INDIVIDUALIZATION AS ONE OF THE QUALITY DIMENSIONS OF E-LEARNING

Irena Pulak
Institute of Educational Sciences
Jesuit University of Philosophy and Education "Ignatianum"
Kopernika 26 st, 31-501 Cracow
irena.pulak@ignatianum.edu.pl

Abstract:*The goal of this article is to examine the issue of individualization of the learning process in e-learning systems and blended learning as an element of evaluating the quality of courses. This aspect of on-line learning is often omitted or treated marginally. Modern research on the learning process indicates that there is significant importance in adjusting the learning environment to the individual learning needs and preferences of the learner. Popular methodical and technical solutions in on-line learning and distance education should also incorporate and support actions that allow for the individualization and personalization of the widely understood process of teaching and learning. This, in turn, will indirectly contribute to improving the effectiveness and overall quality of learning.*

The considerations presented in this article showcase a variety of forms, activities and tools that support the individualization of learning and teaching in e-education. Certain criteria for evaluating the quality of e-learning courses have been proposed which indicate the level of individualization in various aspects of learning.

Keywords: e-learning, blended learning, quality of e-learning, individualization, personalization

INTRODUCTION

Modern trends in education clearly indicate the growing significance of actions that personalize the learning process to the individual needs of learners. In light of the broad usage of new information and communication technologies the learning and teaching environment is being enriched with new quality which is worth using for supporting the efforts of learners trying to reach their educational goals.

Up to this point the experience in supporting the educational process with technological tools indicates that virtual space and digital resources allow for a

greater modification of the learning process in such a way as to incorporate individual conditions and personal preferences of learners. These tendencies are more and more evident in advanced and complex e-learning systems and blended learning. It is a result of the idea that e-learning is based on the necessity of the student to directly engage in the learning process and take responsibility of their educational actions. That is the reason why designers of e-learning systems are trying to incorporate a broad range of resources and tools in courses, so that the learners can modify their educational space to their individual preferences and priorities. (Ehlers 2004).

1. QUALITY OF E-LEARNING FROM DIFFERENT PERSPECTIVES

Topics on e-learning systems can be seen from different perspectives - respective of situations, different factors might be considered such as economical, organizational, legal or social. The most common and typical understanding of *quality* of e-learning refers to obtaining the best learning achievements and excellence in performance (Ehlers, U., Goertz, L., Hildebrandt, B., Pawlowski, J. M.). However, when considering the problem of quality at the institutional level of education, the running costs, which is the ratio of investment to obtained results. U. Ehlers rightly points out that when defining the term *quality* we position ourselves in a multidimensional space. That is why we can talk about various interpretations, kinds and levels (Ehlers 2004).

For example, in the ELQ (E-learning quality) model developed by the Swedish National Agency for Higher Education, used for the evaluation of e-learning, there are 10 quality dimensions models for assessing quality in e-learning, including: material (content), structure and virtual environment, communication (cooperation, 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 (Ferreira, Andrade 2011).

When analyzing the quality of e-learning from the user's perspective - a learner who is using distance learning methods, we can consider quality on several levels connected to the basic elements of the learning process. The first level is context-quality, the second, structure-quality, the third, process-quality, and the fourth, output-quality or impact-quality (Ehlers 2004).

However, in *Quality in e-Learning from a Learner's Perspective* the authors defined seven main fields of quality based on empirical research. The defined fields with listed dimensions are shown in Table 1.

Table 1.

Fields of quality from a Learner's Perspective

Quality field	Dimensions
Tutor Support	interaction centeredness, moderation of learning processes, learner vs. content centeredness, individualized learner support, goal- vs. development centeredness, traditional communication media, synchronous communication media, asynchronous communication media
Cooperation and Communication in the Course	social cooperation, discursive cooperation
Technology	adaptivity and personalization, synchronous communication possibilities, availability of content (technical)
Costs - Expectations - Value	expectation of individualization and need orientation, individual non-economic costs, economic costs, practical benefits, interest in course and media usage
Information transparency	counseling (advice), organizational information, information about course goals and contents
Course structure	personal support of learning processes, introduction to technical aspects and to the content, tests and exams
Didactics	background material, multimedia enriched presentation material, structured and goal oriented course material, support of learning, feedback on learning progress, individualized tasks

Source: Own work, based on U. Ehlers, Quality in e-Learning from a Learner's Perspective, European Journal of Open, Distance and E-Learning 2004 EURODL, http://www.eurodl.org/?p=archives&sp=full&article=101

Many of the mentioned elements of evaluating the quality of learning in e-learning models refer directly or indirectly to topics on the individualization and personalization of learning.

