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Perspectivetele studenților privind învățarea online: sunt îndeplinite așteptările
studenților de actualele practici de predare?

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STUDENTS' PERSPECTIVES ON ONLINE LEARNING – ARE THEIR EXPECTATIONS MET BY CURRENT TEACHING PRACTICES?

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Abstract

The challenges of online learning, created by the COVID-19 pandemic, have prompted a significant demand in researching this particular field of education. The adaptation to online learning, unfortunately, was applied in a context of unprepared teachers and students. This situation was caused by the new format of education, which differs significantly from massive open online courses, traditional learning or distance learning. The new hybrid model of education, prompted by the pandemic, has certainly become a trend that could incite future transformations in terms of teaching and learning. To better understand the specifics of this type of online learning, we asked the students (N = 705) from the University POLITEHNICA of Bucharest to express their opinion on their learning experience during the pandemic. The survey included the problems and expectations of the interviewees, and the research results were analyzed in the article. Our goal was to improve educational practices in the virtual educational environment. In this regard, we analyzed the important components of online learning, focusing on the following ones: the quality of the educational resources used to support the content, the improvement of the quality of the teacher-student relationships, time management, online assessment. The article also provides solutions for effective online learning, from the students' perspective.

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Keywords: digital learning, online education, students' perspective, teacher training.

Rezumat

Provocările din sectorul învățării online au determinat o cerere semnificativă privind studierea acestui tip de educație, ca urmare a reacției la COVID-19. Adaptarea la varianta online, din păcate, s-a aplicat într-un context nepregătit din punctul de vedere al formării cadrelor didactice și a studenților. Această situație a fost cauzată de noul format al educației, care are diferențe semnificative față de o formare online MOOC, în zona tradițională sau în zona la distanță. Noul model hibrid de educație, determinat de pandemie, a devenit cu siguranță o tendință care ar putea oferi transformări viitoare privind modurile de predare și învățare. Pentru a înțelege mai bine specificul acestui tip de învățare online, am solicitat studenților ($N = 705$) de la Universitatea POLITEHNICA din București să-și exprime părerea privind modul de desfășurare a învățării în timpul pandemiei. Sondajul a avut în vedere identificarea problemelor și a tepturilor intervievaților, iar rezultatele cercetării au fost analizate în articol. Scopul nostru a fost să dezvoltăm practicile educaționale în mediul virtual educațional. În acest sens, am analizat componentele importante ale învățării online, cu accent pe următoarele elemente: calitatea resurselor educaționale utilizate pentru susținerea conținutului, dezvoltarea calității relațiilor profesor-elev, gestionarea timpului și a evaluării online. Articolul oferă, de asemenea, soluții importante pentru o învățare online eficientă, din perspectiva studenților.

Cuvinte-cheie: educație online, formarea profesorilor, învățarea digitală, perspectiva studenților.

1. Introduction

During the pandemic, the functioning of educational institutions was disrupted, the teaching activity being reoriented towards new practices, based on the digitization of the society. Carrying out educational activities with the help of digital tools and resources has allowed the process to continue in a novel, but in need to be researched and developed, format.

The new model presents a fusion of distance learning (in which students are separated from each other and from the teacher) and online learning (where the acquisition of knowledge and skills occurs using the computer and other gadgets connected to the Internet). Digital learning during the pandemic has

had good results in people that are able to self-motivate and understand the ultimate goal of learning (Shcherbakova, 2020). This model has been effective in higher education, giving students the chance to continue the learning process (Vandivier, 2020). At the same time, the pandemic has been a valuable opportunity to research online learning.

In other words, the period of the pandemic presented a leap towards a new format of education, which needs to be developed and improved.

2. Literature Review of Opportunities and Disadvantages of Online Technologies

During the temporary suspension of face-to-face learning, digital technology made it possible to continue the teaching activities. However, the application of digital education has demonstrated a number of difficulties and opportunities. Rapanta et al. (2020) analyzed the current situation in education in the context of the pandemic: “Our findings point at the design of learning activities with certain characteristics, the combination of three types of presence (social, cognitive and facilitatory) and the need for adapting assessment to the new learning requirements” (Rapanta et al., 2020, p. 923). It is necessary to train teachers in the use of ICT resources and streamline learning with the help of neurosciences, and more specifically from neuroeducation. A neuroeducational approach considers the efficient management of emotions and motivational processes, but also the optimization of the students’ academic performance (Espino-Díaz et al., 2020).

According to OECD (2020) data, the issue of education during the pandemic was felt more severely in disadvantaged environments: there is a significant gap between poor and rich countries, and the future of learning will rather be more related to this aspect.

