

Predictors of a Positive Online Learning Experience

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Introduction

The onset of the COVID-19 pandemic brought social distancing and thus the necessity of remote learning, especially for international programs, which had the additional challenge of travel and border restrictions. Undergraduate and graduate institutions have utilized online learning to different extents for three decades in order to supplement material from in-person lectures or to make materials more accessible for students with distance or time restrictions (Laksana, 2021). While online learning and hybrid learning is certainly not a new practice (Khogali et al., 2011), international post-graduate institutions were not prepared to take on the challenges associated with a fully online learning environment. Despite the necessity of the practice, there is little research on student satisfaction with the e-learning environment. Various studies demonstrate that student perceptions of their learning environment influence their motivation and overall success in programs (Tackett, et al., 2017). Indeed, medical student motivation contributes to graduation and match rates (Ladha, et al., 2022). At the same time, there is a shortage of well-trained medical doctors internationally (Malko & Huckfeldt, 2017; Scheffler & Arnold, 2019; Stigler, et al., 2021). Online medical schools may provide the solution to training medical doctors despite barriers of travel, social distancing, and financial resources necessary to attend medical school in-person. The current study fills the gap in research on medical students' perceptions with the e-learning environment and provides valuable insight into program development and management for international medical schools interested in incorporating e-learning into their curriculum.

The Learning Environment

Literature highlights the importance of a supportive learning environment in medical training to develop a safe place for learners to excel (Ramani and Krackov, 2012). This includes the importance of the mentoring and learning relationship established between the faculty member and the student. Henderson et al. (2010) writes about the benefits of a supportive learning environment for undergraduate nursing students. The study cites the educator as a learning guide and most important factor to help student achievements. To assess the students' perception about their learning environment, the presence of a skilled and knowledgeable educator was highlighted to as a factor in the transfer of learning. Deep learning was accomplished through effective teaching and role modeling behavior. The relationship built between the mentor and student is instrumental in the learning process. The formal and informal support was documented as facilitating the learning process and promoting learning. The learning environment affects the students' perception of their educational experience and there is evidence that student perceptions of their learning environment differ between traditional, face-to-face instruction and an e-learning environment (Mousavi et al., 2020).

Learning can be defined as the process of making a new or revised interpretation of the meaning of an experience (Mezirow, 2003). We learn differently when we are learning to perform than learning for

knowledge. Learning occurs in different ways and its development and externalization are accomplished through alternation of teacher and learner roles, observations, modeling and cooperative learning (Lacy, 2012). An effective environment enhances student learning (Chen et al., 2012) and provides the opportunity for student-teacher interactions (Mousavi et al., 2020).

Literature on the learning environment also points to the importance of critical reflection, or the critique of the presuppositions on which our beliefs have been built which transforms learning into a new experience (Mezirow, 2003). Reflection has been defined as intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciation (Mezirow, 2003). Educational institutions have a responsibility to provide learning environments that foster intellectual advancement while producing reflective practices.

The Medical Learning Environment

The medical learning environment must provide an interwoven process of integrative thinking and the “opposable mind” or the ability to integrate to seemingly opposing points of view (Davidson, 2014). While working on a medical diagnosis, the medical personnel must collect and assimilate sometimes contradictory points of information to formulate a treatment plan. Davidson (2014) cites Martin’s definition of opposable mind as being able to “admit multiple variables for consideration...to acknowledge multidirectional, nonlinear causality for most events...to visualize the whole while working with the parts...to refuse to surrender to oversimplification or overspecialization” (p.3). The development of new ways to respond, a new habitus and new protocols for best practice is evidence of an effective learning process.

The Liaison Committee on Medical Education (LCME) emphasizes the importance of the learning environment in its accreditation standards (www.lcme.org/standard, 2014):

A medical education program must ensure that its learning environment promotes the development of explicit and appropriate professional attributes in its medical students ...[and should] regularly evaluate the learning environment to identify positive and negative influences on the maintenance of professional standards and conduct and develop appropriate strategies to enhance the positive and mitigate the negative influences.

The medical school learning environment has an influence on the way students form an identity (Monrouxe, 2010), develop moral thinking patterns (Cohen, et al., 2009) and expand competences (Epstein and Hundert, 2002). Human capital development, global health residency programs and virtual teaching methods are becoming more popular within the medical education community (Ackerly, et al., 2011). Monrouxe (2010) writes, “Whatever else organizations do, they do identification: institutions are the most important places within which identification becomes consequential” (p.44). The medical school learning environment must be consciously shaped to ensure the delivery of educational encounters that help students develop empathic professional identities. The lack of interactivity in traditional lectures makes it impossible to know if information is being learned or if students are able to follow the material and therefore the instructor has little opportunity to adapt either the material or the manner of teaching to match the learner (Wessels, et al., 2007).

