



# The coping of academic staff with an extreme situation: The transition from conventional teaching to online teaching

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## Abstract

The emergence of the COVID-19 virus has generated the greatest worldwide disruption of education systems (among others) in generations. In Israel, from the beginning of the pandemic, all universities and colleges quickly adopted an online education system, while the other educational systems did similarly, in part or in full. This study examines the impact of the involuntary immersion of students and instructors into digital learning environments due to the COVID-19 pandemic – the impact on the pedagogical practices, pedagogical conceptions, and inclinations toward pedagogical change of university and college instructors during the “Corona Related Teaching Situation” (CRTS). Our research followed a mixed-methods approach, combining qualitative with quantitative components. The explanatory design is a two-phase mixed methods–approach design, which began with the collection and analysis of quantitative data and was followed by the subsequent collection and analysis of qualitative data. The current report places special emphasis on the qualitative components of the research. The major contribution of this article is the development of a typology based on a conceptual model that allows for the identification of three teacher profiles that emerged during the CRTS: *Experienced* teachers, *Enthusiastic* teachers, and *Cautious* teachers. The study found that the main variable affecting a teacher’s fit into one of these profiles is the level of digital literacy before the crisis. Our typology can be applied to different crisis situations and can be useful for the training and development of university teachers in the field of digital literacy.

**Keywords** Online Teaching · Emergency Remote Teaching · University Teaching · Digital Literacy · Teachers’ Perceptions

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## 1 Introduction

The study was conducted during the first wave of the COVID-19 pandemic in Israel, the most challenging days of the CRTS.

The emergence of the COVID-19 virus has generated the greatest disruption of the education system (among others) in generations. In the words of Audrey Azoulay, director of UNESCO, “Never before have we witnessed educational disruption on such a large scale.” According to UNESCO, 87% of the world student population, in 165 countries, has suffered the closure of in-person learning at their institutions (UNESCO, 2020).

Studies carried out during previous emergency situations, such as the 2003 SARS epidemic that affected areas in China and the Far East, among them Hong Kong, can serve as a background to the analysis of the COVID-19 situation, although the extent of the crisis is substantially different.

During the SARS epidemic, in Hong Kong, 1,302 schools were closed, forcing more than a million students and 50,000 teachers to abruptly transition to online learning and making it necessary for teachers to quickly rethink their teaching strategies. Fox (2004) found that teachers who went through this crisis encountered difficulties in staying in touch with students who, throughout the period, reported feelings of isolation and disconnectedness, as well as in finding enough time to both prepare for classes and to teach. Although the crisis gave teachers the opportunity to experience the advantages that the information and the communication technologies (ICTs) offer, the experience does not appear to have translated into a significant change in their teaching practices (Fox, 2004).

A similar situation occurred with Hurricane Katrina’s landfall in August 2005, which physically damaged 27 colleges in the US Gulf region, as well as others in Texas, making on-campus courses impossible (Meyer & Wilson, 2011; Murphy, 2020). What followed was a rapid deployment of online learning called the “Sloan Semester,” named for the sponsoring Alfred P. Sloan Foundation.

In Israel, in March 2020, all universities and colleges adopted an online education system, while the other educational systems did the same in full or in part. According to an OECD report, at the other levels of education, each week of school closure is equivalent to a loss of 28 h of the compulsory curriculum, which is 2.9% of compulsory education in annual terms. Schools have had to make up these hours through the efforts of teachers, administrators, and parents (Reimers & Schleicher, 2020).

On March 10, 2020, the Hebrew University administration announced that the opening of the new semester, which was scheduled for March 15, would be postponed for a week, after which classes would be conducted from home via online instruction (for both lecturers and students). The extra week would be used to prepare for the new and challenging situation.

The Distance Learning Unit of the university offered intensive remote training in the various online tools to be used, especially Zoom and Panopto, and the university acquired licenses for all teachers. The semester began on March 22, with approximately 25,000 students taking classes online, using the Zoom platform.

## 2 Theoretical Foundations

Over the last two decades, the use of technology-mediated instruction has grown; however, various barriers have prevented it from being adopted effectively. A number of works identify the different obstacles to teachers' incorporation of ICT into their teaching. These include: time to invest in learning new technologies; restrictions and security policies; access to resources; discomfort in the use of technologies (both software and hardware); and insufficient technical support (Alenezi, 2017; Terhart, 2013; Venkatesh & Bala, 2008; Wood et al., 2005).

Hodges and others (2020) differentiate between a planned and effective online teaching program and what they call "Emergency Remote Teaching" (ERT) (Bao, 2020; Demuyakor, 2020; Hodges, Moore, Lockee, Trust, & Bond, 2020; Murphy, 2020). ERT is meant as a temporary teaching modality only, a stopgap measure to be used for the length of a crisis and not as a reform of the educational system for the long term. The implementation of ERT is marked by a strong quota of asynchronous teaching, which can guarantee intensive learning and reasonable results. While Hodges and others clearly differentiate between ERT and other forms of online teaching, Murphy sees a need to "normalize" a post-pandemic pedagogy in which online teaching is part of a new normal situation: "The normalization of emergency eLearning refers to strategies that frame the widespread adoption of online learning under COVID-19 as a pathway to a new normal rather than an emergency response" (Murphy, 2020 p. 10).

We can therefore think of two possible ways to characterize the COVID-19 period: on the one hand, it can be seen as a great opportunity to generate profound changes in university teaching by incorporating the use of digital tools and environments (Toquero, 2020; Yan, 2020); on the other hand, taking a more conservative and pessimistic approach, the distance learning of this period can be seen as a temporary deviation from the traditional teaching environment. According to this characterization, following the ERT period, teaching should ideally return to the same state it was in before the emergency situation (Hodges et al., 2020).

