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From face-to-face to online: Teachers' perceived experiences in online distance teaching during the Covid-19 pandemic

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ABSTRACT

The urgent shift to online distance teaching and learning during the Covid-19 pandemic presented teachers with unique pedagogical, technological, and psychological challenges. The aim of this study was to map the main positive and negative experiences of teachers during this transition, as well as to examine intra- and interpersonal factors that affected teachers' ability to cope effectively with the challenges of online distance teaching. We used a mixed-method approach that combined qualitative (interviews) and quantitative (questionnaires) analyses. The interviews were analyzed using a grounded theory approach, specifically a bottom-up analysis, which led to the identification of five primary categories reflecting teachers' main concerns in online distance teaching (i.e., social, emotional, cognitive, pedagogical, and system support). The two most prominent categories were pedagogy and emotions, illustrating their centrality in teachers' experiences. A regression analysis of the questionnaires' data revealed that the two main variables which predicted both positive and negative experiences in online distance teaching were self-efficacy and teachers' attitudes towards technology integration in teaching. Findings of this study allow formulation of guidelines to promote factors related to positive experiences in online distance teaching.

Credit author statement

Yael Sidi: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Writing - review & editing, **Tamar Shamir-Inbal:** Formal analysis, Methodology, Writing - review & editing, **Yoram Eshet-Alkalai:** Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Writing - review & editing.

1. Introduction

Online learning technologies have already been integrated into education systems in Israel and worldwide for several decades. However, the pace of their implementation until the Covid-19 pandemic was relatively gradual and, according to many studies, did not lead to a paradigmatic change in schools' teaching and learning culture, which remained mainly traditional despite the extensive use of innovative technologies (e.g., [Collins & Halverson, 2018](#); [Georgiou & Ioannou, 2019](#); [Simonson et al., 2019](#)). Accordingly, research literature emphasizes schools' limited use of pedagogical models and strategies suitable for distance learning ([Simonson et al., 2019](#)), such as the flipped classroom ([Reidsema et al., 2017](#)) or online collaborative learning ([Zheng et al., 2019](#)). One of the common

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explanations for the reported limited effect of technologies on the learning and teaching culture in schools lies in the claim that their integration adopted incomplete or improper assimilation processes that did not invest enough in developing proper pedagogical models and strategies, did not involve all stakeholders in the integration, and ignored their needs, motivations, and resistance to change (e.g., Bernard et al., 2018; Cuban, 2022; Fullan, 2020).

Following the outbreak of the COVID-19 pandemic in 2020 and the lockdowns that accompanied it, education systems worldwide were forced to undergo a swift paradigmatic change in their teaching and learning culture (Azorín & Fullan, 2022; Garcia-Morales et al., 2021). The main expression of this change was a sweeping and immediate transition to synchronous remote online teaching and learning. This transition also required the rapid development of new models and strategies for effective distance teaching and learning. Due to the speed and the comprehensiveness with which the transition took place, in most cases decision-makers did not allow enough time and resources to build orderly implementation processes, and many of the stakeholders - especially the teachers - were only partially involved in this process. Consequently, teachers had to switch to online teaching without sufficient preparation, which harmed the quality of the implementation (Aditya, 2021; Epps et al., 2021).

The sweeping transition to online distance teaching confronted teachers with a variety of cognitive, social, pedagogical, and technological challenges (Alenezi et al., 2022; Mouton, 2020). These challenges were mainly: (1) gaining control over innovative technologies, (2) managing social interactions in conditions of limited cues and visibility, (3) conducting these interactions with unclear rules of conduct and discourse (Wut & Xu, 2021), (4) loss of teachers' privacy due to personal exposure in teaching from home (John et al., 2022), (5) dealing with the stress and cognitive load involved in managing online teaching and learning (Costley, 2020; Dong et al., 2019), and (6) dealing with criticism directed towards teachers by parents, who were exposed to the content their children learn (Picciano, 2018). All of these occurred alongside the need for rapid development of new models and strategies for online teaching and learning (Pokhrel & Chhetri, 2021; Popa, 2022).

Despite the many studies that examined the effect of the Covid-19 pandemic on educational systems worldwide (e.g., Pokhrel & Chhetri, 2021; Ryan, 2023), only a few examined teachers' positive and negative perceived experiences related to online distance teaching during the pandemic period. As a result, our knowledge regarding the influence of psychological aspects on teachers' experiences of online distance teaching is limited (Mouton, 2020). Accordingly, the uniqueness of the current study is in identifying teachers' perceptions of the positive and negative experiences involved in distance teaching, while examining the relationships between these and factors related to technology acceptance and integration (i.e., self-efficacy, openness to change, and attitudes towards technology), perceived support, and teachers' demographic variables, such as seniority in teaching. Since the study was conducted during the Covid-19 pandemic, its findings present a unique and ecologically valid insights on the processes of assimilating technological innovation in educational systems under emergency conditions. These insights can be applied not only during times of crisis but also guide the development of training programs and resources to better support teachers in future educational strategies that incorporate technology.

2. Literature review

The effective implementation of innovative technologies in educational systems presents diverse challenges, arising from three major reasons (Guri-Rosenblit, 2006): (1) Most of the technologies were not originally developed for learning and teaching, and their implementation in education systems requires developing unique models and strategies suitable for effective use; (2) The technologies change rapidly and require constant updating of the models and strategies; (3) Most decision makers and teachers are not trained as experts in technology-supported pedagogy and need much support in their assimilation and use.

The challenges faced by education systems in the effective implementation of technologies have greatly increased during the outbreak of the Covid-19 pandemic, and the resultant massive penetration of innovative technologies for synchronous online teaching and learning, which led to a large-scale and rapid shift from traditional face-to-face to online distance teaching (Alenezi et al., 2022). These challenges mainly involve psychological, social, and pedagogical aspects (i.e., cognitive, social-emotional, teachers' attitudes and beliefs, and teachers' personality variables, such as openness to change). They also include aspects of technological proficiency as well as school and peer support (Alenezi et al., 2022; Pedro & Kumar, 2020).

In the following sections, we review the major aspects related to online distance teaching, identify lacunas in which our knowledge is incomplete, and describe the contribution of the present study to partly fill these lacunas.

2.1. Cognitive, social, and emotional aspects in online distance teaching

Overall, long-established research literature has characterized technological environments as involving a high cognitive load, which has a negative effect on the quality of teaching-learning interactions (e.g., Paas et al., 2004). In particular, studies on the cognitive aspects of teaching online using synchronous video tools, report on the heavy cognitive load it imposes on teachers, who are required to constantly shift their attention to the many stimuli that appear simultaneously on the screen during the lesson and remain focused (Eshet-Alkalai, 2009) while managing an unfamiliar technology and interacting with students (Carrillo & Flores, 2020). Additionally, studies on teachers' perceptions of their teaching report that this effect has significantly increased since the sweeping transition to online teaching via synchronous video technologies during the Covid-19 pandemic (Moorhouse & Wong, 2022; Orhan & Beyhan, 2020). The problem of the cognitive load in online teaching was amplified by the fact that many of the students did not open cameras and microphones during the lesson (McGrane, 2022), contributing to teachers' stress and loss of focus during the teaching process (Hodges et al., 2020). Correspondingly, teachers report a decrease in teaching quality when using synchronous video technologies (Orhan & Beyhan, 2020).

