Article

Analysing Students' Reasons for Keeping Their Webcams on or off during Online Classes

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Abstract: Since, in some higher education institutions, it is not mandatory for students to turn their webcams on during online classes, teachers have complained that their students have adopted this behaviour once the educational activities moved online due to the COVID-19 pandemic. Considering this, the present research aimed to identify the reasons behind students' choice to hide their faces during online classes and find possible solutions to remedy the situation to enhance the educational process's sustainability. Thus, this article presents the results obtained by applying an online questionnaire between December 2020 and January 2021 among the students pursuing an academic degree, recording 407 responses. The results highlighted the fact that more than half of the students participating in the study reported that they do not agree to keep their webcams on during online classes, the main reasons being anxiety/fear of being exposed/shame/shyness, desire to ensure privacy of the home/personal space, and chances that other people might walk into the background. The relevance of the research, besides the scarcity of studies on the topic, is also given by the fact that finding and understanding the reasons for this behaviour are, in fact, the first steps in undertaking regulatory interventions on it.

Keywords: webcam on; webcam off; online classes; sustainable education; pandemic; higher education; students; anxiety; privacy; shyness

1. Introduction

The outbreak of the COVID-19 pandemic has propelled the traditional education system into a new era. Students and academics no longer interact in the real educational environment but in the virtual one. Thus, both teachers' and students' personal habitats have suddenly been invaded by the microphones and the cameras of the devices they use to participate in educational activities. The way in which the pedagogical process has unfolded since the outbreak of the COVID-19 pandemic has been described by various international and national studies, tackling a large variety of topics. Therefore, research conducted in various universities across the globe point to some of the challenges faced by the parties involved in the educational process, such as teachers' and students' reactions to moving to online teaching and learning activities [1–4]; collaboration between "different shareholders (e.g., psychologists, sociologists, therapists, etc.) to offer better and timely solutions", particularly to students' problems [5]; students' and teachers' experiences with the digital environment caused by swapping classroom activities performed in a physical location with those completed on online platforms, such as Zoom, Google Classroom, Google Meet, Cisco Webex, and many others [6–9]; identification of effective online teaching principles and strategies that can have a positive impact on students, increasing their involvement in educational activities [10,11]; teachers' endeavours to develop new skills, capabilities, and competencies that are useful in the digital classroom format [12]; teachers' and students' use of social media in order to communicate with each other [6,13]; teachers'

and students' use of webcams during online classes [1]; students' perceptions of the online educational format [14–16]; and institutional difficulties in solving encountered technical problems [15]. In the analyses studied, in the majority of the situations, experiences are presented without taking into account students' opinions on the changes produced in the educational system. As beneficiaries of the schooling-forming process, an analysis of how students perceive these changes is necessary and useful to ensure the sustainability of educational acts.

As expected, global preoccupations with the transition to online teaching and learning are also reflected by Romanian studies on the topic. Therefore, examples of good practices have been given, solutions to the challenges faced by higher education institutions have been presented in order to inspire others, and various strategies adopted to support students' emotional needs in times of distress have been put forth too [17–19]. Moreover, an overview of the educational process taking place in Romania during the lockdown and after, a time frame for when the entire high-level didactic environment became digital, have been described [2,3].

However, it is worth mentioning that these studies focused mainly on the eLearning process either from a social perspective [3] or from the impact it has had on the teachers/instructors [2], while ignoring the students' perspectives in this case as well.

1.1. Online Educational Activities at Politehnica University of Timișoara

Last year, five days before the state of emergency was declared in Romania, in an effort to protect the students and the teaching and the administrative staff from infection with the COVID-19 virus, Politehnica University of Timișoara, due to the university's autonomy guaranteed by the Romanian Constitution [20], decided to move all classes online [21]. Although the Politehnica University of Timișoara was founded 100 years ago, it also has a tradition of more than 20 years of distance education [22], which, as has been the case of other universities worldwide offering distance education [23–26], eased the transition to online teaching, particularly at the start of the pandemic, and made teachers' experiences with the virtual educational environment more bearable than it would have been if they had not worked with such tools before. As the University already had its own Moodle-based educational platform, the so-called "Campus Virtual" (virtual campus), it was decided that it was to be used for all the undergraduate, graduate, and post-graduate programmes to continue the educational process that otherwise might have been interrupted by the epidemiological situation caused by the spread of the novel coronavirus [27].

