Economies of Scale Through E-Teaching in the Post-COVID Era – Students' Improvements Recommendations Using Mixed Methods Design

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Abstract

This study centers on a retrospective investigation of effective and pedagogic planning of academic digital courses taught during the COVID-19 crisis, from the students' perspective. We shall focus on the difference between the traditional, teaching-centered paradigm, and the modern learning-centered approach, while emphasizing the formulation of learning outcomes in online study expanses, in light of the learning experience imposed on teachers and students at the various academic institutions.

The study explored the learning outcomes from students' point of view, as well as the benefits and challenges embodied by formulating learning goals in the post-COVID era, according to the learning-centered paradigm, relating to the strengths and weaknesses of the Zoom teaching method from the students' perspective, predicated on 1,828 students from several institutions. We used a mixed methods design incorporating qualitative and quantitative analysis to develop the Online Teaching Recommendations (SOTR) model. We used Structural Equation Modeling (SEM) for goodness-of-fit.

The research findings indicate that the various types of e-learning challenge academic institutions to carry out renewed thinking about the main potential advantage of physical academic institutions where students and teachers meet, talk, and discuss directly and unmediated, compared to virtual bodies of knowledge and teaching that are evolving at present and that are allegedly threatening to render universities irrelevant.

Keywords: online teaching, education, covid-19, teaching improvement, students' achievement

1. Introduction

The The challenges of teaching and learning in academia in general and in the technological era in particular, all the more so during COVID-19, serve to pinpoint the differences between the teaching-centered approach and the approach based on e-learning. We shall begin by relating to the motivation for academic studies from the students' perspective, as well as the advantages of the physical learning expanse on campus for shaping their personal and professional future. Further on, we shall relate to planning courses in the learner-centered teaching method in the digital era (Cohen & Davidovitch, 2020).

1.1 What Is the Learning Space? On the Shifts That Have Occurred in the Perception of the Learning Space

The remote learning method is customarily defined as a study method where students and teachers are present in separate physical locations (Roffe, 2004). At present, the most common form of remote learning is e-learning, where computers and the internet are the main tools used in order to convey information (Allen & Seaman, 2011; Shelton & Saltsman, 2005). In the last two decades, a meaningful increase is evident in e-learning in many institutions, where the primary motive for growth is the significant development of technology that provides access to information; this technology has dramatically changed how societies and individuals communicate. For instance, there is a burgeoning of blended study programs, as many financial resources have been invested in developing technology suitable for e-learning and -teaching, and online tools have been successfully integrated within the conventional study methods (Redpath, 2012). Various technological developments supporting remote learning allow learning at any time and

anywhere, such that learners encounter less restrictions and can adapt the learning to their needs (Zaharah et al., 2020). One of the preferred and popular options for e-teaching is learning via video conferencing. An example of a technology that offers video conferencing services is the Zoom technology which enables active participation of both the lecturer and the students. This technology has currently become one of the most popular methods in academia (Zaharah et al., 2020).

1.2 The History of E-Teaching and Education

The history of remote education cannot be separated from the history of education in general; the first milestone in the history of remote education occurred after the industrial revolution in the 19th century, where the procedure was based mainly on sending students study material by post. Several universities in developed countries such as the US, UK, Canada, and others, began to allow studies for a degree using this method. Use of the remote study method provided many institutions with a significant income with no need to provide students with housing and other conditions (Sumner, 2000). However, over the years and with the development of technology and of new teaching means, this method, which included sending study material via the postal services, became outdated and insufficiently comprehensive. Hence, the second generation of remote learning did not make do with printed material and postal services rather included integration of broadcast media, recordings, and for certain degrees also use of computers (Nipper, 1989).