In Romania, education faced many problems during the pandemic. First of all, we must mention the insufficiency of technical equipment and software programs, limited access to online platforms to support the teaching process, and to the internet in general. Another difficulty during the pandemic was the transition and adjustment of teachers and students to online learning,

which was associated with the “catching up with lost learning” and the teachers’ low level of digital skills. Also, Romanian education was confronted with the need to adapt the curriculum and the evaluation methodology to the new operating conditions (Florin & Ioc, 2020).

At the beginning of the pandemic, the Romanian education system was only partially prepared for digitalisation: the curriculum allowed only to a limited extent its transposition into a format compatible with distance learning, some teachers did not have enough knowledge and skills related to computer-assisted training, edtech companies did not have enough solutions tailored to the needs of the education system (Botnariuc et al., 2020).

Dhawan (2020) sheds light on online teaching as a necessity, explaining that this is no longer an option, but a certainty caused by the pandemic. The same author argues that disasters stimulate our motivation to introduce highly innovative communication technologies and e-learning tools into education.

The authors of the study “Online School: Elements for Educational Innovation” state that part of the usual teaching activity (face-to-face) cannot be done online because it will have a negative impact on the thoroughness of learning (Botnariuc et al., 2020). The authors of the study analyze the problems that arose during the pandemic in the Romanian educational system: the digital skills of the teachers, the degree to which the school curriculum in Romania is able to be adapted to the new virtual learning coordinates (“the curriculum allows in a variable/sequential/revised measure the transposition into distance activities”, Botnariuc et al., 2020, p. 8), the degree of coverage of the finalities of education in the new context, directions for reforming the legislative framework, future directions for the training of the teaching staff, etc. They also raise the issue of improving online learning by researching the needs of teachers.

From the student’s perspective, the transition to online courses has led to a large amount of individual work. The biggest challenge for the students was the multitude of topics, projects, tasks to be solved for lectures and seminars. In addition, students claim that switching to online courses has led to a deterioration in communication with teachers, interaction with colleagues and the quality of teaching. Unfortunately, at the beginning of the pandemic,

online courses continued to be configured and taught according to the conventions of face-to-face learning (Lup & Mitrea, 2020).

Of course, students noticed that online learning also brought some positive aspects, such as time savings, flexible schedule, lecture capture and the fact that they feel more relaxed during the courses (Lup & Mitrea, 2020).

A number of studies that have taken place before and after the pandemic point out that online learning and distance learning have their specifics. This research literature discusses both the opportunities and the problems faced by people during online and distance learning in the new digital format.

On the one hand, distance learning offers the opportunity to learn from any geographical location through the Internet, is a means of opening to resources around the world, allows students autonomy, own pace of learning, interactive multimedia solutions, the opportunity to self-assess, offers the feeling of freedom and comfort. (Smart & Cappel, 2006; Valenta et al., 2001; Wilde & Epperson, 2006). On the other hand, students may encounter difficulties related to connectivity issues, lack of necessary equipment, difficulties in collaboration and communication, misunderstanding of academic rigour, may feel the need for more guidance and support (Lao & Gonzales, 2005; Nash, 2005).

In online learning, interaction is a very important element: the number of online interactions is closely related to the performance of the students (Bravo-Agapito et al., 2021). Student-student interaction supports students' involvement in the online learning environment and provides opportunities to learn from each other through discussions and the exchange of resources, experiences and ideas. By collaborating with classmates, students also establish an online community that can foster deeper learning (Shackelford & Maxwell, 2012). Research indicates that strong interactions between peers in online learning are a predictor of student satisfaction (Jung et al., 2002). In addition, student-teacher interaction is an important predictor of student satisfaction and achievement in online learning (Andersen, 2013; Kang & Im, 2013).

Although the latest technologies provide interactivity to students and make a fully online education possible, teachers have no certainty regarding the

engagement of the students in a course, and students' academic performance can only be predicted with great difficulty (Bravo-Agapito et al., 2021). How does a student who learns in the new digital formula perceives the present situation and what elements of online learning are important to her/him? Unfortunately, this aspect has not been studied enough, but in our opinion, the development of the new way of doing online learning must focus on adjusting teaching to the students' perception, pace and need for learning, to take into account the elements that the students consider to be essential in their learning process.

3. Research design

3.1. Study purpose

The purpose of the study was to identify ways to improve educational practices in the virtual educational environment, as the online learning, focusing on the following topics: the quality of the educational resources used to support the content, the improvement of the quality of the teacher-student relationships, time management, online assessment.

