Online Teaching and Learning - An Educational Paradigm

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Abstract

Nowadays students have had access to Internet and to technology like laptops, smartphones or smartboards since the youngest years of their lives. With a quick search on the Internet they can find the answer to every question and, potentially, they can learn by themselves about every subject they are interested in with no need of leaving their own homes. Due to Covid-19 pandemy outbreak schools were forced to shift from traditional face-to-face teaching methods to online ones. Thus, online teaching and learning has turned out from option into necessity. A question which arises is how effective online education is in comparison to in-class education. Therefore, just after the three months of schools closure and online formal education in Romania, we conducted a survey, in the form of an online questionnaire, having the scope of assessing the satisfaction of secondary school students with respect to different aspects of this type of education.

Keywords: online education, questionnaire, assessment

1. Introduction

The advancement of Internet and media technologies has brought about the possibility of reshaping the methods of delivering education from in-class to online. Many specialists in education have considered the advantages and disadvantages of online teaching and learning. With respect to online teaching and learning, education, as state institution, faces problems like setting standards, managing to communicate with a large number of students that want to take part simultaneously at discussions or that fake their presence, programs accreditation, teachers preparation for the technological design and delivery of this type of courses and for a different type of evaluation, agree with new perspectives for teachers role in the educational process. Online-learning, being a service in the field of education, virtually delivered, has to fulfill quality criteria in transferring knowledge and in creating general and specific competencies. In order to use highly effective teaching and learning methods, a careful study of students' satisfaction and expectations has to be done. This paper is a qualitative research that makes use of the results of an online questionnaire conducted among secondary school students that have taken online courses due to the emergency state followed by the alert state generated by the Covid-19 pandemy outbreak in Romania, students enrolled in the schools that we teach in, having ages ranged from 12 to 19. Both schools that we work with are urban schools, located in important cities of Romania, children attending them having no problems with the accessibility to modern technology. Therefore, the results would be representative for urban secondary school students coming from middle-class and upper middle-class households. The sampling method used is purposeful sampling, our intention being to assess the level of satisfaction after the forced period of online teaching and learning compared with the traditional in-class way for those students that had access to technology. 355 students have taken part in the questionnaire, 186 of them being enrolled in the lower secondary school and 169 in the upper secondary school. The questionnaire contains 11 close-ended questions.

2. Objectives. Hypotheses. Results. Findings. Conclusions.

The first objective of this survey was to assess whether physical distancing between teachers and students during the forced period of online lessons also brought about a communication barrier between them. Our corresponding hypothesis was that the lack of face-to-face interaction would lessen the teacher-student communication. According to Figure 1, the result was different: 41.4% of them appreciated that teacher-student communication was very good and 52.7% considered it to be good. Therefore we concluded that, regardless of the physical distancing, online education doesn't raise a barrier of communication between teacher and students, on the contrary, it enhances interaction and cooperation.
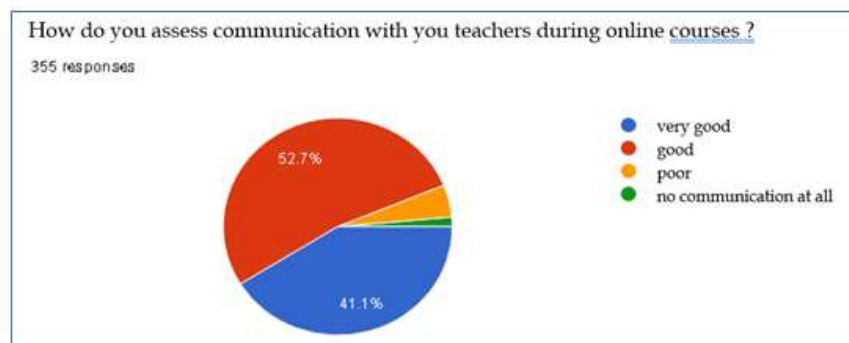

