# Acceptance of Distance Learning during the COVID-19 Movement Restrictions: Does the Year of Studies Matter?

Panagiotis Photopoulos<sup>1</sup> <sup>1</sup> Christos Tsonos<sup>2</sup> <sup>1</sup>, Ilias Stavrakas <sup>1</sup> <sup>1</sup> and Dimos Triantis <sup>1</sup> <sup>1</sup> Department of Electrical and Electronic Engineering, University of West Attica, Athens, Greece <sup>2</sup> Department of Physics, University of Thessaly, Lamia, Greece

Keywords: COVID-19, Technology Acceptance Model, Student Satisfaction, Distance Education, Synchronous Learning,

ERT.

Abstract: This study presents the attitudes and perceptions of a sample of undergraduate students on remote teaching

after face-to-face teaching was discontinued due to COVID-19 measures. The students expressed a preference for face-to-face teaching and reported higher cognitive engagement, learning and understanding associated with this teaching modality. Important differences were recorded on students' replies depending on the year of studies. Overall, students who are at the first years of their studies appear to perceive the present situation

of remote teaching, as more dissatisfactory compared to the more senior students.

# 1 INTRODUCTION

In spring 2020 governments worldwide, ordered or suggested movement restrictions and physical distancing (WHO 2020) to prevent transmission of COVID-19. On the 10th of March 2020 Greek authorities announced the closure of schools and universities across the country (EODY, 2020). Distance teaching was something new to most of the university teachers. Work load increased dramatically in order to transfer materials and methods from faceto-face to distance teaching (Aristovnik et al. 2020). A series of webinars on the educational dimensions of the COVID-19 crisis were organized at the University level and provided a venue for sharing practices, methods and ideas. In May 2020, the University of West Attica bought laptops which were distributed to the academic and administrative staff. Although academic teachers were caught off-guard, they responded fast to the emergency situation and a few weeks after the COVID-19 outbreak, more than 95% of the undergraduate courses were delivered remotely (UNIWA, 2020). Remote teaching during the period of COVID-19 crisis is different from online teaching and Hodges et al. (2020) have

successfully named it Emergency Remote Teaching (ERT).

After the first outbreak of the pandemic, the governments brought to the attention of the public the need to prevent virus transmission but also the question of economic recovery (WHO, 26 October 2020). Within this framework in September 2020 Greek Universities, continued remote delivery of the courses. There is an urgent need for establishing guidelines and procedures to ensure that quality is maintained and students receive the proper support during this challenging period. Next to centralized directions for monitoring quality in a period of crisis, initiatives at all levels are also needed (Leonard and Howitt 2009). In this respect a short survey was administered to students of all the years of studies of the Department of Electrical and Electronic Engineering, to collect information on how they experience distance teaching. After the COVID-19 lockdown, each course was delivered remotely and synchronously, by the same instructor who had been teaching it face-to-face following the same timetable as before the health crisis.

As Sheila Jasanoff (2020) points out "We've modelled the progression of the disease, but not the

<sup>&</sup>lt;sup>a</sup> https://orcid.org/0000-0001-7944-666X

b https://orcid.org/0000-0001-8372-7499

co https://orcid.org/0000-0001-8484-8751

do https://orcid.org/0000-0003-4219-8687

social consequences of the preventative measures that we're taking". Remote delivery of the courses during the COVID-19 crisis period, gives an impression of normal operation: The tutors are involved in remote teaching, the students appear to follow the lectures and at the end of the semester they are assessed by some type of distance examination. This is what happens at the surface of the university life. There is evidence that a lot more is happening at a deeper level. For example, a publication on the rate of clinical depression in a population of university students in Greece, during the period of the lockdown found increased frequency of major and severe depression as well as increased number of suicidal thoughts (Patsali et.al. 2020). It appears that we know very little on how our students experience the new learning reality and therefore we don't know how we can help them improve their learning. The present publication is based on data collected from a sample of students of the Department of Electrical and Electronic Engineering, University of West Attica. It attempts to capture the perceptions of the students on the new educational situation and more specifically how they compare distance to face-to-face teaching.

## 2 PREVIOUS RESEARCH

Learning is not merely the acquisition of information. The physical distance between the student and the instructor (Wilde & Hsu, 2019) and students themselves, has implications on student satisfaction (Parahoo et al. 2016, Landrum et al. 2020) and learning outcomes (Bower, 2019; Gonzalez et al., 2020). There are soft issues which are of critical importance. These include motivation, feeling of social support and engagement. If learning is a social process (Chi at al. 2008), it will be affected by social distancing. Unfortunately, there is little information regarding how students experience distant teaching and more importantly there is no guidance on issues related to quality teaching during this period.

Various publications have reported their findings on the acceptance of ERT by university students and their perspectives concerning the factors influencing learning (Ali, 2020; Aguilera-Hermida, 2020; Al-Balas, 2020; Dinh & Nguyen, 2020). One can identify two main research approaches: one stemming from satisfaction studies and another based on Technology Acceptance Models (TAM). Along the first line of research Amir et al. (2020) administered an online questionnaire to 301 undergraduate students to evaluate their perspective and degree of satisfaction from distance learning compared to classroom

learning. A percentage equal to 75% agreed on the importance of classroom learning and group discussion, with the first-year students expressing a higher preference towards remote teaching compared to senior students. Al-Balas et al. (2020) reported that a percentage equal to 26,8% expressed an overall satisfaction with distance learning, while this number was significantly higher among students with previous experience in distance learning. Dinh & Nguyen (2020) surveyed 186 undergraduate-level social work students in a national university in Vietnam and reported lower levels of satisfaction with online, compared to face-to-face learning on all criteria. Essilfie et al. (2020) reported mixed results regarding satisfaction with e-learning. Most of the participants of their study felt that e-learning should play a supplemental role in standard education.