Since on-site programmes make up the overwhelming majority of educational offers made by the Politehnica University of Timișoara, and since even distance learning programmes rely on a mixture of on-site and online educational activities, the shift to full online education has raised awareness of the lack of rules and regulations related to online teaching and learning. Therefore, the University Senate adopted guidelines regulating online educational activity, from mere classes to regular, final, or PhD thesis defence exams [27–29]. Therefore, Zoom audio–video conference channels have been allocated to each faculty, but other platforms may be used, such as Microsoft Teams, Google Meet, etc. Teachers have been recommended to record online classes in which educational information is transmitted and transform these recordings, which may also be edited into educational resources and made available to students on the virtual campus. Following General Data Protection Regulation [GDPR] rules, recording cannot be done unless students are notified in advance that the video conferencing is registered. Moreover, students may not turn on their webcams and microphones whilst recording if they do not wish to do so; neither is it mandatory for students to turn on their webcams during online classes. However, during any exam, be it a regular, final, or PhD thesis defence one, their webcam must be turned on, otherwise, the student cannot sit the exam.

1.2. Contextual Behaviour of Webcam Users in the Education Online Environment

The obligation to keep webcams on during online classes existed in the Romanian pre-university education system at the very outset of the pandemic [30]. Pupils who refused to turn on their webcams were considered absent. Dissatisfaction arose among parents and pupils on this subject because there were many situations in which the devices with which pupils participated in classes were not equipped with webcams, and in this case, there was no possibility to keep them open. As a result, the teachers' claim that students keep their webcams open and the sanctioning of those who do not comply with this rule through an absence of the pupil in question has been conditionally removed. At the end of 2020, it was no longer mandatory for pupils to keep their webcams turned on during online classes to be considered present. Still, they had to complete tasks assigned to them by the teacher and to answer the questions they had been asked [31]. Therefore, the new pre-university rules try to increase pupils' participation in the educational process, reducing the stress and anxiety caused by webcams.

In higher education in Romania, by virtue of university autonomy, each institution has adopted its own rules regarding the conduct of online classes. Given the fact that there was no general recommendation from the Ministry of Education to set certain routines for carrying out educational activities, different ways of imposing the use of webcams during online classes have appeared in universities. In some universities, through the internal regulations created, the use of webcams was imposed by both professors and students during online classes, while in other universities, no such decisions were made.

Although guidelines regulate Romanian pupils' visual online behaviour and the students at the Politehnica University of Timișoara, no rules or regulations coerce the Romanian teaching staff to keep webcams on. As a result, students chose not to keep there webcam turned on during classes and seminars. Students' online behaviour of not keeping their webcams on during online classes has caused major dissatisfaction among teachers. As a result, teaching staff signalled during institutional meetings that students tend to hide their faces during online classes, which made them feel demotivated to teach.

While no studies on either students' or teachers' preferences regarding turning webcams on during online classes have been carried out in Romania, international research on the matter has been conducted.

For example, in Germany, most teachers choose to stay visually connected to their students during the online classes so that the students see the teacher and feel like they are in a physical classroom [1]. At the same time, however, students avoid using their webcams. Some of the reasons that lead to this behaviour are mentioned in the study, according to which "students' webcam-usage behaviour was related to personal thoughts and feelings (e.g., privacy), to course characteristics (e.g., group cohesion), and it differed due to specific groups (gender, study degree)" [1]. Drawing on numerous studies, the authors indicated that the invisible online presence has become a global phenomenon for students who choose not to use their webcams unless mandatory, determining the authors to call them "generation invisible".

Interestingly, before the COVID-19 pandemic and the universities' shutdown, students used their webcams when attending online courses, as several studies have emphasised [32–34]. Others have identified the reasons behind students' choices not to turn on their webcams as shyness, self-disclosure [35], lack of perceived reason [36], or the sensation that someone is intruding into their privacy [37].

Although there have been numerous studies conducted on various topics related to the polytechnic university environment in Timișoara, such as migration, student values, the development of the concept of sustainability in the University's strategic plan, the use of educational resources, Artificial Intelligence [AI], etc. [18,38–40], none have addressed the issue of online education, either from the perspective of the students or from that of the teachers. Nevertheless, as there are no studies to be found on the perspective of students' online behaviour regarding choosing not to turn on their webcams, as well as on the usage of webcams and their effect on students' behaviour and impact, the present research aims,

on the one hand, to identify the motives that the students at the Politehnica University of Timișoara have regarding the use of webcams in online classes, whatever their behaviour and, on the other hand, to find solutions to improve the online educational process.