Technological progress included many new opportunities but the desire to cover a large amount of study material and the need to reach a large number of students came at the expense of the study experience and its quality (Sumner, 2000); and particularly the interaction between the lecturer and the students as well as among the students themselves (Nipper, 1989). In order to overcome these shortcomings, the second generation of remote learning provided several options that contributed to its development and growth: new communication technologies, gradually increasing sophistication in the use of printed material, improvement of support services for students learning at a distance, and establishment of the Open University in the UK in 1969. The Open University was a distinguishing mark of the second generation of remote learning and over the years had an impact on many institutions. More than any other event, its establishment was perceived as the beginning of a more prestigious era in the history of remote learning (Holmberg, 1986).

By the beginning of the 21st century, the information era was already in full swing. The main feature of this era with regard to the possibility of transferring information rapidly is the computer (Menzies, 1996). The use of rapid transfer of information is evident in almost all aspects of western life, including remote learning (Spencer, 1998). The experience of independent remote learning occurs in the new era mainly through use of the internet. Modular courses, exams at the learner's pace, CDs and various websites, have added a large amount of information for students but have been unable to provide the social interaction and interpersonal communication essential for learning. In addition, a platform that began to emerge in this era is video conferencing, which is capable of providing active communication (Sumner, 2000). The technologies we use today for remote learning are considered the next generations of remote learning (Davidovitch & Cohen, 2020).

Following the great popularity of online communication and social networks among the current student generation, it appears that the educational and teaching spheres too must necessarily proceed in that direction, but in practice this is not obvious to everyone (Redpath, 2012); many top faculty members in the world of higher education are inclined to underestimate e-learning and even display concern at integrating it in the academic institutions they head (McCarthy & Samors, 2009).

In early 2020, a change occurred in the common approach to remote learning; in this year a new virus called COVID-19, from the Corona family of viruses, began to spread. The virus first appeared in November 2019 in the city of Wuhan, China, and rapidly spread, reaching many countries around the world. The virus spreads quickly and attacks the respiratory system, with potentially fatal effects on humans (Zharah et al., 2020). This pandemic posed significant challenges for institutions of higher education around the world. One of the conspicuous challenges was manifested in the urgent and unanticipated need to transfer all courses, traditionally held at universities face-to-face, to e-learning (Rapanta et al., 2020).

1.3 Teaching-Centered E-Learning-Centered Paradigms in the Post-COVID Era

Even before COVID-19, the vision of the global village existed for some time via innovative and networked technologies that make it possible to convey information variably and rapidly and to execute many operations in the virtual expanse, such as receiving news updates in real time, reading newspapers from anywhere on earth, ordering various services without leaving one's home, playing online games with other users, contacting other users in virtual

forums and communities, and more (Barak & King, 2000). Academia, in its role as responsible for producing new knowledge in modern society, has also gone through myriad changes following the technological innovations and value changes in society. The innovation embodied by the personal computer (Kulik, Kulik, & Cohen, 1980), the development of the global information network (BrckaLorenz, Haeger, Nailos, & Rabourn, 2013), the transition to distance learning (Harpe, Phipps, & Alowayesh, 2012), and the sharp rise in the number of academic students are some of the elements underlying these changes. Despite the changes in the world of higher education, only few transformations have occurred in learning strategies and teaching methods in academia, although the environment surrounding the academic world has changed as a result of technology (Eckhaus & Davidovitch, 2019c). Yet, until the COVID-19 era most of the teaching methods remained as they were.

This raises questions concerning the value of the academic degree and the quality of learning in academic classrooms, when in most cases teaching continues to center on conveying knowledge (Stage & Muller, 1998). It seems to many instructors that they can transfer their knowledge to their students' minds in its complete form. This is not only impossible, but in the information era this is an anachronistic approach that renders the instructor irrelevant. Students often ask themselves why they must make the effort to come to class when all the material exists on the course website or can be freely accessed on the internet. These questions reflect the query of what added value can the instructor give students beyond conveying knowledge, in the physical or digital learning space. Is instructors' manner of teaching appropriate for the medium and to what degree? This with regard to the type of course (lecture, exercise, lab) and its pace.