Along the second line of research, Technology Acceptance Model has been extensively used to evaluate technology acceptance in education, although TAM originates from management studies. Aguilera-Hermida (2020) found in her study that motivation, self-efficacy, and cognitive engagement decreased after the transition from face-to-face to remote teaching. Rizun and Strzelecki (2020) reported that the best predictor of students' acceptance of ERT is enjoyment but they also detected low levels of acceptance of ERT and medium to low feelings on the effectiveness of ERT in terms of learning.

# 2.1 Students' Attitudes towards ERT

TAM provides a rich inventory of theoretical considerations on attitudes towards a specific technology. According to the psychological approach, attitude towards a behaviour, in this case the acceptance of ERT, indicates the individual's positive or negative evaluation of performing this behaviour (Ajzen and Fishbein, 1980). In this general framework the behaviour under discussion is realised whenever the evaluation of its consequences is positive. Davis (1996) considered that attitudes are determined by beliefs of perceived ease and perceived usefulness. Davis' criteria of evaluation are clear: "people act according to their beliefs about performance" (Davis, 1989 p. 335). Therefore, if performance is the criterion of evaluation then Davis' consideration results directly from the psychological approach. Consequently, if an individual evaluates a certain behaviour under the criterion of performance, as useful then this person will have a positive attitude towards this behaviour (Ajzen, 2020). Venkatesh et al., (2003) did not consider attitude as a factor

affecting intention to use a technology. Some findings indicate that attitudes towards the adoption of an educational technology impact the intention to use (GarciaBotero, 2008), while others report that such a relation does not exist (ref. 35 in Rizun & Strzelecki 2020). The effectiveness of the transition from face-to-face to remote teaching is mediated by the degree to which the users assume effectiveness criteria, accept remote teaching and also consider that it will be valuable for their learning (Tarhini et al., 2017; Aguilera-Hermida 2020; Bower 2019). ERT affects social relationships as well. Students do not meet their colleagues and teachers and this may influence their attitudes towards ERT and motivation (Knowles & Kerkman, 2007).

On the basis of the above considerations the students were asked to express their views on the following items:

**Preference:** Ranging from "I strongly prefer distance teaching" to "I strongly prefer face-to-face teaching".

Modality Fit to Lifestyle: Ranging from "Distance teaching perfectly fits my lifestyle" (1) to "face to face teaching perfectly fits my lifestyle".

**Pleasant Solution:** Ranging from "Distant teaching is a pleasant solution" to "Distant teaching is an unpleasant solution".

**Desirability:** Ranging from "In the current situation, distance teaching is a very pleasant solution" to "In the current situation, distance teaching is a very unpleasant solution".

#### 2.2 Communication with Teacher

Studies have shown that student satisfaction is significantly lower with online as compared to faceto-face teaching (Carr 2000; Rivera and Rice 2002; Weber and Lennon 2007). The experience of the South African universities from "moving online" in periods of student protests is illuminating. As Laura Czerniewicz (2020) points out even when all classes were cancelled, people preferred working together meeting at coffee shops or in one person's home. Measures of social distancing during COVID-19 crisis left no room for such initiatives. One year after the pandemic broke out students are still struggling in a state of non-voluntary remote teaching, with social relationships disrupted and rather limited support. The students were asked to evaluate how satisfactory was the communication with the teacher for the two modalities.

## 2.3 Cognitive Engagement

It is important to record the extent to which students consider that ERT facilitates engagement and concentration, as compared to face-to-face teaching. Learning, engagement and concentration are measurement constructs of Cognitive Engagement in Kemp's taxonomy (Kemp, 2019). Cognitive engagement is defined as the extent to which students are willing and able to take control of the learning task (Rotgans, Schmidt, 2011). Cognitive engagement includes cognitive absorption, flow concentration. Cognitive absorption refers to a state of deep involvement, flow is the state in which students are so involved in an activity that nothing else matters to them and concentration refers to the degree to which students maintain exclusively focused on an activity (Kemp, 2019)

Concentration, engagement, and active participation during classes are meaningful and important aspects of the learning process. Although these factors affect students' performance, we have excluded performance related questions from the questionnaire for two reasons: First, students enrolled in 2020 do not have an experience of university exams yet and second, there is no conclusive evidence on the relation between ERT and students' performance (Aguilera-Hermida, 2020; Gonzales, 2020).

Therefore, this research attempts to record students' perceptions on aspects of learning which fall under the broad category of student engagement, collecting information on the following issues:

Level of engagement with learning during ERT as compared to face-to-face teaching.

Concentration during ERT as compared to face-to-face teaching.

Active participation during ERT as compared to face-to-face teaching.

Level of learning-understanding during ERT as compared to face-to-face teaching.

#### 2.4 Convenience

Online teaching is described by the students as a preferable option for reasons related to convenience, e.g. stay at home, not drive to the campus etc. (AlHamad, A., Qawasmi, K., & AlHamad, A., 2014; Cartwright & Fabian 2017). Other researchers have reported that students choose online classes because of their flexibility (Fish, L., & Snodgrass, C. 2015). It appears that convenience and flexibility are the most attractive characteristics of online classes. Flexibility in delivery is not a case for courses delivered

synchronously. Therefore, the students were asked to rate the degree to which they found important not having to drive to the campus.