An interesting proposal from Poland on the quality of evaluating e-learning courses, are the criteria developed by the Society of Academic E-Learning (SEA)(*Wybrane kryteria oceny* , 2008). In the prepared proposals the authors refer to the topics on quality in four fields: course organization, course development, running the course and evaluation. Here you can also find the elements that refer, in varying degrees, to different aspects of the individualization of learning actions.

2. INDIVIDUALIZATION POSSIBILITIES IN THE LEARNING PROCESS

When talking about the problem of individualization in education it is worth starting with defining individualization and how it can be run. In general, the individualization process is "modifying content, methods and learning resources to individual skills, abilities and interests of learners" (*Encyklopedia PWN,* 2016). Conversely, in the case of defining the quality of learning the levels and types of individualization can differ greatly. Well-known theorists of the learning process such as R. M. Gagne, L. J. Briggs and W. W. Wager enumerate several of them. Starting with full individualization, which is achieving general learning goals, which the student will reach independently (*independent study plans*), by planning their individual learning process, choosing the right strategies and learning materials. The second level includes self-study (*self-directed study*), which is setting detailed learning goals, however, without specifying the approach in which they will be reached. The teacher may suggest a list of books and provide didactic materials. The student, however, is not obligated to use them. The other kind of individualized learning are programs focused on the learner (*learner-centered programs*). Learners in these programs can decide on the learning content, which they will master (however, usually there is a basic requirement - a specified canon obligatory for all learners). The pace of learning is one of the significant factors in differentiating the learning process. Learners can work at their pace (*self-pacing*), however, the learning goals established by the teacher remain mutual and specified by the teacher. The last approach to the individualization of the learning process mentioned by the authors is learning determined by the student (*student-determined instruction*). It is characterized by the decision-making power of the student who chooses the basic elements of the didactic process, that is learning goals, strategies, materials and didactic materials as well as the pace of learning (Gagne, Briggs, Wager 1992).

When describing the issue of differentiation instruction, K. Scalise emphasizes that it is similar in the traditional learning process and e-learning - only the tools are different. There are three fields in differentiation instruction: differentiation of content, differentiation of learning style approach and differentiation of product. The first field offers students the chance to start at different stages in the curriculum and proceed at different paces, the second field emphasizes different modalities of learning style or learning preference, such as visual and auditory learners, and the third field gives different assignments to different students, and brings different work products (Scalise 2007).

Considering the described approaches, it can be assumed that the individualization process is understood as a differentiation of the didactic process with regard to personal preferences and choices of the learner. It is usually realized in learning practice by modifying or adjusting the following elements:

- **didactic materials** – learners can choose different forms of didactic materials, starting to learn at any stage of the learning material and mastering it at their pace;
- **the course of the didactic process** – learners, according to their preferences can use different methods and forms of learning, there is also a possibility of modifying the methods of learning to the style of the learner, such as intelligence profiles (H. Gardner multiple intelligences), sex or other social factors;
- **learner achievements** – learning goals can often be modified to fit individual needs, current results or the entry-level knowledge of the learner, the tools may also be different;
- **relations** – differentiation of the teacher's actions to shape attitudes, elevate and sustain motivation to reach the established learning goals, support the student in the learning process;
- **learning environment** – learning conditions can be modified, such as individual work, group work, ICT, Internet (on-line learning), multimedia, etc.

3. INDIVIDUALIZATION OF LEARNING IN E-LEARNING COURSES AS AN ELEMENT OF QUALITY EVALUATION

Coming to the analysis of the actions, that increase the level of individualization in e-learning courses, simultaneously considered as criteria for the evaluation of e-education, it is worth introducing a certain differentiation. In many situations the terms "individualization" and "personalization" are synonymous and are used interchangeably. However, when we are talking about personalizing the virtual space - specifically in the Polish language - we are referring to the technical side, to the changes in the preferences of the programs and applications according to one's liking. This element is an important aspect of on-line learning. The solutions used in this aspect make the learning environment user-friendly.

Below we will characterize six areas of e-learning systems in which actions supporting individualization of learning may have a significant impact on the quality of learning.

3.1.Resources and didactic materials

The first area of investigation comprises resources and didactic materials. While analyzing their quality it is worth looking at the volume of educational resources. The available materials can be divided into groups - the ones that are obligatory for all students and the ones that are elective which supplement or expand knowledge from a specific area. The learner decides which resources they will use, according to their needs. The other commonly used solution in learning practice that enriches didactic resources is supplying the courses with references (hyper-links) to external

sources. In this way it is possible to extend the scope of available resources in the course.

The quality also depends on the variety of the forms of presenting the learning content. The educational materials can be published in various formats such as text, multimedia, photography, animations, simulations or interactive texts and quizzes. It is important to present the learning content in many ways - the learner will choose the form of the content according to personal preferences. Dependence of the form of presentation on the preferences of the user creates a situation in which we are talking about different perception profiles and styles of learning.