What can be considered a "profound change" in pedagogical practice? Tarling and Ng'ambi (2016) propose a theoretical framework through which pedagogical practices change from "transmission pedagogies" to "transformation pedagogies". In the former category, the lowest cognitive activities on the Bloom scale, such as understanding, memorizing, and remembering, are prioritized; while in the latter category, higher cognitive activities, such as analysis, comparison, creativity, and evaluation, are prioritized (Tarling & Ng'ambi, 2016). Numerous researchers have highlighted the potential of ICTs to promote more student-centered practices that favor activity, creativity, and teamwork (Beetham & Sharpe, 2007; McLoughlin & Lee, 2008). Theories of pedagogical change highlight different types of teacher resistance to change in teaching practices, including to the incorporation of ICTs into teaching. Examples include a lack of knowledge in ways to change; poor institutional support; difficulty in visualizing the benefits of change; and others (Le Fevre, 2014; Tarling & Ng'ambi, 2016; Terhart, 2013).

An important factor in pedagogical change is the approach or conception that the teacher has of teaching (Fenstermacher & Soltis, 2004). Various studies discuss the relationship between teachers' pedagogical practices and their teaching conceptions. Kember and Kwan (2000), for example, conclude that a change in teaching practices is not possible without a profound change in the instructor's approach to teaching (Kember & Kwan, 2000). Kember and other authors divide teaching approaches into two categories: those centered on the transmission of knowledge (with a "teacher-centered" focus) and those centered on the facilitation of knowledge (with a "student-centered" focus) (Brown, 2003; Emaliana, 2017; Kember & Kwan, 2000).

This categorization is generalized in the research literature with slight variations: for example, a classic model refers to two approaches in university teaching: "Information Transmission"/ "Teacher Focused" (ITTF) and "Conceptual Change"/"Student Focused" (CCSF) (Trigwell et al., 1999). In recent studies, the ITTF approach was replaced by the "Knowledge Focused" approach, and the CCSF approach was replaced by two approaches: the "Development of Thinking Skills Focused" approach and the "Practice Focused" approach (Kálmán et al., 2020). In all these cases, the different focused approaches can be classified as either teacher-centered focused or student-centered focused. Studies indicate that teachers of "soft" disciplines (humanities, social sciences, etc.) are more prone to using CCSF approaches, while those in the "hard" disciplines (such as exact natural sciences) are more prone to using an ITTF approach (Kálmán et al., 2020). Fenstermacher proposes an additional approach, the "Professional" approach, which focuses on teaching the material and skills necessary for the student to participate in the scientific-professional field of the discipline (Fenstermacher & Soltis, 2004).

In our study we look at the impact that involuntary immersion in digital environments made on university teachers' pedagogical practices, disposition to pedagogical change, and pedagogical conceptions of university teaching.

### 3 Methods

Our research followed a mixed-methods approach, combining qualitative with quantitative components. According to Creswell and Clark (2017), the four major types of mixed-methods design are "Triangulation Design," "Embedded Design," "Explanatory Design," and "Exploratory Design." The method adopted in this study was a Mixed-Methods Sequential Explanatory Design, which consisted of two distinct phases: a quantitative component followed by a qualitative one (Creswell & Clark, 2017). The qualitative data was collected and analyzed in the second phase of the study and helped to explain, or elaborate on, the quantitative results obtained in the first phase.

The Explanatory Design (also known as the "Explanatory Sequential Design") is a two-phase Mixed-Methods Approach Design, which starts with the collection and analysis of quantitative data and continues with the collection and analysis of qualitative data. The study is designed so that the main qualitative phase comes after the quantitative phase. Our study places special emphasis on the qualitative components of the research.

The initial quantitative phase made use of a self-report questionnaire consisting of 33 items divided into three parts: Part 1 – Conventional teaching before the Corona-Related Teaching Situation (CRTS); Part 2 – Teaching during Corona-Related Teaching Situation (CRTS); and Part 3: Teaching after the Corona-Related Teaching Situation (CRTS).

The first part asked for general information and for a description of the teaching and use of technologies before CRTS. Examples of items included in this part:

- To what extent did you use digital tools in teaching before the CRTS? In your view, to what extent did digital tools enrich your conventional teaching?

In the second part of the questionnaire, we asked about teaching and coping during the CRTS, assuming that all of the teacher's courses have gone online, without certainty as to when precisely it will end. Examples:

- According to your teaching experience in general, and your experience in online teaching in particular, how would you describe your teaching experience during CRTS?

- To what extent do you think the success of your online teaching in the current context is due to any of the following reasons?

  - My technological skills.

  - My openness / willingness to learn new teaching methods.

  - Technological pedagogical support of the academic institution / unit.

  - Investment of time in lesson preparation, etc.

In the third part of the survey, we asked about "the day after" (the return of face-to-face teaching). Our goal in this section was to understand if, and to what extent, the respondent expected that the experience of online teaching under CRTS would affect pedagogical practice even after the return to teaching "as before". Examples:

- Do you think your new experience in using digital tools will affect your pedagogical practice?

- To what extent do you intend to incorporate lessons via videoconference into the conventional courses you will teach in the future?

The development of the questionnaire involved a process of consultation among members of an international team working in this area. We discussed the wording of some items as well as the response scales appropriate for the analysis. Some items were designed especially for one or more of the sites. For example, the question: "In your view, do you consider yourself to be a (digital native, digital immigrant, other)", was included in the questionnaire administered in two European universities but not in the others.

Prior to the administration of the questionnaires, researchers in each of the sites confirmed with their colleagues the clarity and coherence of the questionnaire. After a last round of revisions, we proceeded to the distribution.

In the first stage, the questionnaire was administered to all the academic staff of the Hebrew University, and we received 241 responses: 53% of the respondents were males, and 47% female; 27% reported 1–5 years of experience, 22% 6–11 years,

20% reported 12–17 years of experience and 32% 18 years or more. As to areas of instruction, 23% were in the Social Sciences, 22% in the Humanities, 8% in the Natural Sciences, and the rest taught in other areas.

The quantitative analysis of the questionnaire consisted of descriptive statistics (primarily frequencies) and correlations among relevant variables.