## 2.5 Research Questions

This is an exploratory study where the following questions were investigated rather than hypotheses assumed or tested.

- 1. Do students prefer face-to-face or remote teaching?
- 2. How the students compare the two modalities in terms of learning and understanding, active participation during classes, engagement, concentration and communication with the teacher?
- 3. How the answers to the above questions vary depending on the year of enrolment?

#### 3 METHOD

Technology acceptance studies often ask respondents to provide absolute judgements on the questions subsumed under the various constructs. The participants rate a certain behaviour, preference or attitude on a Likert scale, for example "I dislike the idea of distance learning" or "I believe it is a good idea to use distance learning for my study process". Asking from a student to make an absolute evaluation on how much s/he learns during face-to-face or remote lectures is rather difficult or even confusing. People are not accustomed to making absolute judgments in daily life, since most judgments are inherently comparative (Nunnally 1976, p. 40).

Making absolute judgements for face-to-face or distance teaching is not an easy task. Comparative evaluations are much easier to perform. TAM evaluates the acceptance of a single technology and is not designed to compare the attitudes and perceptions towards two alternatives. Researchers do use TAM in a comparative way by addressing pairs of questions like "Attitude: Prefer Face-to-Face Learning" and "Attitude – Prefer Online Learning" (A-Okaily et al. 2020; Aguilera-Hermida 2020, Rizun and Strzelecki, 2020)

One method, which takes advantage of our inherent familiarity with making comparisons is the method of paired comparisons. In its simplest form "The Method of Paired Comparisons" (David 1969) asks the respondent to choose one out of two "objects", been treatment, stimulus etc. The respondent is allowed to express her preference in some scale. Originally, paired comparisons were

introduced in marketing research to study cases when the objects to be compared could be judged only subjectively, i.e. in case where it was either impossible or impractical to make other measurements in order to decide which of the two objects is preferable. In pairwise comparison items, responders are asked to compare two products or situations, in this case ERT to face-to-face teaching. The participants are asked to compare the features of the two different modalities. Pairwise questions capture the differences in respondent's attitudes concerning the two modalities but they do not measure absolute levels of preference e.g. I prefer i to j. It is considered that pairwise preference questions allow a fair comparison between the answers of the different respondents (Yannakakis and Hallam,

The data collected in the present study asked the students to compare aspects of the two modalities by choosing between alternatives. For example, regarding the preference towards one of the two modalities 3 alternatives were given: "I prefer face-to-face teaching", "I prefer distance teaching" and "Any of the two". In another example the students were asked to express their agreement or disagreement with the proposition: "With distance teaching I understand better" with the answers ranging from "I disagree" to "I agree".

The data were collected by means of an anonymous questionnaire administered to the students via the Open eClass platform, which is an Integrated Course Management System offered by the Greek University Network (GUNET) to support asynchronous e-learning services. The respondents were full time students of the Department of Electrical and Electronic Engineering, University of West Attica.

The questionnaire was administered to the students at the beginning of the semester from September to October 2020. The questionnaire was loaded on the web pages of two first year courses and one second year course. The students were encouraged to fill out the questionnaire but participation was voluntary. A total number of 336 students replied to the anonymous questionnaire. A 25-item questionnaire was administered to gauge the perceptions, attitudes and experiences of the students from ERT as compared to face-to-face teaching. The questionnaire included one open-ended question, the findings of which are not discussed here. Demographic data included gender, age, and year of enrolment. This study presents only a part of the data collected. Table I shows the percentages of the respondents in the total sample, for the various years

of enrolment. The responses of the students enrolled in 2016 or earlier have been grouped together (shown as "2016" in Table I).

The gap between students' prior expectations and the realities of university life, can cause anxiety (Lowe & Cook, 2003), poor academic performance and increased drop-out rates (Hassel & Ridout, 2017) if not managed successfully.

Table 1: Respondents per year of enrolment.

Year	2016	2017	2018	2019	2020
(%)	19	11	10	21	39

First year students experienced distance teaching during the last year of their Lyceum studies, therefore they do have expectations and presumably they are more frustrated compared to the rest of the students and their voice must be heard and taken seriously into account (Teräs et al. 2020). The students enrolled in 2020, i.e. the 1st year students, were also asked to fill out the questionnaire considering their past experience on face-to-face and distance teaching.

## 4 RESULTS AND DISCUSSION

Preference towards ERT and face-to-face teaching: Overall, the participants showed a strong preference towards in-class teaching. A percentage equal to 31% of the respondents expressed a preference towards distance teaching, while 60% of them preferred faceto-face. The rest of the students expressed no preference for a specific modality. An interesting variation of the preference with respect to the year of enrolment was also recorded: For the students who enrolled in 2020 the percentage who preferred faceto-face teaching was 85% and it decreased to 59% of those enrolled in 2019, while for the students who enrolled in 2016 or earlier the preference was opposite with 61% of them preferring distance teaching and another 30% expressing a preference towards face-to-face teaching. Although further research is needed to validate these result, the present data indicate that year of enrolment is a factor influencing preference towards the two modalities.

Not having to go to the campus: The students liked the fact that with distance teaching they do not have to go to the campus. Overall 77% of the participants expressed positive feelings for not having to go to the campus. This percentage was higher than 70% independently of the year of enrolment.