The research questions were:

- Why do respondents keep their camera turned off while taking part in online educational activities, and what do they think is the explanation for this behaviour amongst their colleagues?
- Why and for how long do students keep their camera turned on during online classes, although this is not necessarily mandatory?
- What are the characteristics of the environment/space in which students participate in online classes, and what other activities do students perform in parallel with the educational activities carried out in the online environment?

2. Materials and Methods

The present research drew on the method of the sociological survey, which is a quantitative research method. The tool used to collect the data was an anonymous online questionnaire, posted on the Isondaje.ro platform (an online survey service). The data were collected between December 2020 and January 2021, and the responses given by 407 participants were recorded. All the respondents were from Politehnica University of Timișoara, Romania, an institution where students do not have to turn on their webcams in the educational process, as already mentioned. The recorded margin of error was ±5.0%.

According to the recorded results, the respondents came from all the years of study of the above-mentioned institution, and their average age was 20.5 years old. As no reviews were identified to explain the phenomenon studied in our research article, most of them referring to the period prior to the pandemic, and to provide the research team with tools and results to help validate the analysis in order to achieve the proposed objectives, we designed our own data-collection tool. The questionnaire included 19 questions (six open questions and 13 closed), which were added to the respondents' factual data. Open-ended questions were used to record the reasons why respondents and their colleagues do not keep their camera turned on during online classes, to identify the number of hours and the reasons why they do keep the camera on (although this is not mandatory), to determine what other activities they are performing in parallel, and find solutions that would influence students to keep their camera on. Our study includes an analysis of frequencies in SPSS, with no significant differences observed in the gender and age of the respondents.

This presents the data obtained from the entire sample in correlation with the research questions. Complimentary to the main questions, the survey also included specific additional questions to help the research team achieve the objectives pursued and outline a more accurate picture of the phenomenon studied.

Determining students' perceptions and reasons for keeping their webcams off during online classes.

The first research objective was to determine how comfortable it is for students to keep their webcam turned on during online classes. The analysis of the results (Figure 1) shows that the largest share was the category of those who said that they agree "to a very small extent" to keep their webcam on during online classes (32.2%). Considering the percentages recorded, this category was followed by those who stated that they agreed "to an average extent" (30.0%), and by those who stated that they agree "to a small extent" (22.9%). At the opposite pole was the category of those who declared that they "largely" and "very much" agree to keep the webcam on (7.0% and 7.4%, respectively). Therefore, it can be noted that more than half of the studied population (55.1%, obtained by cumulating the results recording the answer "to a very small extent" and the answer "to a small extent") showed a reserved attitude towards this aspect.
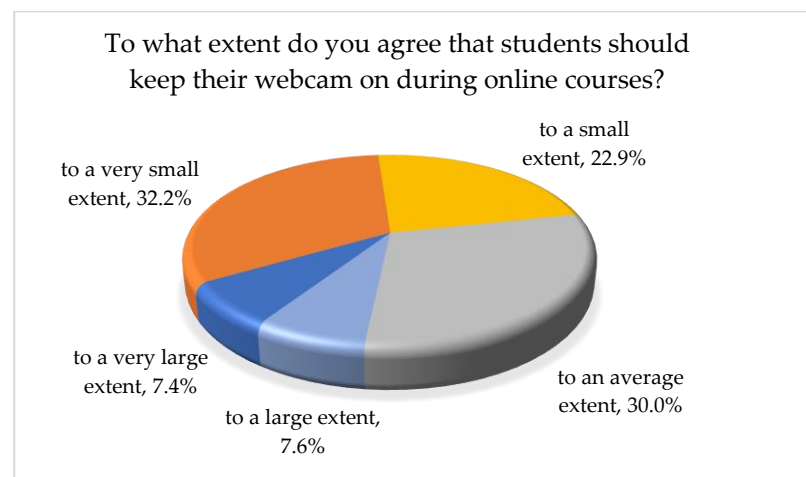
Figure 1. Students' opinion about keeping their webcams on during online courses.