At the end of the questionnaire, teachers were asked to indicate whether they were willing to participate in the qualitative research stage, which would mean participating in an in-depth interview of approximately one hour whose purpose was to extend and deepen the findings obtained in the questionnaire. Approximately 110 positive responses were received, of which a sample of 15 participants was chosen based on the distribution of the two variables: years of experience and areas of teaching. The in-depth interviews were conducted with 10 women and 5 men, 10 from the humanities and social sciences and 5 from the natural sciences. Six teachers had 1–5 years of teaching experience; 3 had 6–11 years; 2 had 12–17 years; and 4 had 18 or more years of experience.

The qualitative interviews were semi-structured, and lasted about an hour. The interviews were recorded and later transcribed for analysis, which was conducted using the thematic-analysis method (Braun & Clarke, 2012).

The in-depth interviews were developed by the international team. The interview schedule was also divided into three parts, and the questions were aimed at broadening and deepening the information obtained in the quantitative phase. In the first part of the qualitative analysis, the interviews were coded according to eight thematic axes: (1) teaching conceptions; (2) the inclusion of ICTs in teaching; (3) best practices; (4) teachers' confrontation with the CRTS; (5) the impact of the CRTS on pedagogical practices; (6) the concept of evaluation; (7) perceived institutional support; (8) back to school.

After a second reading and analysis of the coded interviews, they were collapsed into five thematic categories as follows: teachers' pedagogical conceptions (axes 1 and 6); inclusion of ICTs in teaching (axis 2); confrontation of teachers with the CRTS (axes 3 and 4); the impact of the CRTS on pedagogical practices (axes 5 and 8); and the perceived institutional support (axis 7).

Each of these five categories was then analyzed and regrouped into subtopics, based on the analysis of the concepts raised in the interviews and on the research literature (conceptual triangulation). Defining the first four of these categories allowed us lastly to cluster teachers according to their pedagogical conceptions and practices, which in turn enabled us to later compare this analysis with that obtained in the quantitative phase of the study.

### 3.1 Major research questions

The major research questions arising were as follows:

- 1) To what extent has online teaching during the CRTS impacted the pedagogical practices of university teachers?

- a) To what extent did the prior use of, and familiarity with, digital tools affect instruction during the CRTS?
  - b) What is the relationship (if any) between teaching in an online environment and the willingness of the university teachers to modify their pedagogical practices?
- 2) To what extent has the experience of online teaching during the CRTS impacted the pedagogical conception of university teachers?
- a) What is the pedagogical conception of teachers in relation to technology-mediated instruction?
  - b) Considering that teachers did not choose to work online, can it still be said that their pedagogical conceptions were modified during the CRTS? How?

## 4 Main Results

As reported earlier, in the first stage of qualitative analysis we identified five relevant thematic categories: teachers' pedagogical conceptions; inclusion of ICTs in teaching; confrontation of teachers with the CRTS; the impact of the CRTS on pedagogical practices; and the perceived institutional support. Each of these categories can be further divided into subgroups or conceptual categories. In introducing each of the categories, we try to reveal the relationship between the impact of the CRTS, the digital literacy of teachers, and the changes that were or were not made to their practices or pedagogical conceptions.

### 4.1 Teachers' pedagogical conceptions

This first section answers the following sub-question:

What is the pedagogical conception of teachers in relation to technology-mediated instruction?

In answering this question, we categorized the teachers' responses to the question "How do you teach?" which they were asked in the first part of the interview in reference to their teaching practices before the CRTS. Each teacher spontaneously referred to the key aspects of his or her teaching: their emphases, concerns, as well as their use of technologies before the CRTS.

In the responses, we initially identified two subthemes or well-defined conceptual approaches: the "Teacher-Centered Approach" (TCA) and the "Student-Centered Approach" (SCA) (Admiraal et al., 2017; Brown, 2003; Emaliana, 2017; Kálmán et al., 2020). We concluded, however, that these two categories did not sufficiently explain the conceptual material obtained. For this reason we added a third category – the "Content-Centered Approach" (CCA) (Dorfsman, 2018), to which Fenstermacher and Soltis refer as the "Professional Approach" (Fenstermacher & Soltis, 2004).

Let's examine, then, the details of each of these conceptual approaches:

#### 4.1.1 TCA-oriented teachers

In this first group we placed teachers whose general pedagogical focus is on what they can “provoke” in their students, namely, what questions they should propose and in what way they should transmit the material. Some in this group are primarily focused on the transmission of the course material, while others are concerned with how to generate debate and how to generate interaction between themselves and the students and among the students themselves:

*“I think I have very good analytical ability. I understand the issues very well, and I have a... good ability to simplify [the issues] and say everything in a very simple and uncomplicated way”* (Noa).

*“[My class] does not go [well] if I don't come with an organized plan for how to teach the class, if I don't have the exact outline in my head of what I am going to say and I just start talking...”* (Avigdor).

#### 4.1.2 CCA-oriented teachers

We have included in this group those who, when talking about their teaching, make immediate mention of the epistemological structure of the material to be taught:

*“I work with a model of educational thought that argues that every philosophical conception is built from the conception of the worthy person, the real person, and the educational techniques”* (Moshe).

We also included those who base their teaching on research assignments, given that they are concerned about their students' research skills and abilities:

*“The material I teach belongs to quantitative research, so the lectures are generally ones where some question is asked... [or where we discuss] a certain claim, or more broadly, a certain theory, and [then] we talk about a certain study that tested this theory”* (Michael).

In addition, we included those who focus their instruction on the teaching of concepts:

*“You pay [to go] here in order to speak of ideas... not of the mundane. You acquire such concepts, and then afterward... you speak of concepts”* (Meital).

Unlike the TCA-oriented group, this group of teachers was less focused on their teaching practices and more focused on the content of their lectures and, therefore, on their students' understanding of the material.

#### 4.1.3 SCA-oriented teachers

This group of teachers is especially concerned about students' grasp of the material. They structure their classes by considering the academic level and background of



their students, and they don't mind investing extra time in a class, if this will contribute to the students' understanding of the material.