Figure 1. Responses to the first question

The second objective was to assess the degree of satisfaction regarding online lessons with respect to in-class lessons. Considering that secondary school students need face-to-face interaction in order to grow up properly, our corresponding hypothesis was that a low percentage of them would consider a good choice replacing in-class with online courses. According to Figure 2, the result was consistent with our hypothesis: 64.2% of them appreciated that only to a small extent online education can replace in-class education, 22.8% considered that online and in-class education are equally effective, 8.5% of them thought that, even if online education is not as performant as in-class education, it can replace it to a large extent, and 4.5% of them thought that online education is better than in-class education. Therefore, we concluded that it is difficult to replace the spontaneous and random interactions that constitute the learning experience taking place in a real classroom with the virtual interactions from behind a computer screen.
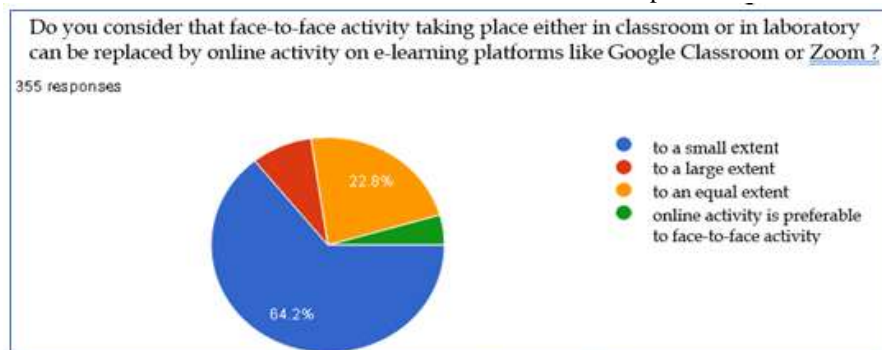

Figure 2. Responses to the second question

The third objective was to discover what aspects of online teaching and learning are preferred by students. In contrast to the traditional theoretical learning, computer-based 3D

presentations are valuable resources of visual explanation that would help students grasp the new concepts more easily and make learning more enjoyable. Moreover, online learning takes place at convenient times, in the comfort of your own house, with no time lost in traffic. That is why our hypothesis was that most students would prefer to study at their own rate online presentation of the topics. According to Figure 3, the result was consistent with our hypothesis: 45.9 % of them chose to study documents, PowerPoint Presentations or video presentations at their own pace, 26.5% chose to work daily on an online platform following the same schedule as in traditional in-class school, 15.2 % would like to watch the recording of lessons taught by their teachers and 12.4 % would prefer a group project to study a topic by themselves and then share it with the rest of the class.
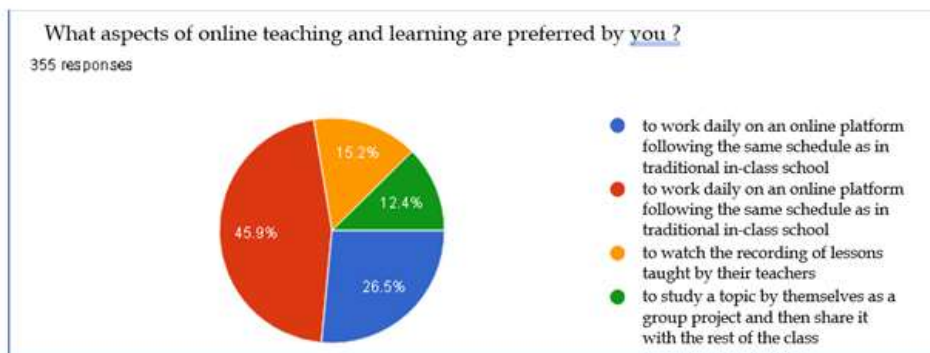

Figure 3. Responses to the third question

Thus we found out that the role of the teacher has started changing from knowledge transmitter to learning mediator. The fact that around a quarter of them wanted the usual school schedule to be kept, was related, in our opinion, with the fact that the respondents of this survey are in a large number very young students, that need teachers' assistance.

