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Teachers' Perceived Effectiveness in Online Teaching During Covid-19 Crisis: Comparing Jewish/Arab Teachers in Israel

Asmahan Masry-Herzallah
AL- Qasemi Academic College, Israel, *asmahan.masry@mail.huji.ac.il*

The research examined teachers' perceptions of factors affecting their perceived effectiveness in online teaching in the Israeli educational system, comparing Jewish and Arab teachers' views during the Covid-19 crisis. The research employed quantitative and qualitative approaches. 295 teachers responded to a questionnaire, and 22 teachers participated in a semi-structured interview. Quantitative data analysis found that the variables socio-economic status, the teacher's age, technological competence, frequency of synchronous teaching and their satisfaction with the profession significantly predicted perceived effectiveness in online teaching. Comparison between Jewish and Arab teachers indicated the correlation between sector and perceived effectiveness in online teaching is mediated by the number of teachers' synchronous teaching hours. Above all the variables, Jewish teachers' perceived effectiveness in online teaching is best explained by the number of synchronous teaching hours. Jewish teachers taught on average more synchronous online hours per week in comparison to Arab teachers, and the number of synchronous teaching hours predicted perceived effectiveness in online teaching. Quantitative and qualitative data, gathered from the interviews with the teachers were triangulated, reinforcing findings and explaining the quantitative data. Findings revealed that the transition to online learning may increase extant gaps between Israeli society's sectors.

Keywords: Covid-19, synchronous, a-synchronous teaching, teachers, teaching

INTRODUCTION

With the outbreak of the Covid-19 pandemic, education and higher education systems worldwide, including in Israel, underwent radical change as they were required to maintain a remote, online teaching array adapted to a time of emergency (ERT – Emergency Remote Teaching) (Hodges et al., 2020; Trust & Whalan, 2020). This transition transferred the teachers' workplace from school to their home, and the learning in school moved to the students' homes (Busuttil & Farrugia, 2020). Studies on this subject relate to various terms, such as online teaching, remote learning (Bozkurt & Sharma, 2020), as well as synchronous and a-synchronous learning (Aliyyah et al., 2020). However, the professional literature places emphasis mainly on the advantages of embracing online teaching, based on the assumption that it can constitute a supportive

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framework in crises (Trust & Whalan, 2020). Through Emergency Remote Teaching, knowledge can be imparted while also providing an emotional response to the students and maintaining a supportive social-educational framework (Schleicher, 2020). Despite these advantages, the sudden transition to online teaching with little if any preparation may influence teacher's satisfaction and perceptions of the effectiveness of online learning, which are both very significant for the learners' online satisfaction and academic success (Bolliger & Wasilik, 2014). Bolliger, Inan & Wasilik (2009) noted three main factors influencing teachers' online satisfaction and effectiveness: learner-related factors, teacher-related factors and factors relating to educational institutes. Relying on this thesis, the present study details factors relating to teachers' personal and background variables and their influence on the teachers' effectiveness in online teaching e.g. technological competence (Masry-Herzallah & Dor-Haim, 2021; Sokal et al., 2020; Victor et al., 2020). For example, teachers' resistance to change was recently identified as a key factor that negatively influences their willingness to embrace online teaching (Masry-Herzallah & Dor-Haim, 2021; Onyema et al., 2020). In addition, studies indicate students' demographic and background variables such as age inhibit teachers' perceived effectiveness in online teaching; online teaching is apparently not suitable for students of all ages, and may be unsuitable for young students who need parents' help for such learning to take place (Busuttil & Farrugia, 2020; Masry-Herzallah & Stavissky, 2021a), or for students from families with a low socio-economic status (Schleicher, 2020). Recent studies contend that the cultural context cannot be ignored in online teaching, and that cultural aspects relating to teaching styles and learning need consideration in a technological space (Amzalag & Masry-Herzallah, 2020; Bolliger & Halupa, 2018;).

Despite extensive research on remote learning, most studies have focused on higher education and were conducted prior to Covid-19; little has been written in the context of schools (Masry-Herzallah & Stavissky, 2021b), or about factors that affect teachers' perceived effectiveness in online teaching during the Covid-19 crisis. Research has also not investigated teachers' perceptions of this issue: more specifically there has been no comparison of Arab and Jewish teachers' perceptions in Israel.

Relying on the model of Bolliger and Wasilik (2009) identifying factors influencing online teaching and Medium Naturalness Theory (Kock, 2005) and in consideration of the above-mentioned gap in knowledge, this study investigated the perceptions of Jewish and Arab teachers in Israel's education system, aiming to identify factors influencing the teachers' perceptions of the effectiveness of online teaching during the Covid-19 pandemic. Comparison was drawn between Jewish and Arab teachers' perceptions and the research also aimed to identify which of the studied factors predicted the teachers' perceived effectiveness for online teaching, and the role of the number of synchronous workhours in mediating between population sector (Jewish/Arab) and their perceived effectiveness for online teaching. It is noted that in Israel, Jewish and Arab education systems are separate. There is obvious inequality between the Jewish and Arab societies, for example hundreds of thousands of Arab families have no access to technological means needed for online education (Dahan et al., 2020). It is well-known that there is a digital gap between the Jewish and Arab societies (Masry-Herzallah & Stavissky, 2021a)

in addition to cultural differences which may influence teaching-learning processes in the online environment (Amzalag & Masry-Herzallah, 2020). Consequently, this research assumes that Arab teachers' satisfaction and perception of effectiveness of their online teaching will be lower than that of Jewish teachers.

The research also sought to discover whether the weaker Arab population was liable to be sharply and suddenly harmed by the transition to online learning. This is one of the first studies in Israel to compare Jewish and Arab teachers' attitudes to online teaching and clarifies problems involved in this practice for underprivileged populations such as Arab teachers and students.

The research findings have implications for education policy and practice, both in ordinary times and in future emergencies, because of the uniqueness of this period, as well as the uniqueness of the Israeli context – relating to different cultures in the educational system.

The research questions were set accordingly: (1) Which factors predict teachers' perceived effectiveness in online teaching in general, and would the prediction be different for Jewish or Arab teachers? (2) Which aspects are perceived by Jewish and Arab teachers` as promoting or inhibiting online teaching in schools during the Covid-19 period?

Literature Review

Online teaching and emergency remote teaching

Online teaching is a constantly evolving interdisciplinary field and has recently received considerable attention (Bozkurt & Sharma, 2020). It may be described as using technology to provide access to learning experiences and to improve educational opportunities for learners (Singh & Thurman, 2019). Online teaching and Emergency Remote Teaching (ERT) are included here in order to provide critical background on the roles of educators during the COVID-19 outbreak (Hodges et al., 2020). It is argued that ERT should not be equated to fully online teaching, considering the differences in their educational approaches (Trust & Whalen, 2020). ERT is defined as a sudden interim shift of instructional delivery to an online delivery mode due to an immense catastrophe, contrary to online courses that are pre-planned and designed to be delivered virtually (Hodges et al., 2020).