These questions are more legitimate at present than ever before and they are a type of challenge to the traditional paradigm of teaching in academia, called "teaching-centered learning". This approach sees the course as one way of learning, where teaching is carried out via the curriculum (Barr & Tagg, 1995). In a typical course, teaching is structured and conveyed according to the number of lessons (lecture time per semester and credits). Its purpose is to cover the content of the course, and at its conclusion students must perform a final assignment that is used as a means of evaluation (Reynolds, 2000). In the traditional teaching method, the instructor decides independently and externally what is required of the student – he determines the features of the instructor, the curriculum, the manner of evaluation, and how the course is managed, in order to achieve the desired learning outcomes (Wagner & McCombs, 1995).

This paper examines learning outcomes from the students' perspective and the benefits and challenges embodied in formulating learning goals in the post-COVID era, according to the e-learning-centered paradigm. What is the added value that an instructor can give students in the physical or digital learning expanse? Is instructors' manner of teaching suitable for the medium, and to what degree? Do the possibilities embodied by technology, as regards the increase in the number of students in the course and viewing options for students, facilitate an "overload" and a large number of students in each course, as well as a more rapid pace of learning?

1.4 E-Learning-Centered Teaching

Learning-centered teaching is a new-old educational paradigm (Seel, 2003) deriving from late 19th century US, with the rise of the Progressive Education Movement. The basic principle of this approach is that knowledge cannot be transferred to learners in its complete form, rather they must be brought to discover or purchase the knowledge themselves (Rogoff, 1994). The research literature indicates that this approach indeed promotes better learning by students. For example, a study that examined the impact of learning-centered teaching compared to the teaching-centered approach, on the attitudes and knowledge of statistics students (Harpe et al., 2012) found that students who studied in the learning-centered approach showed more proficiency in the material and had more positive attitudes to the learning environment. These students had more opportunities to use their knowledge, and they had a stronger sense of control over their grades in the course. Nevertheless, despite the data favoring the learning-centered approach, most institutions of higher education continue to relate to transferring knowledge as the supreme value of teaching. Eberly, Newton and Wiggins (2001) analyzed 145 syllabi of 100 different undergraduate courses for a multidisciplinary degree.

1.5 Learning Outcomes in the Digital Era

In 1999 the Bologna Process was initiated, laying the foundations for inter-state collaboration and creating the European Higher Education Area (EHEA). The agreement stressed that mobility must become the identification mark of the European Higher Education Area (Van der Hijden, 2012). The purpose of the Bologna Process is to facilitate academic mobility and the creation of uniform standards in the systems of higher education, hence the process of accreditation. This means that a transition has been made to a method of accumulating uniform academic credit (the European credit transfer and accumulation system: ECTS), in which each student can accumulate credits

for a degree at any academic institution of his choice. The credits are transferred to his major school and are recognized as part of the degree awarded by the school. This accumulation system allows students to move between schools, experience learning in other places, and become familiar with varied learning environments (Yemini & Ben-Artzi, 2013).

The Bologna Process suggests several courses of action that will help achieve the goals set. Use of learning outcomes to describe courses and curricula has a central place in the process. For instance, in 2003 a decision was reached in Berlin that systems of higher education in Europe would be required to describe the qualifications in terms of **learning outcomes**. In this way this approach, based on learning outcomes, has become gradually more common throughout the world and in quality assessment processes at institutions of higher education, including in Israel. Notably, learning outcomes are declarations by the instructor/ group of instructors that specify what the learners will know or be capable of doing as a result of the learning activity. These outcomes are usually manifested as knowledge, skills, or attitudes, and they are declarations of what the student is expected to know, understand, and/or be capable of demonstrating by the end of the learning process (Streveler, Smith, & Pilotte, 2012).

1.6 Summarizing the Advantages of Teaching Based on Online Learning Outcomes

Learning outcomes help instructors: clearly define for students what is expected of them; plan the materials more efficiently such that they serve as a pattern; choose an appropriate teaching strategy; plan a curriculum by clarifying overlapping areas between courses; comprehensively and accurately defining what students will be able to achieve upon completing their studies.

