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THE SELF-EFFICACY OF ACADEMIC STUDENTS AND ITS CONTRIBUTION TO THEIR SCHOLASTIC ACHIEVEMENTS

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Abstract. *The study examines the association between students' self-efficacy and its impact on their scholastic achievements. This association was explored by means of a model developed to investigate the effect of various personal variables, such as students' motivation and socioeconomic status, as well as institutional variables related to the study environments offered by the academic institution, on advancing students' learning capabilities and skills and on their academic success. These variables involve efficient organization of learning, nurturing academic literacy, communication between the academic and administrative staff and the students, and computer use at the academic institution, which contribute to students' scholastic achievements. Students' attitudes were measured by means of a questionnaire distributed among students at two academic institutions – a college and a university – and completed by 958 students, 464 from the college and 494 from the university.*

The research findings indicate that the students' variables and the learning environments at each of the institutions have varying impacts on students' self-efficacy and scholastic achievements.

At the college students' motivation, and particularly intrinsic motivation, was the most influential of all self-efficacy variables. The more the college study environments emphasize nurturing academic skills and foster communication between the academic and administrative staff and the students as well as efficient organizing of the learning and use of computers, the greater the students' self-efficacy. With regard to students' background variables, employed and married women have higher self-efficacy than men.

At the university, the learning environment was the variable that had the greatest effect on students' self-efficacy. Learning environments that function as a "learning organization" and encourages interaction between the academic and administrative staff and the students and fosters academic literacy and computer use had the highest impact on students' self-efficacy at the university. The other variable affecting students' self-efficacy was motivation and particularly intrinsic motivation. The background variable with the highest impact on men's self-efficacy at the university was number of years at the institution. Male students' self-efficacy was higher, as were their scholastic achievements, the more years they had been studying at the institution, as well as if they were employed and married.

The research conclusions emphasize the great significance that academic institutions, colleges and universities, must devote to nurturing learning environments that endeavor to improve students' learning skills and to enhancing emotional, pedagogic, ethical, cognitive, and organizational aspects that contribute to and intensify the self-efficacy of students at colleges and universities.

Keywords: *self-efficacy, scholastic achievements, effect, motivation, nurturing academic skills.*

The higher education revolution and providing a “response to needs” (Miller, 1990) in two types of institutions of higher education: a university and a college
The higher education revolution

Opening the gates of higher education created a diverse student population, with different orientations, admission terms, and personal qualities. The great social changes that occurred in the world, towards equalization and democratization of higher education (Iram, 1987), opened the university gates to groups that in previous generations were not slated for academic studies. This pressure increased due to the need to professionalize. Expansion of access to higher education was evident in colleges and universities. In the last three decades, all academic institutions increased the number of students in Israel (CHE website, 2019).

According to the website of the Israeli Council for Higher Education (CHE), Israel’s system of higher education is in the midst of a giant momentum. The OECD has ranked Israel as second in the world in academic education among those aged 25-64.

In 1948, Israel had about 1,600 students in 3 universities: the Technion, the Hebrew University, and the Weizmann Institute. Since then and over 70 years, the academic system has grown and now encompasses 62 institutions of higher education: 8 research universities, the Open University, 20 government funded academic colleges, 12 non-funded colleges, and 21 academic colleges of education.

The OECD report published in September 2018 ranked Israel as second in the world, after Canada, in the proportion of locally born residents aged 25-64 who had a tertiary or academic education (48.5%).

A review of the distribution of undergraduate students in the various institutions shows that until the early 1990s most students (85%) studied at universities. Since then, as stated, significant shifts occurred in the structure of the system of higher education and in the early 2000s about half of all undergraduate students were studying at universities. During the recent decade, side by side with the flourishing of the colleges, the CHE and the Planning and Budgeting Committee (PBC) encouraged a policy of fully transferring study courses at government funded colleges from the academic responsibility of the universities to the colleges, a process that naturally increased the rate of students at government funded colleges (CHE website).

The universities served as a catalyst of the shift in higher education, manifested in the change in their elitist orientation. As a result, they had a considerable part in the increasing number of students over the last decade. They took young academic institutions under their patronage and helped them become established. The colleges gradually acquired a place in public consciousness as legitimate institutions worthy of granting degrees. The stigma of the colleges as second-rate universities diminished, but there is still work to do in forming an academic and organizational affiliation between these two types of institutions and acting to synchronize them by means of the CHE (Volansky, 1996). The system of higher education is coping with

fundamental heterogeneity in all areas, in an attempt to create uniformity: uniformity in tuition, uniformity in academic degrees (CHE Law, 1995), endeavors to reach uniformity in the employment terms of academic faculty, and endeavors to set equal standards for budgeting principles (CHE Law, 1958). But the major achievement, i.e., democratization and offering true equal opportunities, is not yet evident in the conception that systematically distinguishes between two gradually developing academic systems. The evolving trend is that academic institutions will eventually compete among themselves for quality and resources.

Responding to students' needs at two "types" of institutions of higher education: universities and colleges

In this study we examine the association between students' self-efficacy and its impact on their scholastic achievements at two types of institutions of higher education: a college and a university. This association was explored by means of a model developed to investigate the effect of various personal variables, such as students' motivation and socioeconomic status, and institutional variables related to the study environments offered by the academic institution, on promoting students' learning capabilities and skills, contributing to their self-efficacy and sense of academic success.

A systemic conception of academic institutions as organizations, indicates that all their components/units and all their personnel may serve as a focus for change in order to shape a suitable environment that will help students maximally realize their goals (Hativa, 1997). In a systematic view of the organization, students see academic faculty members as partners in the change process and sometimes also as objects of change. Although no consensus has been reached concerning the lecturer's role in teaching and the significance of teaching at academic institutions, many undergraduate students see lecturers as a most important element in realizing their potential in many areas, even beyond scholastic achievements in a certain course. Lecturers too see teaching as an important component of their work, as do students. This systemic view is shared by academics and in recent years there has been a significant change in the evaluation of teaching at academic institutions (Hativa, 2002). Feedback on lecturers, provided by students at universities and colleges, selection and publicizing of "outstanding lecturers", advanced study days for faculty members to promote teaching, establishment of units for the advancement of teaching – these and other activities indicate that in recent years the role of the researcher-lecturer has been enhanced by explicit and implicit "pedagogic" requirements. These requirements originate from CHE policy and derive from various needs of the heterogeneous student composition. In its policy, the CHE sees a link between the "student profile" at academic institutions and evaluation of teaching as a significant element (Lev Zion, September 12, 2002).

Self-efficacy and academic-social climate

Self-efficacy – Self-efficacy is one's belief in his or her ability to organize and act in defined ways necessary to achieve future goals (Bandura, 1997a). Self-efficacy depends on the specific field and task, the level of difficulty and complexity of the task (Bandura, 1993). Students might feel high self-efficacy when studying by means of frontal teaching and low self-efficacy when studying on a computer or through

“distance learning”. They might feel high self-efficacy when studying in small groups and low self-efficacy in large highly populated classrooms, or high self-efficacy when studying with friends who create a sense of challenge and low self-efficacy when studying in a heterogeneous classroom with regard to students’ level of knowledge.

