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CLASSROOM CLIMATE AND STUDENT SELF-EFFICACY IN E-LEARNING

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Abstract

The last two decades have seen significant growth in e-Learning in many institutions, with the main growth engine being significant development of technologies providing access to information. These technologies have dramatically changed how societies and individuals communicate. The current study examined whether the paradigm of good teaching dimensions customary in the research literature can predict students' self-efficacy and social-academic climate in e-Learning. For this purpose, 147 students from different academic institutions were sampled and asked to choose one course they had studied online, completing a questionnaire on their experience of the course. The questionnaire was divided into four sub-topics, where at first the participants were asked to answer several demographic questions and the rest of the questions were divided by the research variables as follows: the first group of questions dealt with perceived self-efficacy; the second group dealt with the teaching dimensions presented in Hativa's (2015) theory, from which select teaching behaviors were extracted. In the final part, the questionnaire examined the social-academic climate during the course. The research results show correlations between the research variables and some of the demographic variables. The higher the respondent's age and years of schooling, the higher the lecturer's evaluation. Furthermore, men were found to rank lecturers on teaching dimensions significantly lower than did women. Respondent self-efficacy rose with age and years of schooling. Moreover, the higher the participants' age, the more positive the climate reported, and women tended to rank classroom climate higher than did men.
Keywords: classroom climate, e-Learning, self-efficacy, teaching dimensions

Introduction

Classroom Climate and Student Self-Efficacy in E-Learning

Various technological developments that support distance learning allow learning at anytime and anywhere, meaning that learners encounter fewer restrictions and can adapt the learning to their needs. One of the most preferred and customary options of e-teaching is learning by video conference. An example of a technology that offers video conferencing services is the Zoom platform, which enables active participation by the lecturer and students. At present, this technology has become one of the most common methods utilized in academia.

E-Learning and Education

The history of e-Learning cannot be separated from the general history of education. The first milestone in the history of distance learning occurred after the industrial revolution in the 19th century, when the procedure was based mainly on sending study material to students by mail. Several universities in developed countries such as the US, the UK, and Canada, allowed academic studies in this method. The use of distance learning afforded many institutions a significant income, with no need to provide students with residential and other conditions (Sumner, 2000). However, with the development of technological tools and new means of instruction, this method, which utilized delivery of study material by mail, became outdated.

The second generation of distance learning did not make do with printed material and mail services, rather included utilization of broadcast media, cassettes, and in some programs also computers (Nipper, 1989).

Technological advancements afford many new opportunities, but the wish to cover a large quantity of study material and the need to reach a large number of students has come at the expense of the study experience and quality (Sumner, 2000), the lecturer-student interaction, and interactions among the students (Nipper, 1989). In order to overcome these weaknesses, the second generation of distance learning provided several options that contributed to its development and growth: new communication technologies, increasing sophistication in use of printed material, improvement of support services for students in distance learning, and establishment of the Open University in the UK in 1969. The Open University marked the second generation of distance learning and had an impact on many institutions over the years. More than any other event, its establishment was perceived as the beginning of a more prestigious era in the history of distance education (Homberg, 1986).

By the beginning of the 21st century the information era was already in full blast. The main feature of this era with regard to the possibility of transferring information very rapidly was the computer (Menzies, 1996). Use of rapid transfer of information is typical of almost all aspects of life in the western world, including distance learning (Spencer, 1998). The experience of independent distance learning was implemented in the new era mainly by use of the internet. Modular courses, self-paced exams, CDs, and various websites added a large quantity of information for students but were unable to provide the social interaction and interpersonal communication essential for learning. In addition, a platform that began to evolve in this era is, as stated, video conferencing, which is capable of providing active communication (Sumner, 2000). The technologies currently being used for e-Learning are considered the next generation of distance learning (Davidovitch & Cohen, 2020).

Considering the great popularity of online communication and social media among the students, it seems inevitable that education also proceeds in that direction, but not everyone accepts this (Redpath, 2012). Many leading faculty members in higher education tend to underestimate e-Learning and are even concerned of integrating it in the academic institutions they run (McCarthy & Samors, 2009).

In early 2020 a change was evident in the popular attitude to distance learning; in this year the Covid-19 virus began to spread. The virus appeared in November 2019 in the city of Wuhan, China, and quickly spread to many countries around the world. The virus spreads rapidly and attacks the respiratory system, with possibly fatal results for humans (Zaharah et al., 2020). This pandemic posed significant challenges for institutions of higher education around the world. One of the conspicuous challenges was evident in the urgent and unexpected need to shift all courses to e-Learning, although previously held face-to-face at universities (Rapanta et al., 2020).

