LIMITATIONS IN THE APPLICATION OF THE ONLINE MODEL OF EDUCATION IN PRIMARY SCHOOLS IN SERBIA

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Abstract

Given that the 4th Industrial Revolution encompasses not only the private but also the public sector, including the educational system also, all the educational institutions strive to be digitally transformed to the extent it is possible. Also, the COVID-19 period of time conditioned them to implement an online model of education without much time for the transition process. Also, there is an indication that the education system, in general, will move towards a combined (online and onsite) model in the future, as a response to new trends in Industry 4.0 era. Thus, the aim of this paper is to identify crucial limitations in the application of the online model of education for both teachers and pupils. The sample size is 166 respondents. The research instrument is the questionnaire that includes an evaluation of potential limitations in the application of the online model of education in primary schools in Serbia. The results could be used to give an adequate insight for decision-makers in this area.

Keywords: *digital transformation, online model of education, limitations, primary schools*

1. INTRODUCTION

At the beginning of 2020, the school system in Serbia was changed due to the need for a different way of working due to the pandemic caused by the Covid-19 virus. Circumstances demanded an urgent transition to some kind of online model of teaching. Online teaching has been realized in various ways, from the simplest types of online communication: via smartphones, emails, websites, official school websites, and recorded classes on national television; through the placement of educational material on learning platforms; to the most advanced type - the realization of real-time teaching through video calls on learning platforms. Teaching staff, pupils, and parents have gone through all or almost all of these phases of the online learning model. After two years of such work, experiences and opinions are numerous, indicating numerous shortcomings and limitations in the process of learning and acquiring knowledge, but also many advantages. The question of the essential need for some kind of online learning model, but also the analysis of its consequences is still open.

The relocation of the learning process from the school premises is the first problem that everyone in the school system has encountered. Lecturers and the adoption of materials should be done without direct contact, and the effect should be at the same level. The next problem is the technical equipment of all members in the teaching-learning process, as well as electronic literacy. Considering the age of children in primary school, parents also played an important role in the online model of learning, so the same problem was noticed in that segment as well - insufficient awareness, knowledge, and opportunities for adequate help for children in attending classes online.

To answer to what extent educational systems in Serbia succeeded in overcoming such problems, this paper strives to explore various factors as limitations of the online teaching-learning process. Results could be used to analyze fields that are still seen as stronger limitations so they should be the object of further improvement of the online model of education in primary schools.

2. LITERATURE REVIEW

The modern world has plunged into the age of technology, especially information technology. Every aspect of life is in some way related to technology, as well as the systems of primary, secondary, and higher education (Gupta & Gupta, 2020). The traditional way of classrooms and teaching is changing. In the current approach to education, knowledge has been delivered by the teacher in a way that is focused on the teacher. This way teacher is not able to gain the interest of students and the student feels a dose of boredom (Mseleku, 2020). Education in the 21st century should be focused on students. Now the teacher needs to move to e-learning and adopt the concept of open education (Jonassenet al., 2003). E-learning mainly means electronic learning. Simply put, the concept of e-learning uses a variety of information and communication technology resources (Gupta & Gupta, 2020). According to these authors ICT also involves communication between the technologies themselves that enable access to information. These include the internet, wireless network, satellite communications, mobile phones; digital television, etc. e-learning is also known as digital learning (Gupta & Gupta, 2020).

E-learning is a method of learning anywhere, anytime, and any number of times using personal computers or smartphones (Mseleku, 2020). E-learning also allows the design of digital content and the establishment of digital libraries in which students, as well as teachers, can access material from anywhere and research the subject course material at any time (Watson, 2006). The use of modern ICT in education enabled a special type of study known as distance learning (Setiawan, 2020). This form of learning needs to provide the level of knowledge and competencies corresponding to traditional learning (Setiawan, 2020, Milićević et al., 2021). There is an opinion that with the implementation of online learning, especially in some specific education study programs, there are many limitations when learning takes place (Irfan, et al., 2020). The pandemic uncovered unequal access to the information technologies required to succeed either as an online student or as a teacher who is suddenly responsible for delivering content remotely (Lynch, 2020).