Studies on socialization processes in teaching and learning during the Covid-19 pandemic indicate that the shift to synchronous video technologies led to a dramatic decrease in socialization processes as a result of a decrease in the number of social interactions (Larivière-Bastien et al., 2022; Wut & Xu, 2021). Under these conditions, both teachers and students faced difficulties recognizing social situations and codes of behavior that were unfamiliar to them (Hodges et al., 2020). In addition, teachers reported on insufficient peer support and a feeling that they had no one to help them in preparing lessons for online teaching (Alenezi et al., 2022; Gurung, 2021). Finally, the paucity of social cues in synchronous online communication due to closing cameras and muting microphones (McGrane, 2022), negatively affected participants' mental health (Marroquín & Morgan, 2020) and well-being, and led to a feeling of social isolation experienced by both teachers and students - a feeling that they were "alone in the world" during the lesson (Gordon & Presseau, 2022).

During the Covid-19 pandemic, teachers were forced to hold a large portion of the lessons from their homes, using synchronous video technologies. The fact that during these online lessons students were exposed to intimate details of teachers' lives (e.g., family photos hanging on the walls, the teacher's office, the living room design, and even family members talking in the background or even passing in front of the camera), as well as the ability of parents to watch the online lesson and criticize the teaching quality, caused a severe violation of the teachers' privacy (Majeed et al., 2022; Picciano, 2018). Notably, knowledge about teachers' perspectives on teaching in such conditions is limited and requires more research.

Finally, few studies examined the emotional experiences of teachers during the Covid-19 pandemic, and most focused on negative experiences, such as feelings of stress, anxiety, and depression (e.g., Klapproth et al., 2020; Ma et al., 2022).

2.2. Pedagogical aspects in online distance teaching

One of the great promises of synchronous technologies was the ability to manage diverse modes of online teaching and learning, combining teachers' frontal lectures, students' presentations, and discussions in virtual discussion rooms, while using study materials prepared by the teacher (Greenhow et al., 2022; Haleem et al., 2022). However, research indicates that, despite these promises, the transition during the Covid-19 pandemic from face-to-face to remote online teaching and learning eventually led to an increase in teacher-centered components of teaching (e.g., teacher's lectures) and a weakening of the student-centered components (teaching and learning processes which are largely based on interactions between teachers and students and students among themselves) (Crawford & Cifuentes-Faura, 2022; Tsegay et al., 2022).

Research on teachers' ability to cope effectively with the pedagogical challenges posed to them in these conditions reports that teachers were not familiar enough with effective pedagogical models and strategies for synchronous teaching (Mahmood, 2020; Martin et al., 2020), such as conducting group discussions in virtual chat rooms or employing the flipped classroom model (Reidsema et al., 2017), in which students study the content at home, and the lesson is devoted mainly to class discussions. The literature review by Carrillo and Flores (2020) clearly indicates teachers' unfamiliarity with effective strategies and models for online teaching (Popa, 2022), as well as a low level of technological, pedagogical, and content knowledge (TPACK) (Koehler & Mishra, 2009), which is crucial for effective online teaching (Benson & Ward, 2013). These findings are related to the emergency conditions in which the transition to online teaching took place during the Covid-19 pandemic - conditions that made it difficult for education systems to prepare thoroughly (Hodges et al., 2020).

In an effort to cope with the Covid-19 pandemic emergency situation, the Israeli Ministry of Education launched a large-scale project of instructing and assimilating synchronous and asynchronous distance teaching and learning in all Israeli schools. Teachers received training sessions, and learning activities were uploaded to a national platform for teachers' utilization. Teachers were trained in effectively preparing learning activities, sending assignments to students, and utilizing video meeting tools, such as Zoom (<http://zoom.us>) (Israel Ministry of Education, 2020; Shamir-Inbal & Blau, 2021). It is yet unclear whether the assimilation procedures intended to address the aforementioned pedagogical issues had any bearing on the positive and negative experiences of the teachers. This matter remains an open question and requires further investigation.

2.3. Technology acceptance and integration

As described in the Technology Acceptance Model (TAM, Davis, 1989), the readiness of teachers to accept and integrate technology in their teaching is determined by two factors: its perceived usefulness and perceived ease of use. In addition, studies on the implementation of technology-based systemic changes suggest that in order to improve technologies' perceived usefulness and ease of use, all stakeholders should be involved in designing and implementing the changes (e.g., Azorín & Fullan, 2022; Fullan, 2020). However, studies on the assimilation of the large-scale pedagogical and technological changes during the Covid-19 pandemic indicate that due to the speedy shift to online teaching and learning, in many cases improper processes were adopted, and many stakeholders - especially the teachers - were not involved (Epps et al., 2021). Moreover, studies report on damage to the quality of teaching due to poor technical support, which resulted from the inadequacy of the school technological infrastructure (e.g., outdated audio and video systems, limited bandwidth, and frequent disconnections in Wi-Fi communication) (Alenezi et al., 2022; Gurung, 2021; Pedro & Kumar, 2020). Taken together, these factors negatively affected teachers' perception of technologies' usefulness and ease of use, and lowered their motivation to effectively implement the change in their work (Farjon et al., 2019; Rasmitadila et al., 2020).

Beyond usefulness and perceived ease of use, research literature clearly points to the pivotal role of self-efficacy (Bandura, 1997) in encouraging technology acceptance and use (Barton & Dexter, 2020; Joo et al., 2018; Venkatesh & Xu, 2012). In the teaching context, self-efficacy refers to teachers' belief in their ability to plan their teaching and achieve its goals (Venkatesh & Xu, 2012). Accordingly, teachers with a high level of self-efficacy are expected to employ diverse and innovative teaching techniques in online instruction and

make elaborate pedagogical adjustments that improve the use of technology in teaching and learning. In contrast, teachers with a low level of self-efficacy will stick to the traditional use of technology in a more teacher-centered teaching style (Birisci & Kul, 2019). Surprisingly, studies on online teaching during Covid-19 revealed that despite the long-term experience with technological tools, teachers' self-efficacy did not increase with time (Ma et al., 2021). Moreover, it was found that teachers' sense of efficacy was lower compared to its level prior to Covid-19, and that teaching solely online was associated with a lower self-efficacy score than for teaching in hybrid or in-person models (Pressley & Ha, 2021). However, it is yet unclear if teachers' sense of self-efficacy predicted their perceived positive and negative experiences.

