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Regular Article

Arab and Jewish students in the post-Covid-19 era: Learning patterns as a trigger for dropout intent

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ABSTRACT

Following the COVID-19 pandemic, online academic courses continue to be offered by colleges (synchronous or asynchronous, distance learning or hybrid courses). As such, students are required to apply learning skills that differ from those used in traditional in-class lessons. This study examines students' tendency to drop out of academia in light of such courses after social distancing has been eradicated, and their ability to develop suitable learning skills and self-regulated learning capabilities for successfully studying and completing such courses. The study included Arab and Jewish students from colleges and universities across Israel. The findings indicate that studying on online courses and hybrid courses (that combine both Zoom sessions and independent learning) have a significant impact on personal skills and learning abilities. These factors influence dropout rates as well. The findings of this study indicate that students need to undergo training for developing learning skills and tools that enable optimal self-regulated learning and self-management. Moreover, an emphasis should be placed on students from the Arab population, who are especially exposed to traditional forms of education in high school.

1. Introduction

2. Learning patterns have changed in the post COVID-19 era, students must master 21st century skills to be a successful learner in the 21st. From deferent studies we can understand that many students lack these skills (Lavi et al., 2021), the lake of managing 21st skills provide in some cases dropout from high education institutes. A poor data base and a few studies has been conducted to search the impact on dropout rates and the correlation between them and other factors. Dropout rates are a major problem, especially for disadvantaged students (Raviv & Bar-Am, 2014). The current study examines the impact of learning in the academy system which include teaching and learning skills demand in 21st century on students' tendency to drop out academy. The study was conducted in the period of 2021/2022 academic year in several academic institution in Israel on a random sample of Jewish and Arab students.

2. Literature review

2.1. Post-COVID-19 learning patterns

The COVID-19 pandemic led to unprecedented changes in education systems in general, and in higher education in particular – greatly altering concepts of traditional teaching-learning patterns, while eliminating related psychological and cultural barriers. As a result, a significant expansion of teaching formats and techniques was seen, such as the integration of digital tools and online platforms for conducting distance learning (Allan & Green, 2019; Kelly, 2021).

The outbreak of the pandemic led to rethinking what are the required skills from the 21st century students in order to prepare them with appropriate tools to function in the world of mega information. Studies found 4 types of required skills: learning skills and information processing, high order thinking skills and soft skills such as teamwork and prioritization (Dori et al., 2022; Sulam et., 2019). Finally, specific technological skills are also needed, such as the ability to cooperate and work on shared documents, share information, and master a range of digital platforms (Dori et al., 2022).

Post COVID-19 pandemic higher education institutions progressed towards a more student-oriented active teaching and learning approach, learning patterns included face-to-face on-campus courses; online courses via Zoom; and hybrid courses that combine between the two. (Dori et al., 2022). In spite of the mix method teaching and learning patterns a challenge in hybrid or distance learning is maintained. The quality of interpersonal interactions and learning involvement among

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the students, while instilling necessary skills for active learning and interactions, problem solving, and teamwork is missing in most lessons (Dori et al., 2022).

Even prior to the pandemic, researchers indicated the benefits of online teaching methods and digital platforms, enabling teachers and learners to communicate with one another from afar (e.g., via Zoom) and making learning materials accessible (e.g., via Moodle). With synchronous or asynchronous lessons, learners also become familiar with a range of digital channels of communications that they can later utilize and apply (Anderson, 2011). Following the pandemic outbreak, a range of models emerged for integrating technologies into learning and enabling online teaching. COVID-19 greatly promoted the implementation of technology in learning, combined with a variety of "anywhere anytime" learning processes. Yet it is important to note that distance learning is not an objective unto itself, but rather one method within a toolbox of techniques for enhancing learning in the present era (Bentur et al., 2019).

In the past, the dominant working model was based on one field of expertise – a profession that was acquired through formal learning and that was maintained throughout one's lifetime. Today, the working model is more dynamic and interactive, requiring simultaneous knowledge of a number of fields – with great global employment competition that requires ongoing learning throughout one's career (Melamed & Salant, 2010; The Israel Science and Technology Administration (2012). As such, today, people graduating from higher education institutions require the following: information skills, higher order thinking skills, sharing and communication skills, ability to use computerized tools, learning skills, personal development, language skills, ethics, and online safety – as well as life skills and a career. These aspects, that stem from changes to the employment market in general, also project onto the higher education system (The Organization for Economic Cooperation and Development [OECD], 2015).

2.2. Self-regulated learning

The term *self-regulated learning* refers to metacognitive, motivational, and behavioral characteristics that indicate the active participation of the learner (Zimmerman, 2000). Based on the Social Cognitive Theory (Bandura & National Institute of Mental Health, 1986), Zimmerman (2000) claims that learning is not something that *happens to learners*, but rather something that *happens through learning*. This theory shifts the educational focus away from the learners' environmental background and ability to learn (constant variables) towards individual strategies applied by the students. This is the perception that lays the foundation for self-regulated learning based on environmental processes that associate between learning environment and individual (Koloshi-Minsker, 2019).