The first association of online education is "no-limitation" in both learning time and space (Guo et al., 2020). In recent literature, the most common subjects within online education have focused on the “benefits” and “challenges” of online education in Covid-19 system adaptation, highlighting the limited time for switching (Asgari et al., 2021; Teymori & Fardin, 2020; Chen et al., 2020). However, even though the concept is widely known and many online education benefits are apparent before Covid-19, the students and teachers still face some difficulties. First of all, it is a matter of socialization. Paudel (2021) indicates that online learning brings minimal social contact and interaction. Furthermore, recent research (Rahma & Winarni, 2020) conducted in elementary school shows several obstacles encountered during online education during the pandemic. Rahma & Winarni (2020) notice that limited internet access, lack of teachers accustoms to facilitating students' online learning, declining student motivation, and need for mentoring in using technology learning are the most highlighted online education issues in elementary school. Attention and motivation also become vital to note as they encourage students to behave and do activities more effectively and efficiently (Rahma & Winarni, 2020; Yan et al., 2020). For instance, Yan et al. (2020, p. 2050) discuss inattention indicating “disengagement caused by nearby disturbance, especially in years 1–3 and 10–12” due to “underdeveloped metacognitive skills to concentrate on online learning without teachers’ guidance”.

Some of the disadvantages recognized by Palvia et al. (2018) are lack of administrative support, potentially reduced student/professor interaction and quality of education, increased faculty training costs, cost of the technological update, program startup costs, and potential infringement on existing programs. Technical issues such as poor internet connection or dependency on the internet have been marked by Alshamrani (2019), while student and teacher technical skills also remain significant challenges (Yan et al., 2020). It is also concluded that online learning is unsuitable for all subjects (Mushtaque et al., 2021) because of the need for practical exercises. Further, insufficient organization of the learning material, lack of feedback, and the frequent use of slides in the lessons are selected as one of the negative aspects (Giannoulas et al., 2021). Last but not least, Subba & Subba (2021) point to problems such as eye pain, neck pain, headache, and bad eyesight, resulting from too much time

spent in front of electrical devices. The same authors think that these problems, united with a lack of physical activities, can bring serious health issues.

3. METHODOLOGY

The aim of the paper is to explore factors that could be significant limitations in online education within primary schools. The related research question is what are the most important limitations in the application of the online model of education that should be improved in the future. Limitations as technical and motivational types are considered. To fulfill the aim of the paper, the questionnaire was carried out among teachers and pupils from V to VIII grade in primary schools in Serbia. The questionnaire was sent to five schools and 167 correctly filled questionnaires were exploited, representing a response rate of approximately 15%. The sample structure is given in Figure 1. There are similar sizes of sample subgroups: pupils and teachers.

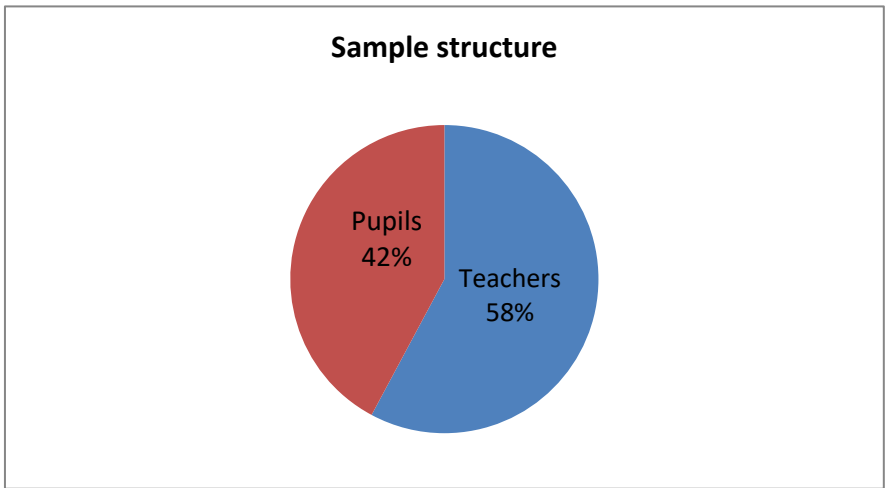

Figure 1. Sample structure

The research question will be analyzed through the following questions covered by the survey, as potential limitations in the online model of education:

1) Technical Limitations:

- Poor internet connection
- Inadequate work equipment (computer, tablet, accessories etc.)
- Inadequate space for uninterrupted work (separate room, etc.)

