

TRADITIONAL AND ONLINE EDUCATION – THE TRANSITION FROM HIGH SCHOOL TO UNIVERSITY DURING THE COVID-19 PANDEMIC

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ABSTRACT: *The transition from classical education (in classrooms) to online education was quite sudden at the beginning of 2020 due to the pandemic situation. This paper captures the difficulties and the opinion of students in the first year of college who have experienced the transition from classical education to online education in high school, and then the transition to university, also online. At the same time, in this paper we want to make a comparison between the online education experienced in the last year of high school (in the first months of pandemic) vs. online education in the university environment, in the first year of college.*

KEY WORDS: *classical education, COVID-19, online education, difficulties, transition*

1. INTRODUCTION

With the spread of COVID-19 coronavirus worldwide, since the spring of 2020, many aspects of daily life have changed dramatically. One of the issues that has been and is still being discussed is one of high interest to any nation: it is about education.

Even though more than a year has passed since the appearance of the virus that changed the lives of people around the world, the emergence of new strains of the virus and its continued presence, make the subject of education of children and young people and its quality up to date and hotly debated.

In Romania, the state of emergency due to COVID-19 was declared in March 2020, and with this situation the entire educational system had to be rethought

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according to the epidemiological situation and the requirements imposed by the authorities. As has happened in many parts of the world, in a matter of days it has moved from traditional education (in classrooms) to online education.

The transition from classical to online education has been a challenge for all parties involved (principals, teachers, students, parents) especially since no one was prepared for this complete transition from traditional teaching to online teaching.

In particular, this situation had a major impact on a generation of young people, the generation that at the beginning of 2020 were in their last year of high school. They experienced perhaps the strongest transition from classical teaching (in classrooms) to online teaching, as they prepared to take the final exams at the end of high school. Unfortunately, the challenge continued for many of them, so at the beginning of the academic year, the courses also started online.

This paper is intended to be a study and then an analysis focused on young people of this generation who have gone through this experience, in order to better understand the weak and strong elements of the types of classical education vs. online and then online education in the pre-university environment vs. academic.

2. FIRST CHALLENGES IN PANDEMIC

In the early days of the pandemic, after the state of emergency was declared and children and young people of all ages stayed at home, it was a real challenge for school principals, teachers and students to communicate online. For school principals or university principals the challenge was to develop a viable system for the whole school / university; for teachers, in the first days the challenge was to discover viable applications / platforms with which to reach students in order to teach and to send materials, homework, projects so that students do not waste a lot of time and knowledge.

For teachers (especially for those who do not have skills in computer science) another challenge was to become familiar with applications, platforms, to create special materials for online teaching, leaving aside the fact that many had to find effective solutions in reaching students who did not have access to an Internet-connected device.

For the students, the challenge was just as great. Even though young people are much more accustomed to mobile devices and much more intuitive in their use, it was a big step to get used to the requirements of the online teaching.

Unfortunately, in Romania (certainly in other parts of the world) not all students have devices to connect to online classes and therefore for many teachers providing such devices for their students was another challenge. Of course, these issues may lead to other discussions about free education, equity and academic excellence in special situations such as the one that the whole world has faced since 2020, but this is not the subject of this paper. Of course, these issues can lead to other discussions about free education, equity and academic excellence in special situations such as the one the world has faced since 2020, interesting aspects that could be starting points for a future study. [Pokhrel S]

3. STUDY APPROACH

The starting point of this study is the paper "*Opinion of students on online education during the COVID-19 pandemic*", authors Chakraborty P., Mittal P, Gupta M. S., Yadav S, Arora A.; in this paper a survey is presented in which they asked undergraduate students in an Indian university about their opinion on different aspects of online education during the ongoing pandemic. [Chakraborty P]

Everyone who works with students must adapt to their requirements and needs, adapt to current circumstances, and promote a positive attitude. [Patricia, A] At the moment, it is not just about content and teaching knowledge; it is about a much more complex process because the way the courses are organized, the interaction with the students, the way the evaluation is done can influence their health as well as their social behavior. A better understanding of students' views on teaching methods, content and the entire online education process can increase student satisfaction which will later be reflected in their performance. [Gopal R] At the same time, it can help the teacher to improve his teaching methods and techniques. Due to the close interaction with first year students in the Computer Science specialization of a Romanian university, as a tutor year, and knowing the problems they faced in the first weeks as students, we considered this study more than necessary.