Another feature that supports universality is the availability of educational materials on different platforms. Especially important in this case are mobile devices, which facilitate learning in the right place and time.

3.2.Structure and organization of the didactic environment

The fundamental premise of e-learning is flexibility of the learning process - it allows the student to independently decide on the time and place where learning takes place. A well-designed system should incorporate this practice in different scopes. Personalization can, however, reach deeper, and impact other remaining elements of the system, including the organization of the virtual space, the choice of learning methods or methods of communication. Designing e-learning courses in such ways so that the user can choose their own personalized path of mastering the material is difficult in reality but creates more engagement. It also makes them create their own, unique path which is facilitated by the non-linear structure of the courses, which also makes it easy to jump from on topic to the another according to their needs and searching for common things and all related contextual informational actions.

However, one of the most valued elements that allows for the differentiation of the didactic process is the possibility to choose the preferred learning strategies based on various didactic resources. It takes place by choosing the appropriate learning method (ex. expository and problem methods), modifying the actions in the course (individual and group work), designing many types of interactions between users - didactic content in the course. There is a great variety of methods and learning techniques in courses; the project method is widely used, as well as didactic games, brainstorming techniques, etc. They allow to cooperate with other participants of the learning process, they help to make new contacts and intensify relationships as well as share knowledge and experience.

3.3.Means of communication and cooperation

Means of communication of the participant with the course lecturer should not be treated lightly as they contribute to the overall evaluation of the quality of e-learning. It is good when a student has the option to choose the means of communication with the lecturer as well as with other students. Every course should include many channels of synchronous and asynchronous communication.

Aside from the basic means of communication such as e-mail, communicators, chats, on-line forums, it is worth using tools of group-work such as wikipedia, on-line seminars and conferences. The communication tools in the course should not only facilitate information flow but also allow to create social networks of learners and reach mutual learning goals.

From the perspective of managing their own learning process, it is inevitable to have an extensive system of notifications, such as a calendar with important dates, notification windows with reminders about upcoming events or incoming messages.

3.4.Student assessment

Individualization in the scope of controlling knowledge and achievements of the learner is quite difficult to achieve in reality. It is more useful not in e-learning courses, but in the case of creating a learning environment using new technologies (on-line learning, web-based learning). When advanced adaptive education systems allow to modify learning goals, if the didactic goals are dependent on the level of initial knowledge of the learner, the possibility of establishing learning goals individually is less likely.

It is much easier to supply the course with the option to choose the method of controlling the quality of knowledge and skills. The evaluation of the user's progress can be done with tests, quizzes, individual tasks, group projects, research reports, essays, etc. A factor that facilitates individualization is the further supplementation of e-learning systems with self-control tools that allow to verify the knowledge by the course participants. Information obtained in this way facilitates the management of the learning process and planning of future tasks.

3.5.Flexibility and adaptability

In the case of this category the adaptation of the virtual learning environment is analyzed from a technical standpoint. It is based on determining the ability to change the settings and preferences of the interface, modifying it to the specific needs of the learner. Elements that are considered include: graphical template (including the option to change fonts, the position of navigational elements, colors), managing the method of displaying and playing multimedia materials, the availability of additional features or software.

The option to modify the courses to the needs of dysfunctional special needs learners. The materials included in the course should meet the Web Accessibility Standards.

3.6.Teacher assistance and individual support systems

The last considered category in this article, tightly connected to the individualization process, is supplying the courses in assistance and support systems at different stages of the learning process. The main goal of the teacher is to help the learners to master the learning material and to acquire knowledge. The

teacher can support the learner in a specific situation by additional information and supplementation, comments on the tasks, feedback on tests and exercises, monitoring learning progress, awards and praises for accomplished tasks. Generally, this evaluation method relates to the presence of various forms of individual support from the teacher and using motivational techniques (i.e. additional materials for those who are interested).

The discussed factors, that facilitate the individualization in the learning process in e-learning systems, are shown in table 2.

Table 2.

The option of individualization and personalization in e-learning in the context of quality evaluation

Dimensions quality.	**Factors that facilitate individualization in e-learning**
Material content	• the large volume of educational resources, the presence of obligatory and elective materials, supplying with links to external sources which supplement or extend knowledge in a specific field
	• the variety of presented educational content (the option to choose forms of presentation), different media forms (text and multimedia materials, such as images, photographs, charts, diagrams, maps, podcasts, videos, simulations, animations, web resources, interactive quizzes, tests and crosswords).
	• interdisciplinary, availability in different platforms, content modified to the requirements of different devices, particularly mobile devices.
	• using tools of course presentation that facilitate the individualization of the message with the inclusion of different styles of perception and learning (visual, auditory and kinesthetic)
Structure and virtual environment	• the ability to use various means and didactic strategies (planning different interactions - didactic content),
	• ensuring the use of a variety of methods and learning techniques (i.e. suppository and problem)
	• the ability to modify the work schedule,
	• non-linear course structure, the ability to change the order of the topics, creating a personalized path of mastering the learning material
Communication, and cooperation	• the presence of various synchronous and asynchronous communication channels, the ability to choose the means of communication (e-mail messages, communicators, chats, tools