Learning outcomes help students: learn more efficiently and cooperatively: students know where they are standing, they become partners in the learning process and are involved in its application, and in this way the curriculum becomes more accessible and friendly for them; help students choose courses; help external elements: information for academic elements, employers, and institutions of higher education regarding the essence of the course and students' achievements; contribute to students' mobility by facilitating recognition and assessment.

The uniqueness of the backwards design method of teaching is in beginning by identifying the learning goals of the course rather than with the study material and course contents. In order to identify the goals, the instructor must ask himself what the students should know and be able to do by the end of the course. Then, he must choose assessment methods and standards for measuring the quality of performance. According to the goals defined, the manner of instruction will be chosen. The instructor must choose the best manner of instruction for him as an instructor and for the relevant students, both regarding the material to be included in the course and regarding the teaching strategy, planning the schedule, and designing the syllabus. Expanding use of the backwards design approach to the variety of academic disciplines will allow students to benefit personally in a range of courses, not only in STEM courses. If the course design will continue to utilize a content-centered approach, many of the courses will probably become irrelevant, and students will continue to leave courses as they entered them, with no added skills or knowledge.

The greater the accessibility of knowledge, the more the instructors are required to bring added value to the learning. This is not a simple demand, and it compels instructors to think "outside the box" and to relinquish regular patterns of teaching. Planning a course in this method undoubtedly requires deep thinking, time, and effort, more than planning a course in the traditional method. It requires familiarity with the students, being ready for changes, and preparing for each lesson. In the backwards design approach, there is no room for mere spontaneity. An instructor cannot come to class without holding a type of self-examination about the goals and means he intends to use. At the same time, he must demonstrate openness and flexibility regarding the development of the lessons according to the evolving learning dialogue with the students. This requires a great deal of effort; however, this effort allows the instructor to face the students with a true and honest answer to questions such as "What will I do with this in real life?" or "Why should I come to class?".

Nonetheless, efforts by the instructors are not enough. In order for a deep and significant change to occur in academic teaching, it must be supported by policy makers. In the academic environment, where instructor output equals the number of scientific publications (=research outcomes), instructors have no incentive to develop the teaching dimension. The Council for Higher Education (CHE) as well recognizes the importance of incentives for generating teaching outputs. However, in the council's budgeting model, teaching outcomes refer to the number of Bachelor's and Master's degree graduates and to the degree level, calculated by an efficacy coefficient formula (Council for Higher Education, 2012). Despite the change in the CHE's budgeting model from its beginning until the new model was introduced in 2011 (ibid), it is doubtful whether this is capable of undermining the superiority of the research component and of motivating faculty to grasp efficient teaching as a type of outcome worthy of significant academic recognition and appreciation. For this purpose, there is need for a model that will also recognize the efforts

of academic faculty at learning-centered teaching and appreciate these efforts (Eckhaus & Davidovitch, 2019b) in a way that will urge instructors to allocate time and energy for advancing and upgrading their teaching in accordance with the development of these aspects in their work .

The current study relates to the coronavirus pandemic in 2020, which obligated Israel's various institutions of higher education, similar to those throughout the world, to instantaneously embrace e-teaching. This was a revolution that appeared with no prior preparation and put on the agenda the issue of the efficacy of e-teaching from the pedagogic aspect as well as its implications for the instructor's roles and for the act of teaching, and also for the quality of students' learning and the meaning of the study expanse (campus-home) in e-teaching and -learning processes. The challenge of teaching during COVID-19 illuminates the role of the instructor in the digital era, in the act of teaching, and particularly the role of the professional elements in charge of teaching and learning at academic institutions, primarily with regard to pedagogic aspects. All this from the perspective of the students, who relate to the topic from the angle of learning-centered teaching and address the weaknesses and strengths of the new method.

The entire system of higher education, and particularly the digital one, is part of "academic capitalism" as manifested in the massification of academic degrees – degrees for the masses. Academic capitalism centers the institutions' attention on the dimension of profit and loss (Davidovitch, Soen, & Sinuany-Stern, 2010). Therefore, we shall explore how students perceive the possibilities embodied by technology with regard to the increase in the number of learners in each course, the students' viewing options, the many students in each course, and the rapid pace of learning (Almog & Almog, 2020).