This study does not focus only on aspects of online teaching but has 2 parts: the first part is dedicated to the transition from classical education to online education in the last year of high school, and the second part covers the transition from online education in high school (pre-university) to online education in their first academic year, as well as a comparison of the online education experienced within the two levels of education (pre-university and university), keeping in mind the indicators mentioned below.

To find out the student's opinion, we used two questionnaires with 22 questions each, plus an additional, free question at the end of each questionnaire. For each of the 2 questionnaires, the 22 questions were structured on 7 indicators:

- General issues
- Classes organization
- Content
- Interaction & Interactivity
- Evaluation
- Health issues
- Social issues.

The students answered the questions given for both high school and university.

At the end of the questionnaire, the students also had the opportunity to answer freely about their experience regarding traditional education vs. online education respectively online high school education vs. online education in university environment, for a better understanding of the situation, even if these answers will not be able to be statistically interpreted.

The present study was attended by a number of 24 students who graduated high school in 2020 (during the first year of the pandemic) and became students of the Computer Science specialization of the university in the same year. They answered

both questionnaires, being asked to answer sincerely. They completed these 2 questionnaires using an online platform previously used, during the courses.

3.1 Questionnaire

The 22 questions (of each questionnaire) are closed questions, the students being able to choose only one answer from the predetermined ones. All questions in the questionnaires are considered questions with hierarchical answers or rating scales.

The questions of the first questionnaire can be viewed in Table 1. In this table are highlighted the 7 indicators mentioned above.

Because we wanted to find out what the students think about traditional education vs. the online education they experienced in the last year of high school, the questions were formulated accordingly, and for each of them, one of the following predefined answers could be chosen: *Strongly disagree*, *Disagree*, *Neutral*, *Partially agree*, *Strongly agree*.

Table 1. Questionnaire no. 1 on High school education (classic vs. online)

General issues
1. Learning takes place better in (physical) classrooms than online.
2. Teachers have improved their online teaching skills along the way (compared to those at the beginning of the COVID-19 pandemic).
3. Online education is a viable alternative during the COVID-19 pandemic.
Organization classes
4. Teaching time (information transmission) is better used in traditional (face-to-face) teaching than in online teaching.
5. Monitoring the individual activity of students and their level of attention is much more difficult online than in classical teaching.
6. In online education there is no mimic-gestural feedback of students - which can be a real help for the teacher (so that he can insist on topics not understood by pupils / students at the time of teaching).
Content
7. Appropriate study materials are available online.
8. Slide shows make a more informative lecture.
9. Special applications are a real help for sharing course materials.
10. Online applications and tools for problem solving, programming and design can enrich a course.
Interaction & Interactivity
11. Teacher-student interaction takes place better in physical classrooms than through online platforms.
12. Using a digital annotation tool makes lecturing more interactive.
13. If the teacher and students have turned on the video cameras, then a lecture becomes more interactive.
14. If the teacher allows students to ask questions or post comments in the meeting chat during a lecture, the lecture becomes interactive.
Evaluation
15. Online tests effectively and correctly assess students' knowledge.
16. Weekly tasks and regular tests help to deepen knowledge.

17. The evaluation during the physical courses is much more correct than the one made online.
Health issues
18. Online education can negatively influence health to a greater extent than traditional education.
19. Prolonged time spent in front of the screen causes stress and affects sleep.
20. Online evaluation creates more anxiety than traditional evaluation.
Social issues
21. Online education negatively affects students' daily lives.
22. Online education affects relationships between students.

The aim of creating the second questionnaire was to find out the students' opinion on how the online education process took place in high school vs. within the university. The 22 questions of this questionnaire are also closed; the students could choose only one of the predefined answers.

For 17 of the 22 questions in the questionnaire, the predefined answers were: *Neither at the High School nor at the University, In / at High School, Partly both at High School and at University, In / At University, Both in High School and in / at University*. The other 5 questions have different answers and will be presented in one of the following chapters of this paper.