	for group work, seminars, on-line conferences).
	• extensive assistance system (pop-up windows, reminders, calendar)
	• the ability to participate and build the community in the course
Student assessment	• the ability to individually establish or modify learning goals, determine the didactic goals from initial knowledge
	• the ability to choose the method of controlling knowledge and skills (individual tasks, individual and group projects, tests, quizzes, projects, research reports, essays)
	• the presence of activities that allow the participant of the course to independently verify their knowledge
Flexibility and adaptability	• The possibility of adapting the work environment in the technical aspect, setting-up the interface preferences, adapting the appearance by modifying the settings (graphical template, font size and type, the way in which the course elements are displayed, color change, playing multimedia materials, etc).
	• The ability to adjust the courses to the needs of dysfunctional individuals, special needs learners and the disabled.
Support	• This aspect refers to the various forms of support from the teacher. The teacher can support the student in a specific situation with additional information, comments to tasks, etc.
	• using motivational techniques (i.e. additional material for those who are interested, feedback from tests and exercises, monitoring progress in learning, awards for completed tasks).

Source: Own work

List of tasks and activities that help to adjust the learning process to the needs of the learner. This statement does not provide all possibilities; it is rather a hint - as in which course elements play a significant role in the context of individualization from the perspective of the quality of the entire learning process.

4. CONCLUDING REMARKS

To sum up the existing considerations it can be assumed that the individualization level in the learning process with the use of new technologies, specifically e-learning models, can be seen as one of the most essential dimensions of criteria in the quality of learning. Many factors can contribute to adjusting various forms of elements of the learning process to the individual preferences of on-line learners. These facilitators contribute to improving the effectiveness of learning and are perceived as positive by the learners. It is worth noting, however, that implementing an individual approach in learning largely consists of developing the

virtual environment, and is connected with high financial costs, which do not always translate into a clear and significant improvement of the entire system. Nonetheless, in many cases actions that are supposed to support the individualization process can take place at all stages of implementing e-learning solutions and the benefits of them can be achieved with little cost.

REFERENCES

Ehlers, U., 2004: *Quality in e-Learning from a Learner's Perspective*, „European Journal of Open, Distance and E-Learning" 2004 EURODL, [on-line] at http://www. eurodl.org/?p=archives&sp=full&article=101 (accessed 26 July 2016).

Ehlers, U., Goertz, L., Hildebrandt, B., Pawlowski, J. M., 2005: *Quality in e-learning. Use and dissemination of quality approaches in European e-learning. A study by the European Quality Observatory*, Luxembourg: Office for Official Publications of the European Communities, [on-line] at http://www.rcc.gov.pt/SiteCollectionDocuments/Qualitye-learning05.pdf (accessed 26 July 2016).

Encyklopedia PWN [PWN Encyclopedia], [on-line] at http://encyklopedia.pwn.pl/haslo.php ?id=3914639 (accessed 3 July 2016)

Ferreira, S. A., Andrade, A., 2011: *Systematic analysis of Quality Technology Enhanced Learning Environments in higher education: an organizational perspective 2.0* [in] *Education in a technological world: communicating current and emerging research and technological efforts.* A. Méndez-Vilas (Ed.) Formatex Research Center, [on-line] at http://www.formatex.info/ict/book/428-439.pdf

Gagne R. M., Briggs L. J., W.W. Wager, 1992: *Zasady projektowania dydaktycznego [Principles of Instructional design],* WSiP, Warszawa, p. 287.

Glossary of Education Reform, [on-line] at http://edglossary.org (accessed 26 July 2016).

Scalise, K., 2007: Differentiated e-learning: five approaches through instructional technology, "International Journal of Learning Technology" 3(2), January 2007, Research Gate, [on-line] at https://www.researchgate.net/publication/220497459_Differentiated_e-learning_five_approaches_through_instructional_technology (accessed 26 July 2016).

Scalise, K., 2007: *Differentiated e-Learning: What it is and five approaches*. https://net.educause.edu/ir/library/pdf/CSD4903.pdf (accessed 26 July 2016).

Wybrane kryteria oceny kursu internetowego przygotowane przez SEA [Selected criteria for evaluating Internet course prepared by SEA], [on-line] at http://www.cko.us.edu.pl/images/stories/cko/prawo/Standardy_prowadzenia_kursu_e_learningowego.pdf (accessed 29 July 2016).