“My objective is for students to be able to examine [the material] themselves and see how they come out... I would let them do it [the assignments] over and over until they get 100, so they understand” (Michal).

“Our learning is based on communication between us [the students and teacher] and building trust on us [the teachers]” (Rachel).

In summary, in the first thematic category that we have analyzed, we find basically three approaches: the first and third, found in the research literature, is that of teachers focused on their own teaching and those focused on student learning (TCA and SCA); after analysis, we added a third approach, corresponding to teachers focused on the epistemological structure of the material to be taught (CCA).

The next section examines the inclusion of ICTs in teaching. Here we analyze teachers' attitudes toward ICTs both before and during the CRTS. In this way, we were able to identify possible relationships between teachers' pedagogical conceptions and their willingness to use digital tools in their teaching.

## 4.2 Inclusion of ICTs in teaching

This second section answers the following sub-question:

To what extent did the prior use of and familiarity with digital tools affect teaching during the CRTS?

In this study, we define ICTs in a broad sense, as digital tools and environments that were created or adapted for teaching purposes. This section examines the teachers' responses to the question about the use of technologies. In their responses, teachers referred to their teaching both during the CRTS and prior to the crisis. In general, most described their use of technological tools in the classroom prior to the CRTS as minimal, limited to the use of PowerPoint or occasional use of the Moodle platform.

At one extreme, Michael told us about his routine use of Kahoot in his classroom, and Lior mentioned using Google forms in certain classes in addition to PowerPoint. At the other extreme, Michal mentions that in her PowerPoint presentations she leaves the correct answers to the exercises and that she does the same in the interactive exercises she uploads to Moodle. Rachel mentions that even before the CRTS she used digital tools to increase the interactivity of the course.

Some teachers referred to the use of ICTs with contempt. For example, Yael said, “I don't like to show videos, this is not a TED talk,” and Lior commented, “This is not the Open University.”

From the quantitative analyses, we determined that only 9% of the teachers claimed to have had experience in online teaching prior to the CRTS and that because of this experience, they could continue with online teaching without any difficulty. On the other hand, 3% of the respondents indicated that they would be

unable or unwilling to teach online in any way after the crisis; 29% declared that they are able to teach online but that their teaching would not be at a satisfactory level; and 40% stated that they were “open to the opportunity” to learn new tools or pedagogical innovations.

Yet despite the fact that such a large percentage of the university teachers did not have positive feelings toward online instruction, when asked whether they felt that their first online classes had been successful, 85% of respondents answered that they considered them to be “reasonable to very successful”. When asked about the reasons for this “success,” 43% attributed it to the time invested in preparation; 31% to the technological and pedagogical support received from the institution; 31% to a sense of urgency (“there is no other alternative”); and 39% to their personal technological knowledge and skills.

From the quantitative analysis, we can point out that on the one hand, a significant percentage of teachers claimed to have had technological knowledge and skills prior to the CRTS, but they did not utilize this knowledge in their classes. On the other hand, a similar percentage of teachers were open to learning new technology and innovations.

In the qualitative analysis, we identified three subgroups of teachers: The first included those who had previously used digital technologies and who had intensified their usage of it during the CRTS. These teachers, in general, looked favorably upon their online-teaching experiences during this period and were open to the idea of using the new technologies in their future practices:

“Now, with Corona, we used many features of Moodle. This was very good because we were forced to learn a lot about Moodle.... [There were] all kinds of questionnaires that we made so that we could see that all the students were following [the material] and keeping up.... So now, we’ve done everything in Moodle, and it was very very easy, [and] in the end, it also allowed us to put all the data together, and it was more useful “ (Elisheva).  
“It is important to clarify that we already used these [technology] tools in the class before Corona. There was always active learning, and then we also wanted to use tools that would be fun, so we did” (Rachel).

In this first group, and according to the Technology Acceptance Model 3 (TAM model 3) (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000), we find teachers who consider the digital tools to be useful and find them easy to use. We call this group “Experienced”. Note that these teachers were not necessarily familiar with digital tools prior to CRTS; in fact, most of them had to learn the new tools proposed by the university – Zoom and Panopto. But it is clear from their stories that they were digitally literate and therefore were able to easily learn the new technological tools (Eshet-Alkalai, 2004).

A second group is made up of teachers who, prior to CRTS, made minimal use of digital teaching tools. All those in this group made very limited use of Moodle and used PowerPoint as a teaching aid and visual tool. The members of this group, such as Meital and Marc, described having “discovered,” in some way, the world of digital tools and how they were now open to using them.

“I wanted to be sure [I understood how to use the program], so I kept taking notes [during the training] until I got it; I knew that everyone said it’s not hard, it’s just a matter of practice, and it’s true... because after the third time [using it]... I said [to myself], ‘Meital, you’ve done enough’” (Meital).

“I found out that there is really a full, rich world of things, and I began to learn what Panopto is, how it is used, and before that, Zoom.... everyone says Zoom, Zoom, Zoom, but prior to this I never knew something like Zoom existed..” (Marc).

We called this group “Enthusiastic”: during the CRTS, the Enthusiastic teachers focused their efforts on mastering the technologies so that they could transfer their usual teaching practices into new, virtual environments or so that they would be able to implement new practices in the future. For those in this group, teaching remotely was a completely new, unfamiliar experience:

“I can’t tell you that I didn’t feel pressured. I had never used Zoom, I didn’t know how I would look [on-screen]. And at the same time, I was at home with my young children... with them learning [to use Zoom] through trial and error. And I was working with my colleagues...” (Revital).

Some of the Enthusiastic teachers stated that the remote-teaching experience caused a psychological barrier to fall:

“ This [teaching online] will be less of a block for me, and this is very significant, because, as you know,... sometimes there are sabbaticals, or unexpectedly you have to teach a class.... meaning, it’s a psychological block that I suddenly get that I’ve had [until now] and which now I think I will no longer have. In case I need to teach, I’ll be able to teach [from wherever I am]” (Revital).