Teachers' readiness to accept change and their attitudes towards technologies were found to be positively related to the effectiveness and degree of technology use in teaching (Ertmer et al., 2012). That is, for teachers to use technology effectively, they must be willing to adjust their way of teaching and to perceive technology as a tool that serves pedagogy. For example, Blackwell et al. (2014) found that the most significant predictor for effective technology use among preschool teachers was their attitude towards the added value of technology. Sahin et al. (2016) demonstrated a strong relationship between the number of technological tools that teachers used and their comfort in teaching with technology. Notably, attitudes and beliefs towards technology were found to be the most significant predictors of effective technology assimilation in teaching, even among pre-service teachers (Farjon et al., 2019).

Despite the abundant papers on teaching during COVID-19, the upside of online distance teaching has received less empirical attention (e.g., Hebebcı et al., 2020; Vlachopoulos, 2020). One such example suggested that the experience of distance learning during this period could serve as an opportunity and an empowering experience for teachers, as they had to learn to maintain regular communication with students, acquire control over new digital tools, and develop new teaching strategies suitable for distance learning (Shamir-Inbal & Blau, 2021). Similarly, Hebebcı et al. (2020) interviewed teachers and reported positive views stemming from the sustainability of education in online distance teaching, as well as the development of students' self-control skills and student-teacher relationships. However, there is a need for a more systematic exploration of teachers' positive and negative experiences, as well as the factors relating to these experiences. Therefore, the present study aimed to thoroughly investigate both positively and negatively perceived cognitive and socio-emotional experiences of teachers during the Covid-19 pandemic. Additionally, we looked at factors that have been previously discovered in relation to using technology in teaching, to predict both positive and negative experiences.

2.4. Present study and research questions

In this study we hypothesized that a combination of the above-mentioned factors related to technology acceptance and integration, together with school system support, would predict teachers' positive and negative experiences while teaching in a synchronous video environment. To examine our hypothesis, we had two main aims. First, we set out to map the main positive and negative experiences of teachers during transitioning to synchronous online distance teaching. Second, we aimed to examine the factors that predicted teachers' perceived positive and negative experiences following this sudden and comprehensive shift. Accordingly, the research questions were:

RQ1. *What are the main experiences that teachers reported on during the transition to online distance teaching compared to traditional face-to-face teaching?*

RQ2. *Are the levels of self-efficacy, attitudes towards technology, openness to change, school support, and demographic variables related to the positive and negative experiences teachers reported on during the transition to online distance teaching?*

3. Method

The research was conducted in a two-phase exploratory mixed-method approach, that combined qualitative and quantitative methods (Greene et al., 1989). To examine RQ1, we utilized a qualitative research method. In particular, we conducted interviews with 20 teachers who taught remotely during the Covid-19 pandemic, aiming to map the main issues which preoccupied them during this time. To examine RQ2, we utilized a quantitative research method. In particular, we administered a questionnaire among 229 teachers, which examined the relationship between teachers' self-efficacy, their attitudes towards technology, their openness to change, and the school support system and their positive and negative experiences in online distance teaching.

3.1. Participants

Participants in the qualitative phase were recruited by an interviewer trained by the research team. The interviewer requested officials in the Israeli education system to contact teachers from different regions in the country and invite them to participate in the study. The participants were 20 fifth and sixth grade teachers, one male (5%) and 19 females (95%), aged 28–60 ($M = 44.65$, $SD = 8.32$). Fifteen participants taught in the central region of Israel (75%) and five in peripheral regions (25%). Their teaching seniority ranged from one to 39 years ($M = 15.1$, $SD = 10.17$). Eight participants taught Hebrew and language arts (40%), six math (30%), five English (25%), and one physical education (5%). Finally, 14 of the participants were married (70%), five divorced (25%), and one single (5%). Eighteen of the participants had children (90%). Participation in the study was on a voluntary basis and participants signed an informed consent form.

The quantitative phase involved 84 teachers who responded to an invitation on social networks (i.e., WhatsApp and Facebook) and also to an appeal by ICT school coordinators and teachers to distribute the questionnaire (60% response rate). An additional 158

teachers answered the questionnaires through an online research platform (Midgam) (91% response rate). Thirteen of the 242 respondents did not fit the participation criteria (they were at the teacher-training stage or not teaching grades five and six) and were, therefore, excluded. This left 229 participants for data analysis. Table 1 shows the demographic variables of the participants.

3.2. Data collection and instruments

3.2.1. Interviews

In the qualitative phase we used a semi-structured interviews to gather insights regarding teachers' perspectives about the obstacles and challenges experienced in using technology in general and for online distance teaching (*Zoom* or equivalent technologies) in particular (See Appendix 1 for sample interview questions). At the beginning of each interview, participants were asked to provide demographic information (e.g., age, number of children) and then to answer detailed questions about their experience in online distance teaching during the Covid-19 period, including the emotional, social, cognitive, and pedagogical challenges they experienced. Reference to the socio-emotional experiences in online distance teaching was made while comparing them to face-to-face traditional teaching. For example, the interviewees were asked to describe the types of interactions and communication they had with their students during online distance teaching and about their ability to create rapport with the students and/or with their peers. In the context of emotional challenges that accompanied online distance learning, the interviewees were asked about their experience with reference to the positive and negative aspects they experienced. In the context of cognitive challenges that accompanied the online teaching experience, the interviewees were asked about their ability to conduct an effective and continuous lesson and to cope with the distractions that accompany online distance teaching. The interviewees were asked about the burden that accompanied the transition to online distance teaching. They were also asked about the support of the system and about coping with dilemmas of learning assessment.

3.2.2. Overview of instruments in quantitative phase

The research tool in the quantitative phase was a questionnaire that included six sections (see Appendix 2): A demographic questionnaire, four existing questionnaires used in previous studies, and one questionnaire that was designed for the present study. The answers to all questions were rated on a 7-point Likert scale (1 = *do not agree at all* to 7 = *agree to a large extent*). Questionnaires taken from previous studies were translated in the process of back translation – from English to Hebrew and back to English.

3.2.3. Demographic information

This questionnaire was designed to collect relevant background information: age, gender (male/female), marital status (single/married/divorced/widow), number of children, teaching discipline, grade, seniority in teaching (number of years), region in Israel (north/center/south), school's socio-economic status according to the Israeli Ministry of Education (low/medium/high), number of hours taught online per week, and prior acquaintance with the students (yes/no/some students).

Table 1
Demographic variables of study participants.