2. Method

2.1 Sample

The number of fully completed questionnaires collected was 1,828. The survey was distributed using Google Forms to students from eleven academic institutions. Most of the respondents were from Ariel University (886 respondents) and Sami Shamoon College (386 respondents), with the rest from nine other institutions. Approval was received from the ethics committee. The survey included a Likert-ranked closed-end item (1- strongly disagree, to 5- strongly agree): The e-teaching method might be detrimental to my grades, and an open question (symbolized by Q_0): In your opinion, what should be done in order to improve the e-teaching experience?

Respondents' age ranged from 18-28 (1,371), 29-52 (463), and 53-67 (26). Of all respondents, 53.9% were female and 46.1% were male. The types of academic institutions were academic colleges (530), university (886), education college (334), private college (28), and others (40).

2.2 Analysis

We present an exploratory research. The data was analyzed using a mixed methods design (Christensen, Johnson, & Turner, 2013), comprising qualitative analysis (Eckhaus & Ben-Hador, 2018) and quantitative analysis. We first performed manual text categorization (Dhar, Mukherjee, Dash, & Roy, 2020), where the responses are explored and main themes are identified. Each response is then binary coded - 0 if the response includes the theme and 1 otherwise. Some themes were removed during the process, therefore the final themes presented are not consecutive. Seven main themes were found (Table 1), divided into two levels. The first level states a proposed solution and the second proposes a course of action. The second level is divided into student-oriented and lecturer-oriented tactics. Correlations were calculated between variables on each level. Age was added as a typical control variables. Figure 1 illustrates the theme and level flow of the Students Online Teaching Recommendations (SOTR) model.

Table 1. Main themes

| Level		Variable symbol	N
1 What to change	Adjusting the lesson for e-teaching	T2	419
	Making sure that lessons are recorded	T5	248
	Teaching in smaller groups	T7	49
2.1 How to change	Not rushing through the material	T3	61
(Instruction)	More practice / extra lessons	T4	68
2.2 How to change	Providing technological tools to instructors	T11	315
(Control the tools)	Guiding instructors on teaching via Zoom	T13	270
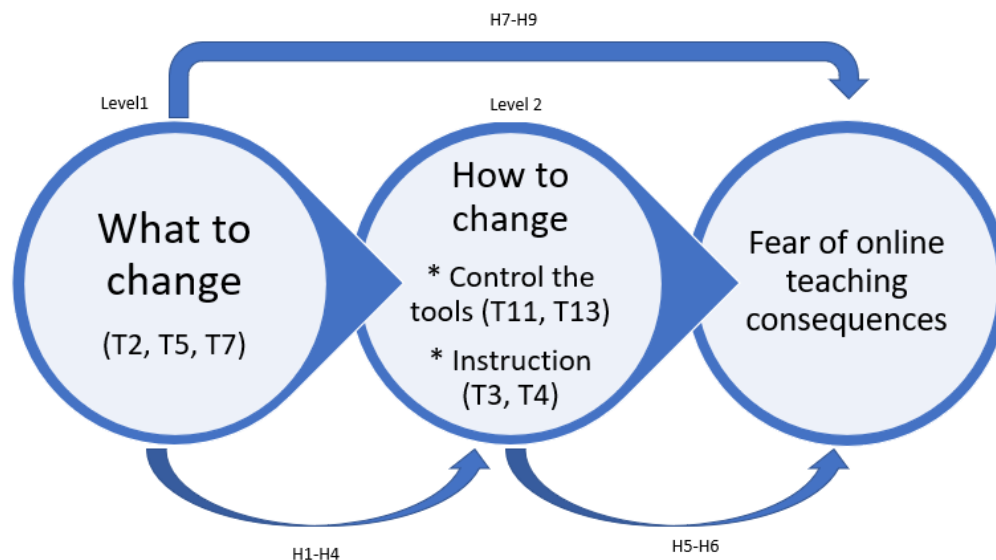
Figure 1. The theme and level flow

Level 2.1 tactics present a genuine current problem from the student's point of view, directly regarding the teaching propositions (level 1), implying a teaching deterioration, with a natural concern for their grade. We therefore assume that level 2.1 suggestions affect the concern for one's grades (Q_0). Level 2 themes (excluding T5) also affect the concern for one's grades, but through level 2.1. Level 2.2 presents adjustment directions for achieving the change (T2), and T5 is is both a suggestion and a tactic.