2) Shortcomings of the online platform:

- Hard to see and systematize materials on platforms
- Hard to see information posted on platforms
- Usage of different platforms instead of using the same by everyone
- Not user-friendly options to come into/from the meeting, chat, etc.
- Possibility for individuals to disturb other participants
- Failures in the work of the platform
- Lack of tools to support the teaching-learning process on platforms

3) Motivational Limitations:

- Absence of live communication and interaction
- Absence of movement and physical activity
- Lack of interest in participation and work
- Lack of instructions and directions for working online

The 4-grade scale is used in the questionnaire: (1) it is not a limitation at all; (2) it is a slight limitation; (3) it is a significant limitation; (4) it is a crucial limitation. Results are analyzed through descriptive statistics, using a chart diagram as a tool to graphically visualize the results.

4. RESULTS

Taking into account all the observed potential limitations in the online model of education in primary schools in Serbia, results show there more than half of them are seen as significant limitations with a value of 3 or more (Figure 1). Significant limitations are from both (technical and motivational groups): Absence of live communication and interaction; Absence of movement and physical activity; Lack of interest in participation and work; Poor internet connection; Inadequate work equipment (computer, tablet, accessories, etc.); Failures in the work of the platform; Possibility for individuals to disturb other participants; Lack of instructions and directions for working online.

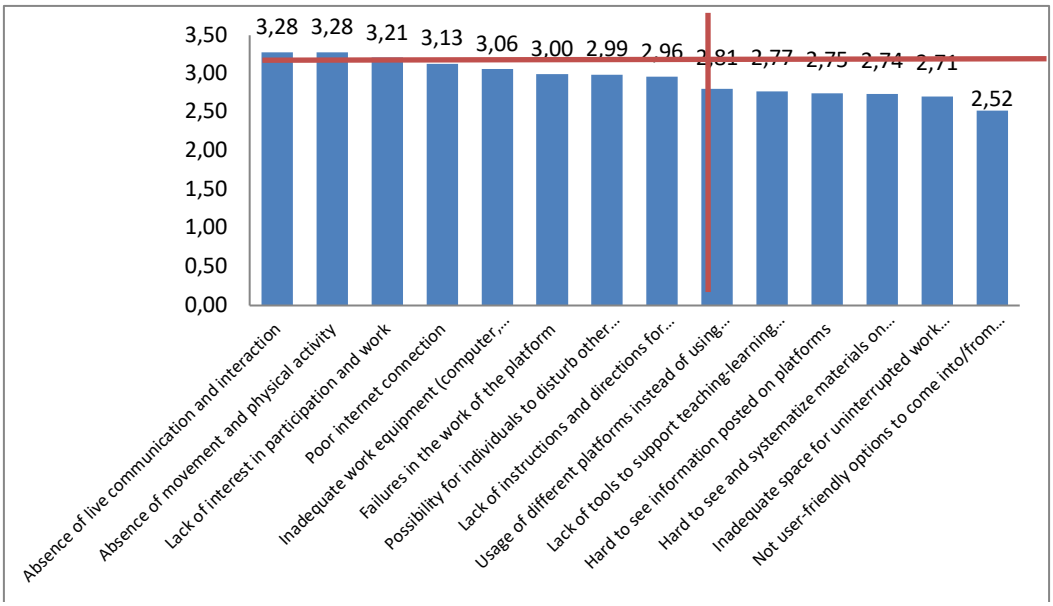

Figure 2. Limitations in online model of education in primary schools

Exploiting differences between pupils' and teachers' points of view, the results also show some differences in all the observed groups of limitations: Motivational limitations (Figure 3), Technical limitations (Figure 4), and Shortcomings of the online platform (Figure 5).