To capture how comfortable students feel in showing their faces during online classes, a 10-step scale question was introduced in the questionnaire, where 1 represented the minimum degree of comfort, and 10 represented the maximum. An average value of 5.37 and a distribution of responses were recorded, the latter being shown in the graph below (Figure 2). The highest percentage values were recorded for ratings 1 (14.0%) and 5 (14.0%), followed by ratings 8 (12.8%) and 10 (11.1%). Compared to the central point of the scale (rating 5), a uniform distribution of responses was recorded in the sense that relatively similar percentages were recorded for those who feel comfortable in front of the webcam and those who do not.
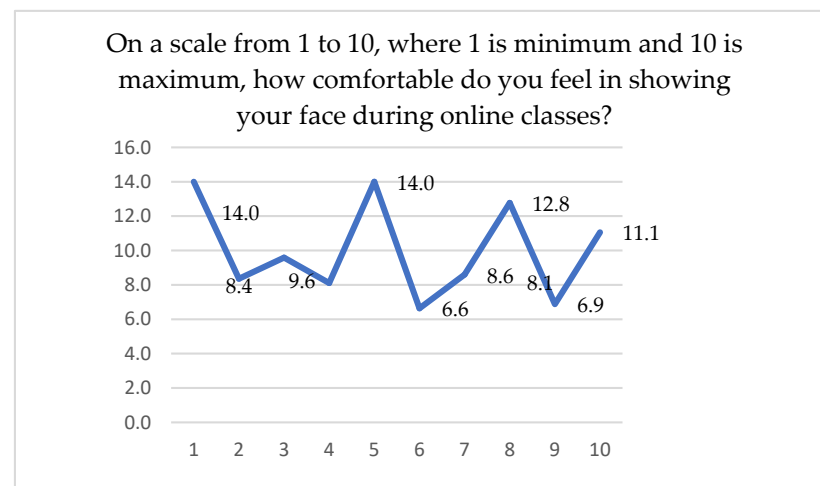

Figure 2. Students' degree of comfort with showing their faces during online classes.

We also tried to identify the reasons why students keep their webcam turned off during online classes. For this, two open-ended questions were introduced in the questionnaire that sought to obtain these answers. The first one asked the respondent to explain his/her colleagues' behaviour and the second one asked the respondent to explain the his/her own behaviour. Understanding these reasons can be the foundation for regulatory interventions for this behaviour, identified among students during online classes. As can be seen from the figure below (Figure 3), the respondents' perception was that the main reason for why their colleagues do not turn on their webcam during online classes is represented by anxiety/fear of being exposed/shame/shyness (21.6%), being followed by the desire to ensure the privacy of the home/personal space (18.9%), the fact that other people may

walk into the background (10.3%), or because they carry out other activities in parallel with the online classes 10.3%.
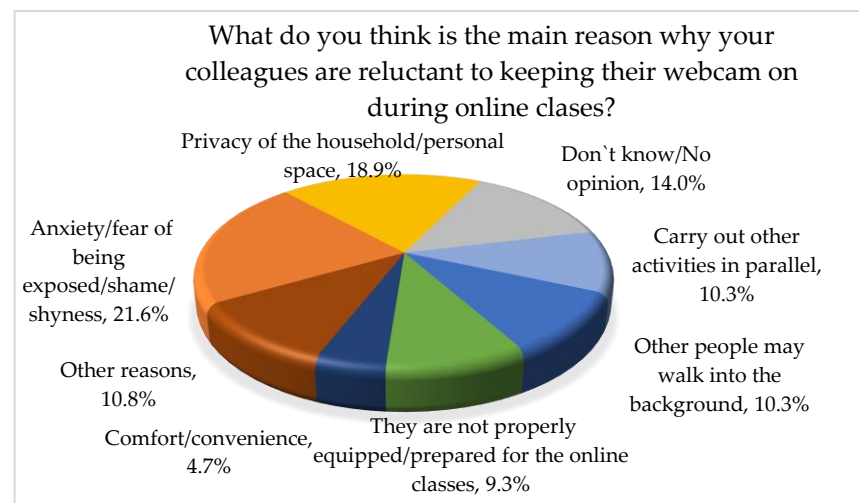

Figure 3. Reasons for the respondent's colleagues reluctance to keep webcams on during online clasess.

The explanations that the respondents offered for their own behaviour during the online classes were anxiety/fear of being exposed/shame/shyness (19.4%), because turning on the webcam is not mandatory and because everyone keeps the webcam turned off during online classes (11.3%), because they are not adequately equipped/prepared for online courses (10.1%), because they wish to ensure the privacy of their home/personal space (8.4%), because other people may walk into the background (7.9%), because they carry out other activities in parallel (7.4%), and finally, because they value their comfort/convenience (7.4%).