Next, we developed the SOTR model and used Structural Equation Modeling (SEM) for goodness-of-fit (Davidovitch & Eckhaus, 2019; Eckhaus, 2019; Krisi, Eckhaus, & Nagar, 2021). SEM is a methodology that comprises a set of multivariate statistical approaches to empirical data (Allen, Eboli, Mazzulla, & de Dios Ortúzar, 2020). SEM is more effective than multiple regression (Cheng, 2001). It is a popular statistical technique for multivariate data analysis in social and behavioural sciences, and it use in education has been recently increased (Leguina, 2015)

The fit indices used were CFI, TLI, RMSEA, SRMR, and the CMIN/DF ratio. Acceptable fit indices are as follows: CFI, and TLI > .9 (Eckhaus & Davidovitch, 2020), CMIN/DF should be should be < 3 (Eckhaus & Davidovitch, 2019a), however, the more strict approach argues that the ratio should be between 1 and 2 (Rohani, Sadeghi, Eslami, Raei, & Jafari-Koshki, 2018), RMSEA and SRMR < = 0.05 (Franklin, Burns, & Lee, 2014).

3. Qualitative Examples for Each Theme

Learning and teaching

1) T2 Adjusting the lesson for e-teaching

• "Adjusting the courses for online teaching and thinking about how to realize the potential of distance learning, because in my view it is a wonderful tool, but the university has not managed to utilize its benefits".

• "In order to improve the e-teaching experience the instructor has to have an adapted lesson plan that will manage to impart all the material in addition to time for answering students' questions".

• It is not necessary to give a 4-hour lecture on Zoom.

2) T3 Not rushing through the material

• Not rushing through the material as though there is no tomorrow, because it is really hard to learn like that.

• The instructors and teaching assistants should rush less with the material.

• To reduce the load and not only try to get through the most material, rather to teach.

3) T4 More practice / extra lessons

• To teach less theory and exercise more

- To add extra lessons at the end of the semester beyond the approved hours
- To plan lessons intended for questions only, and only those who have questions will attend

4) T5 To make sure that lessons are recorded

- In some of the lessons there are no recordings that can be watched again.
- To make sure that the recordings of all lectures are uploaded
- At the minimum all instructors should upload recordings

5) T7 To teach in smaller groups

- To have smaller classrooms so that more questions can be asked
- To open smaller groups, to divide the hours into several groups
- It is necessary to add more practice… and it is not really possible to ask, so exercises with smaller classrooms can help.

<u>**Help for the instructors**</u>

1) T11 To provide the instructors with technological tools (such as a tablet/ graphics tablet/ video camera that will solve the problem of writing on a board)

- Appropriate equipment. For instance, in a course where the instructor must write during the lesson it is not possible to write clearly with a mouse. By using a tablet, the lesson will be much more comprehensible.
- Each instructor/ teaching assistant should have a way of writing clearly on the presentation that he shares with us on the screen. Because some instructors try to write with a mouse and it's simply not logical. Instructors should have the possibility of writing comfortably
- It is necessary to demand use of an electronic tablet rather than presentations
- I think that the instructors should be equipped with an i-pad and pen because the i-pad has the option of writing on the screen with the pen as a regular board, just like in the classroom

2) T13 Guiding instructors on teaching via Zoom

- "Holding a course for instructors who have difficulty operating the Zoom (and not a PEF file)"
- Holding a lesson for instructors and teaching assistants on how to use Zoom
- An accelerated course on operating Zoom for instructors
- Explaining to those who do not know how to use the system about how to use it