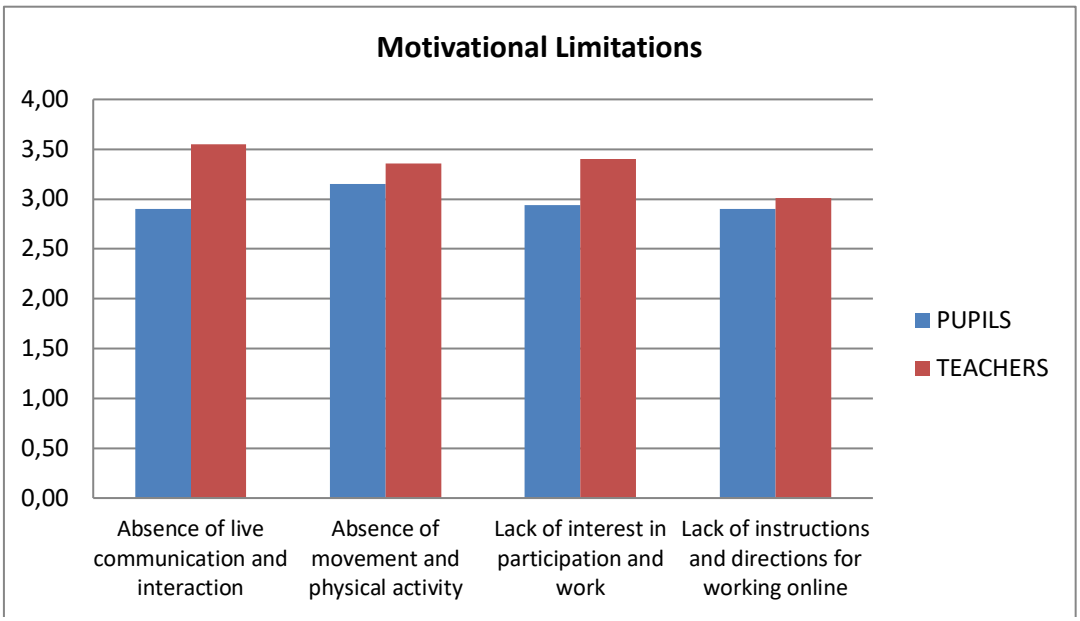

Figure 3. Motivational limitations in online model of education in primary schools

As it can be seen from the Figure 3, there are differences in observing Absence of live communication and interaction and Lack of interest in participation and work in terms that teachers thing those are limitations to greater extent than students think there are.

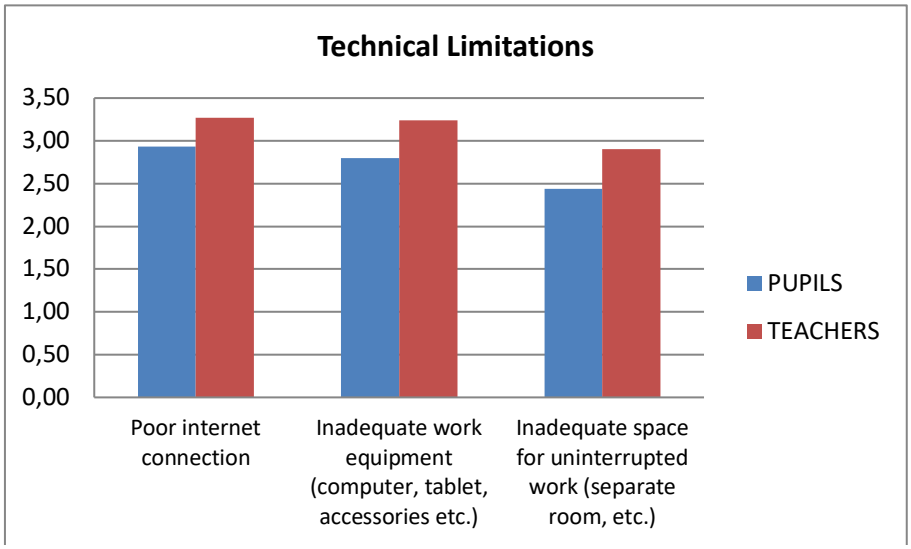

Figure 4. Technical limitations in the online model of education in primary schools

When it comes to the technical limitations (Figure 4) all the observed limitations are seen as greater limitations by teachers than the pupils. Observing shortcomings of the online platform (Figure 5), similar results are regarding: Usage of different platforms instead of using the same by everyone; Not user-friendly options to come into/from the meeting, chat, etc; Failures in the work of the platform; Lack of tools to support teaching-learning process on platforms.