Table 2. Questionnaire no. 2 on online education (High School vs. University)

General issues
1. You have benefited from quality online education...
2. Online teaching skills have been raised to teachers from...
3. Online education is a viable alternative during the Covid19 pandemic for
Classes organisation
4. Teaching time (information transmission) has been better used in online teaching
5. For teaching, in high school, platforms were used in a number of...
6. As a percentage, the teaching was done by videoconference in the High School at...
7. As a percentage, the teaching was done by videoconference in the University at...
Content
8. Appropriate study materials have been made available...
9. In the teaching process, additional materials were used (slide presentations, video, audio, worksheets, etc.) to capture attention and transmit information dynamically...
10. The special materials used enriched the content of the lectures...
11. Over time, there has been an improvement in the production of materials and teaching...
Interaction and Interactivity
12. The teacher-student / teacher-student interaction in the online environment took place better (easier, more natural)...
13. The lectures were more interactive ...
14. The teacher allowed students to ask questions or post comments in the meeting chat during a lecture
Evaluation
15. Online tests effectively and correctly assessed knowledge
16. The weekly / periodic tasks were taken into account in the evaluation process.
17. The evaluation was stricter / more rigorous...

Health issues
18. Online education leads to the phobia of losing internet connectivity...
19. Prolonged time in front of the screen has caused you stress and sleep...
20. Online evaluation has created more anxiety
Social issues
21. Online education has negatively affected your daily life
22. Online education has affected the relationship between you and your colleagues

4. MATERIALS, METHODS AND RESULTS

4.1 The reliability of the questionnaires

The reliability of the questionnaires was calculated using the Cronbach Alpha coefficient, with the help of a Free Statistics Software. [Wessa]

Cronbach's alpha reliability is one of the most widely used measures of reliability in the social and organizational sciences. [Bonnet] The value of the Cronbach's Alpha coefficient for first Questionnaire is 0.7195 and for the second is 0.6512.

In the literature it is presented that a coefficient over 0.7 is acceptable and the higher it is the better; there are also studies in which a value of 0.5 is acceptable. [Ionescu] Given the fact that for the first questionnaire the value is higher than 0.7 and for the second we can say that it is close to this value, we can consider that both questionnaires have an acceptable degree of confidence for the reliability of the items in the questionnaires.

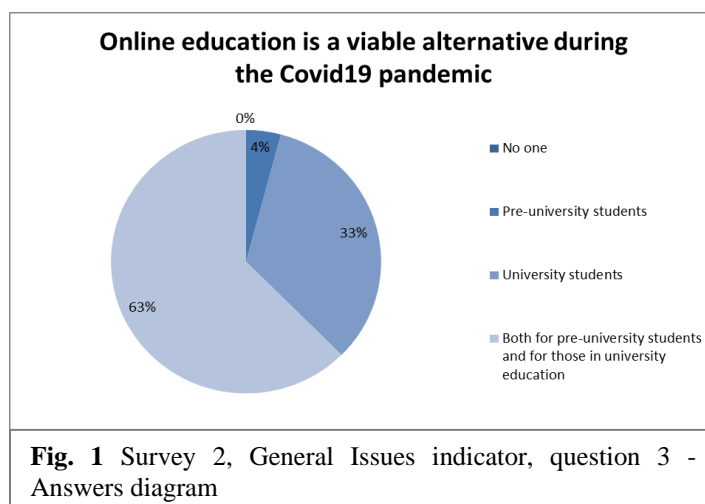
4.2 Responses

As mentioned before, 24 students answered the two questionnaires (surveys). All respondents completed high school in 2020 and in the same year were enrolled in the university, being freshmen in the academic year 2020-2021. Out of the students who completed the two surveys, 6 (25%) were women and 18 (75%) were male.

Tables 3 and 4 summarize the students' answers - percentages.

As well as students from a university in India whose opinions are presented in the paper *Opinion of students on online education during the COVID-19 pandemic* [Chakraborty], the opinion of Romanian students on online education during the COVID-19 pandemic is mixed: over 58% of them partially and strongly agree that education (learning) takes place better in classrooms than online and only a minority of about 20% disagree and strongly disagree with this statement.

Students' opinion on online education during the pandemic, over 83% of respondents partially or completely agree that it is a viable solution given the circumstances.