Self-efficacy is based on personal conceptions of knowledge, personal capabilities, performance, and control, and is related to specific future actions. But familiarity with these elements is not enough to predict good performance. Self-efficacy beliefs determine whether and how people are inclined to apply their knowledge and skills to perform actions that lead to the results they desire (Bandura, 1986). For example, two students can go through high school together, study in the same track, successfully complete the matriculation exams, but they may have a different sense of self-efficacy regarding application of the knowledge. One might feel confident to actively participate in a course while the other might be concerned and prefer to avoid it.

Self-efficacy is perceived as people’s evaluation of their ability to organize the knowledge and skills in their possession and to implement the necessary courses of action to achieve future aims, such as to advance their scholastic achievements. This efficacy includes setting realistic goals, efficient use of learning techniques, applying oneself and persisting in the face of difficulties, as well as adequate coping with emotional situations such as pressure and anxiety (Soodak & Podell, 1996).

Ross, Cousins and Gadalla (1996), Webb and Ashton (1986), and Gibson and Demo (1985) were among the first to utilize Bandura’s theory to conceptualize self-efficacy. Several scales were developed (Tzadok-Leviathan, 1994) to measure self-efficacy in specific situations involving students’ achievements (Pajares, 1996). According to Bandura’s concept (1997b), self-efficacy is measured by a scale of self-efficacy beliefs. Self-efficacy is a multidimensional concept (1997a) and it might vary according to the domain, difficulty, task complexity, and context of the activity. Therefore, individuals’ self-efficacy is not uniform and may change by the learner’s fields of activity. Hence, people’s ability to act to advance their scholastic achievements should be distinguished from their ability to act in order to advance themselves socially. Based on Bandura’s (1997a) theory, learners’ general efficacy will be defined as the belief in learners’ ability to facilitate change in their achievements and it is limited by external factors such as the contribution of one’s family to one’s ability to study. Learners’ self-efficacy will be defined as “learners’ belief” that they have the necessary skills and capabilities to advance their scholastic achievements.

From the 1990s, educational research (Ross, 1995) began to show interest in teachers’ self-efficacy to advance students academically, and at that time there was growing interest in studying self-efficacy in education and in schools. In the current study we expand this occupation to the system of higher education.

Studies have shown (Winer, 1971) an association between achievement-oriented people to attributing success, failure, and expected achievements to underlying causes. According to Winer, learners’ achievements and self-efficacy, as well as their style of attribution, are also related to their perception of messages conveyed by the teacher in evaluation situations: messages that reinforce or weaken

learners' self-efficacy. Studies that link self-efficacy to achievements (Manor & Raviv, 1981) show that positive and precise feedback that directs learners and instructs them on how to improve themselves, strengthens students' self-efficacy and leads to more efforts and diligence, which might subsequently lead to high performance levels and high scholastic achievements, and vice versa.

Another concept that should be discerned from self-efficacy is locus of control (Rotter, 1966), which involves one's perception of his or her control of the results of a given action. Rotter distinguishes between people who have internal and external loci of control. For instance, a student might perceive his low achievements as a result of allocating little time to studying the test material (internal locus of control). The actions the student will take depend not inconsiderably on his self-efficacy. If the student has low self-efficacy he might feel that his failure derives from his inability to study, which might lead to a sense of frustration and anxiety, and consequently to little effort and perpetuation of his low achievements in other areas as well. If the student displays high self-efficacy he may see the failure as a challenge and as a situation that can be changed for the good. This perception might lead him to make an effort to change his method of study or to devote more time to his studies in order to facilitate better achievements.

Academic-social climate – Learners' self-efficacy is linked to various features of the organization's academic-social climate. Studies have shown (Levinson, 1980) that students felt greater self-efficacy when studying at schools characterized by high achievements of students, who come from a high socioeconomic background and have little disciplinary problems. High student self-efficacy is linked to an atmosphere that supports the study environment and to their degree of involvement. Students who reported a sense of involvement and of ability to influence decisions related to teaching and to the curriculum also reported high self-efficacy (Levinson, 1980).

Several researchers (Tscannen-Moran, Woolfolk Hoy & Hoy, 1998) have begun to recognize the significance of the concept of collective efficacy, which reflects the efficacy attributed to the social setting of the study process. The collective self-efficacy of a learning organization is related to academic standards combined with belief in students' ability to attain them, to teachers' support and involvement in their students' advancement, and to elements related to the nature of the class, such as its prestige and the study discipline. Courses of action capable of positively impacting learners' self-efficacy include the following (Tscannen-Moran, Woolfolk Hoy & Hoy, 1998): improving learning skills, improving knowledge of disciplinary content, increasing collaboration among the learners, empowering the learner, professional and emotional support of learners, and preventing damage to efficacy due to operating external projects.

Learners' self-efficacy is context and domain dependent (Rich, Lev & Fischer, 2000). Therefore, it is not possible to assume an automatic positive effect of organizational intervention in a certain aspect of efficacy, such as scholastic achievements, on another aspect such as the social aspect. It appears that it is necessary to act intentionally in each area that requires change. Bandura (1997a) and Ross (1998) note that there may be a certain degree of generalization in self-efficacy

by means of special mechanisms related to one's different experiences throughout life. The teaching organization, however, cannot assume generalization, such that a process of learning will occur with no intentional action. The organization must pay attention and act with sensitivity with regard to those with low efficacy, in order to increase the chance that they too will cooperate in general, and in particular when external elements become involved (Rich, Lev & Fischer, 2000).

People acquire information for evaluating their self-efficacy based on four sources of information: actual performance, emulation, persuasion by others, and one's physiological state. In an academic institution, students who see peers successfully completing an academic task estimate that they too are capable of doing so. Then again, one's own success is a better source for evaluating self-efficacy because it might receive support in the future as well. Persuasion by a teacher ("you can do it") may raise self-efficacy if it continues in the future. These sources of self-efficacy do not affect the student automatically, rather are processed and evaluated cognitively (Bandura, 1986). This perceived self-efficacy might change in the process of coping with the academic task, according to several variables evident in the research questionnaire (Davidovitch, 2004), such as the aim of the teaching and the difficulty level of the teaching contents, practicing strategies that help cope with the task, the teaching method, to what degree the teacher provides prompt feedback on performance that guides learners' progress while carrying out the task and to what degree aims are set for learners' advancement through which they can evaluate their progress and feel that they are advancing.