Self-regulated learning is based on the self-regulating theory, which stems from positive psychology – a field that emphasizes the importance of strengthening learners' motivation by fulling their basic psychological needs (Koloshi-Minsker, 2019). Self-regulated learning differs from academic skills and capabilities, and is founded on learners' pro-active mental ability, instilling in them the ability to change and adapt to their current learning processes. This aspect relates to the learners' self-beliefs and self-regulation that enable them to change (Zimmerman, 2000). The three basic psychological needs entailed in this process include: sense of autonomy; sense of belonging; and sense of competence. Learning environments that provide all three needs can lead to a positive learning change, internal motivation and perceived abilities (Koloshi-Minsker, 2019).

Academic learning expresses the transition to adulthood and embarking the sense of autonomy, students must learn how to deal with changes and new experiences. Most difficulties arise during their first year of studies, with some students encountering difficulties that negatively impact their academic achievements, sometimes even resulting in their dropping out of academia (Dyson & Renk, 2006). Students' self-esteem and abilities stem from their adapting the academic framework, acquiring a social standing, adapting the learning conditions and developing social and academic skills (Zimmerman, 2008). Students also need to develop self-resilience for dealing with stress and pressure. For many students, this could negatively affect the quality of their learning and even their physical and mental wellbeing. Indeed, a lack of self-esteem could also lead to dropping out of the academic institution (Freire et al., 2016).

Self-regulated learners tend to be metacognitively and behaviorally active in all stages of the learning process (Ryan & Deci, 2000). In The study of Puustinen and Pulkkinen (2001) it was found that self-regulated learners are more self-resilience, this factor was the most meaningful contributing for predicting students' adaptation to learning and preventing dropout. In line with the Positive Psychology Theory (Peterson & Seligman, 2004), this approach provides a strong foundation for developing personal resilience and self-esteem (Koloshi-Minsker, 2019) as well as internal motivation to learn (Ryan & Deci, 2000).

2.1. Student sense of belonging

In higher education institutions, a sense of belonging is based on the universal need to feel that you belong, while developing and maintaining cultural and social connections with others. This type of belonging sense has been associated with participating in face-to-face classes that enhance the students' involvement and decrease their sense of risk of dropping out (Osterman, 2016).

Transitioning to higher education often entails leaving home – perhaps for the first time, moving away from family and friends (Freire et al., 2016). The sense of belonging is vital to a person's development and is one of the five most important factors on Maslow's (1962) hierarchy of needs. People's sense of belonging could be defined as the degree to which they are accepted, respected, and supported by their social environment (Krivosh, 2020), and impacted by personal and social factors, such as identifying with their academic institution and peers (Capps, 2003).

Possessing a sense of belonging in an academic institution has a positive impact on students' emotional wellbeing, self-esteem, and academic achievements. It also plays a key role in positive psychological processes, attitudes, and academic motivation (Capps, 2003; Osterman, 2016). Finn (1989) found a positive correlation between students' sense of belonging and their academic achievements, sense of belonging motivation and self-esteem (Krivosh, 2020). Such findings show that a sense of belonging plays a key role in academic success.

Studies show that students from minority groups tend to have a lower sense of belonging in academia, which is often accompanied by low self-esteem (Capps, 2003) and loneliness, and could lead to academic failure (Osterman, 2016). Students from minority groups also tend to feel a lack of trust and even hostility towards the institution (Krivosh, 2020). Yet for these same students, academic success may be perceived as a steppingstone for breaking the glass ceiling and succeeding, in turn creating an increased sense of belonging and desire to fit in (Capps, 2003). In Israel, rather than the term *sense of belonging*, the term *emotional well-being* is often used (Krivosh, 2020).

2.2.2. Dropping out of academia

Students' sense of belonging and academic success is the key to preventing academic dropout, which is a serious problem in many countries (Krivosh, 2020). When transitioning to academic institutions, students must develop and implement their self-regulation, self-efficacy, self-direction, and sense of belonging, as a means for adapting to the demands of their new environment (Lobos et al., 2021; van Rooij et al., 2018).

Although students may drop out of courses or change institutions, the more serious issue is their dropping out of academia altogether, before completing their study program (Androulakis et al., 2020). According to Raviv and Bar-Am (2014), the complex academic dropout phenomena can be addressed at three different levels: (1) students who

transfer to a different institution; (2) students who do not complete their degree; and (3) "covert dropouts", i.e., students who are registered at an institution but are not involved in it at all. Alternatively (Haimovits & Ben-Shahar, 2004).

Moreover, some students drop out by choice (depending on motivation, finances, personal desires, etc.), while others are forced out due to academic failure (Haimovits and Ben-Shahar (2004). Tinto (1975) differentiates between students who do not succeed academically and those who do not fit in socially, yet states that both phenomena increase the likelihood of dropping out of academia.

2.2.2.1. Reasons for dropping out of academia. In OECD countries, only 70% of students who embark on an academic education complete their undergraduate studies. In the United States, great variance can be seen, in 1999 only 50% of students completed their studies in less exclusive institutions compared to 77% in more prestigious ones. Alon and Gelbgiser (2020, pp. 14–19) found that in Israel, during 1997–2008, only 59% of students received their degree from the department in which they began their academic studies.