The fourth objective was to assess students' perception regarding the replacement of real laboratory experiments with virtual ones, by using interactive simulation platforms. Being known the fact that it's of great difficulty to create an alternative to courses that involve practical aspects, our hypothesis was that most students would consider that simulations cannot replace properly real experiments. According to Figure 4, the result was consistent with our hypothesis: 50.8% of them answered that simulations cannot replace real experiments, and 40.4% considered that simulations can replace real experiments, but to a small extent.
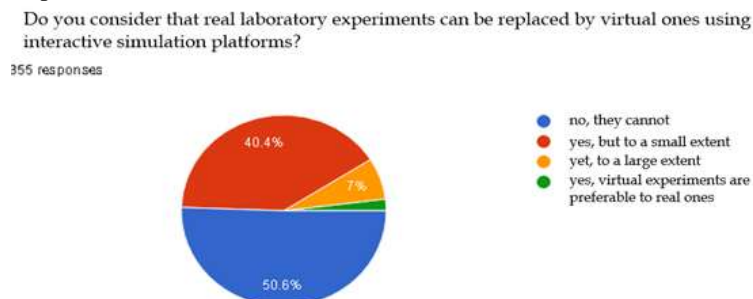

Figure 4. Responses to the fourth question

We concluded that the importance of traditional laboratory involving practical, real experiments and hands-on science has not decreased as a result of the increase of the number of computerized simulation experiments.

Due to modern applications, smartphones have become tools capable of performing real time experiments. This fact has brought about a new branch in teaching, called mobile-learning, shortly m-learning. M-learning could be used in flipped classes, classes that are likely to be used in the nowadays mix of partially online, partially in-class courses. Therefore, our fifth objective was to learn whether our students would feel stimulated by using their smartphones as measuring devices in order to perform experiments instead of using classical laboratory equipment.
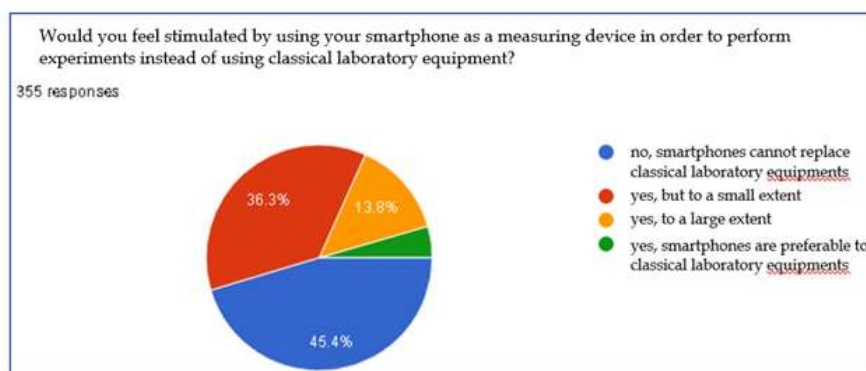

Figure 5. Responses to the fifth question

Because students are keen on their smartphones, we assumed that most of them would like to use their smartphones as measuring tools. According to Figure 5, our hypothesis was right: in total 54.6% of our students were willing to use their smartphones as laboratory tools. The large percentage of 45.4% of those considering that smartphones could not replace classical laboratory equipment shows that m-learning could be an extension to classical hands-on experiments, but it cannot fully replace them. Our sixth objective was to find out the degree of satisfaction that our students had regarding their study tasks during online learning. We supposed, based on students' reluctance for homework, that most of them would think that the tasks they received were unattractive. According to Figure 6, the resultant was inconsistent with our hypothesis. Around 80% of the students assessed them as useful and adequate, 12% assessed them as attractive, and around 8% assessed them as inappropriate and unattractive.
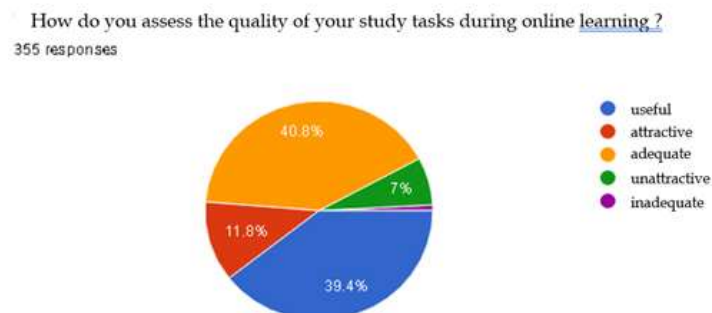

Figure 6. Responses to the sixth question

We concluded that study tasks provided online didn't reach the goal of sparkling students' curiosity and creating a really motivating academic environment, but they were thought wisely enough to be assessed by them as useful and adequate.