The academic-social climate has great value for teaching and learning processes within all educational settings. This has been neglected to a large degree with regard to institutions of higher education (Hativa, 2002). A pilot study (Davidovitch, 2004) explored the academic-social climate of an academic institution as measured by a scale composed by Moos (1979). Its underlying rationale was that the consensus among people regarding the environment's features constitutes a measure of the academic-social climate within this environment. The original scale related to school classrooms and in this study, it was adapted for departments at academic institutions. The research hypothesis was that a correlation would be found between students' sense of success at academic institutions: universities and colleges, by their personal features, perception of the academic-social climate at the institution, and self-efficacy. The assumption was that the more supportive and personal the academic-social climate, the greater the self-efficacy of students at colleges and universities.

In this study (Davidovitch, 2004) a multidimensional approach was developed, and the findings contributed by finding a correlation between students' perception of the academic-social climate in the department and their self-efficacy and sense of scholastic achievement. The act of teaching, as perceived by students, constitutes an essential element in their sense of scholastic achievement at the institution of their choice.

Academic-social climate in ICT-assisted instruction

Two revolutions have occurred in the last generation in systems of higher education. The first is that in the last decade and a half we are witnessing an awesome

increase in computer and information technology, which is changing the face of the world. The number of computers in each household is rising by tens of percents each year. For instance, in the United States the number of computers per person was 1:10 in 2000. This, compared to a 1:125 proportion in 1984. Moreover, in 2001 two thirds of American households with school aged children had a computer. In 2007 the shifts became much more dramatic: 93% of all homes of American children aged 12-17 were connected to the internet. The many uses of computers: for processing data, information systems, graphic design, presentations, access to movies, electronic communication, all these transformed the computer into a tool involved in almost all aspects of daily life. Namely, people have become used to the presence of computers. Use of computers has become widely prevalent.

The second revolution, which some call the “quiet revolution”, involves the conversion of the *teaching culture* that dominated the world of higher education to a *learning culture*. From the 1990s there has been a growing recognition that the goal of institutions of higher education is not teaching rather imparting *learning* through different means.

The dispersion of computer technology underwent a sharp change with the emergence of global information technology. The establishment of the internet created at the same time a new reality that became integrated with social and cultural reality. Information technology involves the process of creating and processing knowledge and hence has a significant effect on the pace of life. Exposure to endless quantities of information at the press of a button is one of the greatest revolutions experienced by the human race.

The impact of information technology on society appears to have caught even the most daring visionaries by surprise. The internet created a parallel sphere with its own language and previously unknown ethical and moral codes. The internet era is the era of information, which poses a special challenge for those in charge of creating and transferring information – i.e., the system of higher education. Information technology is perceived, nearly automatically, as having incredible potential to change both teaching and learning. There is a hidden assumption, one that is almost taken for granted, that the technological changes and their assimilation in the learning environment will have a positive effect on daily life and on learners’ learning processes. Many claims that utilizing information technology is generating a positive transformation of the learning environment. As a result, institutions of higher education are now encouraging the faculty to develop network-assisted and -supported courses; namely, ICT-assisted courses.

Some point out, however, that ICT-assisted instruction is not always preferable to the conventional method of teaching, which has withstood the test of time. When lecturers are highly knowledgeable in their field, when they convey to students their personal experience in the field taught, when they season their lectures with personal relevant anecdotes, this might be more effective than ICT-assisted instruction, with regard to motivating students to study and to assimilate the studied material. Nevertheless, in this context researchers have shown that even the lecture of a gifted teacher might benefit from using video and computer technologies in class. ICT-assisted instruction may not be essential in all lessons, but it can help quite

significantly by providing illustrations, diversifying the lecture, and making it easier to absorb the material. Use of various technological means is not a goal unto itself. It should be seen as a means of encouraging active learning, prompt feedback, better teacher-student relationships, diversity, etc.

One of the most promising areas that harbors many expectations is that of ICT-assisted courses. These courses, also called “virtual courses”, are a learning environment comprised of interrelated pages. The pages include informative sections such as content information, bulletin boards, dictionaries, etc. The pages often also encompass activities that require active initiating, such as completing course assignments, sending electronic mail, participating in discussion groups, and referring to other sites. All these and the transitions between them are part of the learner’s environment.

The *learner’s environment*, or the learning environment, are a secondary subject in most studies, which focus mostly on a single aspect of ICT-assisted instruction, the achievement-oriented aspect. Efforts at developing ICT-assisted instruction focus mainly on the *teachers* rather than on the *students*. They consider course planning and presentation of material by means of new technologies and focus less on the question of how students *learn* using new technologies. For instance, one study conducted on this issue drew attention to the fact that a large part of developing and evaluating new technological methods focuses on improving students’ test scores. Much less efforts are made by developers to explore the question of whether students’ attempts to assimilate the material improve following these methods. Ultimately, some claim that when developing ICT-assisted instruction it is necessary to focus concurrently on both areas: planning teaching and well-based exploration of the student’s learning process. The *effect* of ICT-assisted learning and teaching on the learner’s academic-social climate is an area that has been neglected in most studies of ICT-assisted academic courses. The current study attempts to emphasize a nearly forgotten dimension of ICT-assisted learning – the academic-social climate and its significance for students’ success.

Academic climate

Academic climate, sometimes also called the “learning environment” or “learning ecology” is the area where learning occurs. Traditionally, the academic climate describes the atmosphere in class. The atmosphere formed is the product of mutual relations between the physical components in class and the interpersonal student-teacher relations. The climate is defined at times as the product of the mutual relations between students’ views and conceptions and their relationship. Anderson (1970) saw the climate as a product of the mutual relations between students on one hand and the teacher-student relationship on the other. The different definitions portray a wide spectrum of variables and reflect the dynamic nature of the academic climate.

This dynamic nature has granted the academic climate the image of a living organism. Hence, it may be treated as a biologist treats a lake – as an ecological system that is an entire world: “*The classroom is anchored in space and time and contains several autonomous components that maintain a purposeful mutual relationship*”.

The attempt to map academic climate led to recognition of two separate dimensions: context and teaching. The contextual dimension includes the physical space, which encompasses chairs, tables; the study matter; interpersonal interactions; the administrative/institutional element; the psychological element. The teaching dimension includes all the factors that affect the teacher and the student's performance. Many studies have dealt with the classroom climate and its psychological components. These psychological components include the academic climate, among other things aspects concerning the mutual social relationship within the learning environment, called the "academic-social climate".

The academic-social climate has much value for teaching and learning processes in all educational settings. It has been mostly neglected with regard to institutions of higher education, where more value is given to research than to teaching and service to the community and to the individual.

The focus on the academic-social climate in academic teaching has been neglected, although a historical review of the development of Israel's institutions of higher education points to shifts in higher education since the founding of the state. These changes are manifested, among other things, in the large number and diversity of institutions of higher education and in the growing number of students in Israel's educational system.

The system of higher education is attempting to cope with the issue of whether teaching in young academic institutions can perhaps reduce the discrepancy in admission terms and bring them closer to those in more veteran academic institutions that enjoy a more established status within the academic community.