Teaching Dimensions

The quest for excellence in college and university teaching has become very popular throughout the world. Many academic institutions devote a great deal of attention to the pedagogic standards in their classrooms and to evaluating teaching (Ovando, 1989). At the same time, various educators and researchers are seeking how to enhance knowledge on the efficacy of teaching in general and of digital teaching in particular. A good way of achieving this goal is by learning how good lecturers think about teaching and about their pedagogic knowledge, while stressing their teaching behaviors in class (Hativa et al., 1999). Improving teaching behaviors, such as by replacing inefficient teaching strategies and techniques, is a major component in the teacher's process of becoming a better teacher (Erickson & Erickson,

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1980; Levinson et al., 1981; Weimer & Lenze, 1991). This is because the very focus on teaching behaviors classified as problematic is sufficient in order to improve teaching (Marsh & Roche, 1993).

Efficient teaching requires a wide knowledge base, including in the following areas: general pedagogic knowledge, knowledge about the students (student characteristics, learning and motivation theories), knowledge of the context, knowledge of pedagogic goals, as well as strong command of the study material (Gudmundsdottir, 1987; Shulman, 1986; Shulman, 1987). There is extensive research literature on conceptions of teaching and knowledge. Novice and expert teachers in schools have been compared, and this literature has generated evidence indicating that expert teachers are distinct from their colleagues, and particularly from novice teachers, in the complexity and sophistication of their teaching conceptions (Gudmundsdottir, 1987). Exemplary teachers in their field combine various categories and forms of knowledge in a way that allows them to optimally construct the physical, social, and intellectual classroom environment (Hativa et al., 1999). Similar evidence was also found in tertiary institutions, where exemplary teachers were found to be very organized, carefully plan their lessons, set unambiguous goals, and report high expectations of their students. They displayed a positive attitude towards the students, promoted student participation in class, provided them with regular feedback on their progress in the course, gave specific suggestions for improvement, and took considerable responsibility for the students' achievements. In addition, these lecturers made the material studied relevant by linking it to student experiences, while providing examples and setting defined goals such that the knowledge acquired would be applicable in their life (Horan, 1991). Exemplary lecturers provide students with individual treatment, involve them in the learning process, encourage them, utilize a variety of teaching techniques in order to generate more interest, challenge them intellectually, and create a positive classroom atmosphere (Hilgemann & Blodget, 1991). Exemplary teachers enjoy teaching, display enthusiasm with the material, have good command of language, and provide clear access to the material, while adding humor and theatrical elements to their teaching. They make a true effort to advance students' learning and make sure that these take an active part in the lesson through questions and discussions (Kelly & Kelly, 1982).

Hativa (1984, 1999, 2015) found that studies examining students' perception of good teaching can be divided into two main categories: In the first category, students are asked to choose the most important features of good teaching in their opinion from among given options. The second category in this type of studies accesses students' views on good teaching indirectly, by statistical analyses of student evaluations of their teachers. These analyses are used by the researchers to reach conclusions about specific features. In her studies, Hativa examined good teaching of math as perceived by undergraduate students using these two research methods. The most important feature of the lecturer as perceived by the students was found to be the ability to provide clear and organized lectures. Nevertheless, it is notable that these qualities are appreciated more by students of math and science than by students of social sciences, humanities, and the arts. In addition, it was found that a good lecturer can convey a large amount of material clearly and in a manner that is well-adapted to the students and does not skip relevant study material in the assumption that the students will make up the difference themselves. At the same time, the students reported that the lecturer makes a point of slightly deviating from the topic from time to time in order to arouse interest and curiosity. In addition, the research participants ranked the lecturer's enthusiasm low. It appears that these students do not ascribe significance to this feature and do not perceive it as important for their learning process, apparently because it does not affect the clarity and organization of the lesson. The students in the study attested that a good relationship with the lecturer is very important for them and ranked this feature as being highly significant in a good lecturer. These students appear to have more appreciation than others for qualities such as lecturer empathy and help, as affecting their difficulties with the learning process (Hativa, 1984).

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Through many observations and various statistical tests, Hativa developed a model that contains leading dimensions of good teaching as well as primary teaching behaviors found essential for exemplary lecturers, as perceived by students. According to this model, the teaching capabilities of a good teacher are comprised of two main dimensions: the cognitive dimension, involving delivery of the material, and the affective dimension, involving the classroom atmosphere (Hativa, 2015).

The cognitive dimension is comprised of three main teaching categories: First, organization of the course and the lesson by the teacher; namely, seeing to it that the student is well aware of the course framework, knows the topic addressed by the lecturer in a given lesson, that of the previous lesson, and what will happen subsequently. Second, the lesson is clear; namely, the teacher teaches the lesson clearly, with explanations that allow the students to further apply them beyond school hours. Third, the lesson is interesting and maintains concentration and attention; namely, the students remain concentrated and involved during the lesson (Hativa, 2015).