Our seventh objective was to assess to which extent our students are willing to learn the new concepts by themselves using online resources with a minimum involvement of their teachers. We predicted that they will not be willing to self-assume the learning of all new concepts, but that most of them will choose to learn by themselves the easier ones.
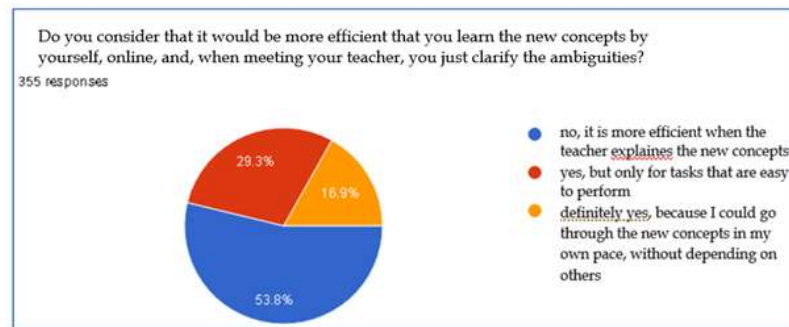

Figure 7. Responses to the seventh question

According to Figure 7, our hypothesis was invalidated by their answers: 53.8% of respondents said that they would prefer that their teachers teach them the new concepts regardless their degree of difficulty. We concluded that although online education seems simple, because students learn from the comfort of their homes and have facile access to information via media technologies, in fact it is more demanding in terms of concentration and cognitive requirements.

Our eighth objective was to assess to what extent secondary school students would be willing to take part in the future in flipped classes: partly face-to-face and partly online. Our hypothesis was that most of them would agree with this possibility. According to Figure 8, their responses disagreed with our hypothesis: 51% of them would not like that in the future online activity to be a part of educational practices because they consider face-to-face activity to be superior to online activity. We concluded that it is very difficult to replace in-class education with online one because classrooms are real places where teachers engage students' participation and develop the ideas raised by them. These kinds of interactions are really difficult to be duplicated in virtual classrooms.
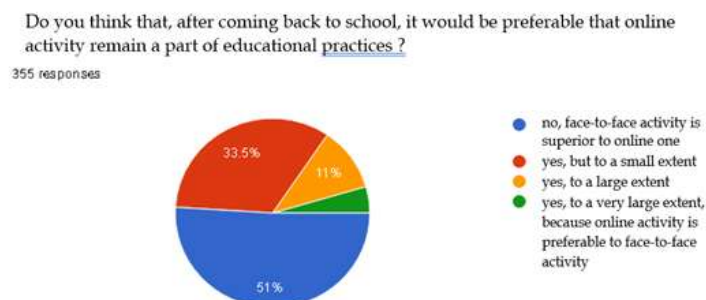

Figure 8. Responses to the eighth question

The ninth objective was to learn what aspect of the online activity was most interesting for our students. They had to choose between the following possibilities: easy accessibility via online platforms, diversity of digital resources, flexibility, utility, involvement and joy in using it, or nothing. Our hypothesis was that the majority of them would appreciate most the flexibility of online learning, because the process takes place in the coziness of their homes, within their comfort zones. According to Figure 9, the result was consistent with our hypothesis: 52.4% appreciate online education for its flexibility.
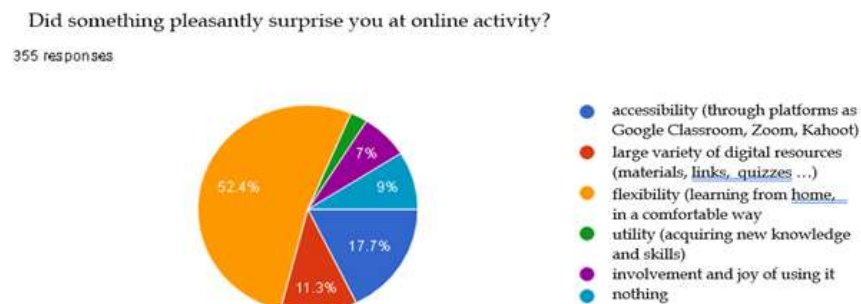
Did something pleasantly surprise you at online activity?