Davidovitch (2004) referred to the association between the perceived success of students at various academic institutions and in different departments, by their personal features, motivation to register for studies, and perception of the climate at the academic-social institution, and their perceived self-efficacy. Her study shows that the more supportive and personal the academic-social climate, the stronger the student's self-efficacy, and this is evident in various academic institutions and departments.

Her study utilizes a multidimensional approach to teaching that is dependent on the academic-social climate, with the aim of exploring the combined relationship between the act of teaching as perceived by students in the form of success in studies for their undergraduate degree and self-efficacy, admission terms for academic studies, family-economic background, and the academic-social climate at the selected academic institution. Namely, the act of teaching as perceived by students may constitute an essential factor in students' sense of scholastic achievement.

Following this pilot study, focusing on the crucial role of the academic-social climate as a mediating factor within the field of higher education, other studies were conducted, where researchers explored the perception of the academic-social climate among students studying at various departments and institutions. The different research findings, gleaned over more than five years, indicate the significance attributed by students to the various measures of academic-social climate and their significance for learners' self-efficacy and sense of scholastic achievement. Measures of the academic-social climate refer both to the sphere of learning and teaching and to

the social sphere of the classroom within the students' department and organization (support for the student, involvement of the lecturer, utilizing his or her authority as a teacher, order and organization when teaching, diversifying teaching methods, creating a sense of affiliation between the learners, and goal-orientation). The studies raise a list of differences in students' perception of the academic-social climate. The findings show that in institutions and departments with strong interpersonal interaction students are more appreciative of the teacher's involvement and support and less of competition, order, and organization. In contrast, students who study at institutions and departments not characterized by strong interpersonal interaction are more appreciative of learning-oriented aspects.

The social aspect of learning is an inseparable part of the academic climate and has even been found to have considerable weight for scholastic achievements. Collaborative learning in a group setting inevitably creates mutual relations and a sense of cohesion. The social relations formed in a study group constitute an important part of learning, as the social interaction affects the quality of the interaction in the overall learning process as well as the results of the learning. Social relations within the study group might improve the mutual relations between the group members and thus facilitate the efficacy of the learning collaboration. Good social relations make it possible to create an efficient learning discourse, successfully manage conflicts, and increase involvement of the group members in the discourse.

The social atmosphere within a study group is usually formed gradually, once the group members get to know each other. In time, social interactions and friendships are formed, and their intensity might dictate the degree of motivation to share information with group members.

Over time, a sense of belonging to the group emerges, and this too affects students' degree of involvement, satisfaction, and success in the course. Sense of belonging to a group is a measure that affects students' transition from the status of observer to the status of participant. This belonging affects the extent to which assignments are completed and involvement in the course, as well as success in the course.

In general, most studies note the significance of students' views and feelings towards the social environment of their studies, which constitute a significant predictor of their achievements.

The academic-social climate is traditionally considered an inseparable part of learning, when this takes place in the classroom, but when a large part of the learning occurs in the virtual sphere this aspect must be reexamined. The social dimension of learning, which is almost taken for granted in the context of a group of people who gather physically in one room, receives different meaning in the context of ICT-assisted learning. The acts of learning and of teaching receive a different nuance when mediated. ICT-assisted teaching and learning redefine the formation and essence of the academic-social climate within institutions of higher education.

Academic-social climate in an ICT-assisted environment

Academic-social climate in an ICT-assisted environment is a disputed topic. Studies have examined the development of this dimension in ICT-assisted courses at institutions of higher education in the form of case studies. One major study

conducted in Israel involved ICT-assisted courses at Tel Aviv University. Sherry-Steinberg (2000) examined the evolvement of a social atmosphere in two ICT-assisted courses at the university. One course was comprised entirely of distance learning and the other was an ICT-assisted course that included classroom learning. The researcher sought to explore to what degree social atmosphere depended on face-to-face encounters. The research results showed that students in the distance learning course who took part in discussion forums developed an intensive social atmosphere over time. The discussion forums created a type of “café atmosphere” and facilitated topical discussions. In contrast, students in the ICT-assisted course combined with physical encounters did not develop a social atmosphere on the course website rather copied the social atmosphere formed in the classroom.

Nachmias, Moduser, Oren and Ram (2000) investigated the effect of combined ICT-assisted courses and classroom teaching on social atmosphere. The research results show that use of ICT-assisted courses significantly affects the teaching and learning process by increasing student involvement and participation. The ICT-assisted course, when supported by classroom teaching, enhances the group’s social climate and collaborative work. In contrast to the findings of Sherry-Steinberg, the researchers concluded that the ICT-assisted space contributed significantly to the academic-social dimension and to enhancing learning in general.

Cohen (2006) launched an ICT-assisted website for elementary school students and sought to examine the effect of the website on their learning experience. The research results showed that the forum had a significant contribution to developing relations between the students and the teacher, among the students themselves, and between the teacher and the parents. The researcher claimed that the forum created a type of “platform” for expressing the participants’ views and feelings, and this contributed to the formation of a social atmosphere.

The development of an academic-social climate in ICT-assisted courses is usually explored through the nature of the discussion groups that emerge in the virtual sphere. In this regard some claim that the ICT-assisted discourse might pose obstacles for students due to the lack of face-to-face interactions. The distance and the lack of nonverbal cues create social impedances that prevent an open approach to learning and to constructing new ideas. Nonetheless, students are capable of feeling part of an online study group; this sensation depends on the style of discussion and interaction between the participants, the structure of the course, the role of the facilitation, and technical features of the media.

In ICT-assisted courses students undergo a study experience in which they learn both how to work together from a distance and how to use the media to complete their assignment. Forming a sense of community between the students is important for increasing the efficiency of using ICT-assisted courses.

Sense of belonging to and ease of using the ICT-assisted medium creates a sense of “flow”. This sensation is typical of discussion groups for students who make use of web-based study activities as part of classroom learning. Chan and Repman (1999) found that a sense of ease and flow characterized groups that were previously acquainted. This sense facilitates advancement of learning goals, as it helps students

create a purposeful activity that includes feedback and the sense of an attainable challenge.

Aside from the discussion group, which constitutes a step towards the development of an academic-social climate, the facilitator of the ICT-assisted course might also be a key factor in encouraging the formation of this climate. The course facilitator might determine the level of the discussion and its limits while striving for progress in the study process. The facilitator, if assuming the role of “social host”, might increase participation by providing feedback, presenting examples, and encouraging the participants to take part in a productive learning process. An ICT-assisted course that takes place in addition to classroom sessions requires the facilitator to implement his or her insights from the classroom dynamics, with specific reference to the students. The course facilitator may, with proper leadership and management of the ICT-assisted course, create a suitable climate for shared work and for the development of an intellectual discussion.