4. Quantitative Results

Figure 2 presents the SOTR model and standardized coefficients.
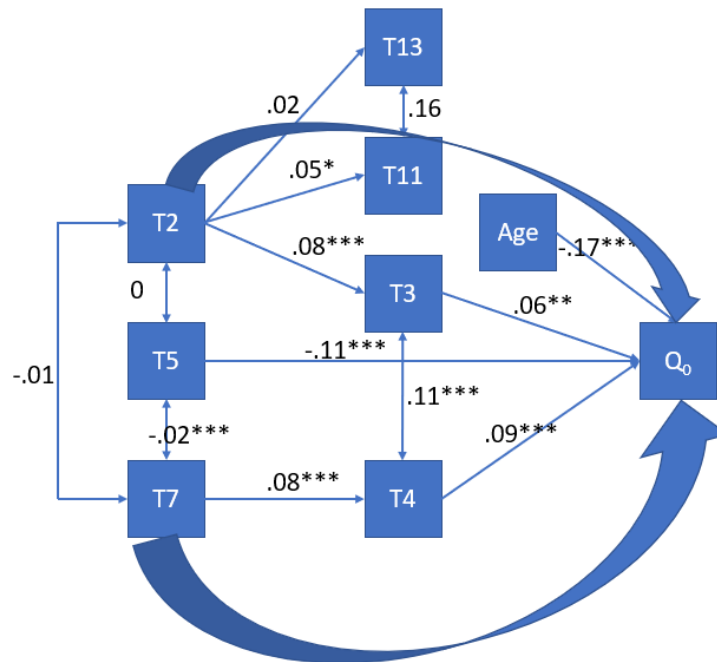
* p<.05, ** p<.01, *** p<.001. The large arrows indicate mediation.

Figure 2. SOTR model with standardized coefficients

The model showed good fit: CMIN/DF = 1.5, CFI = .94, TLI=.91, RMSEA = .02, SRMR=.02. All of the qualitative findings were quantitatively supported, except for the effect of T2 on T13, and T4 affecting Q_0 negatively instead of positively. *Age* had a negative effect on Q_0, meaning that the younger the students, the more they are concerned about the online teaching negatively affecting their grade.

T4 mediation of the indirect effect of T7 on Q_0 was significant (β=.01, *p*<.05). Bootstrapped Confidence Interval (CI) ranged between [.002, .015]. T3 mediation of the indirect effect of T2 on Q_0 was significant (β=.01, *p*<.01). Bootstrapped Confidence Interval (CI) ranged between [.002, .01]. Bootstrapped size = 5000.

4.1 Additional Results

In addition to the model, the following are several other findings that help provide a statistical background of the respondent sample.

Gender

In order to assess gender differences in concerns regarding the grades' negative effect due to the change in the online environment, we added in the model an effect of Gender on Q_0. Results show that model fit were below the accepted measures, however the relationship was indeed statistically significant, showing a positive effect of gender (β=.09, *p*<.001). Gender was coded as 1=male and 0=female, therefore a positive relationship indicates that males are more worried than females about the negative effect of the change to the online teaching environment on their grades. This forms an interesting basis for future research.

Institution type

In order to assess institution type differences in the concern regarding the grades' negative effect due to the change in the online environment, we performed a one-way ANOVA test. Levene test of homogeneity of variances was significant, and therefore an a-parametric test was required, and Kruskal-Wallis test for independent samples was performed. Results showed a statistically significant difference among institution types ($\chi^2(4)$=79.84, *p*<.001) (Table 2).

Table 2. Mean ranking of online teaching effect on students' concern

Institution type	N	Mean Ranking
Academic college	530	1031.22
University	886	924.03
Other	40	901.3
College of education	344	734.11
Private college	28	638.77
Total	1828	

In Table 2 we observe that students in academic colleges have the highest concerns regarding the negative effect of online teaching on their grades, whereas private institutions have the lowest effect.