3.2. Study issues

The aspects investigated included seven issues:

1. Analyzing the teaching practices, from the students' perspective, regarding the structuring of the teaching material and the use of visual impact strategies.
2. Analyzing the teachers' practices regarding the provision of feedback in the teaching activity.
3. Analyzing the availability of resource materials.
4. Analyzing the students' involvement in the teaching activity.
5. Analyzing the involvement of teacher-student communication, through active participation, in daily teaching activities.
6. Analyzing the teachers' practices regarding the adaptation of the specialized academic curricula, following the students' needs.
7. Analyzing teachers' practices regarding the use of time management.

The data collection was based on 7 key questions that aimed at the quality of the process of structuring the teaching material (by teachers), the use of feedback, accessibility of resources on educational platforms, for each course, students' possibility of active involvement in teaching, quality of communication between teacher and student, adaptation of academic language to facilitate understanding of content taught by teachers, the existence of good time management during teaching activities, to facilitate the understanding of concepts by students.

3.3. Sample

The target group consists of 705 students at the POLITEHNICA University of Bucharest. They are aged between 19-22 years, all participants in teaching activities carried out in the first semester of the academic year 2020-2021. Participation in the study was voluntarily.

The majority of students are in the first year of study (68.7%), 19.6% are in the second, 10.5 are in the third and the rest are in the 4th year.

Diagram no. 1. Research population (year of study)

Regarding the distribution by department, the majority of students are from the Faculty of Automatic Control and Computer Science (38.7%), followed by the Faculty of Electrical Engineering (16.5%), the Faculty of Electronics, Telecommunications and Information Technology (14%), the Faculty of Aerospace Engineering, the Faculty of Engineering in Foreign Languages, the Faculty of Power Engineering, the Faculty of Applied Chemistry and Materials Science, the Faculty of Applied Sciences.

Diagram no. 2. Research population (faculty)

3.4. Research Instruments

The research activity started in March 2020, with the organization/development of interviews with students who were facing problems in online activity. Based on the answers provided by them, qualitative research was carried out (which is not the subject of research in this article, but several scientific articles were published and will be published in specialized journals). After analyzing research data, we felt the need to go deeper in certain research topics, which led to the completion of a questionnaire (composed of 14 items with checkboxes / on a scale from 1 (minimum) to 10 (maximum)), pre-tested in April-May 2020, on 250 students. After this stage, the research was conducted in October-December 2020, on a population of 705 students. Each issue is investigated through two questions, one addressing the reality as perceived by students and the other the need as perceived by students. Alpha Cronbach coefficient, on the final research instrument used, was determined at 0.78 (Table no. 1.1).

Table no. 1. Research instrument construction

Issues	Items
1. Analyzing the teaching practices, from the students' perspective, regarding the structuring of the teaching material and the use of visual impact strategies.	Q1. The majority of teachers structure very well what they have to teach, are concrete, and use impact teaching elements in activities. Q8. Teachers need to structure very well what they have to teach.
2. Analyzing the teachers' practices regarding the provision of feedback in the teaching activity	Q2. Student feedback is requested/used in each course/application. Q9. Teachers should use student feedback for each activity.
3. Analyzing the availability of resources and materials	Q3. Resources and materials are available each week on the course's online platform. Q10. The resources and materials must be available every week on the online course platform.
4. Analyzing the students' involvement in the teaching activity	Q4. Teaching is done with the involvement of students in live teaching activities. Q11. Teaching must be done with the involvement of students in live teaching activities.
5. Analyzing the involvement of teacher-student communication, through active participation, in daily teaching activities	Q5. Communication between teacher-student is achieved through the active participation of students in each course/application. Q12. Teachers must use elements of impact communication in teaching.
6. Analyzing the teachers' practices regarding the adaptation of the specialized academic curricula, following the students' needs	Q6. The majority of teachers use adapted language/words to students to be effective in explaining the topic. Q13. Teachers must use adapted language/words to students to be effective in explaining the topic.
7. Analyzing teachers' practices regarding the use of time management	Q7. The majority of teachers provide enough time, during live classes (or at the end of classes), to check if students have understood the topic that was taught. Q14. Teachers must provide sufficient time, during live classes (or at the end of classes), to check if students have understood the topic that was taught.

Table no. 1.1. Research instrument validity

Alpha Cronbach Coefficient validity	Items no.
0.78	14

4. Results and discussion

The data analysis allowed a better organization and description of the teaching practices existing at the time of data collection, in terms of teaching-learning using educational platforms. We will approach the comparative variant of the data: how the teaching activity is carried out vs. how it should happen, based on the expectations/needs of students. This way, we can have a closer look at the match or mismatch between the reality of teaching practices and students' expectations, both based on their perception.