ERT is based on the assumption that online teaching may provide many advantages for students and teachers in schools, such as new instructional aids, potential for varied learning activities and greater flexibility in teaching and learning in terms of time and place (Cheng, 2020; Hodges et al., 2020). Flexible scheduling allows students to pursue their educational goals along with other commitments and constraints (Bolliger et al. 2014). Online teaching can be performed synchronously or asynchronously. Synchronous teaching is a form of teaching with direct interactions between students and teachers while simultaneously using online forms such as conferences and online chat (Aliyyah et al., 2020; Burdina et al., 2019). Exposure to pedagogic applications and online teaching strategies, may help the students to function better in the technological

environment throughout the learning and has great influence on achievements (Yuliyatno et al., 2019).

During the Covid-19 crisis, synchronous learning took place through platforms such as ZOOM, making it possible to maintain bidirectional communication by watching, talking and listening, as well as screen sharing for presentation and teamwork (Blau et al., 2021). This enabled teachers to conduct lessons similar to traditional face-to-face lessons in the plenum, and also group and personal assignments and various social activities. Through synchronous learning it is possible to implement traditional pedagogical models in which the teacher's role focuses on transferring knowledge, while such synchronous sessions can also integrate innovative, learner-focused pedagogical models, facilitating discussions, with the learners leading the discussion, presenting products, working together with their colleagues and providing mutual feedback (Blau & Shamir-Inbal, 2017).

In asynchronous teaching, technology connects various students with teachers without specifying a particular shared time and place in order to conduct learning activities. Asynchronous teaching (tasks) aims to promote students` independent learning. The teacher`s role in asynchronous teaching is to offer guidance in the process of independent learning and provide "scaffolding" to support students' learning (Shamir-Inbal & Blau, 2021).

The effectiveness of online teaching is examined through the Media Naturalness Theory (Kock, 2005). This theory examines the media's level of naturalness according to 5 characteristics: 1) Sharing a physical place (co-location); 2. High synchronous level that makes it possible to respond to stimuli immediately and spontaneously; 3) The possibility to identify and transfer facial expressions; 4) The possibility to identify and transfer the learners' body language; and 5) The possibility to hear natural speech and to make it heard. According to this theory, online teaching and learning should aspire to provide channels of communication with a high level of media naturalness, encouraging better interactions between teaching and learning. Thus, efficient online learning should aspire to a level of naturalness as close as possible to face-to-face interactions.

In order to ensure successful online education, teachers and students need to master new technologies. When teachers view new technologies (Zoom, digital tools etc.) positively, the teaching process is more successful. Teachers invest many efforts to produce effective online lessons, but teachers' satisfaction also plays an essential role in the high-quality and effective delivery of online lessons. Bolliger and Wasilik studied teacher satisfaction and effectiveness in academic online teaching. They indicate that teacher satisfaction with online teaching is measured by the teacher's perception that online teaching is professionally successful and effective and is influenced by three main factors: learner related factors are very significant for teacher satisfaction regarding their teaching. For example, teachers agree that learners' active involvement in the learning increases their satisfaction concerning their teaching. Teacher-related factors also play a significant part in motivating learner participation. Teachers also experience greater satisfaction when they receive mentoring, training, support and recognition of their success. In terms of online teaching, teachers adapted better when they had more online teaching experience. Teachers' perceptions of the efficiency of their online teaching is

influenced by their technological skills and efficacy, learning management and use of technological tools (Bolliger & Wasilik, 2009; Wingo et al., 2017). The third factor is organization-dependent: online teachers expect trustworthy infrastructure and technology. As noted, they experience more satisfaction when they receive mentoring, training, support and recognition of their success. Teachers working online also expressed their appreciation for the flexible options this media offers for professional development and scheduling. When experiencing technological difficulties or difficulties accessing technological tools and support, their satisfaction is expected to drop; when their institution values online learning, the online teachers' satisfaction improves (Bolliger & Wasilik, 2009; Cheok & Wong, 2015).

Effective online learning during emergencies relies on relevant skills that teachers and learners developed during normal learning (Shamir-Inbal & Blau, 2021). The sudden transition to online learning may cause a lack of satisfaction and effectiveness for certain teachers. Teachers' perception of effectiveness of online teaching is highly significant because satisfaction at work is a critical motivational resource (Zhang et al., 2020a, 2020b).

Considering the above literature review and the sparse knowledge on factors affecting teachers' perceived effectiveness during the Covid-19 crisis, this research examines how teachers' personal and background factors such as technological efficacy and resistance to change, and students' background factors such as socio-economic status interact with the type of online teaching (synchronous or a-synchronous) to affect teachers' perceptions of the effectiveness of online teaching in the Jewish and Arab education systems in Israel during the Covid-19 pandemic.

Teachers' personal factors

Technological competence

Perceived self-efficacy relates to people's beliefs in their capabilities to produce given attainments (Bandura, 1997). One cannot master every realm of human life (Bandura, 2006), however for the context of this research, computer self-efficacy reflects an individual's perceived ability in their computer skills as they relate to a specific task (Wilfong, 2006). Computer self-efficacy involves technological competence, meaning knowledge of a diverse set of tools and technology resources used to exchange, create, disseminate, store, and manage information (Chi et al., 2020). Teachers' technological competence refers to the ability to use technology as a teaching tool in the classroom, and includes various skills such as operating technology, using computers to analyze data, integrating online information, and playing multimedia products (Tambunan, 2014). Technological competence is valuable for education given its positive role in improving both teachers' teaching effectiveness and students' learning process (Sangra & Gonzales, 2010; Tambunan, 2014).

Following the eruption of the Covid-19 pandemic, the transition to online teaching was rapid and left schools no time for preparations (Aboagye et al., 2020) so that it was considered a temporary solution to an immediate problem (Bozkurt & Sharma, 2020). Research has demonstrated the importance of teachers' technological competence for

their success in conducting distance learning (Chou et al., 2010; Masry-Herzallah & Stavissky, 2021; Trust and Whalen, 2020).

Resistance to Change

Previous studies have indicated that resistance to change, marked by behavior of resistance to embrace a real or prospective change (Oreg, 2003), may hinder the acceptance of new technology (Sharma et al., 2020). Palmer et al. (2009) identified several factors that can encourage/ discourage people to adapt to changes, including security, economic conditions, authority, status, responsibility, working conditions, level of self-satisfaction, or the time and dedication needed to implement the change. Much has been written about teacher resistance to technology adoption (Johnson et al., 2012). Johnson et al. (2012) explained that teachers often lack self-confidence when using technologies. Moreover, research has found that age and experience are inversely related to technology anxiety. That is, older and more experienced instructors tend to have higher levels of technology anxiety (p. 63).

Another study (Masry-Herzallah & Dor-Haim, 2021) examined correlations between Israeli teachers' technological competence, resistance to change, and perceived effectiveness in online teaching during the COVID-19 crisis. The findings of the study indicated a positive correlation between technological competence and perceived effectiveness in online teaching, and a negative correlation between resistance to change and perceived effectiveness in online teaching.

Student-related variables

Current studies have found that the hasty transition to remote learning has clarified that online learning does not suit every student in the education system and may affect the principle of equal education for all students (Masry-Herzallah & Stavissky, 2021; Schleicher, 2020). This is because not all students in the educational system enjoy the same environmental conditions at home to allow them to study online (Welner, 2020). The inferior experiences and educational achievements for learners who come from disadvantaged families or from domestic environments that do not support or contribute to advancing their learning may widen the gap between them and more advantaged learners even further (Barboza et al., 2020; Sosu & Klein, 2021). Additional difficulties for online learning may be the lack of students' readiness for online learning, which requires mastery of technical skills and an available computer and internet network (Aboagye et al., 2020).