5. Discussion

This study focuses on the difference between the traditional teaching-centered paradigm and the modern learning-centered approach, with an emphasis on the formulation of learning outcomes in online study expanses, in the post-COVID era. The study explored the learning outcomes as perceived by students and the advantages and challenges embodied by formulating learning outcomes in the post-COVID era, consistent with the learning-centered paradigm as perceived by the learners.

The research findings point to students' direct recommendations for instructors: what to do and the pace of studies (not to rush through the material and extra lessons), better compatibility of the study materials with the teaching methods and student evaluations – as manifested in their grades. Specifically, according to the students:

o   The pace of the lesson should be reduced, which may help adjust for e-teaching.

o   Reducing the number of students in the online course and the need to add extra lessons.

COVID-19 generated a realistic exigency that required an immediate change in teaching methods, as perceived by students. Their recommendations are divided in two:

First, to provide instructors with the appropriate tools and training. Namely, the students understand that instructors too are forced to cope with a new reality and are required to make adjustments, similar to them – the students.

Secondly, to the changes in the teaching method. The students raise an interesting and important point of view. In the transition to e-teaching, academic institutions began to use technological tools that enable inclusion of a larger number of students in each virtual class. The institutions see only the short-term savings, without understanding the implications of this act for the long term, i.e., the damage to teaching and learning, as indicated by the respondents. Similar to frontal teaching, including a large number of students in one classroom does not make it possible to answer the questions of all those present and certainly does not allow for personal attention. Many students do not receive answers during the lesson, which continues and advances in order to reach the same output required before the number of students in the virtual class was increased. The students seek to adjust the lesson for online teaching (T2) but not at the expense of teaching and by aggravating the conditions as a result of the increased number of students. The mistakes made lead to "how to correct" – the students suggest doing this via extra lessons and a slower pace of study.

Although we have successfully collected a sample with a wide rage of students from different institutions, the sample is from one country. The Covid-19 pandemic is a global phenomenon. Therefore, future studies may extend the results of this study by investigating them in different cultures.

6. Conclusion

The claims and suggestions raised here point to a grave mistake by the academic establishment that is making incorrect use of technological abilities. The fact that something can be done does not mean that it should necessarily be done all the time in any situation. Technology should be used as a tool that facilitates an educational strategy, not as one whose main purpose is to save money. The claims raised here indicate harm to teaching, both to the instructor – manifested in lower satisfaction of students as expressed in their teaching evaluations, and ultimately to the establishment itself. At the moment, academic institutions are experiencing an increase in students due to the lockdown that does not provide many options. However, the findings show a concern that at the end of this period students' disappointment will lead to the opposite extremity and to a distinct drop in registrations, where students

will turn to vocational institutions that afford personal attention in smaller classrooms. Hence, the academic institutions harm their own cause.

Based on these findings, we suggest that academic institutions correct the mistakes done and widen their perspective from the immediate, limited, short term that is the focus at the moment to a horizon of long-term consequences and strategy. The recommendations include:

A.   Stopping the excessive allocation of a double number of students in each course, as currently implemented in schools, and returning to a class size that facilitates proper and good teaching, as before the transition to online teaching.

B.   Giving a different weight to evaluations of instructors teaching online courses. Comparisons between teaching online and frontal courses are wrong and indicate an inability to manage and to understand the field. Online courses, at least in the way they are currently managed, with a large increase in the number of students who must therefore study under harsher conditions than in a frontal classroom, are directly affected by lower satisfaction.

C.   The institutions must take into account the difficulties generated by online teaching, including the instructor's attempts to enhance students' concentration, which is not high to begin with in the generation of social networks and mobile devices that beep message bursts, in a form of study where it is harder to maintain concentration. In addition, instructors must now cope with a large quantity of e-mails sent by students who could formerly ask questions in person and receive a quick response. Institutions must recognize the added endeavors of instructors and the difficulties of online teaching and define some compensation for instructors teaching online courses as part of the requirements by the Ministry of Education after COVID-19 as well, in an attempt to prepare for the different possibilities posed by this reality.

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