

THEORETICAL APPROACHES AND CONCEPTS TO THE REALISATION OF ELECTRONIC LEARNING IN THE EDUCATIONAL PROCESS

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Abstract: In the era of high technologies, no one doubts that the role of electronic and distance learning will be further expanding. The fact that the society when faced with challenging living conditions had to react and urgently change and rebuild all spheres of its life, served as a litmus test for identifying the matters of highest priority that need to be addressed as soon as possible. E-learning was not an exception. In our work we focused on its aspects, identified the advantages and disadvantages of e-learning at university, mapped out some prospective ways for modernizing the educational system to eliminate the existing contradictions.

Keywords: electronic learning, distance learning, educational process, educational space, university.

1 Introduction

The relevance of this research is high as recently the society has faced the challenges for which it was unprepared. The modern world, the whole structure of which is predicated upon the achievements of technological progress, has turned out to be extremely vulnerable in times of emergency and unforeseeable situations. In this connection, an increased emphasis has begun to be placed on novel and modern organizational forms of educational process, which in the context of modern realities will help to mitigate the damage resulting from the involuntary long isolation and paralysis of all social structures. The pace of development of the modern society also makes it imperative that a future university graduate becomes highly mobile and flexible, and the e-learning may help to develop these qualities. A learner gets access to the continuous education, and a possibility to achieve self-fulfillment in profession and learning at the same time. Territorial boundaries between regions become blurred. However, the modernization of education for incorporating in the system of education, in addition to traditional forms, the most advanced and high-tech organizational forms, definitely is not a matter of one day. E-learning has already been firmly established in the modern educational process, but the realities of present day brought society to realization of its true potential in providing high quality educational services meeting the demand (Satunina, 2006). At the same time, it was the situation of urgent restructuring of all spheres of social life that clearly revealed the gaps that need to be eliminated in order to achieve high efficiency and productivity in all spheres of social life, including provision of high quality educational services meeting the demand (Maslova & Gafforova, 2012; Pokholkov et al., 2004).

2 Literature Review

It is important to highlight that the problem of incorporating e-learning in the educational process is highly relevant in the scientific community and ignites interest of the domestic and foreign researchers. Thus, this problematic has been successfully dealt with by the following Russian researchers: Kornienko S.A. (2014) whose works show that his scientific interest is directed towards the use of e-learning formats for implementing the modern educational programs; T. N. Fokina (2015, p. 138), who addresses the issue of defining the concepts of electronic and distance learning and developing the modern educational technologies corresponding to the imperatives of our times; A. E. Satunina (2006) who seeks to fix the contradictions arising in

the process of implementation and incorporation of e-learning in the educational process.

It should be noted that modern domestic researchers attach particular importance to the creation of a single methodological basis of e-learning, since, in their opinion, e-learning is not part of the traditional learning, but has its own, specific, goals and objectives (Kornienko, 2014; Fokina, 2015; Satunina, 2006; Vernik, 2014). That is why the main contradiction is that, despite the sufficient knowledge about e-learning and its high popularity, its incorporation in the educational process implies a need to deal with very substantial scientific issues.

Undoubtedly, speaking about the theoretical foundation beneath such a concept as "e-learning" it is impossible not to mention the name of Richard Mayer, who is known as "the father of the science of e-learning". In his works he justifies the need to introduce new electronic forms in the educational process of the future. His ideas are shared by Van Merriënboer and Ayres (2005), who point to the need for adapting the learning content to reduce its cognitive load and the use of learning formats which through illustrative potential and imageability will ensure higher comfort of learning for students. Interesting for us are the works of Marshall McLuhan (2003), who was the founder of the theory of digital media, he believed that the media is a treasure trove of resources for e-learning (Vernick, 2014, p. 11). Foreign authors, as well as domestic ones, agree that a solid theoretical framework should be developed for the e-learning which will help to overcome its bottlenecks and identify its advantages (Van Merriënboer & Ayres, 2005; Gianelli, 2018; McLuhan, 2003).

As concerns the above, there is no doubt that the issue of implementation, adaptation and modernization of e-learning at university is highly relevant and promising from a scientific and theoretical perspective.

3 Research Methodological Framework

The research purpose was to determine and provide theoretical substantiation to the efficiency of integrating electronic learning in the education process at university.

For achieving the stated purpose, we had to address the following objectives:

- identify the features peculiar to the e-learning process;
- explore the pedagogical and psychological concepts relevant to implementing the e-learning;
- design an e-learning model composed of the components differentiating it from a traditional learning model.

For accomplishing the research purpose and objectives, we conducted theoretical analysis and synthesis of pedagogical, psychological, methodological literature; in our research we employed the methods of modeling, analysis, synthesis, generalization of mass practice and the best practices in Russia and abroad.

4 Results and Discussion

Based on the definitions of the concepts of electronic and distance learning, it should be noted that these types of learning have been used in the educational process for quite some time, but often their use is chaotic and unsystematic. It is important to understand that for the effective integration of electronic learning in education a solid theoretical framework is required, the scientific foundation without which it is impossible to organize training at a proper level.