In this second group, and according to the TAM 3 model, we find teachers who have "discovered" the usefulness of technology and feel pleasure in having done so, while still not considering the technology easy to use.

A third group, which we call the “Cautious” group, is made up of teachers who were not enthusiastic about using the new technological tools during the CRTS and who were not open to the possibility of using these tools in the future, after the crisis period. According to the TAM 3 model, the usefulness or ease of using technologies would not be clear to this type of teacher.

Lior, for example, mentioned his use of PowerPoint and occasional use of Google forms, aside from the limited and necessary use of Moodle and Zoom. When asked about going back to in-person classes, he specifically mentioned the advantage of flexibility that digital tools offer, but he did not acknowledge any pedagogical advantages of using the technology:

“I can be flexible, but on the other hand, I prefer frontal teaching. But I also see advantages – the advantage of teaching with Zoom is basically [that it saved me] time, because it takes me at least an hour to get to the university ”(Lior).

Yael was greatly affected by her negative Zoom experience, particularly by the “closed camera” issue. Regarding the eventual return to in-person classes, she said:

“Now I am looking ahead, I see all this black [the black squares on Zoom showing those who have not turned on their camera] who will ask us to record the class, because the students really like that. . . . From my point of view, it is bad, because I feel less free and authentic [on Zoom]. There’s nothing to do. You saw, I am less free, I don’t know . . . it’s . . . I am less free. It will turn me into something ‘plastic’”.

In summary, in this section we identify three subgroups of teachers: the Experienced, the Enthusiastic, and the Cautious. As a preliminary finding, based on the quantitative findings previously mentioned, we can suggest that, for the most part, the Enthusiastic teachers are part of the 40% who said they were "open to the opportunity," while the Cautious teachers are primarily part of the 29%, who stated that teaching online "is not satisfactory," or part of the 3%, who indicated that they are unable or unwilling to use ICTs in any way in the future. We can add, based on the quantitative data, that 33% of the teachers who declared that their teaching success was due to “their technological knowledge and skills” belong to the Experienced group. Each of these groups, therefore, are similar in size and divide up the teachers (relatively) evenly into three.

Undoubtedly, the experience of being forced into online teaching has generated in each of these groups an attitude about the use of distance-learning technologies and has influenced their willingness or unwillingness to modify their teaching practices in the future.

The three categories revealed in this section will allow us to continue our analysis in the following sections.

### 4.3 Confrontation of teachers with the CRTS

This third section deals with the following sub-question:

What is the relationship (if any) between teaching in an online environment and the willingness of university teachers to modify their pedagogical practice?

We asked interviewees about their reaction to the initial news about switching from the conventional classroom to online teaching, and we focused on the way in which the teachers adjusted to their new teaching situation. In all cases, teachers experienced affective reactions of different kinds: surprise, paralysis, panic, fear, anguish, worry, and enthusiasm:

“Pressure, hysterical pressure and fear, but it passed. As soon as I turned it on [the Zoom platform] it passed, which means I was terribly stressed “(Yael).  
 “I worried about them terribly, because these were some of the most vulnerable students at the university, and I understood what this uncertainty and these transitions were likely to do them” (Lily).

Some teachers explained that, faced with an initial reaction of concern and fear, they wondered what to do and how to plan their course. One of the issues that worried most of the interviewees equally was the problem of cameras in class:

“It was a disaster for me. I mean, sitting in front of those cubes, it finished me off” (Yael).

For the teachers, having the students – sometimes the majority of them – keep their cameras off during class caused an experience of anguish, a sense of failure and personal offense, to the degree that when students turned on their cameras, this was experienced by the teachers as a sign of success:

“I was so excited to see the students.... I cried about four times during the class” (Lily).

Once the initial shock of the news was over, teachers considered how to move ahead. Some of the teachers (primarily from the Experienced group) understood the depth of the change in the making and decided to modify their pedagogical approach to their courses in a significant way. Their changes were based on a "strategic decision":

"I made a strategic decision to record the classes beforehand" (Michal, with classes of 100 to 300 students).

In this part of the interview, Michal explained that she produced videos of up to 15 min, according to the fundamentals of distance education, and used a method similar to that of the "flipped classroom." In addition, she made herself available to students through remote “office hours” over Zoom. Other teachers tried similar practices, or intensive practice in Moodle and group work. For example, Rachel reported that she changed her teaching practices in a significant way:

“Chat, Moodle, Moodle Forum. We opened an additional forum for activity that ultimately gave them [the students] the possibility to watch Israeli series and react to them, and they were given bonus points” (Rachel).

Michal maintained:

“The main difference, in my opinion, was adapting the material to a completely online situation, which is... different from the perspective of the teaching style. This means, for example, that I had to divide the material into ‘bite-size pieces,’ in parts of a quarter of an hour, so that the students did not lose interest and immediately afterwards I prepared the [interactive] quizzes so that they could review and exercise” (Michal).

Another example is Shlomo; he adopted the “flipped classroom” model, after several classes in which he fine-tuned his practices through trial and error:

“I said [to myself that] it would maintain much better control to do a flipped lesson dedicated to the material and then to do a question-and-answer session with the students, and that was the format” (Shlomo).

Unlike the Enthusiastic and Cautious teachers, these Experienced teachers were more digitally literate. For them, the “psychological block”, one of the barriers that hinder pedagogical change (Fullan, 2011; Le Fevre, 2014; Tarling & Ng’ambi, 2016), was not so relevant. They understood that in order to move

forward, they would have to readjust their teaching practices to new technological environments, and, in fact, many of them did (e.g., Admiraal et al., 2017; Alenezi, 2017; Le Fevre, 2014; Ojo & Adu, 2017; Schreurs & Dumbraveanu, 2014; Tarling & Ng’ambi, 2016). We can therefore suggest that these Experienced lecturers are also strategic in their approach.