The affective dimension is manifested by creating a positive and comfortable class atmosphere that promotes openness and motivation to learn and it is comprised of two main categories of teaching behaviors: The first is displaying respect for the students, empathy for their learning difficulties, providing help, and demonstrating a warm and sympathetic attitude to the students. The essence of the second category is maintaining positive and beneficial interactions with the students, encouraging their inquisitiveness and questions, and providing relevant solutions. All the teacher's primary behaviors constitute potential behaviors utilized by the teacher in the lesson (Hativa, 2015).

Classroom Climate

The climate of the study setting, i.e., the classroom climate, is comprised of the atmosphere among the teacher staff, between the teacher and the management, and between the teachers and students, and it serves as the academic environment of the learning process. It constitutes an important part of the school's values (Friedman, 1995). Classroom climate changes form according to the student-teacher dynamics (Smith et al., 2001) and is affected by demography, prejudices, general views on different topics, etc. (Ambrose et al., 2010). Moreover, the climate is also affected by the nationalities, ethnicities, and faiths of both teachers and students (Stein, 2001). Classroom climate includes the intellectual, social, emotional, and physical environment of the students (Ambrose et al., 2010).

The climate concept can be divided in two: the learning environment and the teaching. The learning environment encompasses all the elements that comprise the academic expanse, beginning from desks and chairs, the study program, the content of the lessons, to the encounters between the students and the teaching staff (Schubert, 1986). The teaching dimension includes all the elements that affect the teacher as well as the students' performance (Fraser & Waldberg, 1991; Fraser, 1989). Tzidkiyahu (1983) explains that classroom climate is comprised of four dimensions: behavior and thinking that are open to change, by both the teachers and the students; teacher assistance provided to the student and assistance among the students; equal treatment of all students by the teacher and among all students; and laws and orders that are familiar to both the teacher and the students (Tzidkiyahu, 1983). Classroom climate can be maximally realized when all the needs of the class students are met and students have a sensation of physical, mental, and social stability (Williams et al., 1998).

It is customary to relate to the classroom climate also as the social-academic climate, a term that relates to how students and teachers perceive the quality of their experiences in the classroom. It is suggested that their feelings are projected on the class (Hoy & Miskel, 2012). There is extensive research literature on the contribution of the classroom social climate to

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the student's academic achievements and emotional state (Mashburn et al., 2008; Pianta et al., 2008; Somersalo et al., 2002; Wilson et al., 2007). Positive classroom climate has been found to help increase student motivation (Makara & Madjar, 2015; Martin et al., 2012), meet psychological needs such as autonomy, capability, and affiliation (Deci & Ryan, 2016), and also encourage learning and improve academic achievements (Ainley & Ainley, 2011; Parra, 2010). According to Davidovitch (2004), a social-academic climate provides individual attention and constitutes a safe space for the development of students' self-efficacy. The literature (e.g., Ainley & Ainley, 2011; Makara & Madjar, 2015; Martin et al., 2012 Parra, 2010) indicates that positive classroom climate helps increase students' motivation, which may improve academic achievements and, in turn, increase self-efficacy.

A study from 2016 found that social-academic climate constituted one of the most significant predictors of emotional functioning, which in turn was a significant cause of academic achievements. Hence, teachers may need guidance on how to create a positive social-emotional climate in order to improve academic performance (López & Oriol, 2016).

Academic climate is influenced at the same time also by social interactions that occur within the learning expanse. These occurrences as a whole are often called the "social-academic climate", meaning the interaction between the student's perceived self-efficacy and a range of social features within the school. In classrooms where most students have a high socioeconomic status, the academic climate was found to be high as well, as was the students' perceived self-efficacy and achievements. Givens-Rolland (2012) found that classroom climate depends on a range of elements, including self-efficacy, which influences the class setup. A possible explanation of these findings is that high academic functioning is partially based on the atmosphere in the study environment, and hence on students' academic efforts. Students who perceived themselves as capable of learning also reported high perceived self-efficacy (Schaedel, 2020).

Factors Affecting the Social-Academic Climate

Students spend most of their school hours with other students and often also in collaboration with them, influencing their classmates and influenced by them (Holen et al., 2013). The classroom climate depends on an array of factors, which include self-efficacy and social-emotional factors that affect the class setup (Givens-Rolland, 2012), as well as social, cultural, and pedagogical factors. While sociocultural factors affect academic achievements (Hodis, 2011), they are not easy to change within the classroom, unlike pedagogical factors that can be changed both in the classroom and in the overall school system by developing motivation (Gutiérrez et al., 2011), encouraging autonomy (Puigarnau et al., 2016), fostering responsibility (Moreno et al., 2010), reducing violence (Alvarez et al., 2011), and meeting basic psychological needs (Moreno et al., 2012). Some researchers are of the opinion that fully meeting needs helps one grow and develop and is beneficial for mental health, while not meeting needs might generate boredom, social segregation, and a narrowing of horizons (Ryan & Deci, 2000). Accordingly, the classroom climate is supposed to provide students with all their needs in this setting (Larson, 2000). In schools where the focus was on strengthening positive relationships between students and teachers (Osler, 2000) and cultivating a sense of mutual trust and respect between teachers and students, the classroom climate improved accordingly (Marshall, 2004).