Regarding the first issue, that teachers structure very well what they have to teach, are concrete, and use elements of impact, in teaching, the responses of students (Q1, Q8) show us that this practice is current among teachers to a large extent. This shows us that teachers have invested in the presentation form, use, development of strategies to attract students from the perspective of ways of persuasion. Compared to the answers to the same question, but from the perspective of students' expectations, from Table no. 2 it can be seen that these practices, however, do not rise to the level of expectations that students have from their teachers, which means that continuous teacher training still needs to invest in the development of impact education materials.

In the research conducted by Nückles (2020) the teaching process depends on the learning situation (quality environment). In this context, it is very important the quality of teaching materials, especially in online learning and teaching. Based on the concept of professional vision, the teaching and learning practices are being improved. So, it can be a good point to measure the teachers' ability to evaluate critically the students' interests in learning activities. Also, Buckley and Nerantzi (2020), while investigating the visuals impact on learning, argued that information presented to students, including visual representations, needs to be accompanied by teacher critique and guidance to develop the students' thinking.

Table no. 2. *Students' responses about teaching practices*

Issue	Medium value for reality	Medium value for expectation/need
1. Analyzing the teaching practices, from the students' perspective, regarding the structuring of the teaching material and the use of visual impact strategies	6,93	9,34

If we refer to the second issue, that student feedback is requested/used in each course/application, we can see that there is no category of answers that can validate the issue, but rather this practice is not proportionally distributed among teachers. From this point of view, we can conclude that the way to request/use feedback in teaching activities can become a specific topic among the continuous professional development of teachers. The defining answer provided by students who would like feedback to be included/requested/used in teaching activities (Table no. 3) contributes to this perspective. These research results are also obtained by Tanis (2020), in a research conducted on the alumni students when they stated that feedback from teachers is very important and needs to be administered in a timely and clear manner.

From the point of view of learning and instruction, the feedback routines, used in daily teaching activities, may substantially contribute to a more powerful and dynamic learning environment.

Table no. 3. *Students' responses about teachers practices in online activities*

Issue	Medium value for reality	Medium value for expectation/need
2. Analyzing the teachers' practices regarding the provision of feedback in the teaching activity	5,91	8,64

Issue no. 3 referred to the weekly availability of resources and materials on the online course platform. As can be seen in Table no. 4, the answers provided (Q3, Q10) by the students confirmed the issue. Also, the data collected regarding this practice, at the time of data collection is close to what students would like to happen/expect from their teachers.

Table no. 4. *Students' responses about availability of teaching courses on online platform*

Issue	Medium value for reality	Medium value for expectation/need
3. Analyzing the availability of resources and materials	8,56	9,58

Issue no. 4 involved the teaching activity, carried out with the active involvement of students in learning (live activities). Respondents provided data (Q4, Q11) that show the gap between the reality perceived by the students and their expectation, as can be seen in Table no. 5. Concerning this aspect, we can mention that students want to be actively involved in teaching, which can mean the need for continuous training in the direction of developing interactive teaching strategies. Van Wart and Medina (2020) have provided research evidence about the importance of integrating students' perspectives in teaching as a critical success factor for online learning from the students' perspective.

Table no. 5 *Students' responses regarding interactive teaching*

Issue	Medium value for reality	Medium value for expectation/need
4. Analyzing the students' involvement in the teaching activity	6,15	8,39

Regarding issue no. 5 (Q5, Q12), that the communication between teacher and student is achieved through the active participation of students, in each course / application, the data collected are within the average scope of these educational practices, as can be seen in Table no. 6. Different variables can be identified that lead to this perspective, but the fact that there are no routines already implemented as good practices, but average trends of effective teacher-student communication. If we look at the perspective of students' expectations, both teachers and students still have much to learn to develop effective communication in the online environment.

Table no. 6. *Students' responses regarding the state of communication, in online activities*

Issue	Medium value for reality	Medium value for expectation/need
5. Analyzing the involvement of teacher-student communication, through active participation, in daily teaching activities	6,34	8,91

Regarding issue no. 6 (Q6, Q13), it is noted that the teachers use academic language adapted to students to be effective in explaining the topic, as shown in Table no. 7. In this regard, the online activity seems to be focused on the needs of students, on adapting the content, and the form of presentation regarding the challenges that students face. And in this perspective, however, the respondents claim that teachers still need to improve the situation.