As can be seen in Fig. 1, over 63% of the students who answered consider that online education is a viable alternative for both high school and university students, 33% consider that it is a viable solution only for university students and only 4% consider that it is a viable alternative for pre-university students.

Looking closely at the questions asked to the students through the two surveys (Tables 1 and 2), as well as the answers given by them (Tables 3 and 4), we can understand better their path from traditional education to online education and we can make a critical comparison of online education made in the pre-university environment vs. of the one made from academic environment.

Because in classes, at the university level, only one platform was used, we wanted to know if at the high school level the students worked with a single platform or more. It is a pertinent question given that students come from different localities and have studied at different high schools.

Table 3. Responses Questionnaire no. 1

Indicator	Questions	Strongly disagree	Disagree	Neutral	Partially agree	Strongly agree
General issues	1	8.33%	12.50%	20.83%	45.83%	12.50%
	2	0.00%	8.33%	8.33%	33.33%	50.00%
	3	4.16%	4.16%	8.33%	25.00%	58.33%
Classes organization	4	4.16%	12.50%	33.33%	29.16%	20.83%
	5	4.16%	20.83%	4.16%	33.33%	37.50%
	6	8.33%	8.33%	16.66%	29.16%	37.50%
Content	7	0.00%	0.00%	8.33%	25.00%	66.66%
	8	0.00%	0.00%	16.66%	25.00%	58.33%

	9	0.00%	0.00%	12.50%	8.33%	79.16%
	10	0.00%	0.00%	8.33%	16.66%	75.00%
Interaction & Interactivity	11	8.33%	8.33%	12.50%	29.16%	41.66%
	12	0.00%	4.16%	25.00%	37.50%	33.33%
	13	0.00%	4.16%	54.16%	25.00%	16.66%
	14	0.00%	0.00%	16.66%	20.83%	62.50%
Evaluation	15	4.16%	8.33%	25.00%	45.83%	16.66%
	16	4.16%	8.33%	12.50%	25.00%	50.00%
	17	4.16%	12.50%	29.16%	29.16%	25.00%
Health issues	18	12.50%	8.33%	37.50%	20.83%	20.83%
	19	8.33%	16.66%	37.50%	25.00%	12.50%
	20	12.50%	16.66%	41.66%	16.66%	12.50%
Social issues	21	8.33%	37.50%	29.16%	20.83%	4.16%
	22	4.16%	25.00%	16.66%	33.33%	20.83%

Note: Percentages may not total 100 due to rounding.

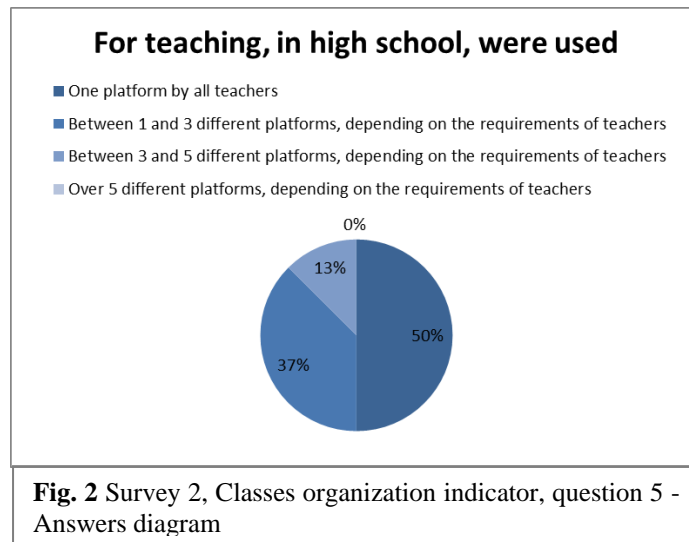
Although in the first months of the pandemic in Romanian media there were numerous discussions about the number of platforms used by students from pre-university, as can be seen in Fig. 2, half of the respondents used a single platform during high school classes, and 37% between 1 and 3 platforms. The percentage of those who used between 3 and 5 different platforms is small, of only 13%, and the predefined option of over 5 different platforms used during high school hours was not checked by any of the 24 responding students.