Factor	Mean	SD	Min	Max	Range
Age	38.9	10.6	20	69	49
Number of children	2.7	2.7	0	9	9
Seniority	11.1	9.6	1	40	39
Number of online teaching hours per week	16.1	8.5	1	42	41
Factor	Frequencies (percentage)				
Gender	Female				164 (72%)
	Male				65 (28%)
Family status	Single				41 (18%)
	Married				172 (75%)
	Divorced				13 (6%)
	Widower				3 (1%)
Socio-economic status of school (self-report)	Low				32 (15%)
	Medium				117 (54%)
	High				69 (31%)
Grade	4				26 (11%)
	5				13 (6%)
	6				20 (9%)
	7				16 (7%)
	8				8 (5%)
	9				9 (4%)
	10				23 (10%)
Prior acquaintance with students	Other (several grades)				111 (48%)
	Yes				79 (34%)
	No				73 (32%)
	With some of the students				77 (34%)

3.2.4. Openness to educational change

The Openness to Educational Change Questionnaire (Crady, 2019) is an eight-item questionnaire designed to identify the degree of openness to changes in teaching among teachers. The reliability of the scale in the present study was very good (*Cronbach's alpha* = .89). Scores were based on the mean of the eight items (Range = 2–7, Mean = 4.7, SD = 0.9, Median = 4.00, Skewness = 0.589).

3.2.5. Perceived barriers to technology integration

The Perceived Barriers to Technology Integration scale (PBTI) (Basarmak & Hamutoglu, 2019) is a questionnaire designed to identify teachers' attitudes towards the integration of technologies in teaching. The questionnaire consists of 14 categories. For the purpose of this study, the three most relevant categories were selected: (1) four items measuring beliefs about learning and teaching activities, (2) two items measuring teacher training, and (3) three items measuring matching technology to the learning content. The reliability of the scale was very good (*Cronbach's alpha* = .891). Scores were based on the mean of the nine items (Range = 1–7, Mean = 4.1, SD = 1.3, Skewness = -0.122).

3.2.6. Self-efficacy

The Self-efficacy Beliefs for Technology Integration questionnaire (Wang et al., 2004) is a questionnaire designed to measure the level of self-efficacy that teachers feel regarding the use of technologies in teaching. The questionnaire consists of 21 items from which the 15 most relevant for the study were selected. The reliability of the scale in the present study was very good (*Cronbach's alpha* = .928). Scores were based on the mean of the 15 items (Range = 1–7, Mean = 4.5, SD = 1.2, Skewness = -0.239).

3.2.7. School support

The school support scale is a three-item questionnaire designed to measure the degree of support experienced by teachers in online teaching based on the Schools' ICT Vision and Policy Scale and focused on school support, peer support, and technical support in online distance teaching (Vanderlinde & van Braak, 2010). The reliability of the scale in the present study was very good (*Cronbach's alpha* = .887). Scores were based on the mean of the three items (Range = 1–7, Mean = 4.5, SD = 1.7, Skewness = -0.406).

3.2.8. Positive and negative experiences in online distance teaching

Six items measured positive and negative experiences associated with online teaching. The items were based on the positive and negative emotional expressions reported by primary and secondary school teachers (Collie et al., 2012; Tabancali, 2016; Trigwell, 2011), and on the experiences described in the present study's interviews. The positive experiences were represented by three items describing positive experiences related to online teaching, while the negative experiences consisted of three items describing negative experiences related to online teaching. The reliability of the scales for positive and negative experiences was satisfactory (*Cronbach's alpha* = .853, .708 respectively). Scores were based on the mean of the three items for each scale (Range = 1–7, Mean = 4, SD = 1.4, Skewness = -0.043, Range = 1–7, Mean = 3.8, SD = 1.3, Skewness = -0.125, respectively).

3.3. Research procedure and data analysis

Data collection for the qualitative phase took place between November and December 2020, during the Covid-19 pandemic. The semi-structured interviews lasted between ~11 and ~35 min. A total of ~400 min were recorded. Interviews were recorded and then transcribed by a research assistant trained by the researchers. The analysis of interviews and categorization of statements were conducted by the authors in a bottom-up process according to the grounded theory approach (Glaser & Strauss, 1967). To corroborate the interviews' coding accuracy, approximately 25% of the statements in the qualitative analysis were coded by all authors. Disagreements that arose between the raters regarding the coding were discussed jointly until full agreement was reached.

The analysis resulted in the identification of 473 statements which were categorized into five main categories. Each category was divided into subcategories according to the thematic analysis. The main categories included statements which referred to social, emotional, cognitive, pedagogical, and self-efficacy aspects in online distance teaching. Statements that referred to experiences related to the school support (e.g., school and peer support) were included in the system support category. Positive and negative references to online distance teaching were found in all the main categories. It should be noted that the coding of the statements into categories and subcategories was not always exclusive; that is, sometimes it was possible to attribute a statement to several subcategories. For example, the statement "I had positive feelings because it allowed me to teach the students, and there was cooperation on their part, which I utilized most of the time. I had satisfaction. I had pleasure." was coded into two categories – positive teacher-student interaction and positive emotional experiences. Notably, coding of the interviews was conducted prior to analysis of the quantitative phase.

Data collection for the quantitative phase took place between January to April of 2021. The participants signed an informed consent form before filling out the questionnaires. The questionnaires were conducted online, anonymously, and took between five and 10 min for completion. After answering the demographic questionnaire, the remaining questionnaires were presented in a random order. The items within each questionnaire were also randomized. Data was analyzed using SPSS Statistics for Windows, Version 26.0 (IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp). Descriptive data was compared using an independent *t*-test

and ANOVA. Pearson's correlation¹ and Linear Regression analyses were used to determine the relationships between study variables.

3.4. Ethics

The study adhered to ethical principles to protect the rights of all participants. Participation was voluntary, and participants could opt out at any stage of the study without penalty. No identifying data was collected or used during the study. The study was approved by the Ministry of Education Ethics Committee (#11429).

4. Findings

4.1. Mapping teachers' experiences

The first research question (RQ1) regarded the main experiences that teachers reported on during the transition to online distance teaching. In our qualitative analysis, five categories were identified in the interviews' analysis, representing the main concerns of teachers in online distance teaching during the Covid-19 pandemic period – pedagogical, social, emotional, cognitive, and system support.

The **pedagogical category** ($N = 156$, 33% of all statements) referred to the pedagogical aspects related to online distance teaching. The analysis showed that the majority of respondents ($N = 99$; 64%) perceived online distance teaching as an opportunity to diversify teaching methods (Table 2). In their positive statements, respondents referred to the way in which online distance teaching allowed them to maintain the order of teaching and learning and to communicate with their students. On the other hand, it is important to note that 57 statements (36%) of the pedagogical category described ineffectiveness and difficulties faced by the teachers during online distance teaching. Table 2 lists the pedagogical category in combination with representative statements.

The statements that represent positive experiences in the pedagogical subcategory (64%) included reference to diversity in teaching strategies (25%), such as learning in groups, promoting dialog, independent learning, and adapting teaching to a variety of learners. Extensive reference (26%) was also found for the effectiveness of online distance learning that facilitated the continuity of teaching-learning processes. Findings also included statements related to maintaining discipline, order, and teacher control of the class (13%). The negative experiences reported (36%) included reference to the ineffectiveness of online distance learning (19%), the difficulty in making a reliable assessment (10%), and techno-pedagogical challenges (8%) which made it difficult to carry out meaningful teaching.