Determining the approximate number of lectures and seminars during which students keep the webcam on and the reasons for this behaviour.

Although there is no such requirement for students, there have been situations in which they have preferred to keep their webcams turned on while participating in educational activities. Thus, the second research objective was to identify the approximate number of lectures and seminar/laboratory activities in which students keep their webcam on and the reasons that explain this behaviour.

The results presented in the graph above (Figure 4) showed that most of the students keep their webcams on during 1–2 lectures (41.5%) or seminar/laboratory activities (38.1%), followed by those who do this during 3–4 lectures (20.9%) or seminar/laboratory activities (18.4%). In descending order of percentages, these categories are followed by those who do not keep the webcam turned on during lectures (15.7%) and seminar/laboratory activities (14.0%).

Nevertheless, it seemed that there was a request from certain teachers for students to keep their webcam on during online classes at 1–2 lectures (27.8%) or 3–4 lectures (15.2%), a fact deduced from their answers to the question, "approximately how many courses are you required to keep your webcam on?"

Although they did not have this obligation, some students chose to keep their webcam on during online classes. In the present study, we also intended to identify the explanations for this behaviour. The results recorded using an open-ended question in the questionnaire used to collect the data highlighted the main reasons behind these choices, which were out of respect for the teacher (20.1%), to facilitate discussion/better interaction with the teacher (14.7%), and to show that they are present and attentive in class (9.1%). The highest percentage was recorded in the case of those who do not keep their webcam turned on at all during the classes, i.e., 26% of the total answers.
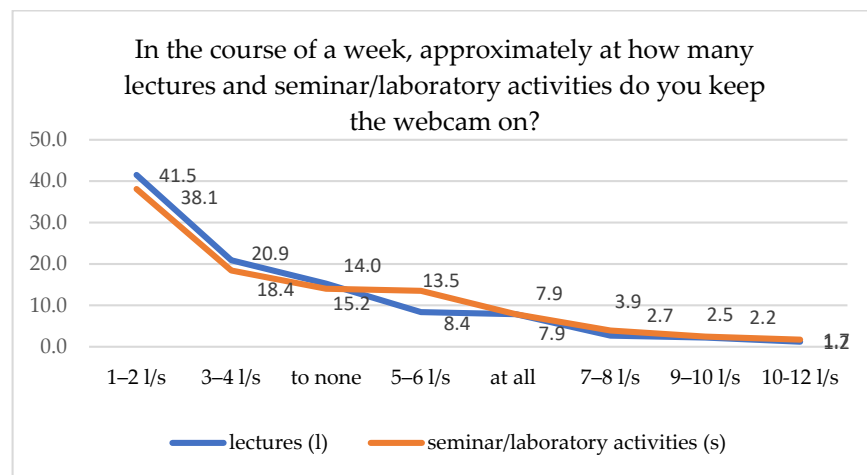
Figure 4. The number of lectures and seminar/laboratory activities when the webcams are kept on.

Determining the characteristics of the environment/space and identifying students' behaviours while participating in educational activities in the online environment.

The environment/space used by students to participate in educational activities is very important. Our study results demonstrated that 60.7% of the students have a specially designed place inside their homes, which is used only by them to participate in online classes. As can be seen from the figure below (Figure 5), for most of the respondents, space provided, on average and above average, the household privacy and the privacy of the people they live with. The category of those who stated that these characteristics are provided "to a small or very small extent" was less than one-quarter of the whole sample.
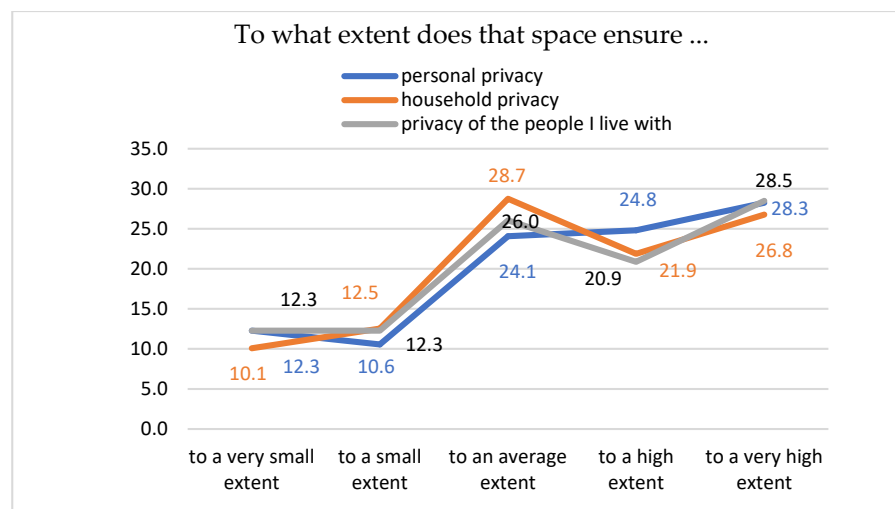