To deal with the dropout phenomenon, it is important to understand its underlying causes. Some studies focus on external sociological models while others examine internal psychological ones (Díaz & Tejedor De León, 2016). Sociological causes include social, cultural, financial, and institutional aspects; psychological internal factors include the students' academic and emotional readiness (Kehm et al., 2019; Raviv & Bar-Am, 2014), as well as their traits, behaviors, thoughts, attitudes, and values (Androulakis et al., 2020). Internal risk factors for dropping out include gender, age, ethnicity, and grade point average (Raviv & Bar-Am, 2014). Studies show that dropout rates are lower among females than males, and that younger students are at less risk of dropping out than older ones (Kehm et al., 2019). Raviv and Bar-Am (2014) found that only about 60% of students who embark on academic education after the age of 31 complete their studies.

Cultural aspects also impact the dropout rate of students from minority groups. In Israel, most students from the Arab society study in Arab schools where the classes are taught in Arabic. Despite similar study programs in Jewish and Arab schools, differences can be seen in their achievements in mathematics, English, and sciences. Moreover, English is an especially significant obstacle for Arab school students, often preventing them from completing their Matriculation Certificate and entering higher education (Feniger et al., 2016). Finally, socio-demographic background is also a risk factor, with immigrant students at higher risk, especially due to language barriers (Raviv & Bar-Am, 2014).

The most significant inequality in higher education in Israel can be seen between Arab and Jewish students (Feniger et al., 2016). About 20% more Jews embark on higher education than Arabs. Yet a decrease in this gap has been seen in recent years, with a 120% increase in students from the Arab society in higher education in Israel during 2009–2019 (Council for Higher Education, 2021). The past decade has seen a significant increase in Arab students in academia in Israel as a national policy of integrating students from diverse backgrounds, which could significantly impact these students' chances of successfully completing their degree (Feniger et al., 2016). The size of the academic institution also plays a role in dropout, whereby students may feel more lost in larger institutions, where they are unable to receive necessary support. Additional factors teaching and learning methods in a foreign language and financial factors (Feniger et al., 2016).

In some studies, a strong connection can be seen between students' grades during their first academic year and completing their bachelor's degree Haimovits and Ben-Shahar (2004). Moreover, the better the students' achievements, the lower the chances of dropping out (Díaz & Tejedor De León, 2016). Dropping out could be the outcome of continuous frustration due to learning difficulties that create a feeling of failure. The need to repeat courses is also related to dropping out, as low achievements impact students' grade-point-average and self-image (Raviv & Bar-Am, 2014). Finally, students may not be emotionally prepared to embark on academia – especially when the learning environment differs greatly from that of their high school (Feniger et al., 2016).

2.3. Consequences of dropping out of academia

The phenomenon of dropping out from higher education systems carries a price for the individual who drops out for university and for all society as a whole (Raviv & Bar-Am, 2014). Students drop out after investing money, time, and effort (Haimovits & Ben-Shahar, 2004). They also miss the opportunity of receiving an education and profession that could increase their chances of making a good living in the future (Raviv & Bar-Am, 2014). Dropping out also has a negative impact on financial, political, and social processes, such as the exclusion of people from the periphery in mainstream society (Díaz & Tejedor De León, 2016).

The analysis of the data in Israel brings up some main findings: in general, only about half of the students finish their B.A degree in the standard time period, and about a 20% of them do not finish their studies at all. Women drop out higher education less than men, there is relatively minor variation between universities and colleges. More students from the Arab sector dropout or do not complete their studies within the given timeframe – except in colleges of education. Interestingly, students who change their high education institute do not necessarily drop out, and the rate among them who complete their degree in the academic time frame is similar to the rate among those who did not change educational institutions. Finally, the more structured and rigid the study framework (such as when studying medicine, nursing, or law) – the lower the dropout rate (Levi et al., 2019).

In Israel, the impact of the COVID-19 pandemic on higher education led to an increase in the number of students during the 2020/2021 academic year, including a 16% increase in bachelor's students. About a quarter of the students reported having encountered a large degree of technical difficulties (25.2%); almost half (41.7%) reported having decreased motivation to learn following the transition to distance learning, with 10% of students reporting that they were considering dropping out of their studies due to distance learning (Kelly, 2021).

In the higher education system in Israel, there are currently about 50,000 students from the Arab sector (Council for Higher Education, 2021). Yet the hybrid and distance learning models have created unique problems for this population, due to inadequate infrastructure for learning from home (e.g., faulty Internet connections in Arab villages and unsuitable home setting for studying). This population was especially hard hit by financial difficulties during the pandemic. Moreover, Hebrew language gaps also increased due to distance learning. As a result, Arab students may be at greater risk of dropout (Abu Rass, 2020). According to a survey conducted by the GeoCartography Institution in June 2021 for the Edmond de Rothschild Foundation, 33% of the Arab students in Israel were contemplating dropping out of academia, compared to only 16% of students from the Jewish population (Council for Higher Education, 2021).