The **social category** refers to the interactions that took place remotely between the teachers and their colleagues, between teachers and their students, and between teachers and their own family members. In this category, 82 statements were found (17% of all statements). Table 3 lists the social category and representative statements.

Among the 82 statements in this category, 57 (70%) referred to positive subcategories of interaction and communication with colleagues and students. However, the findings also included 25 statements (30%) which described difficulties conducting social interactions while teaching and learning remotely. Subcategories that related to difficulties in communication with students were also found, but since they also had emotional aspects, they were included in the emotional and negative subcategories that accompanied this process (Table 4) and not in the social category (Table 3).

The **emotional category** refers to the emotional experiences – positive or negative – experienced by the teachers during online teaching. The reference to the emotional category included 135 statements (29% of all the statements). Table 4 lists the emotional subcategory and the representative statements.

According to Table 4, negative experiences, such as frustration, sadness, and a feeling of detachment from the students, were dominant (94 statements, 70% of all statements). Conversely, positive experiences, such as pleasure and satisfaction, included much fewer statements (41 statements, 30% of all statements).

The **cognitive category** contains statements describing teachers' cognitive experiences in teaching online. This category included 86 statements (18% of all statements). Of these, 46 statements (53%) described negative experiences (difficulty concentrating due to distractions, stimulus overload, and workload), and 40 statements (47%) described positive experiences (mainly feelings of self-efficacy associated with online teaching). Table 5 lists the cognitive category and representative statements.

The **system support category** refers to the education system's support (both technological and pedagogical) for teachers who teach remotely. It was expressed in the statements to a very marginal extent (14 statements, 3% of all statements). The statements in this category referred mainly to the support characteristics of the schools' training and management teams. Table 6 lists the system support category and representative statements.

4.2. Predicting teachers' experiences in online distance teaching

4.2.1. Teachers' background factors

Our investigation of the second research question (RQ2), regarding factors that may predict teachers' positive and negative

¹ As skewness analyses showed that all scales were normally or approximately normally distributed (skewness ranging from -0.4 to 0.58), we used Pearson correlation rather than Spearman correlation, as in the case of normally distributed variables, the use of ordinal data should not distort the r value (O'Brien, 1979). Notably, to confirm this decision, we re-analyzed the data, using Spearman and indeed the results were almost identical.

Table 2

The pedagogical category: Positive and negative aspects (N = 156; 33%).

	Total statements	Percentage within the category	Representative statements
Positive Subcategories N = 99; 64%			
Effectiveness – maintaining a daily routine and learning	40	26%	“It’s effective. I don’t deprive them of knowledge, and I don’t cut their hours. They get all the math hours ... I find it advantageous. Everything is right in front of me, and I can use it all immediately. I can’t forget anything.” (T3)
Diversity in teaching strategies	39	25%	“The students learned to create presentations. Each child in turn opened the morning meeting. Each one chose to present the most interesting topic to him and led the meeting himself with a presentation he created.” (T2)
Discipline and teacher control	20	13%	“Zoom learning had a positive effect. I felt that I was in control of the class. There were no outbursts, because I had control of the mute button.” (T14)
Negative Subcategories N = 57; 36%			
Lack of effectiveness	29	19%	“It’s less interesting to teach this way (remotely). It lowers the level of learning. There is quiet in the lesson, but it’s not the same level as in the classroom.” (T1)
Difficulty in assessment	15	10%	“We don’t evaluate the Zoom lessons. Sometimes I praise them for something they did, but I don’t give grades. It’s enough to say participated or did not participate.” (T5)
Techno-pedagogical difficulty	13	8%	“In the beginning it was very difficult for me to manage the technology. I had to learn to use new tools. Everything was new, and I had a hard time with the fact that I received a new class in a new school, and I only saw the students remotely. (T12)

Table 3

The social category: Positive and negative aspects (N = 82; 17%).

	Total statements	Percentage within the category	Representative statements
Positive Subcategories N = 57; 70%			
Positive teacher-student interaction	37	45%	“I give them a good feeling in the morning. I say good morning to each and every one. Thus, they feel that I see them. I pay attention to them and give them as much personal attention as I can.” (T15)
Contact with colleagues	20	25%	“This period created a great closeness with my colleagues. I am an ICT coordinator and had no contact before with grade 1 and 2 teachers, neither at the teaching level nor in ICT integration. Suddenly they asked for my help in using technology in their teaching. I created a strong social and working connection.” (T8)
Negative Subcategories N = 25; 30%			
Challenges in family interaction	15	18%	“At home I work in a quiet, isolated place. Everyone in my family is sleeping or studying in their rooms. The students are able to see my personal space.” (T3)
Difficulty with colleagues	10	12%	“The remote teaching caused a distance from my peers. There was no small talk, no mingling in the corridors, no opportunity to work or interact together. “(T3)

Table 4

The emotional category: Positive and negative aspects (N = 135; 29%).

	Total statements	Percentage within the category	Representative statements
Negative Subcategories N = 94; 70%			
Negative emotional experiences	52	39%	“There was much frustration because of negative criticism from the media. It was very difficult emotionally. Although our team did everything to maintain an agenda and communicate with the students, there were many teachers who had unpleasant experiences in front of parents. The criticism in the media was especially the hardest for me.” (T11)
Emotional deprivation	42	31%	“Distance teaching affects me emotionally in a very difficult way, because there is no feedback from the students. I can’t see their eyes and don’t know if they are with me or not.” (T10)
Positive Subcategory N = 41; 30%			
Positive emotional experiences	41	30%	“Distance teaching caused me to feel very comfortable. I felt more relaxed and freer to teach; for example, now I teach both face-to-face and online, and I’m really much more comfortable with the Zoom lessons I teach. As far as I’m concerned, I wish teaching would always be like this.” (T18)

reported experiences in online distance teaching, began by examining relationships between teachers’ background information (e.g., gender, seniority in teaching, number of children) and their positive and negative experiences in online distance teaching. An independent *t*-test for gender revealed no significant differences related to the teachers’ gender and positive/negative experiences ($p = .675, .194$, respectively). We conducted ANOVA analyses for schools’ socio-economic status and prior acquaintance with students. Similar to gender, no significant differences were found in the ranking of the positive and negative experiences as a function of the

Table 5
The cognitive category: Positive and negative aspects (N = 86; 18%).