The ICT-assisted environment and the act of teaching

Technological changes are created, by nature, in order to serve human beings and meet their needs, however they often have the effect of changing society and human beings. Technological inventions are assimilated in the social order and become an inseparable part of the new social reality. How technology is assimilated can be shown by reviewing research focusing on the effects of new technologies versus their predecessors. For instance in the 1950s and 1960s, with the invention of television, its efficacy as a teaching medium versus traditional teaching methods was explored. Similarly, in the 1970s and 1980s a wide variety of computer-assisted teaching methods were examined. In the 1980s and 1990s multimedia was examined, and in the late 1990s until current times ICT-assisted methods and distance teaching are being investigated from a comparative perspective in order to check their relative efficacy.

In recent years, use of technology for purposes of teaching and learning at institutions of higher education around the world has been gradually increasing. Many efforts are put into building ICT-assisted environments, since technology is considered to offer flexible time, space, and learning pace. In addition, a list of advantages is identified with technology, including: significant improvement of time utilization for learning, reducing the learner’s dependency on the location of learning, expanding the learning setting and information sources, eliminating dependency on textbooks as the only source of knowledge, building an active knowledge environment, enhancing the learning dialogue, and more.

Despite the multiple advantages, use of information technology in learning has not yet proven itself unequivocally. For example, in a study held by Bernard et al. (2004) a meta-analysis that included data from 232 studies from 1985-2002 on distance learning was conducted. The researchers compared distance teaching and classroom teaching on three dimensions: achievements, attitudes, and dropout rate. The researchers found that in aspects of synchronous learning, classroom teaching produced better achievements, however in asynchronous learning distance learning produced better achievements.

Lou, Abrami and d'Apollonia (2001) examined the use of computer technologies for group learning versus personal learning. The findings showed that learning in small groups with a computer is more efficient than merely learning with a computer. The researchers concluded that the efficacy of using a computer as a learning tool depends to a large degree on the learner's features. At this point, a distinction was also made between students who prefer an independent learning environment and students who require a learning environment that includes human interaction. The former attains higher achievements when using individual distance learning, while the latter are more successful when using group learning.

Turney, Robinson, Lee and Soutar (2009) examined the benefits of using technology in educational institutions to enhance students' achievements. The researchers found that assimilating use of computers may significantly improve students' achievements, however only if the study goals are compatible with their assimilation in the module. According to the researchers, an ICT-assisted course makes it possible for students to revisit the database of study materials and thus holds the students responsible for their learning, at their own learning pace. In addition, the computer gives students feedback and helps them navigate the learning process, thus letting them intensify their achievements. Once again, when utilizing the synchronous learning method, it is necessary to take into account that the online learning method is not suitable for everyone; a not inconsiderable proportion of students are in need of what is called "campus flavor" as well as unmediated contact with their peers and with the lecturers.

Nonetheless, it seems that ICT-assisted learning loses force when lacking proper facilitation. In such cases, the ICT-assisted course is perceived by students as a tool that facilitates ease, communication, and management of classroom activity, while deep understanding of the study options it contains is lacking.

In addition, active participation in discussion groups does not necessarily indicate knowledge expansion.

Beyth-Marom, Saporta & Caspi (2005) examined the relationship between participation in online discussions and students' final grades in a course. The researchers found that active participation in the course website and in the discussions does not necessarily generate higher grades. Assimilating technology might indeed be a catalyst for learning, however it requires a paradigmatic change that transfers the emphasis from teaching to learning. Indeed, technology has and is deeply affecting the style of teaching and access to information, however it is still not possible to say for certain that the technological changes and assimilation of ICT-assisted courses in teaching lead to better learning outcomes.

Studies attest to a great deal of dichotomy with regard to the efficacy of technology in learning. Some see technology as an efficient tool that improves the act of teaching and learning outcomes, while others claim that studies that support ICT-assisted learning are unique for a certain context and therefore not generic; nothing can be generalized from them. Yet others claim that technology does not improve learning and knowledge any more than the traditional non-technological learning procedure.

One difficulty that arises with regard to learning and technology relates to how learning is treated. Learning may be seen as a simple act in which knowledge is acquired, a type of transition from nothing to something. Another outlook, one that is more complex, sees learning as a process aimed not merely at acquiring knowledge rather an activity that contributes to the individual's development and enrichment. This type of learning is perceived as a factor that contributes to expanding one's horizons and enriching one's inner world. This is learning that opens to the learner a sociocultural dimension that surpasses the level of concrete knowledge.

Seeing learning in a wide context accentuates its social dimension. Some claim that the social dimension might disappear in ICT-assisted courses that assumedly neglect this aspect of the learning procedure. This area of ICT-assisted instruction has scarcely been explored systematically and raises questions regarding the contribution of ICT-assisted courses to learning in its wide meaning, as enriching, expanding, and empowering the learner's inner world and as integrating the social and sociocultural aspect in learning?

As evident from the research literature, technological developments created a revolution and pose a challenge for the educational system in general and for higher education in particular. The new tools require a rethinking of our academic teaching methodologies, particularly in light of the fact that the system of higher education is admitting students for whom an academic education is more accessible than in the past. This change process requires examination of technology's effectiveness for learning and teaching. The enormous increase in the number of online courses at Israel's academic institutions since 1999 is attributed mainly to a strategic national initiative by the Council for Higher Education and its executive arm, Meital, the inter-university knowledge center for assistance with learning technologies. The CHE's call for a new pedagogy to accompany the new technological tools has remained mostly unanswered. A preliminary examination of online academic courses in Israel shows that technology jumped forward, leaving pedagogy far behind. In higher education, there is a lack of methodologies, guidelines, and forms of evaluation regarding the construction of online courses that are anchored in well-established theories, objective principles, and research findings. Most of the online courses are based on personal intuition or on the personal experience of the faculty or developers. Although conclusions based on "local" evaluation studies have been reached, there is no database of rules based on an aggregate of conclusions that are emerging with regard to the effectiveness of ICT-assisted courses in higher education. Moreover, there are few studies on the evaluation of online courses, a fact that stresses how the embracing of technology has proceeded ahead of the pedagogic development suitable for this change in tools.

This state of affairs is evident not only with regard to the "how" of online learning environments, rather also with regard to the "what" – What do we want to teach our students in order to prepare them to be knowledgeable practitioners in their field and responsible citizens of the 21st century? Such questions were not considered when developing study programs in general, and in particular when planning the process of adopting technology.

Comparative analysis between students at Ariel University and at the Western Galilee College

The current study examined the association between the self-efficacy of students and its impact on their scholastic achievements. This association was explored by means of a model developed to investigate the effect of various personal variables, such as students' motivation and socioeconomic status, and institutional variables related to the study environments offered by the academic institution, on promoting students' learning capabilities and skills, contributing to their scholastic achievements. These variables were related to efficient organization of learning, nurturing academic literacy, communication between the academic and administrative staff and the students, and computer use at the academic institution, which contribute to scholastic achievements.