Students' family background

Current studies indicate that the presence and support of parents who can assist their children with these studies is not available to all students, because not all parents are accessible for this purpose or technologically capable. Augmenting the digital divide, online learning relies on the extensive involvement of parents of young children, and in older children - on their ability to study independently. Parental involvement and independent studying are obviously affected by the socio-economic background of the students' families and their families' cultural capital. Thus, even if we exclude the digital

divide, the online learning model might nevertheless broaden existing educational gaps, (Masry-Herzallah & Stavissky, 2021c; Schleicher, 2020).

Thus, this research focused on the factors that affected the teachers' perceived effectiveness in online teaching **in the Arab and Jewish educational system during the Covid-19 crisis**. It relied on reference to various variables that arose from previous research that studied online learning in ordinary, routine times and during the Covid-19 crisis. These variables are related to the type of online teaching (synchronous or asynchronous); to the students' and teachers' background variables; and to the teachers' personality characteristics, as shall be expanded further on.

METHOD

The study context

Online teaching in Israel

In Israel, from March 2020, when it was decided to close face-to-face teaching in educational institutes, and until May 2021, a remote learning system was operated in the educational system, conducted mainly through online learning. It continued to operate according to the detailed instructions of the Ministry of Education for the various age groups (Veisblau, 2021) both when face-to-face learning was prohibited and in times of integrated learning. The goal of remote learning when the educational institutes were closed was to maintain a learning continuity and to reduce the harm to the students' learning routine, as well as to provide emotional response for the students' needs by maintaining supporting educational social frameworks.

The State of Israel is characterized by wider achievement gaps between students from various population groups in comparison to other developed countries. Following the use of remote learning as a principal teaching means for a relatively long period of time, there is considerable apprehension that these gaps between students will widen, due to low level participation in learning of this type and difficulties in its integration, such as lack of end media among various population groups; absence of the supportive and suitable environment required for remote learning, and students' difficulty in persevering in remote learning (Masry-Herzallah & Stavissky, 2021a). According to a survey conducted by the Ministry of Education's National Authority for Measurement and Evaluation between the months March-May 2020, 18% of Jewish parents and 31% of Arab parents reported that their child had low or extremely low access to a computer for the purpose of remote learning; 6% of Jewish parents and 10% of Arab parents reported that their child has no end media available for remote learning; 10% of Jewish parents and 21% of Arab parents reported a low availability to a stable and strong connection to the internet at home. Furthermore, among Arab students, approximately 36% of elementary school students, 33% of secondary school students and 43% of Arab students whose family has an under-average income did not study at all or did very little remote learning during the first lockdown. This stemmed either from the fact that their school did not conduct learning of this type, or because they were unable to participate regularly in the learning that did take place (Ministry of Education, 2020).

It should be noted that this transition placed the teachers in the Arab educational system in Israel in particular on the frontline, adding challenges to work that had been complex to begin with, both in the context of social-economic gaps, academic gaps and digital gaps (Masry-Herzallah & Stavissky, 2021a), and this may affect their satisfaction and their perceived effectiveness in online teaching in comparison to Jewish teachers.

Study design

This study employed a mixed-methods approach. According to Creswell and Clark (2014). It used a sequential explanations approach with both quantitative and qualitative data-collection and analysis. This combination of different types of data ensured appropriate analysis of the research questions (Creswell & Clark, 2018).

Data was collected in two phases. First, to answer the first research question, quantitative data were gathered through questionnaires. Next qualitative data were elicited from interviews to respond to the second research question.

This design was based on the assumption that the quantitative outcome of the study can be explained by the qualitative data (Creswell, 2019), enabling an exploration of the factors that affected teachers' perceived effectiveness in online teaching in the Israeli educational system during the Covid-19 crisis.

Mixed-methods methodology enabled the exposure of contextual information on the participants' experiences. A social constructivist viewpoint emerged from the research analysis of the Jewish and Arab teachers' narratives about their different online learning experiences. The aim was that the research results would reflect the present situation of the Arab and Jewish teachers in online learning, so that the results could eventually inform the optimal preparation of decision-makers, especially school principals to develop their teaching staff for effective online teaching.

Participants and sample

Participants included 293 teachers; 45% of the teachers were Jewish and 55% Arab. The schools in both sectors belong to the public education system of the State of Israel. 74% were female, 26% male; mean age was 41.58 (SD= 8.84), mean tenure in teaching was 15.40 years (SD=8.55). The teachers in the sample reported that in the course of the Covid-19 crisis they taught (online) an average of 9.48 hours per week (SD= 6.39). One third of the teachers reported that they taught in elementary school, 42% in middle school, and 25% teach in high school. 64% of the teachers reported that most students in their school came from an average socioeconomic status, 18% of teachers reported that most students in their school come from a very low status. 18% reported that most students in their school come from a high and very high socio-economic class.

After analyzing the questionnaires using descriptive statistics, the study proceeded to semi-structured interviews with 22 teachers (seven men and fifteen women 9 Arabs and 13 Jewish). The semi-structured interview was composed of open and focused questions, helping the interviewees reveal their stories and their meaning openly and ensuring the unity of the interview themes. The researchers found the participants through random sampling. The examinees' age ranged between 27-50. In order to protect their identities, the 22 teachers were labelled teachers 1 to 22, without revealing their identities (See Table 1).

Table 1
Teachers' characteristics

	Gender	School	Socio Economic status	Sector	Age
1	Female	Special Education	Low	Arab	33
2	Female	Elementary	Middle-Low	Arab	38
3	Female	Elementary	Middle-Low	Jewish	44
4	Female	Elementary	High	Jewish	48
5	Female	Middle School	Middle-High	Jewish	34
6	Female	High School	Middle-High	Jewish	44
7	Female	High School	Middle-High	Jewish	45
8	Male	Middle School	Middle-Low	Jewish	35
9	Male	High School	High	Jewish	40
10	Female	Elementary	Middle-High	Jewish	39
11	Female	Middle School & High School	Middle-High	Jewish	42
12	Female	Elementary	High	Jewish	33
13	Female	Middle School	Low	Arab	50
14	Male	High School	Middle	Arab	40
15	Female	Elementary	Low	Arab	30
16	Male	Elementary	Middle	Arab	32
17	Female	High School	Middle-Low	Arab	30
18	Female	Middle School	Low	Arab	48
19	Male	High School	Middle	Arab	41
20	Female	Middle School	High	Jewish	27
21	Male	Elementary	High	Jewish	40
22	Male	High School	Middle-High	Jewish	38

Measures

Several research questionnaires were used in the current study:

Tools

Dependent variable

Teachers Perceived effectiveness in the online learning questionnaire

This scale was based on a validated questionnaire used widely in past research (Bolliger and Wasilik 2009). Fourteen statements were chosen for the study, solely measuring the teachers' perceived effectiveness of their teaching. The statements aimed to measure perceived effectiveness from several angles: (1) the students' angle; (2) the management and organization of the lesson; (3) discipline; (4) active learning. The teachers were asked to mark the extent to which these behaviors were prevalent on a scale between 1 (never) to 5 (always). This questionnaire received high internal reliability in the present research, $\alpha = .89$.