Figure 5. Characteristics of the environment/space in which students participate in online classes.

As can be seen from the figure below (Figure 6), most students used a laptop (72.8%), a mobile phone (17.7%), or a desktop (9.0%) to participate in online classes. A tablet was used by only 0.5% of students. Even though the mobile phone is considered an inappropriate device for attending online courses in the technical field, primarily due to the small screen size, an unexpected high percentage of students regularly used their mobile phones to attend classes. A possible explanation for this could be the fact that they do not possess any other device, the mobile phone being the only tool that allows them to participate in online educational activities.
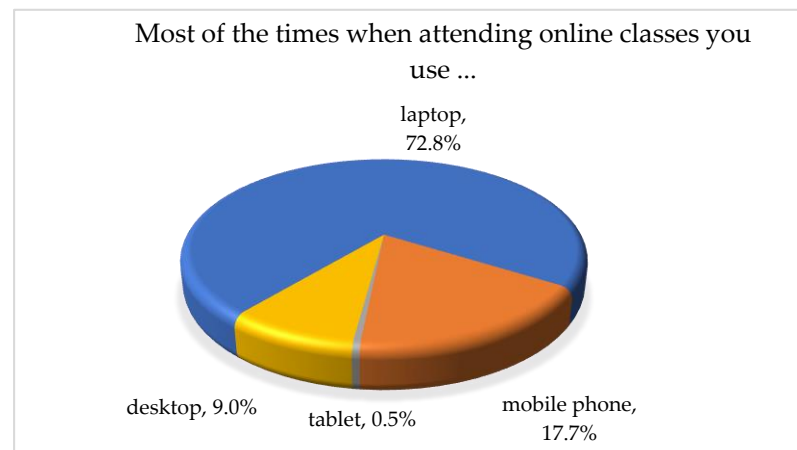
Figure 6. Devices used to attend online classes.

The research also aimed to determine students' behaviours while participating in educational activities in the online environment. A surprising aspect of the study is that those who only listen to the presentations delivered by teachers and colleagues during educational activities were 13.8% of the studied population. Those who follow these activities, both through audio and video, represent 84.9% of the total sample, and those who only watch them represent 1.3%.

More than half of the questioned students (54.1%) stated that they carry out other activities in parallel with the online classes. To the open question "what other activities do you carry out in parallel with the online classes?", most of the respondents stated that they have a full time/part-time job (23.9%), that they work on projects for other subjects (20.1%), or that they eat/drink coffee/clean (18.0%). The list was completed by other activities such as using a mobile phone for various applications/games, etc. (11.7%), helping the family (7.5%), sports activities (5.9%), or searching for information on the Internet (5.4%). (Figure 7). It is worth highlighting that these percentages were calculated from those who stated that they carry out other activities in parallel with the online classes and not from the entire sample.
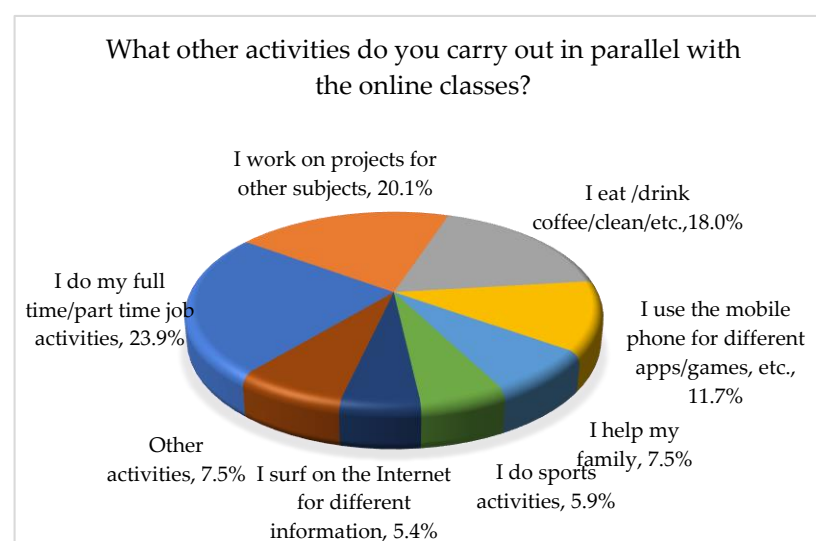

Figure 7. Parallel activities carried out during online classes.