In his work, M. Gianelli (2018) brings into focus that when designing the process of e-learning it is necessary to rely on the results of empirical research in the field of e-learning effectiveness, tools, resources and forms of organization. In

addition, it is necessary to generalize and systematize terminology for the effectiveness of research in the field of e-learning and distance learning. The researcher points out that currently there is no sound theoretical framework that could have been used for the implementation of e-learning (Gianelli, 2018). At the same time, the researcher notes that this form of learning is innovative, which entails the need for dynamic changes and revisiting of the usual forms of educational process. M. Gianelli (2018) points to the problem of coexistence of traditional pedagogical practice and such an innovative form as e-learning. Modern life characterized by a high pace, mass digitalization, migration and regional remoteness make e-learning more and more attractive, helping more and more students to study under the programs of the country's leading universities (Gianelli, 2018, p. 82).

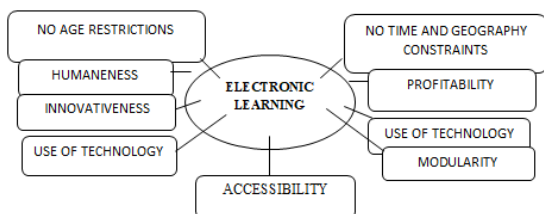
M. Gianelli (2018) highlights a conceptual component of the e-learning content through the prism of the concepts of cognitivism, constructivism, behaviorism, digital media theory, activity theory, and active learning theory. Below based on the study of M. Gianelli (2018), we present the key characteristics peculiar to the e-learning process with regard to these concepts and theories.

1. The concept of cognitivism. From the point of view of cognitivists, learning is an internal process. The structure of this process includes such components as figurative thinking, reflection, memory. As a distinctive feature of this concept we may name metacognition through the lens of subjective comprehension of reality. In this concept, information is perceived by a person via senses, then processed by the operative memory, which resources are limited, and only then enters the long-term memory, which has no limitations (Gianelli, 2018, p. 83). Van Merriënboer and Ayres (2005, p. 12) also note the need to adapt information in order to reduce its cognitive load and to integrate in the learning process such forms that through illustrative potential and imageability will ensure higher comfort of learning for students. Thus, these recommendations may serve as a basis for organizing an effective educational process at university with the help of electronic applications with reliance on cognitivism as its theoretical framework.
2. The concept of constructivism. This concept is based on the assumption that all new knowledge should be built on the basis of the already existing knowledge. In pedagogy, this didactic principle is called "from simple to complex". It is easy to apply this concept to e-learning. This approach promotes cooperation, reflection, and allows the student to absorb new information free of stress. The situations reproduced within the framework of this approach foster in students such significant personal qualities as independence, proactivity, curiosity, initiative. The learning takes place in the format of "guided discovery", when a student gets the impression that he/she independently makes all discoveries, which becomes a strong motivation for learning. In this case, no significant differences may be observed in the understanding of constructivist approach in e-learning and constructivist approach in traditional learning (Gianelli, 2018). Here only the forms of organization of work with students differ, but the essence remains the same – building knowledge based on the learner's personal experience, high personal discipline, interactive presentation of information and self-reflection, as well as shaping a subjective component of the learner's personality (Gianelli, 2018). It can be assumed that this approach holds a rather high potential for building the conceptual foundations of e-learning.
3. The concept of behaviorism. Proponents of this approach view learning in the context of external stimuli, or environmental stimuli (Gianelli, 2018). The role of human perception is premised on the simple principle "stimulus - response" (Gianelli, 2018). Such understanding of human cognition already includes the subjective evaluation of reality (external stimulus) and its comprehension on the basis of "internal perception". Thus, according to behaviorists, a person acquires knowledge through personal experience in interaction with the surrounding world. Projecting this approach to the learning process, the quality of a stimulus producing a response is of great importance in learning. Behaviorists, or rather neo-behaviorists, recommend that study course designers arrange the learning content so that it encourages students to respond to the stimulus eagerly. This becomes possible when the content itself will initially meet such criteria as accessibility, vividness, motivation, imagery, problem-raising, dynamism. The principle "from simple to complex" is also relevant in the framework of this approach, but the leading role belongs to the quality of "a learning stimulus" that is meant to produce "an educational response" (Gianelli, 2018).
4. The digital media theory enriches e-learning with a wide diversity of media formats that can be used for teaching and learning (Gianelli, 2018). If we proceed from the formula of Marshall McLuhan (2003, p. 348), who believed that the medium of communication itself carries information, then the media is a treasure trove of resources for e-learning. According to McLuhan (2003), "the emergence of a new medium of information transfer changes people more than the content of this medium" (Arkhangelskaya, 2009, p. 11). It is important to note that the theory of digital media addresses the key issues related to the accessibility of information in the media format, meaning that the issue of "equal starting opportunities" for all participants in educational relations becomes topical (Gianelli, 2018, p. 86). In this aspect, an important point is to provide all students with necessary technical means and access to the Internet, which, despite the mass digitalization of society, is not always possible, as the previous year showed. At the same time, within the framework of this theory, new interactive forms of information presentation come into existence, which fix the main issues of cognitivism, namely the overload resulting from processing a large amount of information. Illustrative potential and manipulativeness allow a student, within the framework of this theory, to absorb a rather vast amount of information without suffering from an overload and weakening of cognitive and learning motivation.
5. The activity theory and active learning theory. This approach is very relevant amidst the modern realities, especially in the legal field, implemented as professional standards, where student is seen as a subject, a carrier of activity, as these are activity, proactivity, independence, interest (curiosity) and initiative that are essential properties of a future specialist for his/her success in profession. This theory hinges on the approach of conscious active learning (Gianelli, 2018). Because it is through consciousness and understanding of the goals and objectives that a student internalizes the educational content, and not just mechanically learns it by heart. E-learning, having a number of advantages, very effectively fits within this approach. Various quests, case studies, business and interactive games, problem situations open the way for independence and creativity in solving tasks (Gianelli, 2018). A possibility to complicate or simplify tasks, select levels to be passed, return to the unfinished tasks, find keys to their solution, all this motivates a student and contributes to quick learning of the content. From this perspective, e-learning perfectly correlates with this approach (Gianelli, 2018).