Predicting variables

Satisfaction with online teaching

This part was taken from a questionnaire developed by Bolliger & Wasilik (2009). It included 14 statements aiming to measure teachers' satisfaction with a wide range of aspects of online teaching. Sample items included: "The flexibility that is made possible by online teaching is important to me", "The technology that I use for online teaching is reliable", "In online teaching I miss the frontal communication with the students"

(reverse statement), and "I'm compensated fairly for teaching online". The questionnaire had acceptable internal reliability, α = .71.

Frequency of online teaching was assessed by asking teachers to report on the extent to which they teach synchronously and the extent to which they teach asynchronously. Participants responded on a scale of 1 ("never") to 5 ("always").

Technological self-efficacy was measured using seven items, adapted from the tool developed by Bandura (2006) to measure general and specific self-efficacy in particular areas of technology. Sample items included: "If I make enough of an effort, I will be able to cope with any new technology" and "I perceive myself as a person who understands technology." Teachers were asked to indicate the degree to which they agreed with each statement on a scale ranging from 1 ("not at all") to 5 ("to a very large extent"). Internal reliability for the measure was high (α = .87).

Resistance to change was measured using a 17-item questionnaire developed by Oreg (2003). The questionnaire consisted of four subscales: (1) seeking a routine; (2) emotional response to change; (3) focusing on the short-term; (4) cognitive rigidity. Participants responded using a scale ranging from 1 ("not at all") to 5 ("to a very large extent"). Cronbach's alpha was high (α = .89).

Demographic data was collected through questions about participants' background information such as gender, age and tenure in teaching. Teachers were also asked about the socioeconomic background of most students in the school, using a 5-point scale ranging from very low to very high.

Procedure (data collecting and analysis)

The data was collected from the end of May to November 2020, approximately two months after the transition to online learning. The researcher found the participants through random sampling. After receiving the approval of the Institutional Ethics Committee, a link to an online questionnaire was distributed through teacher groups on the Facebook social network, and on WhatsApp groups. The questionnaire was constructed through Qualtrics, an online platform that is frequently used for online surveys. The questionnaire's purpose was explained to the teachers, and they were provided with the researcher's contact details. Complete anonymity was promised to all participants, and they were assured that the collected details would be used for research purposes alone, and that no other use would be made of them.

Semi-structured interviews were conducted with each participant between August to November 2020. Semi-structured interviews were suitable for this research since they enable the participants to reflect on their inner worlds and allow the researcher to expand on subjects in which they wish to deepen their understanding (Cohen, Manion & Morrison, 2011). The participants were interviewed individually by a research assistant, for approximately 45 minutes, using the Zoom platform. The purpose of the interviews was to explore the factors that promote and inhibit online teaching and teachers` perceived effectiveness in online teaching during the Covid-19 crisis. The interview included questions relating to personality, background and demographic variables of teachers and students. For example, "Describe how you teach in school during Covid-19?", "Which factors influence your perceived effectiveness?", "What are the

differences between the synchronous and asynchronous models?" Which model do you prefer, and why?" To avoid social desirability (Patton, 2002), the interviewer avoided exposure of his personal perceptions and was careful not to express judgmental or moral responses to the participants' remarks.

The data analysis was conducted through quantitative and qualitative means. The results of the survey questionnaire were analyzed through SPSS software. Qualitative analysis of the interviews was conducted through Content Analysis in Phases (Creswell, 2014). Data analysis was conducted in four stages: (1) organizing the data, (2) generating categories, themes and patterns, (3) testing any emergent hypotheses, and (4) searching for alternative explanations (Marshall & Rossman, 2016). This process aims to identify central themes in the data by searching for recurring notes of experiences, feelings and attitudes, and subsequently coding, reducing and connecting subthemes into central themes. The coding process was guided by the "comparative analysis" principles (Strauss & Corbin, 1998), which include assessing and comparing data from various individuals in terms of emergent categories and sub-categories. These categories are presented accordingly alongside the quantitative findings, creating relations and interactions between them. In order to reinforce the data's reliability, analysis was conducted by the research assistant, and the author of this article acted as critic and strengthened the analysis at the different stages (Marshall & Rossman, 2012). Nevertheless, it is noted that the explorative-initial study has limitations since it did not study a representative sample and future study should be expanded to include Jewish and Arab sub-sectors and different school age groups.

FINDINGS

Table 2 shows the averages, SD of the research variables

Table 2
Shows the averages of the research variables

Variable	Average	SD
Synchronous learning	3.53	1.00
Asynchronous learning	3.06	0.98
Technological competence	3.83	0.75
Resistance to change	2.56	0.67
Satisfaction	2.84	0.55
Success	3.32	0.64

Note: possible range 1-5

Table 2 indicates, firstly, that the teachers (Jewish and Arab) reported greater frequency of synchronous learning (M = 3.53, SD = 1.00), in comparison to asynchronous learning (M = 3.06, SD = 0.98). T-test conducted for two dependent samples found that this difference is statistically significant, $t(292) = 5.34$, $p < .001$, $d = .48$. It can further be seen that the teachers' satisfaction with online teaching isn't particularly high, with the variable average lower than the middle of the possible range (2.84 out of 5).

Correlations between the research variables

Table 3 shows correlations between these variables themselves, and between these variables and the demographic variables.

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Correlations between the research variables

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Note: possible range 1-5

Variable	**1**	**2**	**3**	**4**	**5**	**6**	7	8	9	10	11	12	13	14
1. Gender1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Age	-.04	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Tenure	-.02	.75**	-	-	-	-	-	-	-	-	-	-	-	-
24. Sector	-.25**	-.26**	-.03	-	-	-	-	-	-	-	-	-	-	-
5. Educational stage3	-.19**	.05	-.03	.01	-	-	-	-	-	-	-	-	-	-
6. Socio-economic status4	.13	-.05	-.07	-.28**	.07	-	-	-	-	-	-	-	-	-
7. Hours of online teaching	-.06	.14*	.12*	-.18**	.09	.00	-	-	-	-	-	-	-	-
8. Teaching subject5	-.12*	.00	-.01	.21**	-.02	-.17**	-.07	-	-	-	-	-	-	-
9. Synchronous learning	.09	-.10	-.12*	-.13*	.07	.11	.08	-.02	-	-	-	-	-	-
10. Asynchronous learning	.02	.03	.02	-.05	-.10	.04	.00	-.03	-.13*	-	-	-	-	-
11. technological competence	.08	-.01	-.12*	-.05	.11	.06	.04	-.01	.32**	.07	-	-	-	-
12. Resistance to change	.02	.14	-.10	-.21**	.00	.10	-.05	.00	-.18**	.02	-.32**	-	-	-
13. Satisfaction	-.03	-.02	-.02	-.03	-.05	.02	-.03	-.03	.19**	.08	.19**	-.12*	-	-
14. Success in online teaching	.01	.14*	.01	-.21**	.11	25**	.16**	.02	.31**	.04	.35**	-.12*	.49**	-

As can be seen in Table 3, in regard to the demographic variables, perceived effectiveness in online teaching was found to have a positive correlation, relatively low (r = .14) but statistically significant, with age, so that the older teacher perceived effectiveness slightly more in online teaching in comparison to younger teachers. Another demographic variable that was found to be positively correlated with success in online teaching was the school student's socio-economic status (r = .25), so that the higher the pupils' socio-economic status – the more perceived effectiveness the teacher in online teaching. In regard to sector, it was found that teachers in the Jewish sector succeed significantly more in online teaching in comparison to teachers in the Arab sector. It was further found that the more hours the teacher teaches and the more he or she teach synchronously (but not asynchronously) – the greater the perceived effectiveness in online teaching (r = .31).