	Total statements	Percentage within the category	Representative statements
Negative Subcategories N = 46; 53%			
Workload	26	30%	"I find myself much more involved in work than before the Covid-19 period. I usually don't work at home. I used to complete all my tasks at school; otherwise, there is no time limit when working at home. In the Covid-19 period I found myself working at the computer for 10 h or more." (T3)
Stimulus overload and distractions	20	23%	"There were many more distractions because we were exposed to students' home environment. Sometimes the father walked shirtless behind the student, the mother yelled at his brother, the television was on full volume ... " (T4)
Positive Subcategory N = 40; 47%			
A sense of self-efficacy	40	47%	"I improved my and the students' technological abilities. This is something we always aimed for, but it did not happen at school. Here, in one month there was a jump ... I dared to experiment with things I had never tried before ... It was very successful." (T13)

It is evident from Table 5 that online distance teaching created a great cognitive load and required dealing with unexpected stimuli overload and distractions caused by the unique nature of distance teaching, where both the teachers and the students were in their homes and not in the classroom (46, 53%). However, it should be noted that a significant portion of teachers (40, 47%) expressed a sense of self-efficacy.

Table 6
The system support category: Positive and negative aspects (N = 14; 3%).

	Total statements	Percentage within the category	Representative statements
Negative subcategory (lack of support)	9	64%	"We were thrown into a completely new situation. The education system piled instructions on us, but in the end each of us was alone, and we had to find the answers on our own." (T2)
Positive Subcategory (presence of support)	5	36%	"I felt that I received good support from the principal, the assistant principal, and the staff. Whenever I needed any help ... With Zoom and without it, I always got the support I needed." (T18)

According to Table 6, the majority of participants who addressed the issue of support (14; 64% of the respondents in this category) felt that they did not receive proper pedagogical, technological, and emotional support from the system. The few participants who responded positively to the system's support (N = 5; 36%) described system support availability, attention, encouragement, and providing emotional, technological, and pedagogical assistance.

socio-economic status of the school ($p = .347, .982$, respectively) or in the prior acquaintance with the students ($p = .286, .824$, respectively). See means and standard deviations in Table 1.

A Pearson correlation coefficient was conducted to examine the association between teachers' positive and negative experiences, teachers' number of children, seniority in teaching, and number of hours of online teaching (Table 7).

As can be seen in Table 7, our findings revealed a significant correlation between the number of children and the positive and negative experiences, i.e., the more children teachers had, the higher their rating of positive experiences and the lower their rating of negative experiences. A significant correlation was also found between teaching seniority and positive and negative experiences, i.e., the higher the seniority, the more positive and fewer negative experiences were expressed. No significant correlation was found between weekly hours of online teaching and positive and negative experiences.

4.2.2. Self-efficacy, attitudes towards technology, openness to change, and school support

We conducted two hierarchical regression analyses to examine RQ2 (the correlation between openness to change, level of self-efficacy, attitudes towards the integration of technology in teaching (i.e., perceived obstacles to technology integration), school support, and background variables to teachers' experiences in online distance teaching). In light of the significant correlation found

Table 7
Correlations table between study variables.

Factor	1	2	3	4	5	6	7
(1) Positive experiences							
(2) Negative experiences	-.46 **						
(3) Openness to educational change	.21 **	.03					
(4) Perceived obstacles to technology integration	.68 **	-.37 **	.19 **				
(5) Self-efficacy for technology integration	.67 **	-.42 **	.16 *	.77 **			
(6) School ICT support	.27 **	-.13 *	.04	.41 **	.36 **		
(7) Number of children	.18 **	-.22 **	-.04	.11	.06	.02	
(8) Seniority	.16 *	-.14 *	.02	.05	.08	.03	.23 **

* $p < .05$; ** $p < .01$.

between positive and negative experiences and the variables number of children and seniority, these variables were entered as fixed variables in the model. Also, since a strong correlation was found between the variables self-efficacy and attitudes towards the integration of technologies in teaching, these variables were entered into the model using the Stepwise method to neutralize the dependence between them.

The Regression analysis for positive experiences showed that, in the first stage, the variable number of children contributed significantly to the model, $F(2,213) = 4.902, p = .008$, and explained 3% of the variance in positive experiences, while the variable seniority was not significant. In the second stage, we added the variables openness to change, self-efficacy, attitudes towards integrating technology in teaching, and school support, using the Stepwise method. Of these, the variables attitudes towards the integration of technology in teaching and self-efficacy remained in the final model together with the control variables. This explained 52% of the variance in the positive experiences, $F(4,213) = 58.396, p < .0001$, while the variables openness to change and school support were removed from the model (Table 8).

The same analysis was also conducted for negative experiences and showed, similar to the positive experiences, that in the first stage the variable number of children contributed significantly to the model, $F(2,213) = 7.305, p = .001$, and explained 1% of the variance in the negative experiences, while the variable seniority was not significant. In the second stage, only the variable self-efficacy remained in the final model which, together with the control variables, explained 23% of the variance in the negative experiences, $F(3, 213) = 22.001, p < .0001$, while the variables attitudes towards the integration of technologies in teaching, openness to change, and school support were removed from the model. Notably, the number of children was marginally significant (Table 9). While attitudes towards the integration of technologies in teaching did not explain the variance in negative experiences, above and beyond self-efficacy and number of children as shown in Table 7 and it was significantly (and negatively) correlated with negative experiences. In addition, attitudes towards the integration of technologies in teaching and self-efficacy were strongly correlated with each other.

These analyses indicate that the two most significant predictors for the positive and negative experiences related to online distance teaching were self-efficacy and attitudes towards the integration of technology in teaching, together with the number of children the teacher had. In contrast, other teacher characteristics, openness to change, and school support did not predict the teachers' experiences in online distance teaching.

5. Discussion

The Covid-19 pandemic provided researchers of innovative technologies with a rare opportunity to study, in real time and in authentic situations, the swift and massive technology integration processes which took place in education systems. In the present study, we focused on teachers' positive and negative experiences during this shift, using a mixed-method approach.

5.1. Teachers' positive and negative experiences during Covid-19

We began our investigation with aiming to map the various unique experiences teachers reported on during the transition to online distance teaching (RQ1). Analysis of the semi-structured interviews resulted in the identification of five main categories (i.e., social, emotional, cognitive, pedagogical, and system support), which reflect teachers' concerns in online distance teaching. Considering the fact that this study focused on teaching, it was not surprising that the category with the largest number of codes was the pedagogical one, illustrating the teachers' concerns regarding pedagogical issues, such as teaching strategies and teaching effectiveness, as well as issues of discipline and teacher control (König et al., 2020). The slightly lower dominance of the emotional category reflects the centrality of teachers' emotional concerns in online distance teaching, mainly due to the limited student feedback and visual contact (Badia et al., 2018; Keller et al., 2014).

Unlike reports from the literature regarding the pivotal role of cognitive and social issues in online teaching and learning (e.g., Martin et al., 2020; Lantz-Andersson et al., 2018), these categories were found to be of only a medium-scale concern for teachers that mainly expressed concerns of workload (cognitive category) and of the quality of social interactions (social category).

Most studies on the integration of innovative technologies in education stress the critical role of system support (e.g., Chen et al.,

Table 8

Regression analysis for positive experiences.