Active participation during lectures: This question asked the respondents, to evaluate which of the two modalities facilitates their participation (ask questions, express ideas) during lectures. Overall, 44% of the respondents replied that during face-toface lectures their participation is easier. It must be noticed that another 34% found that asking questions or expressing own ideas is not influenced by the modality of teaching. Figure I shows the variation of the answers versus the year of enrolment. It is seen that  $\sim 1/3$  of students enrolled in 2016, 2017 and 2018 found that during face-to-face lectures they express more easily their ideas, another third considered the opposite and another third found no difference between the two modalities. It is also seen that the preferences diverge only for the students enrolled in years 2019 and 2020, who reported that during faceto-face lectures they express their ideas and ask questions more easily.

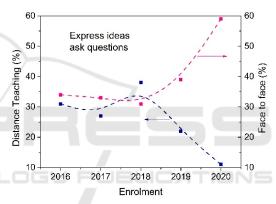


Figure 1: Blue symbols: The percentage of the students for each year of enrolment, who consider that they express their ideas more easily during distance lectures. Pink symbols: The percentage of the students for each year of enrolment, who consider that they express their ideas more easily during face-to-face lectures. The dash lines are guides to the eye.

Concentration: The students were asked to rate for which of the two modalities they remain concentrated to teaching for longer.

Overall, 20% of the participants replied that they remain concentrated for longer during distance teaching, while 54% replied that face-to-face teaching makes them stay concentrated for longer. Figure 2 shows how these percentages vary for each year of enrolment. For the students enrolled in 2016 or earlier a percentage equal to 38% replied that they stay concentrated for longer during distance teaching and another 23% replied that they remain more time concentrated during face-to-face classes. The percentages are reversed for the students enrolled in 2017 or later.

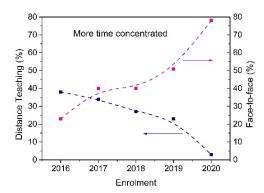


Figure 2: Blue symbols: The percentage of the students who replied that they remain concentrated for longer during distance lectures for the various years of enrolment. Pink symbols: The percentage of the students who replied that they remain concentrated for longer during face-to-face lectures for the various years of enrolment. The dash lines are guides to the eye.

Understand: The students were asked to reply for which one of the two modality they understand the better. Overall 16% of the respondents considered that they understand better during distance teaching, while 55% replied that they understand better during face-to-face lectures. Figure 3 shows the variation of these percentages versus the year of enrolment. It is seen that, independently of the year of enrolment, the students consider that they understand better during face-to-face lectures. It is also seen that for the students enrolled in years 2019 and 2020 the teaching modality is perceived to play a more prominent role in understanding during lectures.

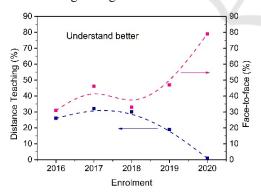


Figure 3: Blue symbols: The percentage of the students who replied that they understand better during distance lectures vs. the year of enrolment. Pink symbols: The percentage of the students who consider that they understand better during face-to-face lectures vs. the year of enrolment. The dash lines are guides to the eye.

Engagement: The students were asked to reply which modality helps them be more engaged in learning activities. Cognitive absorption describes the depth of involvement during learning. 15% of the students replied that during distance teaching they are more engaged to learning and another 53% replied that their engagement in learning is higher during face-to-face lectures. Figure 4 shows that the students enrolled more recently perceive their engagement in learning, to be higher in a face-to-face learning environment.

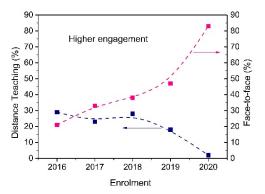


Figure 4: Blue symbols: The percentage of the students who reported higher engagement during distance lectures vs. the year of enrolment. Pink symbols: The percentage of the students who reported higher engagement during face-to-face lectures vs. the year of enrolment. The dash lines are guides to the eye.

Communication with teachers: This item asks the students to identify the modality for which the communication with the teacher is more effective. Overall, 51% of the respondents considered that communication with the teacher is more effective during face-to-face classes, while 17% of them considered as more effective the communication during distance teaching.

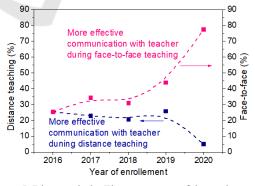


Figure 5: Blue symbols: The percentage of the students who consider that communication with teachers is more effective during distance lectures vs. the year of enrolment. Pink symbols: The percentage of the students who consider that communication with teachers is more effective during face-to-face lectures vs. the year of enrolment. The dash lines are guides to the eye.

Figure 5 shows how the teaching modality affects the perceived effectiveness of the communication with the teacher versus the year of enrolment. For the students enrolled in 2016 or earlier the communication with the teachers is perceived as equally effective for both face-to-face and remote teaching. The students enrolled in 2017 or afterwards found that their communication with the teacher is more effective during face-to-face classes.

Life-style: The students were asked to rate which one of the two modalities fits better the way they want to live. The students enrolled in 2016 or earlier consider that distance teaching fits better their lifestyle, while the students enrolled in 2019 and 2020 consider that face-to-face teaching better fits the way they want to live.

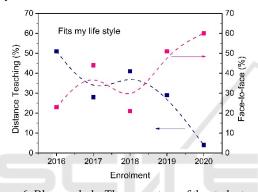


Figure 6: Blue symbols: The percentage of the students who consider that distance teaching fits the way they want to live vs. the year of enrolment. Pink symbols: The percentage of the students who consider that face-to-face teaching fits the way they want to live vs. the year of enrolment. The dash lines are guides to the eye.