Research tools

Four questionnaires were used for this study:

1. **Personal information questionnaire** (Sherman, 1995). This part of our study includes 22 items related to the student's personal background (country of origin, gender, marital status, family's financial state, and sources for paying tuition) and studies at the academic institution (year of studies, the study track as a first choice, the academic institution as a first choice, previous academic background, number of study hours in a week on average, psychometric score, matriculation status, and academic status during the first year of studies).
2. **Questionnaire on motivation for registering** (Davidovitch, 2004). This questionnaire included 15 items on reasons for registering, in several spheres:

Personal-economic: Flexible study hours, easier options for paying tuition, family directions, sent by the workplace, proximity of the institution to place of residence, and possibility of living in the student dorms.

Admission terms: Submitted candidacy to several places and was accepted to the current institution, easier admission terms, accepted to the chosen study track.

The academic institution where the student chose to study: Studies are easier, more pleasant social atmosphere, high level of studies, academic infrastructure that impressed the student (library, laboratories), positive previous acquaintance with the academic institution where the student chose to proceed with academic studies.

3. **Questionnaire on academic-social climate.** The questionnaire was composed by Moos (1979), translated into Hebrew and adapted by Levinson (1980). Since the original questionnaire was intended for schoolchildren, the items in Levinson's study were adapted for the current sample. Items appropriate for students at Israeli institutions of higher education were chosen. The questionnaire (Davidovitch, 2004). contains 90 items, marked correct/incorrect, divided into eight elements: involvement, connection, teacher support, goal orientation, competition, order and organization, teacher control, and diversity. In the original questionnaire the internal consistency range was $\alpha=.45-.78$.
4. **Self-efficacy questionnaire.** The questionnaire is based on a scale composed by Gibson and Dembo (1985). The questionnaire was translated into Hebrew

by Rich (2000) and it originally referred to the self-efficacy of teachers. The items were adapted to the current study, namely, items appropriate for students' self-efficacy were chosen.

We categorized the 14 self-efficacy items by content into four categories: ability to develop independent study methods, ability to make a personal effort, contribution of the family to one's academic ability, and perceived self-efficacy to form connections with other students. Principal components factor analysis with Varimax rotation was performed. This analysis yielded four factors that explained 51.6% of the variance.

According to the factor analysis, four measures were calculated for each respondent by calculating the mean of the respondent's evaluations in items belonging to each factor, such that the range of scores was 1 to 6; the higher the score – the greater the self-efficacy. The reliability of the measures ranged from .55 to .67.

Research questions

1. What are the components of students' personal and family profile at the two institutions?
2. Would differences be found in the intrinsic and extrinsic motivation of the college and university students?
3. How is an effective learning environment perceived by the college and university students?
4. Would differences be found between the evaluated self-efficacy of the college and university students?

Research hypotheses

1. Effective learning environments on the academic campus that encourage the development of literacy and of skills that promote scholastic achievements contribute to improving students' self-efficacy.
2. Organization of learning on the academic campus has an effect on students' self-efficacy.
3. Effective learning environments on the academic campus that encourage interpersonal communication between the students and the academic, administrative, and consulting staff, contribute to raising students' self-efficacy.
4. Effective learning environments on the academic campus that encourage computer use for teaching and learning contribute to students' self-efficacy.

Research tools

This study is based on a self-efficacy model affected by three groups of variables:

1. **Motivation – intrinsic and extrinsic**
2. **Effective learning environments on campus:** academic literacy, interaction between students and academic and administrative staff, organization of learning on campus, use of technology
3. **Socioeconomic status (SES) of the students**

This group includes: gender, first generation in academia, student's work.

The model of the college and of the university presents a regression analysis.

Table 1 provides an analysis of means and standard deviations of data for the college and university students and a comparison between these data using t-tests.

Plan of analysis

Full information maximum likelihood estimates were computed by means of the Analysis of Moment Structures (AMOS) program (Arbuckle & Wothke, 1999). The model was examined for goodness of fit using χ^2 , comparative fit index (CFI), and root mean square error of approximation (RMSEA) fit indices. CFI values above .90 and .95 indicate adequate and good model fit, respectively, and RMSEA values below .08 and .05 indicate adequate and good model fit, respectively (Browne & Cudeck, 1992; Hu & Bentler, 1999; Kline, 1998).

Table 1: factors

The factors	Statements in the questionnaire
Intrinsic motivation	6. Association between current and future studies 14. Identification of learning style 23. Successfully coping with solving problems 24. Ability to cope with strengths and weaknesses
Extrinsic motivation	10. Organizing time 12. Maximal presentation of knowledge 13. Operating memory techniques 15. It is important for me to talk to my schoolmates 25. Learning to plan clear short- and long-term goals
Academic literacy	16. Classes on improving verbal communication 15. Courses on improving reading and writing 11. Signing in for lectures and summarizing articles
Organization of learning on campus	1. Equal attitude 7. Calm atmosphere 9. Studying in small classrooms 22. Finding a quiet place with no disturbances 21. Involved on campus: social events, gatherings, services, and helping others 18. Free access and guidance at the library
Student interaction with the academic and administrative staff	2. The administrative staff should be attentive and available 3. It is important for the lecturers that I do well in my studies 4. It is important to talk to the lecturers freely 19. Available counselors for help 20. Study consultations and psychological services
Use of technology	17. Free access to technology 26. Access to the internet 27. Access to social media 28. Access to the most innovative technologies 29. ICT-assisted courses 30. Submitting papers on the model 31. Studying all the courses by means of ICT-assisted learning

Research population

Socio-demographic background

Table 2: Socio-demographic background of university and college students

Socio-demographic variables		University		College	
		n	Percent	n	Percent
Gender	Men	288	58%	70	15%
	Women	206	42%	394	85%
Age	18 - 21	33	7%	54	12%
	22 - 25	10	2%	182	39%
	26 - 29	24	5%	84	18%
	30 - 33	132	27%	49	10%
	34 - 37	235	47%	39	8%
	38 and older	61	12%	57	13%
Marital status	Single	337	68%	270	58%
	Married	149	30%	171	37%
	Divorced	10	2%	21	5%
Country of origin	Israel	448	90%	404	90%
	Former Soviet Union	18	3%	38	8%
	Ethiopia	2	0.5%	3	0.6%
	Europe	7	2%	4	1%
	South America	2	0.5%	2	0.4%
	USA	12	3%	==	==
	South Africa	4	1%	==	==
Employment	Not working	196	39%	124	27%
	Less than 10 hours	99	20%	111	24%
	11-20 hours	78	16%	101	22%
	21-40 hours	93	19%	68	15%
	Full time	29	6%	53	12%
	Freshman	161	33%	104	22%
	Sophomore	161	33%	242	53%

Year of study	Junior	92	19%	106	23%
	Senior	67	13%	6	1.5%
	Super Senior	9	2%	1	0.5%
Socio-demographic variables		University		College	
		N	%	N	%
Study Department	Science	199	42%	5	1%
	Social Sciences	144	30%	414	89%
	Health Sciences	97	20%	==	==
	Multidisciplinary	32	7%	39	9%
	Humanities	==	==	4	1%
Father's education	Primary	33	7%	68	15%
	Secondary	127	26%	174	39%
	Tertiary	113	23%	115	26%
	Bachelor's degree (BA)	132	27%	71	16%
	Master's degree (MA)	64	14%	12	3%
	PhD / Sc.D.	13	3%	3	1%
Mother's education	Primary	15	3%	65	15%
	Secondary	117	24%	165	37%
	Tertiary	94	20%	130	29%
	Bachelor's degree (BA)	168	35%	66	15%
	Master's degree (MA)	78	16%	20	4%
	PhD / Sc.D.	7	2%	==	==

Profile of university respondents - Most of the university respondents were single (68%) and were born in Israel (90%). More than half were women (58%) in their 30s (74%). Some of the students were the first generation in their family to receive an academic education, as half the students' fathers (44%) and mothers (56%) had an academic degree. One third of the students (27%) were still living with their parents, and most of them had a part time job (55%), while many of the students (39%) had no job. Many of the students (42%) were studying science and engineering.