The findings in a post-COVID-19 study (Degani & Degani, 2020) explain the impact of online learning on dropout rates. In a survey on 525 students, including 107 Arab students, the change in learning methods greatly impacted students' self-esteem and their inclination to drop out of academia. 75% of students found online learning difficult; 41% mentioned specific difficulties studying online from home (e.g., children or lack of space and privacy); almost half the students perceived online learning as difficult, while 25% stated that such learning increased their desire to continue their studies. Most of the students (84%) intended on continuing their studies that year. About one-third of those who had at least one more academic year to complete their degree were contemplating dropping out (Edmond de Rothschild Foundation, 2020).

The aim of this study was to examine connections between post-

COVID-19 learning patterns (in class vs. distance learning), self-regulated learning, sense of belonging, and dropout from academy in the Jewish and Arab student population in Israel.

3. Methodology

Based on the literature review and the research objective, the following seven research hypotheses were devised:

H1. Differences will be found between Jewish and Arab students in self-regulated learning (perseverance, self-esteem, self-esteem, etc.) in both types of learning patterns (online and face-to-face courses).

H2. Differences will be found between Jewish and Arab students in dropout tendency in both types of learning patterns (online and face-to-face courses).

H3. Correlations will be found between the number of online courses (distance and hybrid) that the students took and self-regulated learning.

H4. Correlations will be found between learning patterns (online or face-to-face courses), dropout intent, and sense of belonging.

H5. Differences will be found between the two types of learning patterns (online and face-to-face courses) in self-regulated learning, sense of belonging, and dropout tendency.

H6. Correlations will be found between students' study year and grades, self-regulated learning in both types of learning patterns, sense of belonging, and dropout intent.

H7. Correlations will be found between the students' learning pattern, self-competence and dropout intent.

3.1. Participants and procedure

The research focuses on the typical student population in the State of Israel and is based on the human mosaic in Israeli society consisting of Jews and Arabs living side by side and making up about 98% of the country's residents. The percentage of other minorities residing and living in the State of Israel is extremely negligible and is not reflected in the population of students studying in higher education. Considering this, the study deals in depth with these two populations.

The sample is a random sample based on the composition of the student population studying in the State of Israel in institutions of higher education. The questionnaire was addressed to all students studying in these institutions to obtain a representative sample of the student population and through this sample to check their capability to cope with the changes that have taken place in the higher education system post-COVID-19.

A total of 471 Jewish and Arab students from a range of higher education institutions in Israel (from north to south such as: Tel-Hai academic college, Bar-Ilan university, Ben Gurion university and others) participated in this quantitative study between 2020 and 2021. The students were studying for their bachelor's or master's degree. This sample included 127 males (26.9%), with an average age of 28.21 (SD = 8.75), ranging from 19 to 48 years. Table 1 presents the students' demographic background. The sample is a random sample of all such students, the questionary was sent by digital platforms to students from several colleges and universities.

On average, on a scale of 0–5 courses, the participants preferred to study 2.64 courses (SD = 1.98) via distance learning through a range of means.

3.2. Research tool

The participants were asked to complete a closed-ended questionnaire comprised of the following six sections:

Table 1
Participants' demographic background (n = 471).

Variable	Values	Frequency (%)
Category of Religion	Jewish	99 (20.8%)
	Not Jewish	372 (79.2%)
Religion	Jewish	99 (20.8%)
	Muslim	259 (54.8%)
	Christian	33 (6.5%)
	Druze	80 (17.9%)
Mother tongue	Hebrew	99 (21.2%)
	Arabic	367 (77.6%)
	Other	5 (1.2%)
Place of Residence	South of Israel	19 (4.1%)
	Center of Israel	52 (11.2%)
	North of Israel	400 (84.7%)
Type of town	Village	207(44.4%)
	Moshav	19 (4.1%)
	City	226 (48.0%)
	Kibbutz	19 (3.5%)
Year of Study	1st year	184 (38.7%)
	2nd year	141 (30.4%)
	3rd year	80 (17.3%)
	4th year	47 (10.1%)
	Master's	19 (3.0%)
Faculty	Engineering	38 (7.6%)
	Education	118 (24.7%)
	Social Sciences	104 (22.4%)
	Humanities	57 (12.4%)
	Sciences & Technology	23 (4.7%)
	Medicine	14 (2.9%)
	Other	117 (25.3%)
Grade point average	<60	11 (2.4%)
	61–70	6 (1.2%)
	71–80	118 (24.7%)
	81–90	217 (45.9%)
	91–100	119 (25.9%)
Learning patterns	Face-to-face, face to face	182 (38.6%)
	Hybrid: combined synchronous and asynchronous	74 (15.8%)
	Distance learning via Zoom	116 (24.6%)
	Distance learning, Zoom, synchronous and asynchronous self-learning	91 (19.3%)
	Other	8 (1.8%)