When nominated by the teacher to answer a question, 13.5% of students stated that they "always" keep their webcam on. Those who "sometimes" adopt this behaviour represented 68.6%, and 17.9% stated that they never open the webcam.

Asked whether they could think of a solution that could help students feel more comfortable when turning on the webcam, most respondents said they do not believe there is one (38.0%). Of the respondents, 19.1% considered that the interaction should be encouraged, and 12.4% considered that the turning on of the webcams should be encouraged, but at the same time, should not be mandatory. To achieve this goal, a smaller share of the respondents (6.7%) considered that more students should keep their webcam on, keeping the webcam on should be mandatory (5.8%), students should be explained how to use a virtual background (5.8%), or teachers should require students to turn their webcams on during online classes (4.0%).

As can be seen from the figure below (Figure 8), by cumulating the response variants "to a very small extent" and "to a small extent", we noticed that almost half of the respondents (46.5%) were not willing to give up the comfort of closing webcams during educational activities carried out in the online environment. More than a third of students declared themselves "to an average extent" (36.1%), the rest of the percentages represented the category of those who considered that they can keep webcams on during online classes.
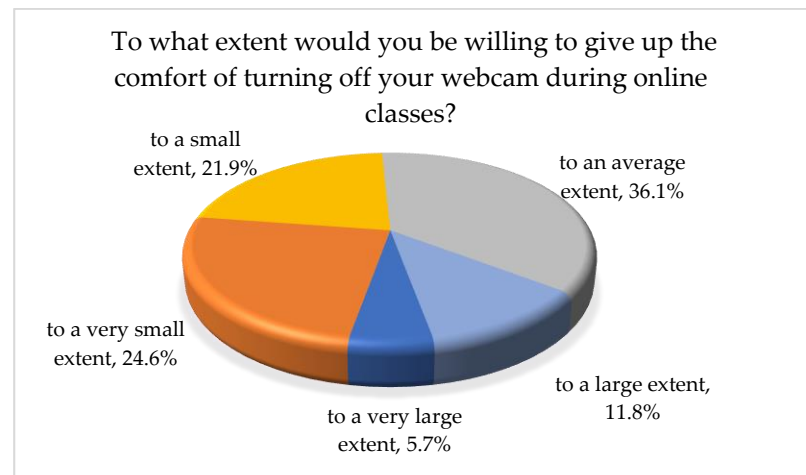

Figure 8. Students' willingness to give up the comfort of turning off their webcam during online classes.

The debate taking place in the pre-university environment, regarding the fact that students who sit in classes without turning on the webcam should be considered absent, does not seem to be successful in the university environment. When asked if they would agree that students who do not keep their webcam on during online classes should be absent, 71% of students chose the answer option, "to a very small extent". We can add the category of those who offered the answer, "to a small extent" (18.4%).

3. Discussions and Conclusions

Starting from the finding that students do not keep their webcam on during online classes, which is not mandatory at the university where the respondents were selected, but also from the dissatisfaction recorded in meetings with teachers about this behaviour, the study tried to capture aspects meant to explain these manifestations and to identify possible solutions to remedy them.

In our study, the anxiety/fear of being exposed/shame/shyness was considered, both for students themselves and their colleagues, to be the main reason that they do not keep their webcam turned on during educational activities in the online environment. To this reason (for the behaviour of students' colleagues as well as for explaining their own behaviour) was added the desire to ensure the privacy of the home/personal space, the fact that other people may appear in the background, or because students perform other activities in parallel with online classes. All of these resulted from the processing of the open-ended questions included in the questionnaire, aimed at capturing these

explanations. Studies that focused on using the webcam during educational activities have provided various explanations for these behaviours in the learning process [37]. At the same time, students consider that they are more attentive to what they are doing but that it is much more comfortable for them to keep the video camera closed. The need for intimacy, previously mentioned as a result obtained in our study, was also highlighted by Kozar's study [24]. Although in our research, the need for intimacy was considered to be an explanation of the behaviour of not keeping the webcam on during online classes, in some answers to questions about the extent to which the space in which students participate in classes provides them with personal privacy, housing, and the people they live with, only about a quarter of respondents stated they were insured to a small extent. Therefore, there was no availability on the part of the subjects to expose themselves to be visible during educational activities, even if the physical space ensured the intimacy of both them and their family members. For a more accurate recording of these explanations, it would be recommended to perform qualitative analyses on this topic.