Pleasant/unpleasant solution: The students were asked to rate whether, in the present situation, they consider ERT as a pleasant or unpleasant solution. The findings are shown in figure 7.

The majority of the students enrolled in 2018 or earlier consider ERT as a pleasant solution under the present circumstances. For the students enrolled in 2019 the replies are rather equally balanced between the two options, while the students who enrolled in 2020 consider distance teaching as a rather unpleasant solution.

Overall, the participants preferred face-to-face lectures, they found easier to express their ideas or address questions during face-to-face lectures, they reported significantly longer concentration, better understanding and higher level of engagement. They also rated their communication with the teachers as more effective. Nonetheless, they enjoyed the fact that during ERT they did not have to move to the campus. Our findings indicate that the year of studies,

approximated by the year of enrolment, influences students' preference, attitudes and perceptions. The students of the first two years of studies expressed significantly higher percentages in all items in favour of face-to-face teaching.

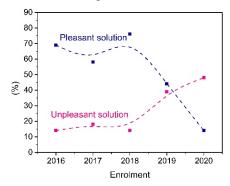


Figure 7: Blue symbols: The percentage of the students who consider distance teaching as a pleasant solution vs. the year of enrolment. Pink symbols: The percentage of the students who consider distance teaching as an unpleasant solution vs. the year of enrolment. The dash lines are guides to the eye.

One could explain this difference by appealing to the level at which the students of the first years of studies have obtained mastery in self-managed learning. Although cognitive engagement is influenced by the personal characteristics of the individual, research in face-to-face teaching has shown that different types of activities are characterised by different patterns of cognitive engagement. Student-student interaction considered as more important in promoting cognitive engagement of higher level and wider scope compared to student-teacher interaction. Cognitive engagement is also influenced by the tasks given to the students during teaching such as working in groups, answering questions or solving problems (Helme and Clarke, 2001; Rotgans, Schmidt, 2011). Participation in extra-curriculum activities, and engagement in discussions during classes (Appleton et al., 2006) are also considered to be manifestations of the level of student engagement. The learning environment during ERT is different compared to face-to-face teaching therefore it is probable that students at the first years of their studies have not developed yet the capabilities needed for distance teaching to be effective. Therefore, these students perceive that ERT makes participation, learning, concentration and engagement during classes more difficult and this in turn affects their level of cognitive engagement and expected performance gains (Venkatesh et al., 2003; Davis et al. 1989). Although this argument may be sound, there is no evidence to

show that senior students have acquired, as part of their education these extra abilities, given that they have no prior experience of distance teaching. Indeed, research has shown (Al-Balas et al. 2020) that preference for distance teaching is significantly higher for students having some previous experience. Other studies conducted during the COVID-19 lockdown period have shown that the first-year students expressed a higher preference towards remote teaching compared to more senior students (Amir 2020).

Table II shows that 56% of the students who prefer face-to-face teaching replied that they express their ideas and ask questions more easily during inclass lectures. On the contrary, only 33% of the students who expressed a preference for distance teaching replied that they express more easily their ideas and ask questions when teaching is remote. "Expressing ideas and asking questions more easily" can be considered as a factor explaining the choice of those students who prefer face-to-face teaching. The greatest percentage of the students (37%) who prefer distance teaching replied that they express their ideas and ask questions with equal ease ("The same" in Table II) for the two teaching modalities, similar to the students who expressed no preference for a particular modality (56%)

Table 2: Express ideas, ask questions more easily.

Preference	In class (%)	Remotely (%)	The same (%)
f-2-f	56	10	26
Dist. Teach	22	33	37
No-Pref.	7	33	56

Table III shows that 73% of the students who prefer face-to-face teaching replied that they remain less time concentrated during lectures when teaching is delivered remotely. A 44% of the students who prefer distance teaching replied that, with this teaching modality, they remain more time concentrated.

Table 3: Time the student remains concentrated during distance teaching compared to face-to-face.

Preference	Less (%)	Equal (%)	More (%)
f-2-f	73	17	4
Dist. Teach	15	37	44
No-Pref.	22	44	30

As it is seen in Table IV 42% of the students who prefer distance teaching replied that they understand better when teaching is delivered remotely, while a percentage equal to 47% kept a middle position

(Neither agree nor disagree). On the contrary, 81% of the students with a preference towards face-to-face teaching, disagreed with the proposition that understanding is better during distance teaching. Therefore "better understanding" does not explain the preference towards distance teaching.

Table 4: Understand better during distance teaching.

Preference	Agree	NAND	Disagree
	(%)	(%)	(%)
f-2-f	0	19	81
Dist. Teach	42	47	11
No-Pref.	22	37	41

Table V shows that the students who prefer face-to-face teaching consider, at a percentage equal to 76%, that engagement to leaning is worse during distance teaching. On the contrary, the majority (51%) of the students who prefer distance teaching (and those who expressed no-preference for a particular modality) reported equal levels of engagement for the two teaching modalities.

Table 5: Compared to f-2-f, engagement in learning during distance teaching is.

Preference	Worse	The same	Better
	(%)	(%)	(%)
f-2-f	76	16	3
Dist. Teach	12	51	34
No-Pref.	19	51	22

66% of the students who prefer face-to-face teaching consider that communication with the teacher is better during in-class teaching, while another 19% reported that communication with the teacher is equally effective for the two modalities (Table VI). A relatively small percentage (27%) of the students who expressed a preference towards distance teaching, consider that communication with the teacher is more effective with this modality.

Table 6: Communication with the teacher is more effective.