The scientific community is faced with the question of whether it is required to develop its own scientific basis for the e-learning or are the existing developments sufficient? It is important to understand that e-learning in pedagogical theory and practice, is the formation which is dynamic, prone to constant modernization and development, as the progress of technology and digital society is very rapid. The changing world dictates its tasks, the digital community exists according to its own laws and this progress is unstoppable. In this regard, it is important to set forth the key considerations to be taken into account when creating new digital concepts and theories (Fokina, 2015, p. 137).

The e-learning model should include components that distinguish it from the traditional educational model, namely: remote access to any university across the globe, regardless of its geographic location, no time constraints (regardless of a time zone), for example, within the frames of e-learning a student may choose the most convenient time for learning the content, if the lectures are not delivered in real time, etc. Based on the above, in our view, this model may be presented as a following chart (Figure 1. The Component Model of Electronic Learning (Authors).

Figure 1 The Component Model of Electronic Learning



Source: the authors

Therefore, we would like to highlight that electronic learning is based on the following principles:

1. flexibility - the absence of regular classes in the form of lectures and a free choice of time for learning the program content.
2. modularity - each separate topic or a combination of topics completed by a learner, create a holistic view of the particular subject area, thus arranging knowledge in a clear system or structure.
3. parallelism — training can be carried out without discontinuing the main work activities.
4. beyond distance — the physical distance between a learner and an educational institution is not a hindrance.
5. asynchrony — a possibility of implementing learning technologies irrespective of time.
6. mass coverage — non-criticality of the parameter "number of learners".
7. profitability — economic efficiency of training.
8. use of technology — a widespread use of new information and communication technologies (Popov & Andryushkova, 2011, p. 22).

The presented chart shows that one of the distinctive features of e-learning is the ability to provide services remotely, which, for understandable reasons is an obvious advantage, making education accessible for students living far from the chosen university, but at the same time has its drawbacks due to the lack of direct communication and reflection. Thus, the concept of e-learning must necessarily include components, which, on the one hand, minimize the problematic aspects, and on the other hand, invigorate the strengths of this type of learning. Also the paramount task, when organizing e-learning by higher education institutions and its incorporation into their curriculums is the development of a legal framework regulating this process (Lapchik, 2014, p. 102). A major problem today is also associated with staff, in particular, unreadiness of the university teaching staff to handle the e-learning tasks, to the biggest extent it concerns universities whose teachers have a long teaching record, it does not mean that all teachers with a lengthy service demonstrate technological backwardness, but it is more difficult for them to readjust and switch to new formats of work.

5 Conclusion

Today it is inconceivable that the educational process may exist without electronic learning. Progress in technology and digital advancements dictate new requirements for the life of society as a whole and all its spheres in particular. The use of various forms and means of e-learning significantly enriches the educational process, increases its illustrative potential and accessibility, opening "equal starting opportunities" for all students regardless of their location and social standing.

However, today, the advantages of e-learning become prominent along with its disadvantages. In the force-majeure situation where our society was caught due to the pandemic, gaps in the methodology and technical resources of universities has become more apparent. The questions arose which require new comprehension by the scientific community of the purposes and objectives of electronic learning.

In recent years, scientists are increasingly coming to the conclusion that the existing pedagogical and psychological theories on which traditional education is resting are not suitable for addressing the specific objectives of e-learning. This brings scientists to realization of the need to develop a new theory and methodology of e-learning and make these developments comply with a single educational standard.

Also, the introduction of a distance learning triggered by the pandemic, has revealed unreadiness of university students for this type of learning, for personal rather than technical reasons. Without the direct control, many students showed their personal immaturity when dealing with problems associated with distance learning.

The identified main issues that require solution for optimizing the educational process in the system of higher education highlighted for us the need for this research. Also our research led us to the conclusion that e-learning is not only highly relevant, but also highly promising. In our opinion, this type of organizing the educational space carries a powerful pedagogical and technological potential, which tapping becomes the priority task for both educators and practicing teachers.

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