1) *Demographic questions* – background information, such as age, gender, year of academic study, and religion (Jew/Druze/Muslim/Christian/Other).
2) *Academic Self-Regulation Scale* (face-to-face vs. distance learning). **Five items** were rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree), such as: "I maintain high standards when learning on my courses" (Akhtar & Mahmood, 2013). This questionnaire explained 67.25% of the general variance, with a general reliability of α = 0.852.
3) *Learning habits in online (distance/hybrid) courses.* **Twenty-four items** were rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree), such as, "I choose a time of day with few distractions for studying for my online courses (Akhtar & Mahmood, 2013). Factor analysis yielded six indexes: [a] self-regulated learning (α = 0.876); [b] perseverance and adaptability (α = 0.757); [c] self-esteem (α = 0.791); [d] time management (α = 0.808); [e] sense of autonomy (α = 0.766); and [f] sense of competence (α = 0.780). The questionnaire explained 71.93% of the general variance, with a general reliability of α = 0.780.
4) *Learning habits on face-to-face face-to-face courses.* **Eleven items** were rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree), such as "I summarize my learning in face-to-face courses to examine my understanding of what I have learned" (Akhtar &

Mahmood, 2013). Factor analysis yielded three indexes: [a] self-regulated learning (α = 0.852); [b] self-esteem (α = 0.752); [c] sense of competence (α = 0.871). The questionnaire explained 78.65% of the general variance, with a general reliability of α = 0.589.

5) *Dropout intent.* **Seventeen items** were rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). These included: [a] satisfaction with the education (**five items**, e.g., "I am satisfied with the education I have been receiving at this university or college"); [b] academic exhaustion (**five items**, e.g., "I am exhausted from my course activities"; and [c] dropout intent (**seven items**, e.g., "I am thinking of stopping my higher education" (Duque et al., 2013). The questionnaire explained 73.53% of the general variance and its general reliability was α = 0.876.
6) *Sense of belonging.* **Five items** were rated on a Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). For example, "I am part of the on-campus community" (Duran et al., 2020) The questionnaire explained 71.33% of the general variance and its general reliability was α = 0.776.

The research tool was built based on existing and valid research tools (Akhtar & Mahmood, 2013; Duran et al., 2020). The study was approved and validated by the Ethics Committee at Tel Hai Academic College.

3.3. Research method

This quantitative study was conducted via online questionnaires that were sent to students via the mailing lists of a range of colleges and universities in Israel. The data achieved was then divided into two research groups: Jewish and Arab students. Statistical analyses of the data included descriptive statistics, t-tests, Pearson's correlations, and multiple regressions, as well as two-way MANOVA tests. The report will include effect sizes, p-values, and confidence intervals (CIs) for each hypothesis tested.

The study was approved by the Ethics Committee of the authors' affiliated college. Throughout the study, great efforts were made to ensure the anonymity and privacy of the participants. The quantitative questionnaire opened with a note thanking them for their participation and informing them that they may stop completing the questionnaire at any stage.

4. Results

This chapter presents the findings relating to the six research hypotheses. First, statistical calculations were conducted for the main indexes addressed in this study, including range, mean, and standard deviation (SD) (Table 2).

To examine the first hypothesis, whereby differences will be found between Jewish and Arab students in self-regulated learning (perseverance, self-esteem, self-esteem, etc.) in both types of learning patterns (online and face-to-face courses), independent t-tests and effect size were calculated (Table 3).

A significant difference was seen between the two groups in self-efficacy and sense of competence in online courses [$t_{(471)} = 3.75$, $p < .001$], whereby both variables were higher among Arab students than Jewish ones ($t_{(471)} = 3.75$, $p < .001$; M = 2.42, SD = 1.09, respectively) – with a medium effect size (Cohen's D = 0.72). A significant difference was also found in time management in online courses [$t_{(471)} = 4.23$, $p < .001$], whereby Arab students presented better time management than Jewish ones (M = 3.19, SD = 1.00; M = 2.35, SD = 1.11, respectively) – with a strong effect size (Cohen's D = 0.82). Finally, a significant difference was found in sense of ability in online courses [$t_{(471)} = 2.26$; $p = .025$], Arab students showed a higher sense of ability than Jewish ones (M = 3.25, SD = 0.87; M = 2.85, SD = 1.05, respectively) – with a medium effect size (Cohen's D = 0.44). No other significant differences were found in self-regulated learning variables.

Table 2
Statistics for main questionnaire indexes.

Variable	Mean	SD	Min	Max	Range
Self-regulation learning in online courses	3.54	.83	1.00	5.00	4.00
Persistence and adaptability in online courses	3.72	.84	1.50	5.00	3.50
Self-efficacy in online courses	2.96	1.00	1.00	5.00	4.00
Time management in online courses	2.98	1.09	1.00	5.00	4.00
Sense of autonomy learning in online courses	3.20	.93	1.00	5.00	4.00
Sense of competence learning in online courses	3.16	.93	1.00	5.00	4.00
Self-regulation learning in face-to-face courses	3.54	.91	1.00	5.00	4.00
Self-efficacy learning in face-to-face courses	3.42	.92	1.00	5.00	4.00
Sense of competence in face-to-face courses	3.41	.88	1.00	5.00	4.00
Sense of belonging	2.58	.79	1.00	4.80	3.80
Dropout intent in general	2.31	.80	1.00	4.33	3.33
Dropout intent learning in online courses	2.17	1.12	1.00	5.00	4.00
Dropout intent in face-to-face courses	2.12	1.15	1.00	5.00	4.00

Table 3
Self-regulated learning in both learning patterns by group (n = 471).