The teacher's teaching style has an impact on the classroom climate as well. Some claim that the type of teaching style can be divided in two: a teacher-centered instruction style and a learner-centered teaching style. The teacher-centered style focuses on the teaching (Brown, 2009; Pratt, 2002). This teaching style is aimed mainly at providing access to information, where teaching and maintaining the study program are given priority over students' needs.

Then there is the learner-centered teaching style, characterized by an emphasis on the student, the student's needs, and the learning process. A learner-centered classroom climate puts the student at the center of the learning process and grants the student support and guidance, positive feedback, encouragement, empathy, as well as mutual trust and respect (Pratt, 2002). The teacher's inclination towards a teacher- or learner-centered teaching style might shape and reflect the classroom climate and thus affect the students' self-efficacy and achievements (Eggen & Kauchak, 2007). This was also found in a study from 2004, showing that a social-academic climate that provides individual attention and support constitutes safe grounds for the development of self-efficacy among the students. Moreover, differences in this climate were found between various institutions and academic departments (Davidovitch, 2004).

One of the main roles of the learner-centered educator is to establish positive teacher-student relations that nurture the student's self-confidence and self-efficacy. Accordingly, learner-centered teachers strive to enhance their students' self-efficacy and aim to maintain a balance between trust in the students and helping them to achieve their academic goals (Pratt, 2002). In this context, studies have found that students who perceived their teacher as caring and supportive tended to have higher motivation, manifested in investing efforts and perseverance, features that in turn increased the likelihood that these students would do well (Lumpkin, 2007; Wentzel, 1997).

Self-Efficacy

Bandura was the first to introduce the concept of self-efficacy and he defined it as the individual's belief in his abilities to organize and execute the necessary actions in order to achieve something. Self-efficacy as belief in one's personal ability affects human behavior in various ways. Bandura assumed that self-efficacy affects the decisions people reach, their nature, the extent of the resources spent, persistence in them, and flexibility (Bandura, 1977). Self-efficacy is multi-dimensional and might change according to the type of task and its context as well as its difficulty. Hence, self-efficacy is a dynamic quality that changes according to the learner's different fields of activity (Bandura, 1997).

People tend to choose activities in which they feel capable and to avoid activities in which they do not feel capable. Self-efficacy helps people decide how much effort they will have to devote to a given task, how much time they will have to spend when encountering difficulties, and how much resilience they will have to demonstrate in moments of crisis. The more they perceive themselves as capable, the greater their efforts, perseverance, and flexibility (Bandura, 1986).

Beyond its effect on human behavior, individuals' self-efficacy also affects their thoughts and feelings. Individuals with low self-efficacy tend to assess tasks as harder than they really are. These thoughts are fertile ground for perceived failure, tension, helplessness, and even depression. In contrast, strong self-efficacy grants a sense of calm and challenge when carrying out a complicated task. Based on this argument, Bandura claimed that self-efficacy has a key role in human agency (Bandura, 1997).

Self-Efficacy in Education

In recent decades, the concept of self-efficacy has been widely studied in the educational context. Many researchers examined the effect of self-efficacy on motivation and learning among students. These findings suggest that self-efficacy affects motivation and cognition by influencing the interest students display in executing a task, their perseverance, the goals they set, their decision making, and their use of cognitive and meta-cognitive strategies, as well as their self-monitoring (Bouffard-Bouchard, 1990; Bouffard-Bouchard et al., 1991; Lent et al.,

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2002; Linnenbrink & Pintrich, 2003; Pintrich & Groot, 1990; Schunk, 2003; Zimmerman et al., 1992). Accordingly, the student's self-efficacy mediates between several aspects related to capability (skills, knowledge, prior achievements, etc.) and consequent performance (Bandura, 2006; Schunk & Pajares, 2002).

According to the social-cognitive theory of learning, there are four main sources that facilitate self-efficacy: practicing skills, observing others, social persuasion, and one's physiological and psychological state (Bandura, 1997). Practicing skills constitutes the most significant source for forming a sense of self-efficacy, because it provides students with authentic evidence that they are capable of handling a task (Palmer, 2006). Students interpret the results of their actions and utilize this interpretation in order to develop beliefs regarding their ability to carry out tasks and activities. As a rule, success facilitates a strong sense of self-efficacy and failure weakens it, particularly when the individual fails before forming a strong and stable sense of self-efficacy. However, the development of strong self-efficacy is based not only on success but rather requires experiences of overcoming obstacles through effort and persistence (Bandura, 1997). The second source is, as stated, observing the experiences of others (Bandura, 1997). The students receive information regarding their abilities by observing others, particularly in their peer group, which provides natural opportunities for comparison (Schunk, 1987).