In contrast, the group of Enthusiastic teachers, and to a lesser extent, the Cautious group, had to spend most of their time "acquiring" technological skills, which represented new, uncharted territory for them. One could compare this experience to learning a new language, a "digital language" (Eshet-Alkalai, 2004). In some cases, teachers expressed genuine interest and enthusiasm; others simply saw no alternative to making the change. Such teachers expressed concern about the "excessive time" required to prepare online classes and that in online classes they "cover less material" than in a conventional educational setting (Le Fevre, 2014).

We can learn from our quantitative analysis that 43% of the teachers indicated that the amount of time invested in their preparation for the online classes was a factor in their classes' success; however, the amount of extra time required to properly prepare for online classes also had a negative effect on teachers' openness to using ICTs in the future.

Once teachers felt confident in their ability to master the technological environment, their main focus was on how they could transfer their teaching practices into this new environment. However, this was not the case with these two groups of teachers; an example of this is Michael:

"I tried to make significant changes to the course, and I made them for three or four classes, for which I later received very positive student feedback. . . . But after the fourth class, I realized that I had covered . . . I don't know . . . five percent of the material that I had planned for the semester, and then I went to totally common classes with some 'tactical' adaptations . . . ."

Similarly, Shulamit was unable to move to the flipped classroom model, as her students did not participate enough, so she reverted to the traditional format:

"It did not work at all, this new [teaching] method, not in any way, although I... was prepared to change [my] format of teaching... [there was] just zero cooperation. Zero. So I gave up" (Shulamit).

Another interesting case is that of Moshe. He felt that a basic contract had been broken when they moved to the online platform, given that the students did not choose online learning. Bothered by this "broken contract," Moshe felt committed to build a kind of "scaffolding" over the students to protect them from this situation that they did not choose; his prewritten notes for class acted as this scaffolding (Bruner, 2009). Unlike Rachel or Michal, who used interactive exercises, pre-recorded videos, and classroom forums, Moshe did not change his "strategy" but, like Michael, he implemented tactical changes to reinforce his teaching practice.

The teachers in these two groups – Enthusiastic and Cautious – understood that it was necessary to use the new technological environments along with their

previous conventional practices. We can thus argue that the Enthusiastic as well as the Cautious teachers are similarly "tactical".

#### 4.4 The impact of the CRTS on pedagogical practices

This fourth section answers the following sub-question:

Considering that teachers did not choose to work online, can it still be said that their pedagogical conceptions were modified during the CRTS? How?

The analysis of changes in the teachers' pedagogical conceptions was carried out in this study in two ways: through the questions in the in-depth interviews (qualitative analysis) and by analyzing the correlation between different questions in the questionnaire (quantitative analysis). The consistency in the results of both analyses reflects the validity of this approach.

We recognize that the interviews in the qualitative analysis tell us only about how the teachers perceived the possibility of change in their pedagogical practices and that we cannot know, at this point, whether the experience of online teaching will ultimately cause them to make changes in their teaching practices during a non-crisis situation. Nevertheless, by analyzing the changes that the teachers say that they *intend* to make, we can get a good picture as to whether the CRTS has effected a change in their pedagogical conceptions.

Revital's case presents a good example:

"Besides this, I'm pretty sure that since there is this tool [Panopto, to record videos], it is most likely that I will not require attendance [to my classes] and I that I will allow the students to watch the recorded classes on the Moodle site.... From my point of view this takes a lot of pressure off of me, because keeping track of attendance... is not very nice,... it's like being in a kindergarten. And this [not taking attendance] is ok for me" (Revital).

While what Revital refers to here is a formal/administrative change, implicit in her words is her intention to make a profound change from a situation that had caused her a great deal of stress even before the CRTS (she teaches very large groups). She explains below how the experience of online teaching during the CRTS has impacted her plan for returning to in-person classes:

"At the end of the semester, I received good [student] evaluations overall, but there was a great deal of criticism about the fact that I keep track of attendance. Now this is something has been mentioned before [in previous evaluations], but in this specific semester there was particular opposition to it: "Why do the teachers keep track of attendance?"... Because of corona, we couldn't enforce attendance, it was very clear." (Revital).

It remains to be seen what type of change will actually be implemented.

Another interesting situation occurs in Elisheva's case:

“I think this is going to totally change our way of teaching, because really, we always spoon-fed the students, and this year we didn’t do this, and they managed. Bottom line, there were some complaints here and there, but it seems that they [the students] are very satisfied. They got high marks and their assignments were done well, on a very good level, and I think that ultimately it is more important to me that they know the material and learn it for real than that I give them what they want on a silver platter. That’s how it seems to me” (Elisheva).

Revital’s case appears to be a formal, administrative change in teaching, while what Elisheva says clearly reflects a genuine change in her pedagogical conception.

We can now divide the teachers into three groups: those who intend to make formal or indefinite changes, those who propose making profound changes in their teaching practices, and those that they might have been impacted but still decided not to make changes.

In the first group, in addition to Revital, we have for example Tal, who said:

“I can schedule a class for 7:30 p.m. that students don’t have to come to the university... and they can watch the classes when they can” (Tal).

We can hear Shulamit saying:

“I hear a lot about how the administration wants some of the future instruction to be over Zoom. So, as the saying goes, “count me in.” I’m a person who really likes to travel” (Shulamit).

In the second group we can put Michal, who says:

“So I think this gave me a new look at how to correctly structure a class, even a frontal class and not a class on the Internet” (Michal).

We can say that Rachel “discovered” Google Drive as a collaborative work environment, which she anticipates will cause some changes in her pedagogical practice – more projects and work in groups:

“This will influence a lot, a lot, because it refines things that I already knew before and that this time period reinforced [for me]... Our methodologies [in the teaching practicum] always involve the students being active, and this [time period] confirmed it, and it also confirmed which [technological] tools I can use to generate communication between them, (...) Now I can transform it into homework, which is also, let’s say now, we don’t use the drive at all.... the google doc, and it’s so incredible...”(Rachel).