Profile of college respondents - Most of the college respondents were women (85%), studying social sciences (89%), and were born in Israel (90%). More than half were single (67%) and in their 20s (57%). Many students were the first generation in their family to receive an academic education; only one fifth of their fathers (20%) and mothers (19%) had an academic degree. Half the students (54%) were still living with their parents, most of them had a part time job (61%), and one third of the students had no job (27%).

Research findings

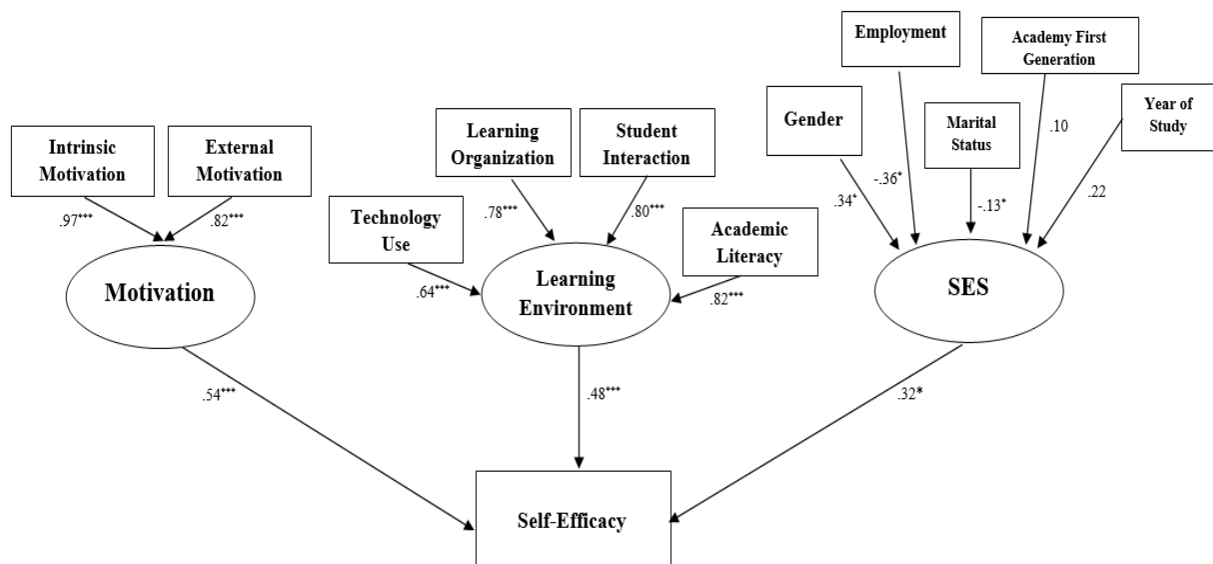
Plan of analysis

Full information maximum likelihood estimates were computed by means of the Analysis of Moment Structures (AMOS) program (Arbuckle & Wothke, 1999). The model was examined for goodness of fit using χ^2 , comparative fit index (CFI), and root mean square error of approximation (RMSEA) fit indices. CFI values above .90 and .95 indicate adequate and good model fit, respectively, and RMSEA values below .08 and .05 indicate adequate and good model fit, respectively (Browne & Cudeck, 1992; Hu & Bentler, 1999; Kline, 1998).

Self-efficacy analysis

Self-efficacy was modelled by latent variables that measured motivation, learning environment, and socioeconomic status (SES). The college sample fit the self efficacy model well ($\chi^2 = 1974.6$, $n = 474$, $df = 104$, $p < 0.01$, $CFI = 0.86$, $RMSEA = 0.13$). The estimate of squared multiple correlations in the analysis is 31.9 percent.

Figure 1: Structural model for determinants of self-efficacy with standardized coefficients - College sample

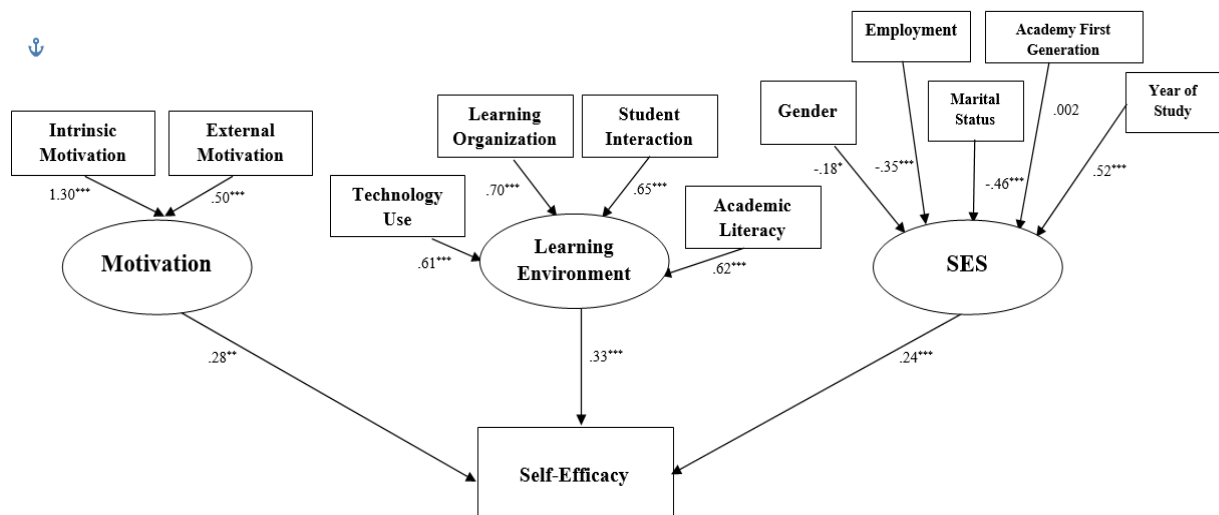


As shown in Figure 1, motivation is the variable that had the greatest effect on college students' self-efficacy ($\beta = 0.54$, $p < 0.001$). The higher the levels of intrinsic ($\beta = 0.97$, $p < 0.001$) and extrinsic motivation ($\beta = 0.82$, $p < 0.001$), the higher the self efficacy. Another significant positive variable that had an effect on the dependent

variable was learning environments. The higher the levels of academic literacy ($\beta = 0.82, p < 0.001$), the higher students' interaction with academic and administrative staff ($\beta = 0.80, p < 0.001$), learning organization on campus ($\beta = 0.78, p < 0.001$), and use of technology ($\beta = 0.64, p < 0.001$). Some of the socioeconomic variables had a significant effect on college students' self efficacy. Women had higher self-efficacy than men ($\beta = 0.34, p < 0.05$), those employed had higher self-efficacy than students who were not employed ($\beta = -0.36, p < 0.05$), and students who were not single had higher self-efficacy than single students ($\beta = -0.13, p < 0.05$).