A survey from 2011 that focused on the self-efficacy of students at institutions of higher education found several techniques used by the lecturer that help increase self-efficacy. First, it was found that when the lecturer taught new contents and then opened them to discussion while asking questions and stimulating the students to remember the contents, their sense of proficiency grew. Second, when the lecturer followed the student's progress, pointing out possible mistakes and offering additional approaches and angles, this encouraged the development of a sense of proficiency. Third, a lecturer who encouraged the students to answer questions and raise ideas and suggestions while urging them to be goal-focused and persist, helped preserve positive emotional arousal. In summary, experiences in which students develop a good command of their skills were found to be the most important source for creating a stable sense of self-efficacy. The explanation given by the researchers was that almost all the studies surveyed in the article, which emphasized the significance of exposing students to practical experiences and development of skills, found the greatest improvement in the enhancement of self-efficacy (van Dinther et al., 2011). The current study examined whether the paradigm of good teaching dimensions customary in the research literature could predict students' self-efficacy and social-academic climate in e-Learning.

Hence, the purpose of the current study was to examine whether and to what degree there was an association between the two teaching dimensions: the cognitive and the affective, and between self-efficacy and the social-academic climate of students engaged in e-Learning. Namely, the current study examined whether the teaching style utilized by the lecturer might predict students' perceived efficacy and social-academic climate when studies are carried out remotely via online technologies.

Hypotheses

- There is a positive correlation between the teaching dimensions and the social-academic climate, such that participants who rank the lecturer high on instruction behaviors will report a positive social-academic climate.
- The teaching dimensions are positively correlated with self-efficacy, such that participants who rank the lecturer high on instruction behaviors will report high self-efficacy.
- Of the categories in the cognitive teaching dimension, "lesson clarity" is the strongest

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predictor of self-efficacy, such that students who report a clear and logical lesson will also report high self-efficacy.
- Of the categories in the affective teaching dimension, the lecturer's ability to grant respect, empathy, and support best predicts self-efficacy, such that reporting high empathy and respect by the lecturer will be accompanied by reports of high perceived self-efficacy.
- There is a positive correlation between social-academic climate and self-efficacy, such that participants who report a positive and pleasant atmosphere will also report high self-efficacy.

Research Methodology

After a comprehensive and extensive search in the research literature in this field, no study was found to have applied Hativa's (2015) model of overall dimensions and main behaviors of good teaching" to the area of e-Learning. In light of the technological transformations occurring around the world in recent decades, which are also evident in the domain of education and teaching, the current study that was conducted in 2020-2021, seeks to expand this theory to the area of e-Learning as well, in order to help educators, maximize their abilities to teach remotely.

Research Variables

Demographic Variables
Age, gender, marital status, residential area, years of schooling, academic institution, faculty, and current year of studies.
Independent Variables
Cognitive and affective teaching dimensions.
Dependent Variables
Social-academic climate and perceived self-efficacy

Participants

The study consisted of 152 respondents, of whom four were removed from the data analysis because they were not academic students, rather had only a high school education. Of all the students, 105 were female (71.4%). The age range was 21-61 ($M = 28.3$, $SD = 7.72$). The participants were recruited with non-probabilistic sampling by distributing the questionnaire in its electronic form among students from all over the country, through a snowball sampling method. Before answering the questions, the participants were asked to give their consent to participate in the study on a volunteer basis, by marking "confirm participation." Table 1 presents the sociodemographic data of the research participants.

Table 1

Sociodemographic Data of the Research Participants

Variable	Number of respondents	Percentage	Mean (±Standard Deviation)	Min.	Max.
Gender					
Female	105	71.4			
Male	42	28.6			
Age (years)	147		28.3 (±7.72)	21	61
Marital status					
Single	99	67.3			
Married	43	29.3			
Divorced	5	3.4			
Residential area					
Northern district	8	5.4			
Central district	4	2.7			
Haifa district	93	63.3			
Tel Aviv district	15	10.2			
Jerusalem district	9	6.1			
Southern district	6	4.1			
Judea and Samaria	12	8.2			
Years of schooling	147		14.44 (±2.34)	12	25
Academic institution					
University	100	68			
College	45	30.6			
Faculty					
Social sciences and humanities	106	72.1			
Engineering	17	11.6			
Medicine	5	3.4			
Law	3	2			
Exact sciences	8	5.4			
Current year of studies					
First	28	19			
Second	44	29.9			
Third	35	23.8			
Fourth	19	12.9			
Master's degree	6	4.1			
Preparatory program	7	4.8			

Instruments

The research participants were asked to complete one questionnaire comprised of 36 questions. The statements were written by the current authors based on the research literature in this area. The questionnaire was divided into four parts, where each examined a certain variable. The first part of the questionnaire collected the demographic data of the research participants and included eight items. The second part also included eight items that examined the student's perceived self-efficacy (for instance, "I am able to keep up with the pace of teaching in class"; "I feel that I am unable to learn the material in the online course").