To the third group we can allocate Yael, who clearly differentiates between teaching in times of crisis and teaching in normal times:

“During the crisis, this [online instruction] is the best thing that could happen to us because it saved us. In normal life, I don’t see it....” (Yael).

Along the same lines, Marc says:



“I was forced to learn all kinds of online tools, but I will be happy to teach my classes in a frontal way” (Marc).

In the quantitative analysis, although the correlations were not as high as would be expected, we identified similar trends to the ones we saw in the qualitative analysis.

We first analyzed the relationship between the involuntary transition to online teaching and the willingness to modify practices in the future: Within the question on the transition to online teaching (“When I heard about the transition to online teaching, I thought...”), we had two types of responses, negative and positive. In both cases, the responses correlate, either positively or negatively, with the feeling that this crisis will affect practices in the future; willingness to utilize videoconferencing in the future; willingness to develop online courses; and a feeling of being prepared for a future crisis.

Secondly, we found low but positive correlations between the use of digital tools prior to the CRTS and the teachers’ perception that this experience will affect their future teaching practice ( $r=0.161$ ); willingness to implement videoconferencing in the future ( $r=0.160$ ); willingness to develop online courses ( $r=0.195$ ); and the perception of being prepared for the future ( $r=0.158$ ).

We then obtained two preliminary results: First, that negative reactions to the crisis predicted hesitation with regard to future change, while positive reactions predicted willingness to change in the future; and second, that teachers who already used digital tools before the CRTS anticipate that their practices will be impacted in the future and that they feel prepared for such change.

In summary, we can identify three groups of teachers: The Experienced, the Enthusiastic, and the Cautious teachers. The first consisted of teachers who are willing to make clear and strategic changes in their practices. In general, these teachers have a student-focused approach; they already used ICTs prior to the CRTS; and they understand that their practices must be adapted to technological environments. They are open to making significant changes, ranging from the way they organize their classes to the way they conceive of how students learn in those classes. They also appear to be teachers who have changed their approach from one focused on the teacher to one focused more on the student. According to our quantitative analysis, they already have prior knowledge of digital technologies and have already adjusted to using a new digital language.

The second group – the Enthusiastic teachers – includes those who are interested in change. Although these teachers did not have much previous technological experience, during the CRTS they discovered a wide world of ICTs and are interested in taking advantage of them. For the most part, these teachers are not strategic but “tactical” in their approach – they maintained their previous pedagogical practices in the new environments, and the changes they consider making in the future are either formal or undefined. In general, these teachers are focused upon the material they teach or upon themselves. Nevertheless, they have discovered the possibilities that the world of technology offers them (Admiraal et al., 2017; Alenezi, 2017; Beetham & Sharpe, 2007; Blau & Peled, 2012). According to our quantitative analysis, these teachers are among those who are willing to

“experiment with new tools,” although it is not certain that they have previous knowledge of digital tools or, at least, not to the point of using them in teaching.

Finally, into the third group – the Cautious teachers – we place those who value the use of technology tactically in times of emergency, but will not consider it for “normal” times, and are not evaluating changes in their practices. This group, in our quantitative analysis, are those who showed no willingness to change their pedagogical practices.

#### 4.5 Perceived institutional support

“Perceived institutional support” refers to how teachers perceived the university’s support during the CRTS, in particular in providing help during the mandatory transition to online teaching. We saw also positive and negative perceptions of the university’s support that cut across all profiles:

“I really think that everyone who worked at the university during this period did their best. Yahel [The Teaching and Learning Unit of the Hebrew University] did its best and sent things that were really relevant and helped” (Rachel, Experienced).

“The university immediately obtained the necessary licenses for Panopto and Zoom, and everything was accessible and convenient” (Marc, Cautious).

“I think the university has gone above and beyond, meaning, I really must take my hat off [to the university]” (Yael, Cautious).

“So I did not feel alone, I mean, I felt that the support I received was... at least for my needs, sufficient” (Tal, Enthusiastic).

“Great, great... it was great. We could take the training classes numerous times” (Meital, Enthusiastic).

We also find negative reactions:

“But we have no teaching assistants. So it’s very difficult” (Lili, Experienced).

“We made a very big effort to change our ways of teaching and invested a lot of [extra] time, thought, and energy..., and I don’t think we need to continue volunteering [our time]” (Noa, Enthusiastic).

In this thematic category, our analysis was inverse: having identified the three pedagogical profiles, we were able to examine how the teachers in each of these groups perceived institutional support during the CRTS.

The Experienced teachers value institutional support but do not consider it essential:

“From my perspective, I am very satisfied, I do not need anything more at this point” (Michal, Experienced).

The Cautious, for their part, tried to get by without the help, although they also valued the fact that support was available to them:

“We managed alone most of the time, but when [we] needed [help], I think there was some.... There was support, and we were all in the same boat” (Marc, Cautious).

Enthusiasts ultimately considered institutional support crucial for attempting any profound change:

“But really an approach of the institution (...), let’s say, okay? And [it’s] not just one thing, but really there should be an atmosphere that really we’re changing here” (Meital, Enthusiastic).

To summarize, in using the first four of the thematic categories that we defined, we were able to identify three pedagogical profiles. The fifth thematic category – no less relevant – has allowed us to enrich these profiles by contrasting each group’s perception of institutional support.

## 5 Discussion

In the theoretical foundations of our study, we suggested a distinction between an emergency situation (ERT) and a situation in which online teaching with previously established pedagogical criteria is used (Hodges et al., 2020; Murphy, 2020; Viner et al., 2020; Yan, 2020).

Faced with the crisis situation and having examined what happened during the first stage of COVID-19, which was the most challenging time of the CRTS, we wondered about the impact of this situation on the pedagogical practices and conceptions of the university teachers. How could we characterize the change in pedagogical practices and conceptions in this emergency situation?

The research literature refers extensively to the concept of change in teaching: deep change and formal change; structural change and cultural change; genuine change and forced change (e.g., Admiraal et al., 2017; Brown, 2003; Fullan, 2011; Schreurs & Dumbraveanu, 2014).