In regard to the personality variables, success in online teaching was found to have a positive relation, medium in its strength and statistically significant, to technological competence (r = .35), so that the more the teacher reports a higher technological competence – the more he or she report perceived effectiveness in online teaching. It was further found that resistance to change was found in negative relation, relatively low but statistically

1 Dummy coding (0 = Male; 1 = Female)
2 Dummy coding (0 = Jewish; 1 = Arab)
3 Dummy coding (1 = Elementary school; 2 = Middle school; 3 = High school)
4 The socio-economic status of most pupils in the school (1 = extremely low; 5 = Extremely high)
5 Dummy coding teaching subject (0 = humanities; 1 = STEM)

significant, with success in online teaching (r = -12), so that the more resistance to change the teacher reports, the less perceived effectiveness he or she reports in online teaching.

Finally, a positive relation, medium-high and statistically significant, was found between the teacher's satisfaction with online teaching and his or her perceived effectiveness in teaching (r = .49), so that the more satisfied the teacher with online teaching – the more he or she report perceived effectiveness in that teaching.

Another prominent finding in the table is that teachers in the Arab sector report a lower socio-economic status of their students and fewer hours of synchronous online teaching, in comparison to teachers in the Jewish sector.

In the next phase, hierarchical regression was performed in order to examine the exclusive contribution of each variable to the prediction of perceived effectiveness in online teaching. First, the demographic background variables were entered into the model: gender, sector, age, tenure, educational stage, the students' socio-economic status and the principal teaching subject. Secondly, the personality variables – technological competence and resistance to change – were entered into the model. Finally, the variables frequency of synchronous and asynchronous teaching, frequency of online teaching in hours and satisfaction with online teaching were added. The results of the model can be seen in Table 4.

Table 4
Results of the hierarchic regression

	Perceived effectiveness in online teaching		
Variable	Stage 1	Stage 2	Stage 3
Gender6	-0.06 (0.09)	-0.11 (0.08)	-0.05 (0.07)
Age	0.02* (0.01)	0.01 (0.01)	0.02** (0.01)
Tenure	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Sector7	-0.15 (0.09)	-0.18* (0.08)	-0.07 (0.07)
Educational stage8	0.06 (0.05)	0.03 (0.05)	0.05 (0.04)
Socio-economic status9	0.21** (0.05)	0.20** (0.05)	0.20** (0.04)
Teaching subject10	0.08 (0.08)	0.09 (0.07)	0.10 (0.06)
Technological competence		0.26** (0.05)	0.16** (0.05)
Resistance to change		-0.05 (0.06)	0.01 (0.05)
Synchronous learning			0.09** (0.03)
A synchronous learning			0.00 (0.03)
Hours of online teaching			0.01* (0.01)
Satisfaction			0.50 (0.06) **
R2	.13**	.22**	.44**
F(df)	5.70 (7,275) **	8.73 (9,273) ***	16.41 (13,269) **
Fchange	5.70**	17.02**	26.37**

Note :N = 290 ;* = p < .05; ** = p < .01.

6 Dummy coding (0 = Male; 1 = Female)
7 Dummy coding (0 = Jewish; 1 = Arab)
8 Dummy coding (1 = Elementary school; 2 = Middle school; 3 = High school)
9 The socio-economic status of most students in the school (1 = extremely low; 5 = Extremely high)
10 Dummy coding teaching subject (0 = humanities; 1 = STEM)

The estimations are not standardized.

As can be seen in Table 4, in the third stage, in regard to the demographic variables, the students' socio-economic status and the teacher's age predicted perceived effectiveness in online teaching significantly and positively. In regard to the personality variables, technological competence is the only predicting variable. In addition, the frequency of synchronous teaching, online teaching hours and satisfaction with online teaching predicted perceived effectiveness in online teaching significantly and positively.

The pattern of the results raised a possibility that the difference between the Jewish and Arab sectors in the extent of perceived effectiveness in online teaching, as was found through Pierson test and as was found in the second phase of the regression, is related to differences between the sectors in the number of online teaching hours. Specifically, the addition of hours of online teaching and frequency of synchronous and asynchronous teaching, together with the addition of the satisfaction with online teaching variable, changed the prediction mode of the sector variable, so that it was no longer a significant predictor. Since no relation was found between satisfaction with online teaching and perceived effectiveness in online teaching, it appears that the number of hours plays a role in the relation.

In order to examine this possibility, an additional mediation model was tested by adding PROCESS to SPSS (Hayes, 2018). The tested model examined whether the relation between sector and perceived effectiveness in online teaching is mediated by the number of online teaching hours. In order to verify that the differences are not related to the teacher's age and to the students' socio-economic status, variables that were found to be related both to sector and to perceived effectiveness in online teaching, these two variables were controlled. The indirect correlation was tested through bootstrapping technique (Preacher & Hayes, 2008) with 5000 repetitions. When the confidence interval of the correlation coefficient does not include zero, the indirect correlation is considered in this method to be a significant correlation. It was found that sector predicts the number of online teaching hours positively and significantly, b = -2.12, SE = 0.81, p = .009, so that teachers in the Jewish sector report teaching more hours a week online in comparison to teachers in the Arab sector 11. In turn, the number of online teaching hours significantly predicted perceived effectiveness in online teaching, b = 0.12, SE = 0.06, p = .03, so that the more hours a week a teacher teaches online, the more he or she succeed in online teaching. The indirect correlation was found to be borderline significant, b=-0.03, SE=0.02, 95% CI(-0.07, 0.0006). on the other hand, the direct correlation was not found to be statistically significant, b=-0.12, SE=0.08, 95% CI(-0.28, 0.03).Thus, the mediation hypothesis was borderline verified. See Figure 1.

11 Teachers in the Jewish sector teach an average of 10.78 hours a week online (SD = 6.23), while teachers in the Arab sector teach a average of 8.50 hours a week (SD – 6.39). the value of the correlation coefficient is affected by the controlled variables and thus is not exactly equal to the gap between the groups in the number of online teaching hours.

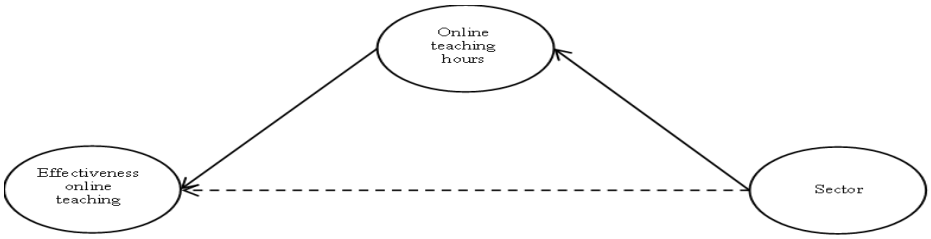

Figure 1
Thus, the mediation hypothesis was borderline verified

Analysis of the qualitative findings

Following the quantitative data-analysis of factors predicting the teachers' perceptions of their online teaching effectiveness, interviews were conducted to ask the teachers about factors that emerged from the quantitative data (socio-economic status, teachers' technological efficacy, synchronous teaching versus a-synchronous teaching and synchronous teaching hours), comparing responses of Arab and Jewish teachers concerning the advancement or hindrance to their online teaching. The interviews were transcribed and encoded to sort them into main themes, as noted below.