The third part of the questionnaire dealt with the lecturer's teaching style according to Hativa's (2015) theory of teaching dimensions, such that each statement dealt with one

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dimension found to characterize the exemplary student. This part included ten items divided in two: the first six dealt with the cognitive dimension (for instance, "The material is conveyed in an organized and continuous manner"; "The lecturer explains his words clearly"), while the four last items focused on the affective dimension (for instance, "The lecturer encourages the students to ask questions"; "The lecturer displays respect and empathy for the students"). The fourth and last part of the questionnaire included ten items that represented the social-academic climate in the course (for instance, "I feel that I am among equals"; "The students in the course befriend each other"). The questionnaire was comprised of various statements and the research participants were asked to note their support for each statement on a range of 1 (*strongly disagree*) to 7 (*very strongly agree*). Items 14, 15, 29, 42, and 34 were formulated as inverse items in order to retain the participants' attention and check for unreliable responses to the questionnaire.

Procedure

The questionnaire was administered and completed online using Google Forms website. The opening section clarified to the participants that the questionnaire is anonymous and although written in the male form appeals to both genders. Each subtopic opened with an explanation of how to respond to the statements and upon completing the full questionnaire the participants were thanked and told that their responses had been recorded in the system.

In order to explore this question, students from various institutions of higher education in Israel completed a questionnaire where they were asked to choose one course they had studied online and focus on it when responding to the questionnaire. The questionnaire was divided into four sub-topics, where at first the participants were asked to answer several demographic questions and the rest of the questions were divided by the research variables as follows: the first group of questions dealt with perceived self-efficacy; the second group with the teaching dimensions presented in Hativa's (2015) theory, from which select teaching behaviors were extracted. In the final part the questionnaire examined the social-academic climate during the course.

Data Analysis

In order to examine the hypotheses, several statistical analyses were conducted. First, a descriptive statistics analysis was performed for all the demographic variables. In addition, for each group of questions regarding social-academic climate, self-efficacy, and teaching dimensions, a Cronbach's alpha test was conducted in order to evaluate reliability as internal consistency. In order to examine hypotheses 1, 2, and 5, Pearson correlations were conducted. In order to examine hypotheses 3 and 4, multiple linear regression analyses of the hierarchical regression type were conducted. In order to rule out alternate explanations, Pearson correlations were conducted among the three research variables for the quantitative demographic variables (age and years of schooling), and a Chi-square analysis for independence (Cramer's V) for the research variables and the categorical demographic variables (gender, marital status, place of residence, academic institution, faculty, and years of schooling). However, with regard to these variables, in each of the Chi-square tables more than 20% of the cells had an expected value of less than 5, so this test could not be relied upon and therefore a Pearson's test was held too for these variables, where each category in the variables was given a numerical value (for instance, female – 1, male – 2) in order to allow a Pearson's correlation.

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Reliability

In order to examine the reliability of the tools, a Cronbach's alpha reliability test for internal consistency was conducted. For this purpose, the questionnaire statements were divided in two according to the three research variables (teaching dimensions, perceived self-efficacy, and classroom climate). The reliability of the tools for measuring perceived self-efficacy and teaching dimensions was found to be very high, while the reliability of the tool for measuring classroom climate was found to be medium. Table 1 presents the values of the internal reliability measure (Cronbach's α) for each of the tools.

Table 2
Internal Reliability (Cronbach's α)

Variable	Statements	Range	Inverse Statements	Alpha Value
Self-efficacy	1-8	1-7	6,7	848.
Teaching dimensions	9-18	1-7		899.
Social-academic (classroom) climate	19-28	1-7	3,6,8	620.

Research Results

In order to rule out the possibility that the demographic variables had influenced the research variables, Pearson correlations were calculated between the research variables and the sociodemographic variable. Table 3 presents a matrix of the Pearson correlations between the variables ($N = 147$).

Table 3
Matrix of the Pearson Correlations between the Variables (N=147)

Variable	Teaching dimensions	Self-efficacy	Social-academic climate
Sex	-.166*	-.091	-.291**
Age	.166*	.198*	.287**
Marital status	.110	-.012	.072
Years of schooling	.198*	.257**	.166
Residential area	.127	-.070	-.010
Academic institution	-.089	-.137	-.098
Faculty	-.024	.021	-.149
Year of studies	-.099	-.068	-.093

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Table 4

Statistics for the Three Research Variables

Variable	Mean (±Standard Deviation)	Minimum	Maximum
Teaching dimensions	5.330 (±1.014)	3.10	7.00
Self-efficacy	5.009 (±1.102)	1.75	7.00
Classroom climate	4.975 (±0.814)	3.00	7.00

In order to examine the first research hypothesis, whereby there is a positive correlation between the teaching dimensions and the social-academic (classroom) climate, a Pearson's correlation between the two variables was calculated. Confirming the research hypothesis, a significant positive correlation was found ($r = .608$, $p < .001$). Namely, participants who ranked the lecturer high on teaching behaviors also reported a positive social-academic climate.