Preference	In class	Remotely	The same
	(%)	(%)	for both (%)
f-2-f	66	7	19
Dist. Teach	18	27	46
No-Pref.	19	26	44

Accommodating the needs of distance students for communication with the teacher is a rather complicated issue. In a recent publication Landrum et al. (2020) found that the students who participated in their focus groups wanted the "teachers to be available, even 'on demand', to assist, provide guidance and feedback, but only when and how the

students have made space for it in their own world" and "if a teacher texts their class, some students may find this to be intrusive while others find it helpful; whether this is satisfying or not depends on what the student wants."

Both Technology Acceptance Models and models of student satisfaction assume that the student is interested in making gains in terms of learning or performance only. First year students may value their studies as equally important to the way they want to live. What if they prefer face-to-face teaching not only for its effectiveness in terms of learning but also because they like the theatricality of the classroom? Meeting people and exchanging ideas inside and outside the classroom may be of high importance for the students, next to becoming experts in the subject of their studies. According to our findings, students enrolled in 2016 or earlier consider that distance teaching fits the way they want to live. This is in accordance with the student satisfaction surveys where convenience and family obligations are included in the reasons for pursuing online education (Landrum et al. 2020). Students who enrolled in 2019 and 2020 consider that face-to-face teaching fits their own way of living. As shown in Table VII, students with a preference towards face-to-face teaching reported that this learning modality also fits the way the want to live (67%). Similarly, 61% of the students who prefer distance teaching reported that this modality fits their life-style as well.

Table 7: Fits my life style.

Preference	In class	Remotely	Any of the
	(%)	(%)	two (%)
f-2-f	67	2	25
Dist. Teach	7	61	26
No-Pref.	19	26	52

Distance teaching during the COVID-19 health crisis, has detrimental effects on students' socialization, including interaction with their teachers and the absence of direct communication with their colleagues (Martínez-Caro & Campuzano-Bolarín, 2011). University life is meant to be a new experience for the first-year students in particular. They expect to live a more independent life, away from their families, meet new people, engage in discussions, come in contact with new ideas and learn in an entirely new learning environment (Govindarajan & Srivastava, 2020). This year, the students do not enjoy the pleasant moments of university life. Our findings show that the modality-lifestyle fit influences the preference of both the groups of the students.

The universities around the world have focused their efforts to continue education without interruption, but there is little information on the feelings of the individuals on the receiving end of ERT. In this study, 40% of the respondents consider ERT a pleasant solution, 34% unpleasant and another 23% chose a middle position. As shown in Table VIII, 52% of the students who prefer face-to-face teaching consider ERT an unpleasant solution, while this percentage drops dramatically (1%) for the respondents who prefer distance teaching.

Table 8: ERT as a solution is.

Preference	Pleasant	Unpleasant	Indifferent
	(%)	(%)	(%)
f-2-f	12	52	29
Dist. Teach	80	1	11
No-Pref.	59	4	37

Our findings show that the preference for face-to-face teaching is consistent with the answers given to the rest of the questions. These students replied, that during face-to-face lectures they express their ideas and ask questions more easily (56%), they communicate with the teacher more effectively (66%), while in remote classes they remain less time concentrated (73%), they do not understand better (81%) and there are less engaged to learning (76%). A percentage equal to 52% considered ERT an unpleasant situation and the majority of them (67%) replied that face-to-face teaching fits the way they want to live.

The situation is different for the students who expressed a preference towards distance teaching. Only 1/3 of them replied that they express their ideas and ask questions more easily, 44% that they remain more time concentrated and a percentage equal to 42% agreed that they understand better during distance teaching. Only 27% of these respondents consider that communication with the teacher is more effective, 34% reported to be more engaged with learning and 42% agreed that they understand better during remote classes. Quiet importantly a percentage equal to 61% replied that distance teaching fits the way they want to live.

68% of the students who prefer face-to-face teaching considered as "important" or "very important" the fact that during ERT they do not have to drive to the campus. This percentage was even higher (93%) for the respondents who expressed a preference towards distance teaching. Therefore, "not driving to the campus" is not a factor differentiating the two groups of students and it cannot be considered

as a factor explaining the preference towards distance teaching.

The attitudes of the students who prefer face-to-face teaching appear to explain their actual preference. This group of students replied that they participate more easily to the classes and learn more effectively, when these are face-to-face. The attitudes of the students who expressed a preference towards distance teaching do not appear to have such an explanatory force. A factor which adds significantly to their preference is the modality-lifestyle fit. Perceived easiness of distance courses as opposed to on-campus equivalents (Cartwright & Fabian 2017) or the novelty of ERT (Martínez-Caro & Campuzano-Bolarín 2011) can be other factors explaining their preference.

The modality-lifestyle fit is an interesting factor captured by our research which explains the preference towards the two teaching modalities. This factor requires further investigation since it is not explicitly included in the TAM, which has been extensively used to study how the students perceive ERT.

## 5 CONCLUSIONS

This study concludes that the participants prefer faceto-face compared to distance teaching. They consider that learning and understanding, concentration, engagement with learning, active participation and communication with teachers are more effective in the case of face-to-face modality. Important variations in the answers were also recorded depending on the year of studies. Students enrolled in 2019 and 2020 express a stronger preference towards face-to-face teaching compared to more senior students. Presumably students pursuing the first years of their studies are more eager to experience university life and consider that face-to-face teaching is more suitable to the way they want to live. It was further found that a factor which loads considerably to the actual preference of the students is the modality-lifestyle fit. While technology acceptance models assume that gains in terms of efficiency alone, drive the acceptance of a certain technology, the participants' replies show that socialisation, interaction with fellow students, direct interaction with the teachers and other factors which are related to the enjoyment of the university life play an important role as well. Quiet importantly the 1st year students consider ERT as an unpleasant solution within the current situation. This implies that the faculty needs to provide the proper support to these

students. Finally, if the dependence of students' attitudes on the year of studies is valid, sampling must be done carefully in order to obtain a fair overall picture of students' views at the level of the faculty.