355 responses

Figure 9. Responses to the nineth question

We concluded that online learning is most appealing among students due to its coziness.

The tenth objective was to find out our students' opinion about the efficiency of online learning. Considering that our students come from middle-class and upper middle-class households and attend schools able to provide them with online education, we assumed that they would assess online activity as an efficient educational method. According to Figure 10, the result was consistent with our hypothesis: 64.8% appreciated online education as effective. We concluded that the transfer of knowledge and the forming of competences in the given circumstances of forced online learning due to Covid-19 outbreak were perceived by our students as efficient.
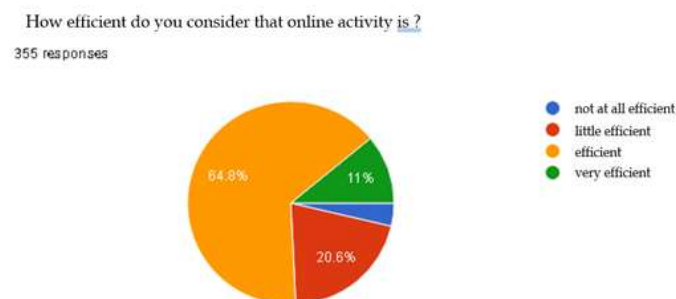
How efficient do you consider that online activity is ?

355 responses

Figure 10. Responses to the tenth question

Our last objective was to learn how much time did our students spend on online learning. Our hypothesis was that the large majority spent more than 15 hours per week on online courses, but, according to Figure 11, their responses were inconsistent with our supposition: 87% spent less

than 15 hours per week on online learning. We concluded that our students spent much less hours per day studying online than when doing it in-class.
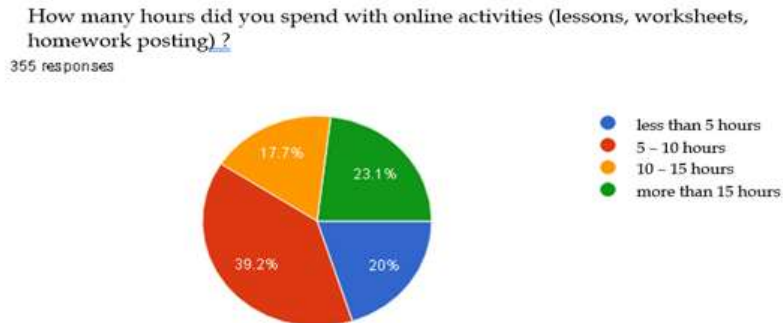
How many hours did you spend with online activities (lessons, worksheets, homework posting) ?
355 responses

Figure 11. Responses to the eleventh question

Conclusion

Online education opens up the possibility of reaching new kinds of media resources by a larger number of students, at flexible times, at their own pace, from the coziness of their homes, no matter how far away they are. It also brings about economic and logistic advantages because it doesn't need the presence of both students and teachers in the classroom, which leads to space management issues, rigid schedules, transportation issues, time lost in traffic, environmental pollution.

Visual, dynamic explanations, built up through modern technologies, make the learning of new concepts fun and enjoyable for secondary school students, but designing effective online learning is a complex problem. Although students can benefit from Internet and almost endless digital resources, they should have nevertheless a great analytical and synthetical capacity in order to determine relevant information for problems resolution without a teacher's aide. Therefore, teachers will continue to play a central role in education, although this role will change from knowledge deliverer into learning catalyst and knowledge navigator.

One of the biggest disadvantages of online education is physical distancing. The lack of human physical contact deprives students of direct interaction with their colleagues and their teachers, of making friends, working together and competing, all situations being very stimulating. Another big disadvantage refers to disciplines involving practice, because there is almost impossible to create perfect simulations of the real-life experience. Also, real time communication is a challenge in online education, because it cannot cope with a large number of students trying simultaneously to join discussions.

In conclusion, online learning should be an extension of in-class learning. Not even the best online course can fully replace personal contact with teachers or classmates. So, in our opinion, based on the responses given by our students, traditional classes shouldn't be totally replaced by online learning.

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