Online Learning Environment for Medical School

Given the gradual transition to online education brought on by the worldwide COVID-19 pandemic (Ali, 2020), it is necessary to understand the predictive qualities of the online experience. The online platform can be used to increase faculty and student engagement and satisfaction. In fact, Mann (2014) found 100% of his student respondents reported instructors can create a caring learning environment online. While literature on student perceptions of their learning environment is limited, some studies demonstrate student satisfaction and preference for online and/or hybrid learning rather than frontal traditional lectures. In one study, students cited flexibility in online classrooms as the number one benefit of the modality (Chasteen-Miller & Mills, 2019). Stone and Springer (2019) revealed that students and instructors understand the digital environment as challenging, but the instructors' successful navigation of the environment can create a welcoming environment. This environment creates an educational climate of trust, support, guidance, and values. Students report that a faculty's attempt to get to know them as individuals made them feel faculty cared and were invested (Carr et al., 2020). In another study, faculty caring and the ability to create a positive learning environment influenced students' success and mastery of learning objectives (Froneman et al., 2016). Other researchers found student's positively perceived online education when the teacher is engaged (Bailey et al., 2020; Mousavi et al., 2020). In Gyurko's et al., (2016) study of college administrators, "caring faculty and staff" and "high-quality teaching" were the two comments most agreed for what makes students stay in college.

Macario (2019) stated, "Examination of the relationships between course delivery methodologies and students' perceptions of faculty caring behaviors and presence in online courses may contribute to a knowledge gap in this area and potentially lead to the development of strategies for improvements in online education" (p. 111). Instructor presence is one of the most influential behaviors when demonstrating concern for learners (Theodosiou & Corbin, 2020). Stone and Springer (2019) suggest creating an online presence to demonstrate online instructor caring. A social presence is a necessity when developing an online positive learning environment (Turk, et al., 2022). The students' perception of their learning environment contributes to their academic performance and promotes positive behavior (Wayne, et al., 2013).

While literature highlights the importance of the learning environment, meaningful student-teacher interactions, and student perceptions of their environment for student success, few studies have explored these constructs within the online medical school learning environment. This study fills the gap in literature determining the connection between students' perceptions of instructor care and students' perceptions of their learning environment. Finding links between the caring processes of medical education and unique characteristics of varying learning environments will provide faculty and leadership with the direction they need to maximize efforts to model caring in the classroom for online medical school learning.

Method

Participants and Procedures

Study participants included 20 medical students at an international medical program located in Israel. Students were all United States or Canada natives who had relocated to Israel for medical school. Students were current second-year medical students already in Israel reflecting on their first year of medical school during the COVID-19 pandemic (2020-2021 school year), where all lectures and exams took place online. Due to government lockdowns, the majority of participants took classes from North America with a significant time difference from the host country of study (7-10 hours depending on location). Upon receiving approval from University's Institutional Review Board (approval #2021-050), second-year international medical students were sent a link to the study's survey via online Google-form. Students provided consent on the form prior to completing the survey. Survey response rate was 69%.

Measures

The e-learning educational atmosphere measure (EEAM) assesses remote students' perceptions of their virtual educational environment (Mousavi et al., 2020). The EEAM includes 40 items rated on a 5-point Likert scale (5 representing *totally agree*, 4 *agree*, 3 *neutral*, 2 *disagree*, and 1 *absolutely disagree*). Previous studies confirmed the face validity and content validity of the scale for a general sample (Ayre & Scally, 2014) and specific to graduate students in medical fields (Mousavi et al., 2020). A factor analysis confirmed the 40 questions covering six factors of the e-learning environment including: program effectiveness, teaching quality, ethics and professionalism, learner support, safety and convenience, and awareness of the rules (Mousavi et al., 2020). In addition to the EEAM, students were also asked an open-ended question asking them to provide additional feedback about learning during the academic year.

Results

Pearson correlations revealed various associations between various aspects of the e-learning environment and their overall satisfaction with remote learning during their first year of medical school. Overall, students reported being dissatisfied with the learning environment ($M=2.75$, $sd= 1.29$) with fifty-five percent of participants reporting that they disagreed with the statement "I am satisfied with studying in this virtual program), ten percent neither agreeing nor disagreeing, and thirty-five percent agreeing or strongly agreeing. Many specific items of the e-learning environment were positively associated with students' satisfaction with their first year in general. All significant correlations are indicated in Table 1 below; non-significant items are not indicated for parsimony.