	Jews (n = 99)		Non-Jews (372)				
Variable	M	SD	M	SD	$t_{(471)}$	P	Cohen's D
Self-regulation learning in online courses	3.48	.85	3.56	.82	−.52	.607	.099
Persistence and adaptability in online courses	3.85	.94	3.69	.82	.99	.326	.190
Self-efficacy in online courses	2.42	1.09	3.12	.93	−3.75	<.001	.723
Time management in online courses	2.35	1.11	3.19	1.00	−4.23	<.001	.816
Sense of autonomy learning in online courses	3.13	.92	3.22	.93	−.50	.617	.097
Sense of competence learning in online courses	2.85	1.05	3.25	.87	−2.26	.025	.436
Self-regulation learning in face-to-face courses	3.64	1.05	3.50	.87	.67	.506	.141
Self-efficacy learning in face-to-face courses	3.31	1.03	3.48	.87	−.86	.394	.185
Sense of competence in face-to-face courses	3.55	1.02	3.39	.82	.85	.398	.186

Hypothesis 1 was partly confirmed, as a difference was seen between the two groups in some characteristics relating to self-regulation learning.

To examine *the second hypothesis*, whereby differences will be seen between Jewish and Arab students in dropout tendency in both types of learning patterns, independent t-tests were conducted (Table 4).

No significant differences were found in the dropout tendency between groups. As such, hypothesis 2 was not supported.

To examine the third hypothesis, whereby a correlation will be found

Table 4
Dropout intent by group (n = 471).

Variable	Jews (n = 99)		Non-Jews (372)				
	M	SD	M	SD	$t_{(471)}$	P	Cohen's D
Dropout intent in general	2.01	.71	2.15	.83	−.96	.376	.176
Dropout intent in online courses	1.99	1.08	2.21	1.14	−.94	.349	.186
Dropout intent in face-to-face courses	1.88	1.02	2.17	1.19	−1.28	.203	.252

between the number of online courses (distance and hybrid) that the students took and their self-regulated learning, Pearson's correlations were conducted (Table 5).

A significant positive correlation was found between the number of online courses and self-regulated learning (r = 0.401, p = .019), self-esteem (r = 0.379, p = .031), and sense of competence in online courses (r = 0.245, p = .057) in Jewish students, whereby the greater the number of online courses, the greater their self-esteem and sense of competence in these courses. No significant correlations were found between the number of online courses and other dimensions of self-regulated learning in both learning patterns in the Jewish participants. No significant correlations were seen between the number of online courses and dimensions of self-regulated learning in the Arab participants.

As such, the third hypothesis was supported by the findings of this study.

To examine the following hypothesis, whereby correlation will be seen between learning patterns (online or in-class), dropout intent, and sense of belonging, Pearson's Correlations were conducted (Table 6).

The findings indicate that as the number of online courses increases, the sense of belonging decreases in both research groups. In the Jewish group, a significant positive correlation was found between the number of online courses and dropout intent from such courses (r = .375, p = .031), the opposite impact is obtained on the intent to dropout from face-to-face courses (r = 0.415, p = .016). The findings indicate that as the number of distance learning courses (Zoom and hybrid) increase, the dropout intent from such courses also increases.

Next, to examine the fifth hypothesis and examine differences between the two types of learning patterns (online and face-to-face courses) and self-regulated learning, sense of belonging, and dropout tendency, one way ANOVA was conducted (Tables 7 and 8).

The findings show a significant difference in dropout intent between preferred learning patterns [$F_{(3,164)} = 5.49$, p = .001, Eta2 = 0.091], the greater dropout intent was found in online and self-learning courses. Moreover, dropout intent is greater among students who prefer distance learning (via Zoom) (M = 2.64, SD = 0.72) than those who prefer face-to-face learning (M = 2.13, SD = 0.70) or those who prefer self-learning and asynchronous learning (M = 2.16, SD = 0.64) – with a 9.1% explained variance.

Table 5
Online courses and self-regulated learning.

Variable	No. of Online Courses Jews (n = 99)	No. of Online Courses Arabs (n = 372)
Self-regulated learning in online courses	.401 (.019)	.117 (.184)
Perseverance and adaptability in online courses	.284 (.103)	.136 (.125)
Self-esteem and sense of competence in online courses	.379 (.031)	.031 (.728)
Time management in online courses	.241 (.171)	.090 (.309)
Sense of autonomy in online courses	.193 (.275)	−.023 (.799)
Sense of competence in online courses	.245 (.162)	.057 (.549)

Table 6
Student Sense of belonging in Courses and Dropout Intent by Group.

Variable	No. of Online Courses Jews (n = 99)	No. of Online Courses Arabs (n = 372)
Sense of belonging	−.264 (.125)	−.125 (.152)
Dropout intent in general	.253 (.155)	.054 (.570)
Dropout intent in online courses	.375 (.031)	.086 (.364)
Dropout intent in face-to-face courses	.415 (.016)	.034 (.720)

To assess differences between dropout intent and preferred learning pattern, one way ANOVA was conducted (Table 10).

