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UNCERTAINTY OF THE ELECTRONIC EDUCATIONAL ENVIRONMENT AND MEANS OF ITS REDUCTION

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Abstract

The shortcomings of the electronic educational environment in comparison with the traditional educational environment are analysed in the article. In terms of the spatial factor, the electronic educational environment does not ensure the joint presence of students and a teacher in a specially organized locus that promotes concentration on the educational process and excludes inappropriate types of activity. From the point of view of the time factor, the electronic educational environment does not provide for the structuring of activities. Finally, the electronic educational environment does not provide sufficient conditions to ensure a coordinated, synchronous interaction between all participants in the educational process (interaction factor); as a result of this, the interaction of the student with the educational material comes to the fore, overshadowing the interaction between the student and the teacher, as well as between the student and other students. Due to these features, the electronic educational environment does not invite involvement in the educational process and does not provide sufficient motivation. These shortcomings of the electronic educational environment can be compensated through: blended learning, regular and uniform organizational communications carried out with the help of a limited and unchanging number of communication tools, the provision of familiarity between the members of the study group, forms of synchronous work involving all members of the group (including those based on the principles of play or competition), and collective projects, as well as through various forms of constant monitoring.

Keywords: Distance education, online education, electronic educational environment, organization of the educational process, motivation, involvement

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1. Introduction

The active development of the electronic educational environment has created numerous innovations in the education process. The electronic educational environment makes education accessible to a wider range of people of all ages. Online classes are difficult for young children, as well as for seniors who find it difficult to master new technologies; over time, however, as technology enters life, grown up students become active consumers of e-learning services. Electronic education is applicable in all types of education institutions, including primary, secondary school, and higher education, as well as supplementary education. The only exception is the professional skills that are acquired through active bodily activity, but the results of numerous researchers show that obstacles in these areas are also surmountable.

In the electronic educational environment, it is easier to show power points and share audio, and video materials. Although new technologies have become an integral part of the educational process, sometimes it is not possible to use them in traditional face-to-face teaching. For example, using a projector assumes the possibility of darkening the room. In e-learning, applying high-tech tools is absolutely natural.

An analysis of the distance learning possibilities and potential should be complemented by a more critical analysis of its shortcomings and a search for ways to overcome them. At the same time, comparing distance learning with traditional education makes it possible to understand better the essence and strengths of traditional education. This presupposes asking the question, “What are the advantages of the traditional education process that distance learning lacks?” as well as finding ways to compensate for these shortcomings.

2. Problem Statement

According to the experience accumulated over the past decades, the electronic educational environment has a number of deficiencies (Akhter et al., 2021; Kuznetsova, 2015; Marchuk, 2013). At the same time, the analysis of learning in an electronic environment and the organizing role of the traditional educational space as a special locus, which, by its very organization, creates certainty and therefore performs motivating, disciplining, and organizing functions, are not always taken into consideration. Distance learning in a virtual environment is completely or largely devoid of these organizing qualities, so therefore it is legitimate to consider it as characterized by uncertainty.

3. Research Questions

During the research, During the research, the following questions were posed:

3.1. What factors of traditional educational environment promote students’ involvement into the education process?

3.2. What are the differences between traditional and e-learning environments if we analyse the organization of the educational process?

3.3. How differences between the traditional educational environment and electronic one affect students’ involvement into the education process?

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3.4. What deficiencies does the electronic educational environment reveal compared to the traditional environment if we analyse the organization of the educational process?

3.5. What steps and measures can be taken to compensate for these deficiencies?

4. Purpose of the Study

The purpose of this study is to understand the shortcomings provoked by the electronic educational environment's uncertainty that arise due to the study group's dispersal in space and time, as well as the lack of interpersonal interaction and the elaboration of compensation measures.

5. Research Methods

The following methods were used during the research: educational process modelling, analysis, synthesis, and pedagogical experiments.

6. Findings

6.1. Certainty/Uncertainty Factors in Traditional and Electronic Educational Environments

There are three factors that create certainty in the traditional educational environment and are absent in the electronic educational environment: the spatial factor, the time factor, and the interaction factor. These three factors are intertwined in many respects, but this does not prevent them from being described separately.

1. Spatial factor. Both the educational institution and the auditorium are special spaces, the primary purpose of which is to perform teaching-specific work. These loci are appropriately organized, and educational settings and the extraneous stimuli exclusion reduce distraction and promote students' focus on the educational process. It is also essential that students go from one place (from home to college, etc.) to another. This relocation is not neutral, as the "worlds" between which it occurs are organized differently. The student should "correspond" to a certain educational world: s/he should be properly dressed and have the items and tools required for the educational process. Finally, particular rules of conduct are adopted in the traditional educational space.