In order to examine the second research hypothesis, whereby there is a positive correlation between the teaching dimensions and self-efficacy, a Pearson's correlation was calculated. This hypothesis too was confirmed by the data ($r = .549$, $p < .001$). Therefore, participants who ranked the lecturer high on teaching behaviors also reported high self-efficacy.

In order to examine the third research hypothesis, whereby of all the categories of the cognitive teaching dimension, "lesson clarity" is the strongest predictor of self-efficacy – a multiple linear regression analysis of the hierarchical regression type was conducted between self-efficacy and the three teaching categories in the cognitive dimension. This hypothesis was supported by the findings. First, the cognitive teaching dimension was found to explain 35% of the explained variance in the variable of self-efficacy ($R^2 = .346$, $F(2,143) = 37.87$, $p < .001$). in this dimension, the category of lesson clarity was found to be the strongest predictor of self-efficacy ($\beta = .348$, $p > .001$). The category of interesting lesson that engages concentration and attention was found to have the second next significant unique contribution to predicting self-efficacy ($\beta = .316$, $p > .001$). No significant unique contribution was found for the category of teacher organization of the course and the lesson ($\beta = .003$, $p = .977$). Table 5 presents a hierarchical regression analysis of the categories in the cognitive teaching dimension as predictors of self-efficacy.

Table 5

Hierarchical Regression Analysis of the Cognitive Teaching Dimension Categories as Predictors of Self-Efficacy

Cognitive teaching dimension	Model 1				Model 2			
	B	SE B	β	t	B	SE B	β	t
Lesson clarity	.469	.063	.528**	7.468	.309	.073	.348**	4.218
Interesting lesson that promotes concentration and engages attention					.236	.062	.316**	3.831
Lecturer's organization of the course and the lesson								
R²		.279**				.346**		
F change		**55.769				**14.679		

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

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In order to examine the fourth hypothesis, whereby of all categories of the affective teaching dimension, that of respect, empathy, and support by the lecturer most strongly predicts self-efficacy – a multiple linear regression analysis of the hierarchical regression type was conducted between the variable of self-efficacy and the two categories in the affective teaching dimension. This hypothesis too was confirmed by the findings. The category of respect, empathy, and support by the researcher was found to explain 16% of the explained variance in the variable of self-efficacy ($R^2 = .162$, $F(1,144) = 27.83$, $p < .001$). This category was found to have a unique contribution to predicting self-efficacy ($\beta = .402$, $p > .001$). In addition, the category of creating positive and beneficial interactions with the students was not found to have a significant unique contribution to predicting self-efficacy ($\beta = .042$, $p = .702$). Table 6 presents a hierarchical regression analysis for the categories in the affective teaching dimension as predictors of self-efficacy.

Table 6

Hierarchical Regression Analysis for the Affective Teaching Dimension Categories as Predictors of Self-Efficacy

	Model 1			
Affective teaching dimension	*B*	*SE B*	β	*t*
Respect, empathy, and support by the lecturer	.411	.078	.402**	5.275
Creating positive and beneficial interactions with the students				
R²		.162**		
F change		**27.830		

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

In order to examine the fifth research hypothesis, whereby there is a positive correlation between classroom climate and self-efficacy, a Pearson's test was conducted between the two variables. A positive significant correlation ($r = .502$, $p < .001$) was found and therefore the hypothesis was confirmed, such that participants who reported a positive and pleasant climate in class also reported high self-efficacy. Table 7 summarizes the Pearson correlations between the three research variables in a matrix.

Table 7

The Pearson Correlations between the Three Research Variables in a Matrix

Variable	Teaching dimensions	**Self-efficacy**	Social-academic climate
Teaching dimensions	1	.549**	.608**
Self-efficacy		1	.502**
Social-academic climate			1

*$p < .5$. **$p < .01$.

Discussion

The transition from face-to-face learning to online lessons was made almost instantly, with little preparation by academic institutions, and creates a strong need for research on the variables that affect and are affected by e-teaching. The study examined whether Hativa's

(2015) paradigm of teaching dimensions predicted students' self-efficacy and perceptions of social-academic classroom climate, in e-Learning situations. Students in several academic institutions were sampled, asked to choose one course they had studied online and completed a questionnaire on their learning experience, rated various teaching dimensions of their lecturer, the classroom climate, and their own self-efficacy in the selected course.