1.***Students' socio-economic status***

In line with the quantitative data, all participants (n=22) reported that when pupils had a low Socio-Economic Status (SES) this influenced the effectiveness of online teaching. Teachers who teach students with a low socio-economic status (n=8) report lower satisfaction and perceive online teaching as less effective in comparison to teachers' teaching students with higher SES. This was described by an elementary school Arab teacher (T15): *"Since more than half the school's students come from families with low SES, they cannot participate in online learning, it's difficult for me to advance online learning and to offer its advantages when half the class is absent."* Similarly, Jewish teachers teaching in schools with low SES (N=2) indicated the implications of this status on the effectiveness of their online teaching, as one teacher explained*: "I think it's difficult to reach children who have difficulties and families from low SES, especially through Zoom and the effectiveness of Zoom lessons is low, despite our intentions and motivation, it's not always possible to succeed. There are few participants and lack of parents' cooperation, and the difficulty involved in using technological tools. Parents prefer exercise pages instead of technological tools".*

In the comparison between Jewish and Arab teachers, the profile of the interviewed teachers reflected the SES of Arab society as distinct from that of Jewish society. Out of 9 Arab teachers, 6 reported that they teach in schools with a low SES, in contrast to 2 out of 13 Jewish teachers who gave similar reports. This evidence reinforces the quantitative findings concerning the influence of SES on teachers' perceptions of the effectiveness of their online teaching.

2. Technological efficacy

The interview transcripts yielded teachers' perceptions on the influence of technological efficacy on their online teaching effectiveness, such that teachers with technological

efficacy use digital tools, share them with their students and succeed in combining content knowledge, pedagogic knowledge and technological knowledge in their teaching. They also noted that combining various teaching methods with technological tools during the Zoom lessons helps the students to understand the learning materials and influences their satisfaction and the effectiveness of online learning.

Jewish teachers reported higher technological efficacy dependent on them being trained for this before the Corona-19 outbreak. Jewish teacher (n=13) also reported that they integrated telecommunications in teaching in routine periods. Contrastingly, more than half the Arab teachers (n=6) had no opportunities to integrate telecommunications in teaching in routine periods, and were not trained to do so. These findings comply with the findings of previous studies indicating differences in technological efficacy between Jewish and Arab teachers in Israel (Masry-Herzallah & Dor-Haim, 2021). One Jewish elementary school teacher noted:" *Due to the Corona crisis we were forced to change our learning methods and to introduce synchronous and a-synchronous distance learning. I personally integrate technology in routine times and so I didn't have difficulties during the transition to distance learning (Jewish teacher, in middle to high SES school).* Contrastingly an Arab teacher in a middle SES high school described the challenges faced during the Corona crisis: *"we moved to distance learning with no preparation, we were forced to use distance teaching on platforms we didn't know and without mentoring or guidance. Before the crisis we weren't asked to integrate telecommunications in teaching, so it was not easy to cope with the transition (T14).*

Jewish teachers also saw technological efficacy as the basis for teachers' empowerment and the development of technological skills appropriate for 21st century education (Engelbertink et al., 2020). Possibly this experience created a sense of achievement and perception of online teaching as effective during the crisis period, expressed by a Jewish teacher in a medium to high SES high school: *" technological ability leads to teachers' motivation, a sense of self-efficacy and belief that they can innovate and promote new practices for optimal teaching (T7)*. The qualitative findings indicate an affinity between the teachers' sense of ability in terms of distance teaching and characteristics of the teaching processes during the Corona-19 pandemic. This accords with previous findings dealing with the influences of a high sense of technological efficacy on teachers' tendencies to be more willing to introduce pedagogic innovations in their teaching (Bolliger & Wasilik, 2009).

Synchronous and a-synchronous teaching

In order to understand the teachers' perceptions of synchronous versus a-synchronous teaching, they were asked to define the two types of teaching, their effectiveness and factors that hindered their use and the frequency with which they used them. All the interviewees (n=22) defined synchronous teaching as teaching through Zoom or any other interactive space such as Google meet. Most of them used Zoom, which they considered a novel pedagogy since it was only under the crisis situation that they were forced to use it. Comparatively, a-synchronous teaching included different strategies such as a-synchronous personal tasks and collective assignments, referral to work from a work pamphlet/textbook, listening to recorded or broadcast lectures.

With regard to the effectiveness of the two methods, all the teachers (n=22) perceived synchronous teaching as more effective than a-synchronous teaching. These findings confirm the quantitative findings, they also comply with the Medium Theory of Kock (2005) indicating that teachers see synchronous teaching as a replacement for face-to-face teaching during a crisis, when one of the main goals is to maintain a sequence and contact with the students through high frequency synchronous meetings, both for academic purposes and to provide emotional and social support.

In the comparison between Jewish and Arab teachers regarding their perceptions of the effectiveness of synchronous versus a-synchronous teaching, the following differences were found: Jewish teachers explained their perceptions of effectiveness of synchronous teaching because it enabled them to improve their interaction with students for academic and social-emotional purposes, both on the individual and group levels, as explained by Jewish teacher in an elementary school with middle-high SES*: "Zoom enables teachers and students to form discussion and debate, and to continue social and emotional activities; it also allows me to conduct the lesson while writing on an online board, presenting information, giving assignments and providing differential responses to students through the division into rooms – this replaces routine classroom learning" (T13)*

Similarly, Jewish teachers perceive synchronous teaching as an opportunity for pedagogic and technological innovation, enabling them to integrate new teaching tools and practices for optimal teaching, as explained by a teacher in an elementary school with a medium-low SES: "*After trying a-synchronous teaching alongside synchronous teaching, I found that synchronous teaching with Zoom was more friendly and effective, it enables the pupils to meet socially and academically. I succeeded in advancing experiential and active learning as part of those synchronous lessons using new technological tools (T3).*

In contrast, the perception of the greater effectiveness of synchronous teaching among Arab teachers is explained by two main factors: the first relates to the frontal teaching style used by Arab teachers, so that synchronous teaching constitutes a replacement for frontal teaching. This strategy is teacher-centered. These findings may stem from cultural differences between Arab and Jewish teachers, such that Arab society is collectivist expressing more value for obedience to authority such as the teacher (Amzalag & Masry-Herzallah, 2020; Masry-Herzallah & Arar, 2019). This was explained by a teacher in a high school with medium level SES*: "in synchronous teaching I see and hear the students, succeed in teaching as in frontal lesson although not all the students participate in the lesson" (T14).* The second factor relates to the learning style of Arab students, characterized by lack of independent learning skills needed in a-synchronous learning as noted by a teacher in a high school with medium-low SES: *"My choice of synchronous lessons stems from the need to maintain interaction and contact with the students, to deliver the material in accord with the learning program. Even if I give the students an a-synchronous assignment I still need to explain it in my lesson and to help them with it later and they do not all understand what is needed without my mediation (T1)".*