Table no. 7. *Students' responses regarding adapting academic curricula according to the students' needs*

Issue	Medium value for reality	Medium value for expectation/need
6. Analyzing the teachers' practices regarding the adaptation of the specialized academic curricula, following the students' needs	7,05	9,16

Issue no. 7 (Q7, Q14) referred to the fact that the teachers provide enough time, during live classes (or at the end of classes), to check whether students have understood the taught topic. The data collected show the distance between the perceived reality and the students' expectations, as can be seen in Table no. 8. It should be noted that students' expectations are very high about the time given by the teacher with additional explanations and that, at the time of data collection, students are not satisfied with the teachers' time management in this respect.

Table no. 8. *Students' responses regarding teaching time management for additional explanations*

Issue	Medium value for reality	Medium value for expectation/need
7. Analyzing teachers' practices regarding the use of time management for additional explanations	5,94	9,01

Regarding the seven investigated issues, we can conclude that there are different perspectives on the teaching practices involved in actual online learning and on which ones can be considered to be satisfactory. However, as noted above, the majority of students considered that the teaching process can be improved through real investment in teacher training, especially in the online environment.

5. Conclusions and recommendations

As is well known, achieving best practices in online education requires a lot of time and resources. It takes hundreds of hours to properly design and implement an online course (Oranburg, 2020).

The results of our study confirm that teachers need to invest in (self-) training. Their activities are appreciated by students, but still do not live up to the expectations. Students noted (and are pleased) that teachers:

- structure well what they have to teach and use visual elements of impact while teaching;
- provide students (on the platform) in a timely manner with all necessary study materials;
- most teachers adapt their language to the students in order to be more effective in explaining the topic.

However, more investment is needed in the development of impactful educational materials that keep students' attention active, motivate their learning and support the assimilation of knowledge.

Research has also shown that online activity needs improvement for the teachers' part. According to the opinions expressed by students, during the online activity, it is desirable that the teachers: interact more actively with the students during the teaching process, involve them more actively, communicate more with them. Interaction in the online environment is a complex and extremely important issue (Bolliger & Martin, 2018; Shackelford & Maxwell, 2012), confirmed by students in the present research. Therefore, collaboration between teacher and students should be further explored and developed. Asked about their expectations regarding online courses, the students also expressed a desire for teachers to use feedback more frequently during class and to check more thoroughly during the teaching activity how well the taught material was understood. These expectations, related to assessment, are not only justified but also necessary, especially since in the online format "students need to play an active role in the co-construction/construction of curriculum, learning outcomes and their own learning scenarios. Through immediate feedback loops between instructor and students, they can also contribute to the iterations continuously made in course design" (Shearer, 2019, p. 44). We live in a world where everyone is connected to each other on a global scale, and the Internet is a pool of collective knowledge in which each individual can be a student, a teacher or a designer (Anderson & Dron, 2011).

Students' feedback can also relate to their emotions, confusions and frustrations. "There needs to be a responsive and flexible environment for open and ongoing learner input and interaction, and deep, rich and meaningful discussions" (Shearer, 2019, p. 44). It is necessary for the online environment to offer not only thorough learning but also a social presence.

In order to meet the needs of the students, in online learning, it is necessary to create a framework that provides them with increased contact/interaction, cooperative work, active learning, timely feedback, effective time management, high standards and individualisation. These issues have been discussed for many years yet we still have problems with integrating them into practice and theory.

At the same time, it is necessary to mention that our study aimed to investigate online learning during the pandemic as a whole and defined only some aspects of this phenomenon, which shows the limits of this research. We emphasize that in order to deepen the research, each topic addressed in the paper can be analyzed separately and more deeply. We also emphasize that our research aimed to study the students' point of view (not the teachers'), which limits the creation of a complex image of the eLearning phenomenon during the pandemic. Another direction of extending the research is seen in the further verification of the research results by diversifying the methods (interviews, recordings of courses/seminars, analysis of training resources, etc.) used to record and analyse data. In conclusion, we believe that our study presents useful and necessary information to understand the specifics of online learning during the pandemic.

Concluding what was said, we want to emphasize that the specificity of online teaching requires the adjustment of the material to the psychological characteristics of the students. This implies a more differentiated structuring in order to individualize and assimilate the material easily (and quickly). In addition, to support online interactivity, we recommend creating the conditions to stimulate student learning. In conclusion, we argue that the results of our research confirm the need for continuous teacher training in the direction of a collaborative, constructive and connected learning pedagogy.

NOTES

1. The contribution of the authors to this paper is equal.

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