Online education lacks these critically important components. The student is not present in a classroom: s/he is at home in a familiar environment, which s/he may associate not with learning, but rather with leisure, homework, etc. The results of our study show that students can listen to online lectures outdoors, in public places, and even while driving a car. Under such conditions, learning is hardly possible. The professor has to be aware of the places where students are during the classes and count nonattendance if the places are unsuitable.

2. Time factor. Students spend of time in the educational institution a certain period, which can be rather long, and at least to some extent follows the rules and regulations of the educational institution. The student knows that such institutions like schools, universities, etc. are designed for studying. In any case, when in an educational institution, students postpone or reduce other activities to a minimum.

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In some cases, learning in the electronic educational environment does not require simultaneous learning (for example, autonomous work with texts, completing assignments, passing tests, and performing other types of exercises that students can complete beforehand at a convenient time). It also reduces the involvement in the educational process due to the lack of interaction. However, this effect belongs to the scope of the following factors.

3. Interaction factor. The lack of interpersonal interactions in the online learning process is perhaps the most covered aspect of the analysed problem. There are three types of student interaction in the learning process: student–teacher, student–student, and student-–educational material. Thus, the electronic educational environment possesses a certain peculiarity since the last axis (the interaction of a student with the educational material) is prioritised far more in this scenario compared to traditional forms of education.

The literature has repeatedly examined evidence regarding how direct personal contacts with the teacher play a more significant role in learning outcomes than contacts with other learners (Hay et al., 2004; Wu & Hiltz, 2004). On the other hand, interactions between learners within a group (for example, the importance of the learning community; (Palloff & Pratt, 2007), should also not be underestimated. Students also name the lack of a community as one of the shortcomings of e-learning (Song et al., 2004). The data obtained by the authors suggest that a lack of community is the most frequent response (71%) of those students who are less satisfied with online learning.

These findings do not seem random. Since an educational institution is a public place in which persons are simultaneously engaged in a common activity, the conduct of others plays an important role, thus accumulating and intensifying the organizing effect of educational activities. Constant contact is established between all participants in the educational process, which does not imply technological mediation and lasts throughout the entire time during which the students are in the classroom. This creates a kind of cumulative effect: any action a student makes in the educational process is seen by others and at the same time contributes to their involvement in the educational process.

The absence of technological mediation, combined with the presence of one locus, not only enables the teacher to coordinate with students during the educational process, but also makes them aware that other individuals can see what they are doing. This characteristic explains why the teacher has to make greater organizational efforts in online learning settings. In this regard, the results of the survey among representatives of higher education in the United States, conducted under the patronage of the Alfred P. Sloan Foundation (Allen & Seaman, 2014), are particularly important. The survey has been conducted annually since 2002. Every year, 2.800 respondents are asked about the number of students, the importance of the online format with current activities, and the strategies of educational organizations where they work/study, etc. According to the majority of respondents (64.7% in 2005, 68.9% in 2013), online learning requires more measures aimed at maintaining student discipline than traditional face-to-face learning (Allen & Seaman, 2014, p. 17). Equally significant is the increase in respondents who answered positively to the question of whether keeping students motivated online is more difficult than in traditional face-to-face learning. In 2004, 27% of respondents answered positively to this question, 28% in 2009, and 41% in 2013 (Allen & Seaman, 2014, p. 18).

This certainly does not mean that we should return to traditional control teaching methods. In some cases, the possibilities of control are essential (teaching schoolchildren or poorly motivated students), but

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in others, they are less significant (teaching highly motivated students or organizing professional development courses and retraining). In our opinion, these data indicate that distance education reduces student time, management skills, and self-discipline and negatively affects their motivation. This is confirmed by the experience of other teachers, and this problem is especially acute for schools (Artiukhov, 2021, p. 53) since schoolchildren have a lower self-motivation ability than adults.

The aforementioned problematic aspects of education in the electronic environment have been recognized previously. A growing trend in the popularity of an approach called blended learning or hybrid learning, which combines traditional educational forms and distance education using the Internet (see, for example, Dziuban et al., 2005; Hofmann, 2018), proves that both educational institutions and teachers are aware of the limitations inherent in online learning but are unwilling to give up the obvious benefits that it can provide.

At the same time, considering the global situation (the pandemic, for example: see Akhter et al., 2021), it is not always possible to organize joint students' work, and many students have to study without direct personal interaction with others. Thus, we need to answer the question of what steps and measures can be taken to compensate for the electronic education deficiencies compared to the traditional face-to-face format.

6.2. Means and methods of reducing the uncertainty of the electronic educational environment

The organizational factor should be taken into consideration when planning distance courses and implemented as a complex of early announcements, reminders, timely summing up, and monitoring. For this purpose, it is important to choose one or more communication channels that will be used systematically and regularly throughout the course. Organizational messages should require a response.