The number of synchronous teaching hours given by Arab as compared to Jewish teachers

Since the number of synchronous hours plays an important role between the ethnic sectors and in influencing the teachers regarding the effectiveness of online teaching – more for Jewish teachers, the interviews investigated the intervening factors that enhance or hinder the teachers' effectiveness, especially Arab teachers, to teach synchronously and how this affects their perception of the effectiveness of online teaching. The comparison of teachers' reports concerning the factors that enhance or hinder the implementation of synchronous teaching between Jewish and Arab teachers indicated that Jewish teachers (n=8) noted the students' SES as a factor that could help or hinder the implementation of synchronous teaching, especially in elementary education, as one Jewish teacher explained (T4) "*I teach in an elementary school, to teach this age group, we need to be interactive with them and this is only possible when their family has an end tool and suitable infrastructure, in addition to an adult's mediation, since out students come from a low SES, so we have tried to do as many synchronous lessons as possible"*. In contrast Arab teachers (n=9) indicate several additional factors stemming from the other research variables such as the stage of education (elementary/high school), student-related factors, teacher-related factors and school=related factors. These findings echo findings from previous studies (Bolliger & Wasilik, 2009). One Arab teacher (T2) teaching in a school with medium-low SES, spoke about student-related factors: *"as an elementary school teacher, the number of synchronous hours that I can teach is connected to the students' background factors. The lack of computers among Arab families, especially when there are several children at home, and there may not be an infrastructure or the children lack technological skills. In elementary education this strongly influences the effectiveness of online teaching. Although, in my planning I need to teach a synchronous lesson, sometimes because of students' connection difficulties and problems with the Internet infrastructure I'm forced to cancel the lesson"*.

With regard to teacher-related factors, the Arab teachers (n=8) indicated that teachers who had not received training for online teacher before the crisis, or had not integrated telecommunications in their teaching, necessarily experienced difficulties and that influenced the number of synchronized hours that they taught during the crisis. This was explained by one of Arab teachers T15, teaching in an elementary school with a low SES): *"the transition to distance learning was very difficult for me and for many teachers in my school. We were not ready. We had not used technology in teaching at the required level and had not had suitable training. Regrettably I did not always succeed in delivering synchronous lessons because of problems with my Internet infrastructure. Naturally, that harmed the online teaching-learning process.* Several Arab teachers (n=7) explained that they had problems with the Internet infrastructure as did their students and this was a significant factor, as T17, working in a high school with medium-low SES noted: *"Often I am forced to cancel the synchronous lessons because the network at my home or at the homes of some students falls. It happens because I'm teaching at a distance and my children are also learning online, it happens several times a week"*.

with regard to factors relating to school policies, the Arab teachers (n=9) reported that the number of synchronous hours they were able to give during the pandemic, was determined by the school management, as T19, a teacher in a high school with medium SES explained: *"According to the principal's instructions, we are supposed to teach two synchronous lessons per day, meaning 10 synchronous lessons per week. These instructions alter all the time in line with assessment of the situation, the parents' complaints about lack of computers per child in the family etc. This all has negative consequences for the effectiveness of online teaching, which is more effective if the synchronous lessons are performed regularly".* T(14) another high school teacher, in a school with medium SES noted: *"Although I am supposed to teach 12 weekly hours in synchronous lessons, I never succeed in doing so because of the lack of students' participation, especially students from a low SES, who are also students with low achievements. Regrettably, a large proportion of my students come from that background, something which greatly hinders online teaching effectiveness".*

DISCUSSION

The main purpose of the above-described study was to investigate online teaching as seen by Jewish and Arab teachers during the Covid-19 pandemic in Israel. The study examined which factors influenced (predicted) the teachers' perceptions of the effectiveness of online teaching. The research used the pragmatic mixed-methods approach, composed of both quantitative and qualitative data-collection and analysis. Twenty-two teachers (9 Arabs and 13 Jews) were interviewed in order to reinforce and explain the quantitative findings, and this strengthened the comparative study between Jewish and Arab teachers representing two different cultures with various particular characteristics described in the introduction and literature survey above. Analysis of the findings of the present research leads to several insights:

First, the findings indicate a positive correlation between the students' SES and their teachers' perceived effectiveness in online teaching, as described by the teachers. In accordance with previous studies, the research findings indicate that online learning during the Covid-19 period is based on possessing digital communication and end means, Internet infrastructures and the parents' support, particularly for young children (Barboza et al., 2020; Busuttil & Farrugia, 2020; Masry-Herzallah & Stavissky, 2021a; Sosu & Klein, 2021). The findings of the interviews explained the positive effect of students' high SES, particularly in Jewish schools, on the teachers' perceived effectiveness and allowing this period to constitute an opportunity for pedagogical and digital innovation. On the other hand, a low SES, particularly in the Arab schools, was described as inhibiting the teachers' perceived effectiveness, due to shortage of computers, Internet problems and lack of technological skills and support, particularly in elementary education. The interview findings explained the influence of low SES on students' involvement in learning online including their lack of the necessary digital skills, and inaccessibility and lack of computers in the students' homes. These findings echo those found in previous studies (Busuttil & Farrugia, 2020; Onyema et al., 2020; Masry-Herzallah & Stavissky, 2021). Additionally, the qualitative findings indicated that interviewed teachers from high socio-economic schools perceived the pandemic period

as an opportunity to seek new and different creative ways to teach. In their eyes, the crisis emphasized the need to master digital tools and innovative teaching methods.

Secondly, the research findings indicated that the teachers played a significant role in mobilizing online learning during the Covid-19 crisis. The perceived effectiveness of online teaching depended to a large extent on the teacher's skills and technological competence. These findings are consistent with previous studies that indicated the importance of teachers' technological competence for their perceived effectiveness in the implementation of online learning (Bolliger & Wasilk, 2009; Hodges, et al., 2020; Masry-Herzallah & Dor-Haim, 2021). These findings can be explained by findings of previous research indicating that teachers with strong technological competence are more willing to use online teaching in their teaching and significantly increase the use of digital communications in teaching (Chou et al., 2010; Huang et al., 2020; Zhang et al., 2020a, 2020b). The importance of technological competence shown in these earlier studies was supported by the current study's findings. The particularly high variance in online teaching success may be explained by the lack of appropriate training provided to teachers. Thus, we suggest that successful use of online teaching was primarily dependent on each teacher's individual technological capability (OECD 2020; Office of the Israel State Comptroller and Ombudsman, 2021).

Moreover, data from the interviews indicated gaps between Jewish and Arab teachers' technological abilities, in favor of the Jewish teachers. They also pointed up the negative implications of these gaps on the effectiveness of online teaching during the Covid-19 crisis. These gaps are the product of gaps between Jewish and Arab teachers during routine times. Comprehensive professional training could help teachers to develop and employ suitable online strategies. Maintaining effective social connections between learners and instructors through the use of ICT could contribute to this goal.