Model	Factor	β	t	P	R	R ²	ΔR^2
1					.211	.035	.044
	Number of children	0.144	2.072	.039			
	Seniority	0.123	1.774	.078			
2					.691	.471	.434
	Number of children	0.080	1.555	.121			
	Seniority	0.092	1.780	.076			
	Perceived obstacles to technology integration	0.663	13.207	.000			
3					.726	.519	.050
	Number of children	0.096	1.938	.054			
	Seniority	0.069	1.407	.161			
	Perceived obstacles to technology integration	0.397	5.345	.000			
	Self-efficacy for technology integration	0.348	4.695	.000			

Table 9
Regression analysis for negative experiences.

Model	Factor	B	t	p	R	R ²	ΔR ²
1	Number of children	-0.221	-3.224	.001	.255	.056	.065
	Seniority	-0.083	-1.210	.228			
2	Number of children	-0.209	-3.367	.001	.489	.228	.174
	Seniority	-0.041	-0.656	.513			
	Self-efficacy for technology integration	-0.420	-6.937	.000			

2019). While our findings included teachers' complaints about a lack of support and the feeling that they did not receive enough preparation, the analysis of the statements in our study revealed that the system support category was surprisingly negligible.

Moreover, in light of the abovementioned difficulties that teachers faced during the swift and large-scale shift to online distance teaching with innovative technologies (Alenezi et al., 2022; García-Morales et al., 2021), we expected the teachers' statements to reflect mainly negative experiences. Surprisingly, all of the categories, except the cognitive one, demonstrated a *clear dominance* of positive experiences. These findings reinforce the few studies that aimed to examine the advantages, alongside the disadvantages, of the shift to online distance teaching during Covid-19 (e.g., Hebecci et al., 2020; Shamir-Inbal & Blau, 2021; Vlachopoulos, 2020). We maintain that understanding these positive and negative experiences may help in enhancing the advantages of online distance teaching and ensure that they continue to be strengthened even during routine teaching and learning.

5.2. What affects teachers' positive and negative experiences?

Research literature regarding the integration of technology for teaching and learning has identified a wide range of factors associated with teachers' readiness and motivation to integrate innovative technologies in their curriculum. The most prominent factors were teachers' self-efficacy (e.g., Kwon et al., 2019) and their TPACK knowledge (Ifinedo et al., 2020; Joo et al., 2018; Wang et al., 2018). Accordingly, in the present study we sought to examine whether these factors are also related to teachers' positive and negative experiences when technology was vastly and expeditiously imposed on the entire teaching process. Specifically, we looked at self-efficacy, attitudes towards technology, openness to change, school support, and teachers' personal characteristics (RQ2) and their association with the teachers' positive and negative experiences during the transition to online distance learning.

Our analysis revealed that the two main variables that predicted both positive and negative experiences were self-efficacy related to technology and teachers' attitudes towards technology integration in teaching. This aligns with existing literature, showing that both factors are related to teachers' readiness to integrate technology into their classrooms (e.g., Farjon et al., 2019). Notably, while previous research has illustrated the fundamental role of these factors in using technology in general, in the present study we show that these factors are also strongly associated with more positive and fewer negative experiences during a systemic large-scale and swift shift to online distance teaching. In this context, self-efficacy also emerged as a subcategory in the qualitative analysis, with teachers' reports suggesting that the imposed shift to online distance teaching may have contributed to their self-efficacy. Overall, our findings emphasize the importance of promoting teachers' self-efficacy and their positive attitudes towards technology by exposing them to the use of different types of technology (Barton & Dexter, 2020). It is noteworthy that, since the present research was conducted during a period characterized by uncertainty, stress, and social distancing (Marroquin et al., 2020), further research is necessary to investigate whether the variables found in this study also apply to more gradual technology integration models. Future research should also explore the possibility that positive and negative experiences, partly or fully, mediate the relationship between attitudes, self-efficacy, and acceptance.

Surprisingly, neither openness to educational change nor school support variables predicted positive or negative experiences during the shift to online distance teaching, despite their well-reported role in teachers' readiness to integrate technology (e.g., Crary, 2019; Vanderlinde & van Braak, 2010). These findings advocate the unique role of positive and negative experiences beyond technology acceptance, supporting the importance of adding them as distinct variables to existing acceptance models. As suggested above, they may even mediate some of the relationships between the factors related to technology integration. Research findings indicate that openness to change reflects the readiness to accept changes in general, and not specifically technological changes. In our study, despite the openness to change scale's good internal consistency, it is possible that its adaptation to technology-related changes impacted the measured variables. It may also be that the systemic, large-scale, and swift change in the teaching systems explored in our study was not properly measured by this scale, which was originally developed by Crary (2019) for small-scale changes. Support of the notion that openness or readiness to accept change doesn't play a pivotal role in large-scale technological shifts can be found in the fact that it was not found as a main subcategory in the qualitative phase of this study as well.

With regards to school support, this was not found to be a significant predictor for positive and negative experiences, despite being considered in literature as an important factor in technology integration (e.g., Margot & Kettler, 2019). It is possible that the scale we used, which included three items relating to school support, peer support, and technical support, was not sensitive enough to properly reflect the issues of support that teachers struggled with. Using the complete scale might have revealed a more pronounced role of this factor with respect to positive and negative experiences during online distance teaching. It is also possible that the quick reaction of the Israeli Ministry of Education in instructing and assimilating synchronous and asynchronous distance teaching in Israeli schools helped in reducing some of the uncertainties that were associated with the Covid-19 pandemic crisis. Future research that would compare

implementation processes in different education systems worldwide may shed light on this potential explanation.

With regards to teachers' personal characteristics, we found that the variable 'number of children' predicted both positive (marginally) and negative experiences of the teacher. In particular, the more children the teachers had, the more positive and the fewer negative experiences they reported. This is consistent with reports in literature that having children is associated with life satisfaction (Angeles, 2009). Moreover, it is possible that, because of their proficiency in teaching skills, it was easier for teachers to carry the burden of homeschooling their children. However, the few teachers that mentioned their home life in the qualitative analysis reported problems associated with having their children present at home during the online lessons and exposing their personal domestic life to their students. Moreover, most of the teachers that participated in our study were females. Research has shown that workload had a negative impact on working mothers' well-being during the pandemic (Giurge et al., 2021), because, more than fathers, they bore the burden of caring for the young children, homeschooling them, and taking care of household chores (Adisa et al., 2021). Similar findings were reported by Gordon and Pesseau (2022), whose study on working academics showed that mothers of young children were especially harmed during the pandemic in both their well-being and professional productivity. While further research is required to shed light on this factor, it is important to note that in our study we did not take into consideration the age of the teachers' children. In relatively larger families, it is possible that some of the interviewed teachers had older children who were able to assist with the younger ones, as well as with the household chores, thereby freeing the teachers' time and capacity for achieving their work goals.