Our research results were also surprising in the fact that just over half of the subjects stated that they do not agree to keep their webcam on during online classes. This was also confirmed by the results of another question in the questionnaire, which showed that they did not agree to give up the comfort of closing their webcams during educational activities carried out online.

The solutions to remedy this situation seem to come from the participants in the survey. One suggestion to combat anxiety/fear of being exposed/shame/shyness could be for online platforms to allow only the teacher to see all students and not for all students to see each other. It would also be possible for them to choose who to see and which of their colleagues to see during classes. In this way, the atmosphere of the classroom in classical education would be somewhat recreated.

The results of other studies have led to similar conclusions, namely that "students may feel uncomfortable because they cannot see or feel who is looking at them or because they can see themselves, which is unusual and not the case of face-to-face communication" [1]. Miller et al. (2017) found that "participants were more concerned about how others perceived them when they could see themselves" [41].

Another solution to remedy this problem was to encourage interaction, and in this way, through the atmosphere created, there would be an increase in the sharing of those who keep their webcam on during online classes. Through interaction, students would no longer have the opportunity to perform other activities in parallel with online classes, such as those resulting from our research (to complete projects for other subjects, eat/drink coffee/clean, or use a mobile phone for various applications/games etc.). It should be noted that there was a group of students who stated that, in parallel with online classes, they are at work and that it is impossible for them to keep their webcam on.

The research also identified situations in which, although there was no requirement to turn on webcams during online classes, students preferred to do so. The survey also highlighted that there are very few courses in which students choose to keep their webcam on during online classes (1–2 courses for more than 40% of respondents). The explanations acquired for this behaviour referred mainly to respect for teachers, the desire to facilitate the discussion, or better interaction with the teachers. These results can be starting points for a new analysis to identify the teachers' profile for whom students choose to keep their webcam on during online classes.

Other aspects that affect the online education process should not be neglected. We mentioned here that the respondents who follow only audio presentations made by teachers and colleagues during educational activities were 13.8%. There was a portion of 17.7% of students who used smartphones to attend classes most of the time. These results could also be attributed to material shortcomings among the population studied and identified in other studies but not in the target of our analysis. Regarding physical space, specifically the one used for participation in educational activities, most respondents stated that they have a specially arranged place in their house, used only by them, to participate in online

classes which ensures personal privacy of the home and the people with whom they live to a large extent.

The transition to online education has represented, for many educational institutions both in the country and abroad, a new stage in the educational process organisation. During the COVID-19 pandemic, this way of conducting education has become an essential alternative for reforming the entire traditional education system.

Our research revealed that it is necessary to model all parties' behaviours and streamline the educational process, especially that carried out in the university environment, through creative and constructive intervention leading to high-quality, sustainable education. Both teachers and students will have to change their behaviours and become aware that this unprecedented situation brings paradigm shifts and that the transition must be made coherently and adapted to local/regional/national specifics.

To achieve better communication with students during online classes, the main challenges seem to be addressed at teachers who will have to earn students' respect, conduct classes in an interactive way, and encourage the turning on and maintaining of webcams during educational activities.

Limitations of the Study

The study has provided information and statistics from the COVID-19 pandemic on the challenges that arise in online education. Still, only the perspectives of students at the Politehnica University of Timișoara were described. Our study's limitations are given by its small sample, by the respondents' particular profile coming from a single institution with a technical profile, and by its coverage area. Starting from the recorded results, the research team aims to perform a series of qualitative analyses leading to a better understanding of this phenomenon and expand the quantitative research and the database by conducting and distributing a questionnaire to students from technical profile universities across the country. Also, being a technical field, it would be necessary to perform an analysis from teachers' perspective to observe good practices and recommend ways to improve and optimize the educational process.

Conflicts of Interest: The authors declare no conflict of interest.

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