Thirdly, the research findings indicate a correlation between the teacher's age and perceived effectiveness in online teaching; older, more experienced teachers succeed more in online teaching in comparison to younger teachers. In other words, the more experience the teacher has in teaching, the more they succeed in online teaching. This finding is supported by findings from previous research (Bolliger & Wasilik,2009; Jelińska & Paradowski, 2021) and by the Talis 2018 report (OECD, 2020), which indicated that more experienced teachers have a better capability to integrate computer communication in the classroom. For that reason, they also have stronger perceptions of online teaching as effective during the unique period of the Covid-19 crisis.

Fourthly, the research findings indicate that the frequency and number of hours spent in teaching synchronously and the teacher's satisfaction with synchronous teaching predicted, positively and significantly, teachers' perceived effectiveness in online teaching. A possible explanation for the findings stems from the hasty transition to online teaching as an alternative and substitute for face-to-face teaching, with online teaching aiming to promote interaction with the students, providing a possible medium to impart academic knowledge while also maintaining a supportive social-educational framework (Schleicher, 2020). These findings are compatible with the Media Naturalness theory, according to which synchronous sessions are the most natural form

of online learning, most similar to face-to-face interactions and most beneficial both pedagogically and emotionally (Weisler et al., 2018). The interview findings explain that synchronous teaching was conducted mainly through the ZOOM platform, which makes it possible to maintain both traditional pedagogic models in which the teacher's role focuses on imparting knowledge, and innovative, learner-focused pedagogic models (Blau & Shamir-Inbal, 2017). In a comparison between Jewish and Arab teachers, the research findings indicated significant differences in the perceptions of Jewish and Arab teachers, both regarding their satisfaction and perceived effectiveness in synchronous teaching, in favor of the Jewish teachers. A possible explanation stems from the Jewish teachers' stronger sense of self-efficacy and technological competence, which help them promote innovation and creativity in synchronous teaching. For the Arab teachers, on the other hand, synchronous teaching mainly constitutes an alternative for face-to-face learning, and the teacher's role remains that of a source of knowledge aiming to teach as the center of the learning processes (Amzalag & Masry-Herzallah, 2020). These findings are compatible with the findings of recent studies indicating that intelligent use of innovative digital tools enables the promotion of processes of knowledge construction according to advanced pedagogical approaches (Blau & Shamir-Inbal, 2017), development of social and collaborative skills and maintenance of interpersonal relations between the participants (Huang et al., 2020). Thus, efficient use of remote learning techniques may help to develop 21st century skills among the students (Vlachopoulos, 2020).

Fifthly, the findings of the present research stress the importance of the frequency and number of synchronous teaching hours as a mediating variable, and indicate that this factor plays an important role between the sector variable (Arab/Jewish) and perceived effectiveness in online teaching in the course of the Covid-19 crisis. This variable is, to a certain extent, a result of the teachers' technological competence, and the students' socio-economic status. In a comparison between Jewish and Arab teachers, the research findings indicated differences between the sectors, with Jewish teachers reporting greater perceived effectiveness and more frequency in the number of synchronous teaching hours in comparison to the Arab teachers. As explained before, the low findings for Arab teachers stem from low socio-economic status, shortage of end means, low computer communications skills among Arab parents, in addition to low technological competence of Arab teachers in comparison to Jewish teachers. These findings are compatible with the findings of a previous research (Masry-Herzallah & Stavissky, 2021), which indicated that Arab teachers, particularly those who teach in elementary schools, teach less hours than Jewish teachers. This is added to the research conducted by Veisblau (2021), which indicated that according to a Ministry of Education survey conducted in the course of the Covid-19 crisis among Arab students, 34% of elementary school students, 33% of secondary school students and 43% of Arab students whose family's income is below average did not participate at all or hardly at all in remote learning during the first lockdown period – either because their school did not conduct such learning or because they were unable to participate regularly in such learning that did take place. Analysis of the interview findings indicated that promotion of synchronous teaching among Arab teachers was influenced by a more authoritarian

organizational culture and also by the socio-cultural and economic environmental context. These factors also influence the teachers' success in managing their teaching as desired and their perception of the effectiveness of their online teaching. These findings correspond with previous arguments that online teaching in Arab society is influenced not only by the managerial style and culture of the school but also by external factors (Masry-Herzallah & Stavissky, 2021).

Theoretical and implementational implications

Theoretical implications

The research described here contributes to previously accumulated knowledge concerning factors influencing teacher satisfaction and teachers' perceptions of the effectiveness of their online teaching both in routine and crisis and change periods in the school. As far as could be ascertained this is the first study to test personality variables, student background variables, type of distance learning and their influence on the teachers' perceived effectiveness of teaching online in a comparison between Arab and Jewish teachers during the Covid-19 crisis in the Israeli education system. The findings contribute to knowledge concerning distance learning during a crisis period among an ethnic minority and factors that influence teachers in the implementation of this type of teaching. It was felt important to examine the transition to online teaching especially in the Arab education system that works in unique social, educational, political and social conditions. The findings also constitute a foundation for future comparative studies of the teachers' satisfaction and perception of their effectiveness in online teaching both in routine and crisis times.

The significance of this research is in examining the perceptions of Jewish and Arab teachers of factors that affect their perceived effectiveness in online teaching during the Covid-19 period, and in that the findings can inform decision-makers when determining whether distance teaching used during the crisis should be an integral part of the educational system in normal times as well, and if so – to what scope and in what form. As things appear today, there is a high probability that remote teaching and learning, made possible by the rapid technological innovations, will in fact become established as part of the academic and educational process, and the education system should be prepared for this in order to reinforce its advantages and minimize its disadvantages, while providing different solutions for the needs of various educational sectors. The practical significance of the findings is that teachers who perceive themselves technologically competent will perceive their synchronous teaching as effective. Their practical experience, years of tenure in teaching and appropriate training will lead to an understanding of the potential for perceived effectiveness in teaching of this type. The research findings emphasize the need to train teachers and parents in technological knowledge, in addition to pedagogical knowledge that is compatible with synchronic and a-synchronic teaching, and with cultural adaptation. It appears that if training to the digital era won't take place in a planned and methodic way, the digital gaps will widen, between teachers and students and between the various educational sectors in Israel, and this may affect the imparting of 21st century skills to the students of the educational system. Despite the importance of the variables that were examined in this research,

other variables may play a role in predicting teachers' perceived effectiveness in online teaching. It is important for future research to examine additional potential variables. In this context, the professional literature proposes a wide range of variables such as leadership style, gender and cultural dimensions. In addition, it is recommended to study perceived effectiveness in online teaching in times of crisis from points of view other than that of the teachers, such as school principals, educational counselors, students and parents.

CONCLUSION

The research examined the perceptions of Jewish and Arab teachers concerning the factors that influenced their perceptions of the effectiveness of online teaching during the Covid-19 pandemic. The effectiveness of online teaching in the Israeli education system depends on an optimal integration of technology and pedagogy, and the pedagogy should be culturally relevant in order to advance innovative teaching paradigms that are culturally appropriate. Thus, despite the additional difficulties imposed on teachers and students from different cultures, integrated online teaching should be continued even in routine times. However, policy-makers designing online teaching in the education system should consider the variety of cultures in that system, both in their planning of professional development for teachers and other educators and for the support of students from different cultures.

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