The university sample fit the self efficacy model well ($\chi^2 = 1974.6, n = 497, df = 104, p < 0.01, CFI = 0.80, RMSEA = 0.14$). The estimate of squared multiple correlations in the analysis is 21.1 percent.

Figure 2: Structural model for determinants of self-efficacy with standardized coefficients - University sample



As shown in Figure 2, learning environments is the variable that had the greatest effect on university students' self-efficacy. The higher the learning organization on campus ($\beta = 0.70, p < 0.001$), student interaction with academic and administrative staff ($\beta = 0.65, p < 0.001$), academic literacy ($\beta = 0.62, p < 0.001$), and use of technology ($\beta = 0.61, p < 0.001$), the higher the self efficacy of university students. Another significant positive variable that had an effect on the dependent variable was motivation ($\beta = 0.28, p < 0.01$). The higher the levels of intrinsic ($\beta = 1.30, p < 0.001$) and extrinsic motivation ($\beta = 0.50, p < 0.001$), the higher the self efficacy of university students. Some of the socioeconomic variables had a significant effect on college students' self efficacy. The higher the academic year the higher the self efficacy ($\beta = 0.52, p < 0.001$). Students who were not single had higher self efficacy levels than single students ($\beta = -0.46, p < 0.05$), those employed had higher self efficacy than those not employed ($\beta = -0.35, p < 0.05$). Men had higher self-efficacy than women ($\beta = 0.18, p < 0.05$).

Table 3: Independent t-test analysis of the differences between university and college students

		Items	Range	Mean	SD	Ca	T
Intrinsic motivation	College	6,14,23,24	1.75 - 5.00	4.50	0.58	0.68	2.87***
	University		3.00 - 5.00	4.60	0.41		
	Total		1.75 - 5.00	4.55	0.51		
Extrinsic motivation	College	5,10,12,13,25	1.40 - 5.00	4.44	0.59	0.73	3.69***
	University		2.60 - 5.00	4.57	0.43		
	Total		1.40 - 5.00	4.50	0.52		
Academic literacy	College	11,15,16	1.33- 5.00	4.46	0.62	0.69	1.68
	University		2.67 – 5.00	4.52	0.47		
	Total		1.33- 5.00	4.49	0.56		
Learning organization	College	1,7,8,9,18,21,22	1.71 - 5.00	3.86	0.59	0.65	3.61***
	University		2.00 - 4.86	3.73	0.51		
	Total		1.71 - 5.00	3.79	0.56		
Student interaction	College	2,3,4,19,20	1.80 - 5.00	4.38	0.63	0.73	2.38*
	University		2.20 - 5.00	4.47	0.51		
	Total		1.80 - 5.00	4.42	0.57		
Use of technology	College	17,26-31	1.29 - 5.00	3.80	0.66	0.71	3.88***
	University		2.29 - 5.00	3.96	0.60		

	Total		1.29 - 5.00	3.88	0.64		
Self-efficacy	College	32-45	2.00 - 4.79	3.71	0.48	0.73	3.19**
	University		2.21 - 4.79	3.62	0.45		
	Total		2.00 - 4.79	3.66	0.46		

Note: *P<0.05, **P<0.01, ***P<0.001, College n= 474, University n= 497

As shown in Table 2, significant differences were found between university and college students in the following research variables: Intrinsic motivation [t=2.87, p<0.001], extrinsic motivation [t=3.69, p<0.001], learning organization [t=3.61, p<0.001], student interaction [t=2.38, p<0.05], use of technology [t=3.88, p<0.001], and self-efficacy [t=3.19, p<0.01], while university students scored higher than college students on all the variables except learning organization and self-efficacy. No significant difference was found in academic literacy between university and college students [t=1.68, n.s.].

Summary

Profile of the participants

Among the university students: some of them were single (68%), born in Israel (90%), more than half the women (58%) were in their 30s (74%). Some of the students were the first generation of their family to receive an academic education, as half the fathers (44%) and mothers (56%) had an academic degree. About one third of the students (27%) were still living with their parents, most had a part-time job (55%), and many of the students (39%) had no job. Many students (42%) were studying science and engineering.

Among the college students – most of the respondents were women (85%) who were studying social sciences (89%) and were born in Israel (90%). More than half were single (67%), in their 20s (57%). Many of the students were the first generation of their family to receive an academic education; only one fifth of their fathers (20%) and mothers (19%) had an academic degree. Since one half of the students (54%) were still living with their parents, most had a part-time job (61%) and about one third had no job (27%).

Self-efficacy was shaped by variables that measured motivation, learning environment, and socioeconomic status (SES). The college sample showed a good fit with the self-efficacy model.

Motivation was the variable that had the greatest effect on the self-efficacy of college students. The higher the extrinsic motivation the higher the self-efficacy.

Another variable that had a positive effect on the dependent variable was **learning environments**. The higher the academic literacy, the higher the interaction between the students and the academic and administrative staff, the organization of learning on campus, and the use of technology.

Some of the socioeconomic variables had a significant effect on students' self-efficacy. Women had higher self-efficacy than men, those employed had higher self-efficacy than those not employed, and married women had greater self-efficacy than single women.

The university sample showed a good fit with the self-efficacy model.

Learning environments was the variable that had the greatest effect on the self-efficacy of university students. The higher the organization of learning on campus, the interaction between the students and the academic and administrative staff, academic literacy, and use of technology, the higher the self-efficacy of university students. Another variable that had a positive effect on the dependent variable was motivation. Some of the socioeconomic variables had a significant effect on students' self-efficacy. The higher the academic year the higher the level of self-efficacy. Those who were not single had a higher level of self-efficacy than single students, those who were employed had higher levels of self-efficacy than those who were not employed. Men had higher self-efficacy than women.

Significant differences between university and college students were found in the following research variables: intrinsic motivation, extrinsic motivation, organization of learning, interaction between students, use of technology, and self-efficacy, while university students had higher scores than college students on all the variables aside from organization of learning and self-efficacy. No significant difference was found in academic literacy between university students and college students.

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