Supporting H1 and H2, the cognitive and affective dimensions of teaching dimensions were found to predict perceived social-academic learning climate and self-efficacy, such that the lecturer's ratings on teaching dimensions were positively associated with the students' reported self-efficacy and learning climate. Students often receive information that confirms their beliefs and convinces them that they are capable of performing a task. This is because it is easier to form a sense of self-efficacy in difficult circumstances if people in one's close environment express their confidence regarding the individual's ability. Such social persuasion is particularly effective when the information sender is considered knowledgeable and trustworthy. This may lead to an explanation of the findings concerning the second hypothesis, since a lecturer who is perceived to be knowledgeable and trustworthy has a greater probability of contributing to students' self-efficacy. Another possible explanation of the findings can be found in the study conducted by Pratt (2002), who claimed that a learner-centered style of teaching, which emphasizes support, positive feedback, encouragement, empathy, and respect for the student, might shape and reflect the classroom climate and influence students' self-efficacy and achievements. As a result, certain aspects of the lecturer's teaching style might influence both perceived social climate and self-efficacy.

In support of H4, the findings indicated that the affective dimension of teaching, which includes respect, empathy, and support to students, is the strongest predictor of self-efficacy. On this aspect of the teacher-student relations Pratt (2002) stated that one of the main goals of the learner-centered educator is to establish positive teacher-student relations that nurture students' self-confidence and self-efficacy. A study by Hilgemann and Blodget (1991) found that the exemplary lecturer is one who expresses a positive and respectful attitude towards his students, and another study by (Lumpkin, 2007; Wentzel, 1997) found that exemplary lecturers are those who give students individual attention, involve them in the learning process, encourage them, and create a positive class atmosphere. Studies (e.g., Lumpkin, 2007; Wentzel, 1997) also found that students who perceived their teacher as caring and supportive were inclined to be more strongly motivated, which was reflected in effort and persistence, which increased the probability of students' success in their studies. A lecturer's respect, empathy, and support, all affective dimensions of teaching, predict students' motivation for success among students, increases the probability of success, which may, in turn, predict increased self-efficacy. However, this set of associations was not examined in the current study, and further research should examine this investigative direction.

Hativa (1984) found that, from the students' perspective, the most important attribute of a lecturer is his or her ability to maintain clarity (i.e., give clear and organized lectures). H3, which predicted that, of all categories in the cognitive teaching dimension, teaching clarity will be the strongest predictor of self-efficacy. In the current study, the category of class organization was not found to make a unique contribution to predicting self-efficacy, in contrast to Hativa's (1991) findings. In online classes, class organization may have less significance, as the lecturer uploads the study material to the internet, facilitating independent learning based on multiple views and readings, even if the class was given in a disorganized manner. Future studies should further explore Hativa's model should be adjusted with respect to class organization in the case of e-Learning.

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Conclusions and Implications

The current study examined the validity of Hativa's (2015) teaching dimensions model during COVID-19, when most academic classes are taught online. For this purpose, 147 students from different academic institutions were sampled and asked to choose one course they had studied online, completing a questionnaire on their experience of the course. After completing demographic information, participants reported their self-efficacy in the course and assessed several teaching behaviors, based on Hativa's model. (2015) theory and rated the social-academic climate during the course.

All the research hypotheses were confirmed. Highly rated lecturers were lecturers who, first and foremost, give clear and comprehensible lessons, respect students, express empathy, and give them support. These are the two most significant categories in Hativa's model. Consequently, our findings support the extension of Hativa's model to the field of e-teaching. Furthermore, Hativa's teaching dimensions were found to predict self-efficacy and positive classroom climate. Therefore, Hativa's model may be used to facilitate students' improvement both by positively influencing the classroom climate and by improving the student's self-efficacy perceptions.

Findings supported the prediction of a positive correlation between classroom climate and self-efficacy, although the correlations found in this study were moderate. The current study is a correlational study and is therefore unable to detect causality or its direction. Future studies might construct an experimental research design to determine the direction of effects, whether self-efficacy affects classroom climate or the reverse. Further research may conduct a more intensive examination of the association between self-efficacy and classroom climate and examine potential moderators and mediators of the association between these two variables.

Findings also indicate correlations between the research variables and several demographic variables: Students' ratings of lectures were significantly positively correlated with students' age and years of schooling, and significantly negatively correlated with male gender. Self-efficacy was also significantly positively correlated with age and years of schooling. Classroom climate significantly negatively correlated with male gender and significantly positively correlated with age. No possible explanations were found for these findings in the literature reviewed, and since the current study is a correlational study there is a need for further studies to examine the meaning of these associations. Future studies might construct a different research setup that uses other operationalizations and statistical methods. Furthermore, the correlation found between age and the three research variables may be attributed to students' increased experience, which may have affected students' self-efficacy based on past successes; Experienced students may have studied with a large number of teachers and lecturers, are familiar with a range of teaching methods, and thus are more inclined to identify and appreciate positive qualities of lecturers and the advantages of specific teaching methods. In light of the finding that self-efficacy and teaching style are correlated with classroom climate, future research may explore whether students' age is also correlated with perceived classroom climate.

Declaration of Interest

Authors declare no competing interest.

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