Table 1. Pearson correlations between e-learning perceptions and satisfaction

Program effectiveness	r
Courses' resources and contents are intriguing and motivational for learning	.469*
Possibility of learning academic meta skills is provided to me	.469*
Courses' contents and activities are understandable and tangible	.501*
Teachers assess the students pretty well in various courses	.824**
It's easy for me to study and do my assignments and activities	.652**
My ability to interact with others in virtual space has increased	.624**
I have learned what I needed to learn in this program	.605**
This program will prepare me for my future job	.564**
Teaching quality	
The timing of delivering courses' resources and activities during the semester is appropriate for me	.523*
Teachers of this program care about students' views on how to present their courses and activities	.532*
Teachers of this program benefit properly from available educational facilities for better e-teaching	.592**
Teachers of this program use different methods to encourage group activities and engage students in the virtual environment	.572**
Ethics and Professionalism	
Teachers of this program are responsive and available	.584**
Teachers of this program try to make sure about learning	.576**
Cultural issues and social etiquette are observed in the educational environment	.467*
Relationships governing the educational environment are with respect and courtesy	.512*
Learner support	
There are good supports for the top students	.629**
There are good supports for the weak students	.520*
Students' views on the program delivery and educational services are considered important	.555*
Safety and convenience	
I don't feel lonely in my learning environment	.765**
Awareness of the rules	
There is a good place for my e-learning in my society	.666**

note: * $p \leq 0.05$, ** $p \leq 0.001$

Frequencies revealed students felt ambivalent about their learning environment in the first year. On one hand, students enjoyed the flexibility and ease of the e-learning environment ($M=3.30$, $sd=1.22$) and developing

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meta-learning skills such as writing proposals and working with software ($M=3.35$, $sd=.933$), and feel comfortable asking questions ($M=3.55$, $sd=1.05$). Students also reported that course content was understandable ($M=3.65$, $sd=.671$) and rules of the scientific community were respected ($M=3.75$, $sd=.716$). At the same time, students perceived teachers as ill-prepared for teaching medical school online ($M=2.85$, $sd=1.137$). Specifically, teachers were not responsive or available ($M=2.75$, $sd=1.45$), course plans were unclear ($M=2.60$, $sd=1.142$). Finally, students did report feeling lonely ($M=2.50$, $sd=1.36$) and that there was a lack of interaction ($M=2.30$, $sd=1.174$).

Qualitative responses reflected the same ambivalence with students enjoying the flexibility and individualization of e-learning. One student noted that s/he enjoying the flexibility, reporting that they “enjoyed it greatly as I had the ability to create a safe pace for my learning” and another noted that s/he has the opportunity to create “a schedule that best suits my most productive hours.” At the same time, many students noted technical issues and the unavailability of staff due to time-differences. In terms of interaction in the e-learning environment, students noted that e-learning “is very lonely and mostly independent” and that “lack of interaction with administration” made students feel there was “no support for our class.” However, one student found that e-learning “forced the class to make more social connections and work together in groups to study and teach one another.” Discussion and implications of results are discussed in the subsequent section.

Discussion

The current study adds to the growing literature on online learning and is the first to explore international medical student perceptions of their online learning. Due to the onset of the COVID-19 pandemic, international medical school programs needed to be flexible in their delivery of course content. The worldwide pandemic brought online education into the forefront of discussions. However, the benefits and issues of online education already existed and will continue to exist post-COVID-19. While travel and in-person classes are now available, the current study provides insight to how to improve e-learning for medical students who do not have the financial or physical resources to study abroad or in person. In the current study, students noted flexibility of learning at a time and place that best suits students’ needs as a benefit to online learning. Literature echoed this finding, citing the greatest advantage to synchronous online classrooms in the research is flexibility, primarily the benefit of not having to come into the campus for class, as expressed by both faculty and students or being able to accommodate schedules more easily (Serhan, 2020). In one study, students cited flexibility in online classrooms as the number one benefit of the modality (Chasteen-Miller & Mills, 2019). The most significant benefit to education in the digital age is the inherent flexibility of the various modalities and the instructor’s ability to understand each students’ unique, diverse set of circumstances, backgrounds, challenges, and strengths (Heuberger et al., 2019).

When considering the role of the faculty, students reported feeling less motivation in online courses due to the lack of connection with the instructor (Tratnik et al., 2019). Meyers et al. (2019) suggest instructors take time to understand students’ social contexts and personal contexts and create course policies that reflect their

understanding. Students appreciate the instructor's willingness to communicate, support, and address individual needs (Dennen et al., 2007). Students also value opportunities for faculty and students to get to know each other and engage as partners (Hayne et al., 2020). Benefits to students rely upon a supportive environment with a continuous personal relationship (Salahian et al., 2017).

The current study fills the gap in research on medical students' perceptions with the e-learning environment and provides insight into program development in incorporating e-learning into a curriculum. Our study suggests that the relationships between the e-learning environment and student perception requires additional exploration and research to reach a conclusive correlation on student satisfaction.

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