Interaction in a traditional educational environment is facilitated by the presence of a common space and visual contact, which, if possible, should be ensured when working in an electronic environment as well. Online conferencing technologies are suitable for this purpose. According to data obtained by other researchers, the students themselves suggest starting online courses with a real face-to-face meeting; in addition, they note that if the teacher uploads real-life photographs of the course participants at the start, it fosters such a community (Song et al., 2004). In other words, whenever possible, online education needs to always be complemented by elements of the traditional face-to-face education; that is, we should convert it into a blended learning environment.

Current control is important from the point of view of the current phase of the educational process, which requires increased involvement in current activities. The balance of independence and control, the degree of "rigidity," and the forms of control depend on the audience, students' age, education level, motivation, etc. A good tool in this regard seems to be a system of constant assessment, which is carried out throughout the training and is directly integrated into it (Herr et al., 2013).

Ongoing monitoring has traditionally been performed through testing, but the e-learning environment offers a much wider range of assessment tools (Alonso-Díaz & Yuste-Tosina, 2015; Baleni, 2015). In some cases, testing becomes the main form of interaction between a student and an educational organization (Carnevale, 2001), but in such a situation, one has to rely solely on the independent work of

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students, which is a problem that falls out of the scope of this article. The tests do not have to include a long list of questions. Moreover, in some cases, the focus of questions may be switched from the assimilation of basic concepts (for example, in order to diversify the educational process) to more particular secondary content that should have been learned while listening to a lecture, autonomous work with the materials, etc.

The task to create a test can be regarded as a form of student work. The teacher asks several students to create the final test in such a way as to check the attentiveness of the rest of the group members. The teacher should then check the test's validity. The tests are focused on the educational material. So it is hardly possible to compose tests without analysing the content of the material. The only drawback of this technique is that the authors can communicate the correct answers to the rest of the group. To prevent this, the teacher can ask students to produce a large number of questions (for example, 10 to 15) and include only a part of them (4 to 7) in the final test. Moreover, the final test may include questions from the teacher.

To involve students into the educational process, game methods can be applied. This statement can be illustrated by the following example: a student delivers a short speech with a definite number of errors in facts, concepts, key names, etc. Listening to such a message by the rest of the study group presupposes a preliminary acquaintance with the topic under study. The advantage of this form of work is that the information received at a lecture or in the process of independent work is activated, thus increasing its assimilation. Finding mistakes encourages students' attentive comprehension. Answers can either be given during the discussion or sent to the teacher personally after the lesson.

Involvement in the educational process largely depends on the work of various organs of perception. However, the electronic environment creates rich opportunities for this due to its multimedia nature. At the same time, feedback and active actions performed by the students themselves appear to be important tools.

Adjacent to the organization aspect is the "locality" aspect, which includes "unity of place" and "unity of time." To ensure the "unity of place" in the communication process, the main "node" through which communication is carried out (for example, a website or page as the main source of information) should be distinguished, and the unsystematic use of heterogeneous communication tools (videoconferences, chats, e-mail, instant messengers, etc.) should be avoided.

"Unity of time" in distance learning is created by contact forms of joint work such as lectures, seminars, conferences, and personal and group consultations (since personal contact with the teacher increases involvement and motivation). Distance learning in real time is preferable because learners note the lack of immediate response in online learning that is present in conventional learning (Song et al., 2004, pp. 61–62). At the same time, in electronic education, traditional lectures are hardly effective, and activities that involve the active participation of the entire group such as discussions seem much more productive.

The interaction between students should also be encouraged, for example, in the form of joint projects that allow for the development of practical skills and abilities of group members. Finally, students' involvement can also be promoted by a sense of competitiveness in group work.

7. Conclusion

Therefore, the electronic educational environment differs in its parameters from the traditional environment, and these differences do not always testify in favour of the former. One of the most significant disadvantages of the electronic educational environment is its lack of space-time unity, which is

accompanied by active, long-term, and orderly interactions between all participants in the educational process. It is this feature of the electronic educational environment that has a crucial effect on reducing motivation in the learning process.

Teachers should strive to compensate for these shortcomings in their activities. This can be achieved by introducing the elements of traditional face-to-face education, that is, by a transition to blended learning. If we remain within the limits of the possibilities set by the electronic educational environment itself, then preference should be given to the form of synchronous work, which involves the active participation of the entire study group (discussions, seminars, game assignments), to compensate for these shortcomings. Any form of interaction between students, such as group projects or forms of work that imply competitiveness, plays an important role in compensating for deficiencies. Constant monitoring is very important as, on the one hand, it ensures the students involvement in the educational process, and, on the other hand, it can have different forms and thus reduce the work monotony.

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