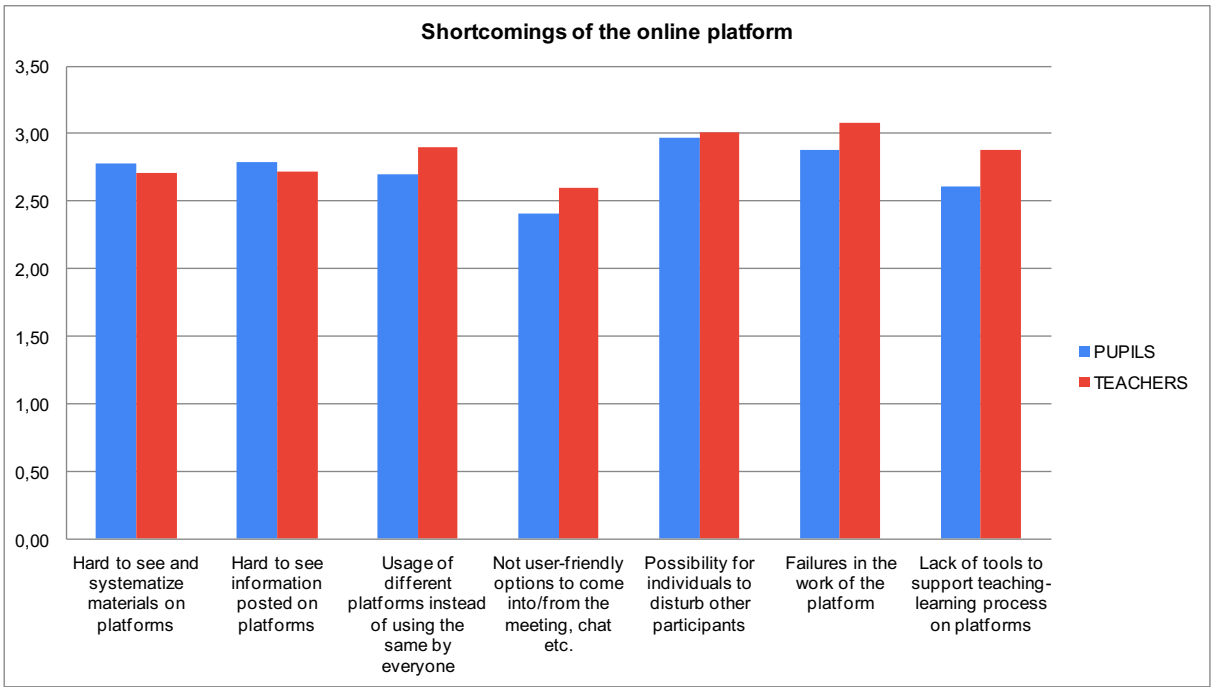

Figure 5. Shortcomings of the online platform as limitations in the online model of education in primary schools

5. DISCUSSION AND CONCLUSIONS

Since education processes become digitally transformed to a significant extent, this paper aims to identify crucial limitations in the application of the online model of education for both teachers and pupils. Accordingly, within this research, students and teachers answered questions about the limitations of the online education model, through a questionnaire, grouped into 3 parts: questions of a technical and motivational nature as well as questions about possibilities offered by learning platforms and systems that were used in the implementation of the online teaching model.

When it comes to the technical limitations of the online education model, results show that both pupils and teachers ranked the technical limitations in the same way. Poor internet connection is a dominant limitation, followed by lack of computer equipment and after that lack of adequate space for work. While pupils recognized all three technical factors as a significant limitations, teachers recognized internet connection and computer equipment as significant limitations.

Regarding the limitation of motivational type, both teachers and pupils recognized the absence of movement and physical activities as significant limitations. In addition to the above, the teachers identified as a significant limitation the absence of live communication and interaction as well as the lack of interest in participation and work. For both pupils and teachers, all of the above motivational factors are seen as limitations of the online education model. The most significant difference in the perceptions of teachers and students refers to the lack of live communication and interaction, which teachers recognized as a significant limitation, while pupils defined this lack as a limitation, but not significant.

As for the shortcomings of the learning systems - platforms, both teachers and pupils believe that these shortcomings are the limitations of the online education model, but of somewhat less importance compared to technical limitations and limitations of a motivational type. The only category that is recognized as a significant limitation is blockages in the work of the platform, and it was recognized that way by teachers. The most uniform opinion given by teachers and pupils about the limitations of the online education model is the possibility that individuals interfere with the work of other participants.

Results also indicate that the most significant limitations relate to issues of a motivational nature. Of all the factors listed in the questionnaire, motivational factors and their limitations occupy the first three places, and all three are recognized as significant limitations (lack of live communication and interaction; absence of movement and physical activity; lack of interest in participation and work). The following two shortcomings, which are recognized as significant limitations, are of a technical type and refer to a poor Internet connection and a lack of computer equipment for work. On the border between limitation and significant limitation, there are blockages in the operation of the platform, while the remaining shortcomings of the online education model are below the limit of significant limitation. The minor limitation on the chart is the platform's lack of an overview option for switching on/off/chat etc.

No one factor was perceived as a very significant limitation, but more than half of the observed factors were marked as significant. Also, all observed factors are recognized as limitations and none of them are at level 1 (this is not a limitation), from which it can be concluded that the online model of teaching represents a general significant limitation. That is also could be confirmed by the results of the answer to the question "If you can choose, which model would you choose" where 75% of the respondents answered they would choose the classical education model rather than the online or combined education model.

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