The findings indicate that learning patterns have a significant impact on sense of belonging (p ≤ .001), with 11.5% effect size – ranging from the lowest sense of belonging in distance learning (M = 2.00, S.D 0.84) to the highest sense of belonging in face-to-face learning (M = 3.68 S.D 0.70). The findings indicate a significant difference in sense of belonging by preferred learning style [$F_{(3,164)} = 7.10$, p < .001, Eta2 = 0.115]. Sense of belonging in students who prefer distance learning via Zoom was significantly lower (M = 3.00, SD = 0.84) than in students who prefer face-to-face learning (M = 2.32, SD = 0.70), or who prefer self-learning and asynchronous learning (M = 2.51, SD = 0.76) – with 11.5% explained variance. As such, the fifth hypothesis was supported.

Pearson's correlations were conducted to examine the sixth hypothesis, whereby correlations will be found between students' study year and grades, self-regulated learning in both types of learning patterns, sense of belonging, and dropout intent (Tables 9 and 10).

The findings show a significant negative correlation between grades and dropout intent (r = 0.252, p < .001), whereby the higher the grades, the lower the dropout intent and vice versa (p ≤ .001).

Moreover, a significant negative correlation was seen between grades and dropout intent in general (r = −0.318, p < .001); dropout intent from online courses (r = −0.278, p < .001), and dropout intent from face-to-face courses (r = −0.313, p < .001), as the grades are higher, it increases the dropout intent. As such, this hypothesis was supported by the research findings.

To examine the seventh and final hypothesis, whereby correlations will be found between students' sense of competence and dropout tendency, Pearson's correlations were conducted (Table 11).

The findings indicate a significant positive correlation (p ≤ .001), the higher the sense of competence in both research groups, the higher the additional dimensions of learning in both types of learning patterns. As such, the seventh hypothesis was supported.

5. Discussion

This study strove to examine correlations between learning patterns (online and face-to-face in the post-COVID-19 era) and self-regulated learning' sense of competence and belonging, and dropout tendency in Arab and Jewish students in academic institutions in Israel. The findings show an increase in online courses among both groups of participants, with the majority having adapted to this learning pattern. It is important to note that today, higher education institutions in Israel must teach about 30% of bachelor's courses online in a variety of formats.

In today's era, information is readily available, yet knowing how to access it requires more advanced and complex learning skills, including technological skills and self-learning (Ghafar, 2020). Following the unique learning experiences during the pandemic, students became more proficient in online learning, which led to a decrease in dropout intent, as seen in this study. During the pandemic, dropout intent rates were much higher, with students speaking of difficulties learning via online courses in the Jewish population (Degani & Degani, 2020) and in Arab society in Israel (Abu Rass, 2020).

The findings of this study show that in the Arab population, intent to

Table 7
Learning pattern and student sense-of-belonging (n-463).

	Face-to-Face (n = 182)		Hybrid Learning Pattern (n = 74)		Distance Learning (n = 116)		Distance Learning, Zoom, and Self-Learning (n-91)		$F_{(3,164)}$ Eta2	P
Self-regulated learning in online courses	3.36	.77	3.11	.76	3.72	.78	3.36	.63	.81 (.015)	.490
Self-regulated learning in face-to-face courses	3.63	.71	3.31	.86	3.30	.82	3.46	.85	1.40 (.034)	.247
Dropout intent	2.13[b]	.70	2.16[b]	.64	2.64[a]	.72	2.41[ab]	.69	5.49 (.091)	.001

Table 8
Student sense-of-belonging by preferred learning pattern (n-463).

	Face-to-Face (n = 182)		Hybrid Learning Pattern (n = 74)		Distance Learning (n = 116)		Distance Learning, Zoom, and Self-Learning (n-91)		$F_{(3,164)}$ Eta2	P
Sense of belonging	3.68	.70	2.49	.76	2.00	.84	3.38	.73	7.10 (.115)	<.001
Dropout intent in general	1.99	.85	2.07	.81	2.38	.80	2.11	.67	1.92 (.039)	.129
Dropout intent in online courses	2.12	1.24	1.84	.85	2.40	1.18	2.27	.96	1.28 (.026)	.281
Dropout intent in face-to-face courses	2.06	1.30	1.72	.83	2.43	1.18	2.25	.95	2.00 (.041)	.117

Table 9
Student's Study Year, Grades, Dropout tendency, and Self-Regulated Learning (n-463).

Variable	Study Year (n = 463)	Grades (n = 463)
Self-regulated learning in online courses	−.070 (.375)	−.087 (.263)
Self-regulated learning in face-to-face courses	−.012 (.897)	.038 (.669)
Dropout intent	−.046 (.556)	−.252 (<.001)

Table 10
Student's study year, grades and sense of belonging.

Variable	Study Year (n = 146)	Grades (n = 146)
Sense of belonging	.061 (.434)	−.096 (.212)
Dropout intent in general	−.098 (.237)	−.318 (<.001)
Dropout intent in online courses	−.078 (.347)	−.278 (<.001)
Dropout intent in face-to-face courses	−.120 (.150)	−.313 (<.001)

dropout from college or university is higher in both learning patterns, compared to the Jewish students. Although this finding was not significant, it is in line with previous studies (Raviv & Bar-Am, 2014). The findings also show a decrease in dropout intent from online courses in both groups of students, combined with the increase in self-regulated learning and sense of competence in these courses. It seems that experiencing online courses during the pandemic contributed to students' perseverance, adaptation, and sense of autonomy when learning. The improvement in these skills greatly decreases dropout intent. This could be explained as online courses often allow students to study and progress at their own pace, and to go over the learned materials again and again if it is needed. Doing so enhances students' self-regulated learning and sense of competence. This is especially meaningful in the Arab students' community, who often encounter difficulties when studying is in Hebrew, and as such, require additional time for processing the information.