#### **ACKNOWLEDGEMENTS**

The authors are grateful to the anonymous referees for their comments.

## **REFERENCES**

- Aguilera-Hermida P. A., (2020) "College Students' Use and Acceptance of Emergency Online Learning Due to COVID-19", International Journal of Educational Research https://doi.org/10.1016/j.ijedro.2020.100011
- Ajzen, I. (2020) "The theory of planned behavior: Frequently asked questions", *Hum Behav & Emerg Tech.*, 2 pp. 314–324. https://doi.org/10.1002/hbe2.195
- Ajzen, I., & Fishbein, M., (1980) Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice Hall.
- Al-Balas, M., Al-Balas, H.I., Jaber, H.M. et al. (2020) "Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives", BMC Med Educ 20, pp. 341-347 https://doi.org/10.1186/s12909-020-02257-4
- AlHamad, A., Qawasmi, K., & AlHamad, A. (2014) "Key factors in determining students' satisfaction in online learning based on 'Web Programming' course within Zarqa University", International Journal of Global Business, 7(1), pp. 7–14
- Ali, W. (2020), "Online and Remote Learning in Higher Education Institutes: A Necessity in light of COVID-19 Pandemic", Higher Education, 10(3) DOI:10.5539/ hes.v10n3p16
- Al-Okaily M., Alqudah H., Matar A., Lutfi A., Taamneh A., (2020) "Dataset on the Acceptance of e-learning System among Universities Students' under the COVID-19 Pandemic Conditions", Data in Brief, 32 https://doi.org/10.1016/j.dib.2020.106176.
- Amir LR, Tanti I, Maharani DA, Wimardhani YS, Julia V, Sulijaya B, Puspitawati R. (2020) "Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia", BMC Med Educ. 20(1): pp. 392-399 doi: 10.1186/s12909-020-02312-0
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006), "Measuring cognitive and psychological engagement: Validation of the student engagement instrument", Journal of School Psychology, 44(5), 427–445 doi:10.1016/j.jsp.2006.04.002
- Aristovnik A., Keržic D., Dejan Ravšelj D., Nina Tomaževic N., and Umek L., (2020) "Impacts of the COVID-19 Pandemic on Life of Higher Education

- Students: A Global Perspective" Sustainability, 12, pp. 8438-8471 doi:10.3390/su12208438
- Bower, M. (2019), "Technology mediated learning theory", British Journal Education Technology, 50, pp. 1035-1048. doi:10.1111/bjet.12771
- Carr, S. (2000), "As distance education comes of age, the challenge is keeping the students", The Chronicle of Higher Education, 46(23), 39 41.
- Cartwright B. and Fabian S. (2017). Evaluating the Effectiveness of Three Different Course Delivery Methods in Online and Distance Education.In Proceedings of the 9th International Conference on Computer Supported Education Volume 1: CSEDU, ISBN 978-989-758-301-8, pages 268-275. DOI: 10.5220/0006270202680275
- Chi M., Roy M. & Hausmann R., (2008) "Observing tutorial dialogues collaboratively: Insights about human tutoring effectiveness from vicarious learning", Cognit. Sci. Multidisciplinary J.,32(2), pp. 301-341 https://doi.org/10.1080/03640210701863396
- Czerniewicz L., (2020) "What we learnt from "going online" during university shutdowns in South Africa", Phil on Ed Tech, available at: https://philonedtech.com/what-we-learnt-from-going-online-during-university-shutdowns-in-south-africa/
- David, H.A. (1969). The Method of Paired Comparisons. 1st ed. London: Griffin
- Davis F. D., (1989) "Perceived usefulness, perceived ease of use and user acceptance of information technology", MIS Quarterly 13(3), 319–340.
- Dinh L. P., & Nguyen T. T. (2020) "Pandemic, social distancing, and social work education: students' satisfaction with online education in Vietnam", Social Work Education, 39(8), pp. 1074-1083, DOI: 10.1080/02615479.2020.1823365
- EODY (2020), https://eody.gov.gr/en/current-state-of-covid-19-outbreak-in-greece-and-timeline-of-key-containment-events/
- Essilfie A. A, Hurley E. T, Strauss E J, Alaia M. J., (2020) "Resident, Fellow, and Attending Perception of E-Learning During the COVID-19 Pandemic and Implications on Future Orthopaedic Education", J Am Acad Orthop Surg. 28(19) pp. 860-e864. doi: 10.5435/JAAOS-D-20-00579. PMID: 32732495.
- Fish, L., & Snodgrass, C. (2015), "Business student perceptions of online versus face-to-face education: Student characteristics", Business Education Innovation Journal, 7(2), 83–96
- GarcíaBotero, G., Questier, F., Cincinnato, S., He, T., & Zhu, C. (2018), "Acceptance and usage of mobile assisted language learning by higher education students", Journal of Computing in Higher Education, 30(3), 426-451. doi:10.1007/s12528-018-9177-1
- Gonzalez, T., de la Rubia, M., Hincz, K., Lopez, M. C., Subirats, L., Fort, S., & Sacha, G. M. (2020). Influence of COVID-19 confinement in students' performance in higher education. https://doi.org/10.35542/osf.io/9zuac
- Govindarajan V., & Srivastava A., (2020), "A Post-Pandemic Strategy for U.S. Higher Education", Harvard Business Review Retrieved from