Table 4. Responses Questionnaire no. 2

Indicator	Questions	Neither at the High School nor at the University	In / at High School	Partly both at High School and at University	In / At University	Both in High School and in / at University
General issues	1	0.00%	0.00%	12.50%	58.33%	29.16%
	2	0.00%	0.00%	12.50%	70.83%	16.66%
	3					
Classes organization	4	0.00%	0.00%	4.16%	66.66%	29.16%
	5					
	6					
	7					

Content	8	0.00%	0.00%	8.33%	33.33%	58.33%
	9	0.00%	0.00%	4.16%	70.83%	25.00%
	10	0.00%	0.00%	16.66%	62.50%	20.83%
	11	0.00%	0.00%	12.50%	50.00%	37.50%
Interaction & Interactivity	12	12.50%	0.00%	16.55%	37.50%	33.33%
	13	4.16%	0.00%	12.50%	58.33%	25.00%
	14	0.00%	0.00%	4.16%	16.66%	79.16%
Evaluation	15	4.16%	0.00%	29.16%	33.33%	33.33%
	16	0.00%	0.00%	12.50%	41.66%	45.83%
	17	4.16%	0.00%	20.83%	50.00%	25.00%
Health issues	18					
	19	75.00%	0.00%	4.16%	4.16%	16.66%
	20	58.33%	4.16%	16.66%	4.16%	16.66%
Social issues	21	79.16%	0.00%	12.50%	0.00%	8.33%
	22	54.16%	4.16%	20.83%	8.33%	12.50%

Note: Percentages may not total 100 due to rounding.



Because in the public space and in the Romanian press there were heated discussions and articles about how to organize classes online, we wanted to know approximately what percentage of the teaching hours took place using the videoconferencing option. Unfortunately, as seen in Fig. 3 a, b and c the differences are major.

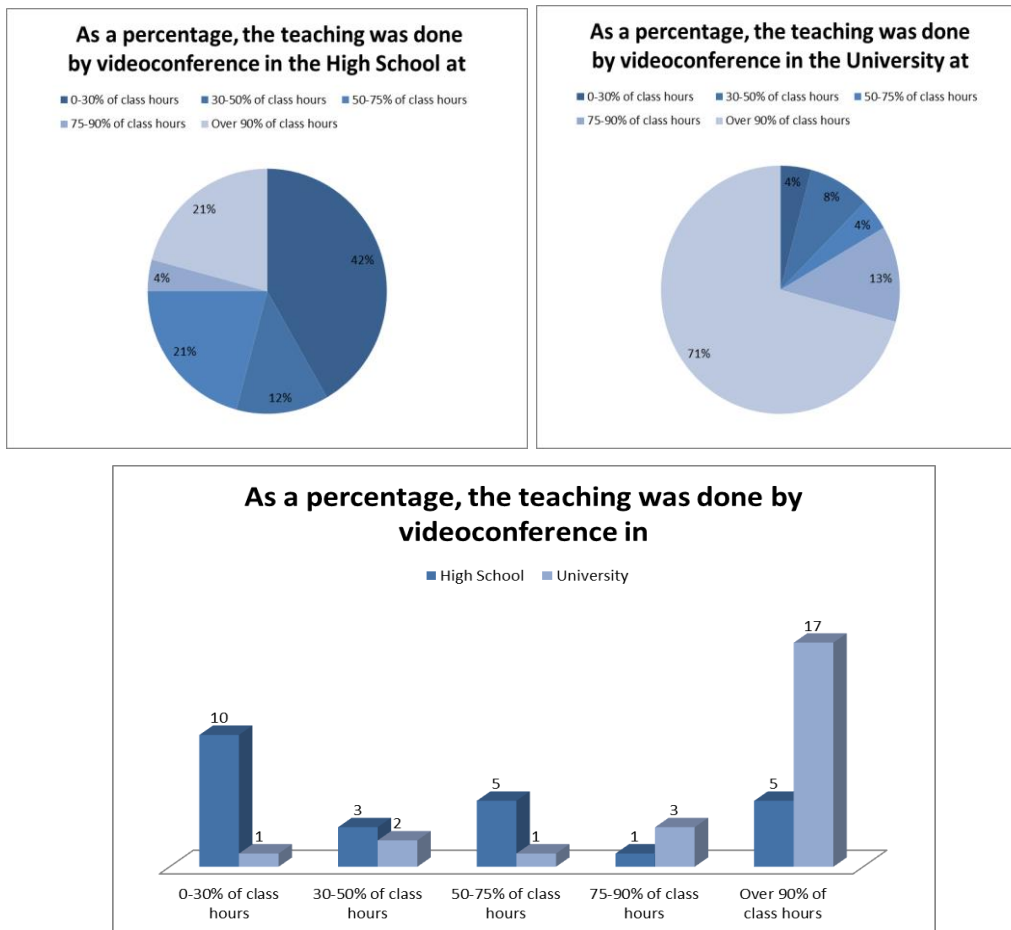
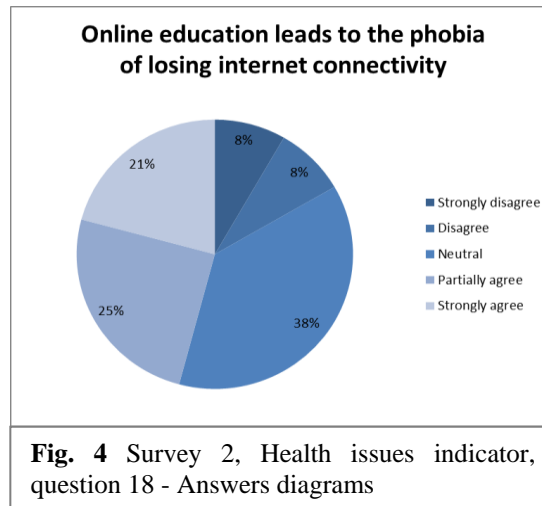