A significant positive correlation was seen between the number of online courses and students' self-regulated learning, self-esteem, and sense of competence in online courses – yet more so in Jewish students than in Arab ones. These differences could be explained by the patterns of learning that these students were used, i.e., the more traditional teaching and learning methods that are applied in Arab high schools in Israel, where the teacher serves as the knowledge center of the class (Akhtar & Mahmood, 2013; Hendin, 2011). The findings also indicate a lower sense of belonging in online courses than in face-to-face ones.

Higher education institutions should establish a support system for students, with an emphasis on the following three aspects: (1) certainty – course lecturers must provide clear directions and instructions regarding learning processes and requirements of online courses; (2) discipline – lecturers must create a communication channel that promotes learning, while providing students with supportive feedback throughout the course; and (3) belonging – higher education institutions must provide

Table 11
Students' sense of competence and dropout tendency.

		Sense of competence in Jewish Students (n = 34)	Sense of competence in Arab Students (n = 129)	Sense of competence in All Students (n = 471)
	Sense of belonging	.232 (.187)	.330 (.<001)	.201 (.009)
	General dropout intent	.116 (.526)	.001 (.992)	.051 (.542)
sense of competence in one-line courses	Self-regulated learning in online courses	.778 (.<001)	.742 (.<001)	.755 (.<001)
	Setting goals in online courses	.723 (.<001)	.583 (.<001)	.593 (<.001)
	Self-esteem in online courses	.659 (.<001)	.647 (.<001)	.665 (.<001)
	Environmental setting for online courses	.610 (.<001)	.492 (.<001)	.479 (.<001)
	Time management in online courses	.814 (.<001)	.748 (.<001)	.782 (.<001)
	Seeking for help in online courses	.483 (.<001)	.488 (.<001)	.480 (.<001)
sense of competence in face-to-face courses	Self-regulation in face-to-face courses	.506 (.006)	.591 (.<001)	.551 (.<001)
	Setting goals in face-to-face courses	.403 (.<001)	.511 (.<001)	.441 (.<001)
	Self-esteem in face-to-face courses	.488 (.<001)	.595 (.<001)	.575 (.<001)

students with a technical support system, while providing academic mentoring and support for students in general, and for Arab students in particular (Meltzer, 2006) – similar to the on-campus support centers that assist these students in completing their study programs (Mustafa, 2007).

5.1. Limitations and further research

The main limitation of this study is the unbalanced sample, with many more Arab students (n = 372) than Jewish ones (n = 99). This may have impacted the statistical analysis, as some of the significant correlations found in the study were relatively weak.

Another limitation that arises from the students' sample (Jewish and Arab students) can limit the generalizability of the findings to other culturally and linguistically diverse populations. This can be highlighted as a limitation and as an area for further research.

However, despite this limitation, this study contributes to the literature on students' learning experiences and dropout tendencies in the post-COVID-19 era. Future research could benefit from replicating this study with a more balanced sample and with participants from a larger number of higher education institutions.

5.2. Conclusions and recommendations

Learning in the post-pandemic era has changed the face of higher education as we know it. Developing the ability to learn independently and autonomously (i.e., self-regulated learning) using a range of technological tools and platforms is a necessary skill in the 21st century. This is especially true for elementary and high school students – as per recent reforms implemented by the Israel Ministry of Education (The Israel Science and Technology Administration (2012). Moreover, training students to function efficiently and effectively in the labor market requires self-learning capabilities – which should be instilled in them by higher education institutions. In higher education institutions today, students need to be taught a range of tools and skills for self-regulated learning – especially students from the Arab society, who are less adept at studying through non-traditional methods.

In light of the findings of this study, we propose a number of recommendations. First, higher education institutions should support students in their self-learning. In addition to online self-learning courses, students must receive technical support and academic mentoring, especially students from the Arab society – to decrease technological gaps and enhance their learning skills. Moreover, training videos and workshops should be offered to students, should they encounter difficulties when dealing with 21st century skills.

In addition, teachers should be trained to support students during online courses. Many courses are now open access ones, where students complete the course and take the exam without any contact with the lecturer. Yet such courses seem to lead to greater dropout. For example, Savenije (2013) found that in 29 open access courses, only 6.8% of the participants completed the course. It is therefore of the utmost importance to offer academic and personal support. Yet to do so, lecturers must receive suitable training for including meaningful content in such courses, while creating coherent connections between the studied materials, combined with learning-promoting communications throughout the course.

Credit author statement

Anat raviv: Conceptualization, Methodology, Writing – original draft, Investigation Writing- Reviewing and Editing, Marsel Amasha: Software Data curation, Noha Bader: Validation, Supervision Software. Visualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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