- https://hbr.org/2020/06/a-post-pandemic-strategy-for-u-s-higher-ed
- Hassel, S., & Ridout, N., (2018) "An Investigation of First-Year Students' and Lecturers' Expectations of University Education", Frontiers in psychology, 8, 2218. https://doi.org/10.3389/fpsyg.2017.02218
- Helme S. and Clarke D., (2001) "Identifying Cognitive Engagement in the Mathematics Classroom", Mathematics Education Research Journal 13(2), pp. 133-153, https://doi.org/10.1007/BF03217103
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020), "The difference between emergency remote teaching and online learning" EDUCAUSE Review. https://er. educause. edu/articles/2020/3/the-differencebetween-emergency-remote-teachingandonlinelearning.
- Jasanoff S. (2020) "Science Will Not Come on a White Horse With a Solution", The Nation, April 6th 2020, available at: https://www.thenation.com/article/ society/sheila-jasanoff-interview-coronavirus/
- Kemp, A., Palmer, E., and Strelan, P. (2019), "A taxonomy of factors affecting attitudes towards educational technologies for use with technology acceptance models", British Journal Education Technology, 50, 2394-2413. doi:10.1111/bjet.12833
- Knowles, E., & Kerkman, D., (2007) "An Investigation of Attitude and Motivation toward Online Learning", Student Motivation, 2, pp. 70–80 DOI: 10.46504/02200708kn
- Landrum B., Bannister J., Garza G., & Rhame S., (2020) "A class of one: Students' satisfaction with online learning", Journal of Education for Business, DOI: 10.1080/08832323.2020.1757592
- Leonard H. B., & Howitt M., (2010), "Organising Response to Extreme Emergencies: The Victorian Bushfires of 2009", The Australian Journal of Public Administration, 69(4), pp. 372–386 doi:10.1111/j.1467-8500.2010.00695.x
- Lowe H., Cook A. (2003), "Mind the gap: are students prepared for higher education?" J. Furth. High. Educ. 27, pp. 53–76. 10.1080/03098770305629
- Martínez-Caro E., & Campuzano-Bolarín F., (2011), "Factors affecting students' satisfaction in engineering disciplines: traditional vs. blended approaches", European Journal of Engineering Education 36(5) pp. 473–483 https://doi.org/10.1080/03043797.2011.6196 47
- Nunnally, J. C. (1976), *Psychometric theory*, New York: McGraw Hill
- Patsali ME, Mousa D-P V., Papadopoulou EVK, et al. (2020) "University students' changes in mental health status and determinants of behavior during the COVID-19 lockdown in Greece", Psychiatry Research, Published online, doi:10.1016/j.psychres.2020.113298
- Parahoo, S., Santally, M., Rajabalee, Y., & Harvey, H. (2016), "Designing a predictive model of student satisfaction in online learning" Journal of Marketing for Higher Education, 26(1), 1–19. doi:10.1080/08841241.2015.1083511
- Rivera, J & Rice, M. (2002). "A comparison of student

- outcomes and satisfaction between traditional and webbased course offerings", Online Journal of Distance Learning Administration, 5(3). State University of West Georgia, Distance Education Center.
- Rizun, M.; Strzelecki, A. (2020), "Students' Acceptance of the COVID-19 Impact on Shifting Higher Education to Distance Learning in Poland", Int. J. Environ. Res. Public Health 17, p. 6468.
- Rotgans J.I., and Schmidt H.G., (2011), "Cognitive engagement in the problem-based learning classroom", Adv in Health Sci Educ 16 pp. 465–479 DOI 10.1007/s10459-011-9272-9
- Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2017), "Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modelling of an extended technology acceptance model", Interactive Learning Environments, (25)3, 306-328, doi:10.1080/10494820.2015.1122635
- Teräs M., Suoranta J., Teräs H., Curcher M., (2020), "Post-Covid-19 Education and Education Technology 'Solutionism': a Seller's Market", Postdigital Science and Education, 2, pp. 863–878 https://doi.org/10.1007/s42438-020-00164-x
- UNIWA (2020), https://dialogoi.uniwa.gr/university/ exairetika-epitychimeni-i-sygchroni-ex-apostaseosekpaidevsi-sto-pada/
- Venkatesh V. and Davis F.D. (2000) "A theoretical extension of the technology acceptance model: four longitudinal field studies", Management Science 46(2), 186–204.
- Weber, J., & Lennon, R. (2007), "Multi-course comparison of traditional versus web-based course delivery systems", Journal of Educators Online, 4(2), 1-19
- Wilde, N., & Hsu, A. (2019) "The influence of general self-efficacy on the interpretation of vicarious experience information within online learning", International Journal of Educational Technology in Higher Education, 16(1), pp. 1-20
- WHO (2020), https://www.who.int/director-general/ speeches/detail/who-director-general-s-openingremarks-at-the-media-briefing-on-covid-19---26october-2020
- WHO (2020), https://www.who.int/news-room/q-a-detail/ q-a-coronaviruses.
- Yannakakis G. N., and Hallam, J., (2011) "Ranking vs. preference: A comparative study of self-reporting," in Proc. 4th Int. Conf. Affective Computing Intelligent Interaction, pp. 437–446