Teachers' seniority was found to be associated with positive and negative experiences, such that teachers with more years of teaching reported more positive experiences and fewer negative experiences. However, it did not predict these variables in our regression model. As detailed in the Introduction section, the effect of seniority on teachers' well-being, job satisfaction, and burnout has mixed findings in literature. And since seniority was not mentioned in the interviews, we can only assume that it was not a fundamental factor in explaining the effects of the shift to online distance teaching on teachers' experiences.

5.3. Limitations and future research directions

Our study has some limitations. First, although the fact that the study was conducted "in real-time" (i.e., measuring teachers' attitudes and experiences during the COVID-19 pandemic online distance teaching period) grants it a unique ecological validity, data was collected over a relatively short period. A further study that would measure the same research variables over a longer period of time is recommended. Second, our study focused on teachers' perceptions, but did not measure their actual performance. In light of the well-documented gap found in literature between reporting and actual performance (e.g., Dang et al., 2020), it is strongly recommended to test these in follow-up studies. Third, for reasons explained above, the sample in the qualitative phase was limited to teachers of grades five and six, whereas the sample in the quantitative phase was more comprehensive (teachers of grades four to ten). Using a more inclusive sample would allow expanding the generalizability of our findings. However, it must be noted that there might have been a gap between the main concerns of teachers in grades five and six alone compared to the larger sample. Thus, future studies should corroborate the findings by interviewing teachers from a more inclusive sample. Fourth, as noted above, for translating the questionnaires we used a forward-backward method. While this is an accepted technique (Cohen et al., 2017), we did not conduct a validity check of the translated scales nor of the experiences scale. As the various versions of our assessment surveys may not be culturally equivalent to the original, future research could confirm our findings by conducting a validity check for these scales. Finally, the current study was limited to teachers' perceptions and experiences. It is recommended, in the future, to complete the picture by also examining the students' perceptions.

5.4. Implications and conclusions

In conclusion, our study offers a thorough and unique investigation of how the large-scale and swift systemic technology implementation in Israel affected teachers' reported positive and negative experiences of online distance teaching. From a practical standpoint, the study allows the formulation of guidelines to promote factors related to positive experiences of online distance teaching. In particular, offering workshops and training courses to promote familiarity with technological tools (for example, tools for developing animations and games) can increase teachers' sense of discipline and pedagogic control, improve attitudes towards technology, and increase teachers' self-efficacy with regards to technology use. We also suggest that expert lectures, as well as hands-on workshops on issues related to the cognitive and emotional-social challenges, that online distance teaching present to teachers (attention, discourse ethics, etc.) may help teachers to cope better with future transitions, even gradual ones, to online distance teaching.

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Declaration of competing interest

The authors declare that they have no conflict of interest.

Data availability

Data will be made available on request.

Appendix 1

Example items from semi-structured interviews.

- How did online distance teaching affect the interaction and communication between you and the students?
- Did and how did online distance teaching affect the ability to create rapport between you and the students?
- How did online distance teaching affect the support you receive from the school and the other teachers?
- What positive feelings related to online distance teaching can you describe? (e.g., enjoyment of teaching ...)
- What negative feelings related to online distance teaching can you describe (e.g., frustration from teaching)?
- Can you describe other emotional effects related to online distance teaching?
- In your opinion, is and how is online distance teaching suitable for the teaching of the study contents that you teach?
- In your opinion, is online distance teaching suitable for evaluating the students' learning outcomes? (For example, does online distance teaching allow evaluating the learning process and giving a grade in a manner similar to the assessment that takes place in the classroom?)
- Did the load in teaching and preparing for class increase/decrease/not change following the transition to online distance teaching?
- Are there more/less/the same distractions for you during online distance class compared to a face-to-face class?

Appendix 2

Study Questionnaires (presented to participants in Hebrew).

The Openness to Educational Change Questionnaire (Crary, 2019)

1. I prefer to teach my subject the way it was taught to me. (R)
2. I try to adapt my instructional approaches to follow current best practices.
3. I do not want to change the way I teach my subject. (R)
4. I am quick to embrace new methods for teaching my subject.
5. Pressure to change my strategies makes me want to leave teaching. (R)
6. I enjoy trying new ways of teaching my subject.
7. I am afraid to change the way I teach my subject. (R)
8. Gaining new knowledge about teaching my subject is invigorating.

The Perceived Barriers to Technology Integration scale (PBTI) (Basarmak & Hamutoglu, 2020)

1. I believe that the use of online distance teaching in learning-teaching activities enhances learning.
2. I believe that it is easy to design learning activities by using online distance teaching.
3. I believe that online distance teaching facilitates my work just like a teacher.
4. I believe that use of online distance teaching in learning-teaching activities supports students' advanced thinking skills (creative thinking, problem-solving skills, critical thinking., etc.).
5. I think that the training I received in the use of online distance teaching is easily applicable in the classroom.
6. I think that I have been sufficiently trained in the skills required to the use of online distance teaching.
7. I have the appropriate curriculum content for online distance teaching I use in the course.
8. I think that online distance teaching to be used in the course and the content to be taught complement each other.
9. I think the current state of online distance teaching is useful for teaching.

The Self-efficacy Beliefs for Technology Integration questionnaire (Wang et al., 2004)

1. I feel confident that I understand computer capabilities well enough to maximize them in my classroom.
2. I feel confident that I have the skills necessary to use online distance teaching for instruction.
3. I feel confident that I can successfully teach relevant subject content with appropriate use of online distance teaching.
4. I feel confident that I can use correct computer terminology when directing students' online distance teaching use.
5. I feel confident I can help students when they have difficulty with online distance teaching
6. I feel confident I can effectively monitor students' online distance teaching use for project development in my classroom.
7. I feel confident that I can motivate my students to participate in technology-based projects.
8. I feel confident I can mentor students in appropriate uses of online distance teaching
9. I feel confident I can consistently use educational technology in effective ways.
10. I feel confident I can provide individual feedback to students during online distance teaching use.

11. I feel confident that I will be comfortable using online distance teaching in my teaching.
12. I feel confident I can be responsive to students' needs during online distance teaching use.
13. I feel confident that, as time goes by my ability to address my students' technology needs will continue to improve.
14. I feel confident that I can develop creative ways to cope with system constraints (such as budget cuts on technology facilities) and continue to teach effectively with online distance teaching.
15. I feel confident that I can carry out online distance teaching based projects even when I am opposed by skeptical colleagues.

Positive experiences

1. While online distance teaching, I experience feelings of pleasure.
2. While online distance teaching, I experience feelings of satisfaction.
3. While online distance teaching, I experience a feeling of control over the teaching process.

Negative experiences

1. While online distance teaching, I experience feelings of stress.
2. While online distance teaching, I experience feelings of frustration.
3. While online distance teaching, I experience feelings of loneliness.

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