Fig. 3 a, b Survey 2, Classes organization indicator, questions 6 and 7 - Answers diagrams – percentages distribution; **c** – comparison

The open-ended question at the end of the questionnaires gave students the opportunity to express their opinion and present their experience in terms of how they adapted to the situation. Most pointed out the advantages and disadvantages of traditional education vs. online education and made a critical comparison of online education experienced in high school vs. the one experienced in university.

Not only the students and teachers stay at home but also in many fields, things have changed and some of the employees have worked for a shorter or longer period at home, obviously, there were problems at certain moments with the stability of the Internet networks. Therefore, a question about the possibility of anxiety or phobia regarding the loss of internet connectivity was obvious. Even though a large part of the respondent students (38%) had a neutral answer, 46% answered that they agree or partially agree that online education can lead to a phobia of losing internet

connectivity. Following their open answers (which focused more on online education) can be pointed out both some advantages and some disadvantages for online education.



Benefits:

- time gained (travel home - university and return)
- the possibility to access the materials more easily
- the possibility to review in certain cases the information provided - if the meeting was recorded and possibility of adapting the learning rhythm, etc.

Disadvantages:

- loss of attention much faster than traditional teaching
- lack of real interaction with the teacher and colleagues
- long time spent in front of mobile devices - leading to lack of movement, etc.

Regarding the comparison between the online education experienced in high school vs. the one experienced in college also the opinions were similar: in the spring of 2020 when it was first entered online teachers were not prepared at all for this complete transition; therefore in most cases the training focused on the disciplines of the final exams and less on the rest of the disciplines. For most students, there was a shock when they went to university. The requirements were higher but most of the respondents mentioned that the whole online process was much better prepared; the teachers had more experience due to the time they were able to adapt to this type of teaching.

5. CONCLUSIONS

Online teaching brings both positive elements (the possibility to use different applications in teaching, for example) and negative elements (limitation of platforms, organization of courses, physical human interaction, etc.). Regarding the transition

exclusively online from high school to university can be upsetting and has a major impact on the students.

In the online environment, the transition from high school to college was harder than in a normal year, with classical teaching. The student's fears and anxieties were much higher due to the fact that in the first days of the academic year they did not know how the courses will take place, how the evaluations will take place and what the teacher's requirements will be due to online environment.

At the same time, the lack of physical interaction that is non-existent in the online environment also has an important role, unfortunately negative, at the time of the transition from high school to college.

The current studies focus on the difficulties encountered by students in the transition from classical education to online education and on the difficulties and opinions of students in the transition from high school with online teaching to university with the same type of online teaching. The purpose of this paper is to analyze exactly this topic which is very interesting and worth studying in order to provide an easier transition for students in a similar situation.

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