In our preliminary analysis, we found that the teachers we interviewed could be roughly divided into three groups. Therefore, we have proposed a teacher typology based on the degree of willingness and feasibility of the university teachers to carry out pedagogical changes. For this, we have taken into account five parameters identified in qualitative interviews carried out during the emergency period: the pedagogical conception; the incorporation of technologies into teaching; coping with an extreme situation (CRTS); the perception of the impact of the CRTS on future practice; and the perceived institutional support. Analysis based on these parameters enabled us to build our typology of three profiles, where each profile incorporates characteristics cumulatively identified in each step of the analysis.

Our typology proposes three types of teacher attitudes toward change: Firstly, there are those who have formally changed their practice during the CRTS and are interested in some type of change in the future but do not know, or do not describe exactly, what changes they refer to. These teachers are characterized basically as Enthusiasts. In a second group we place those who have genuinely changed their

practices during the CRTS and intend to continue with these changes afterward; we characterize these teachers basically as Experienced. Lastly, the third group is made up of those who have formally changed their practices during the CRTS but are unwilling to continue with these changes after the crisis period. These teachers can be viewed basically as the Cautious ones.

The three groups that view change favorably conceive of change differently. The Experienced perceive change as part of a strategic decision, which accounts for a change in their conception of how students learn. We can say, therefore, that Experienced teachers who have already undergone a digital literacy process that allows them to access known or new digital environments in better conditions (Eshet-Alkalai, 2004; Wood et al., 2005) are more ready to deal positively with the emergency situation. These teachers see this situation as a learning opportunity, after which they will be able to make changes in their practices, based on changes experienced in their conception of teaching.

On the other extreme, Cautious teachers experienced the CRTS situation as an emergency, temporary situation (Hodges et al., 2020; Murphy, 2020) that had to be dealt with, which implies a “tactical” change in their practices and an anticipated return to “normality,” after the CRTS.

In between are the Enthusiasts, who are interested in change but either don’t know how to implement it or fail to distinguish between formal administrative changes and genuine pedagogical change. Hence, although they are open to making genuine changes, in practice they introduce formal or tactical changes.

What do we learn from the various groups? Experienced teachers excel in three aspects: first, a willingness to “make mistakes” and to use the trial-and-error method as a working modality; second, the conviction that the use of technologies is valuable – a conviction stemming from the teacher’s personal digital skills; and third, a student-based approach, which has been shown to be highly effective, as the research literature shows that those with digital literacy favor this approach (Blau & Peled, 2012; Brown, 2003; Emaliana, 2017; Wood et al., 2005).

Enthusiastic teachers show openness to change but within a context of insecurity and uncertainty, since they are technological novices; at this point, such teachers may have high aspirations for the results to be obtained with the use of technologies, but they also have a clear appreciation of the effort that will be required to obtain these results. Unlike the Experienced teacher, this teacher is more aware of the social acceptance of the change and the necessity of institutional support for making these changes.

The Cautious teachers exhibit a clear tactical approach, with few indicators of openness to change and more signs of resistance to change.

The portrayal of our interviewees in each of the categories does not imply a deterministic vision. The purpose of the typology is to conceptually understand predominant features of the different profiles, in order to identify salient aspects in each one that allow us to establish lines of action.

Returning to our research questions:

- To what extent has online teaching during the CRTS impacted the pedagogical practices of university teachers?

- To what extent has the experience of online teaching during the CRTS impacted the pedagogical conception of university teachers?

And, derived from these:

- In what way can we characterize the change in the perception of practices and pedagogical conceptions in this emergency situation?

Firstly, we can say that we have verified that the crisis situation has generated change or the possibility of pedagogical change in the conceptions of at least two of the groups identified in our study. Secondly, the changes that are generated are not always profound or genuine. Finally, we can say that at least two factors strongly influence the possibility of teachers making pedagogical changes: the digital literacy of the teacher and the degree to which a teacher works with a student-centered focus.

## 6 Future lines of research

The work carried out has served to analyze the first stage of the COVID-19 pandemic in Israel, between March 2020, when in-person classes were cancelled, and May 2020, when the lockdown rules in Israel were first eased.

The continuation of the pandemic and its consequences have led universities and institutions of higher learning in particular, and the educational system in general, to adapt to a situation that has become a kind of “routine emergency.” Given this situation, a second, future stage of our research could examine the effect of this emergency situation on the semester that began in October 2020, when, unlike the previous semester, there was sufficient time for teachers to prepare their online classes and teachers already had online teaching experience under the CRTS conditions.

We will look at the teaching during this second stage of the emergency, which we conceptualize as a “planned emergency.” How did the teachers in this study prepare for it? What kind of teaching practices were used? What did they learn from the previous stage of the pandemic, and how can this later stage be characterized?

While interviewing again the teachers who participated in the first part of this research, we will also try to identify how each member of the different groups (Experienced, Enthusiastic, and Cautious) have developed their teaching during this second stage. We will then ask: what type of changes have occurred in their teaching practices, if any, and in what way can the categories identified in our typology be useful in developing new lines of pedagogical training in the area of university instruction?

## 7 Limitations

The current study is affected by several limitations, some related to methodology and others to conceptualization. From the methodological point of view, we would like to stress once again the use of mixed methods with a qualitative emphasis. This calls for the arduous task of combining the two methods, and the integration of the findings obtained from both of them.

Another limitation is related to the sampling. The study is based on a sample taken from only one university. Although the sample is representative in terms of size and diversity, it is still reduced and limited to one university in one specific country.

From a conceptual point of view, it is important to note that data was collected during the first month of the crisis – during the first month of the pandemic in Israel – at a time when it was not clear what was about to happen in the near future. This is likely to affect perceptions and approaches by the respondents (in the quantitative and qualitative section of the research).

In addition, and as argued in the Results section, pedagogical change could be assessed only on some of the dimensions relevant to change. The notion of pedagogical change could be assessed only on the perceptual dimensions of the teachers interviewed, and not as effective change in teachers' practices.

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