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Secondary School Students' Perception Towards Online Learning Versus Face-to-Face Learning

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Abstract

Background: Online learning classes mushroomed in Nepal after the outbreak of the COVID-19 pandemic. Online learning has become an alternative mode of delivery even in the secondary level curriculum. Teachers and other stakeholders experienced online learning as a wonderful task, but assessment of online learning from the students' side was not done, as compared to face-to-face learning.

Methods: The assessment of secondary level students' perception on social presence, social interaction, collaborative learning, and satisfaction was planned by selecting 34 schools of Kathmandu valley where 1242 students studying grades 10 to 12 participated in the survey. Simple percentage, mean, and t-test were used to analyse the results. Students rated moderately positive perceptions towards online learning as compared to face-to-face learning. Students perceived significantly higher social presence in face-to-face learning than in online learning.

Results: The results indicate significant differences in social presence ($t=-9.482$, $p<0.001$, social interaction ($t=-8.663$, $p<0.001$), collaborative learning($t=-9.18$, $p<0.001$), and

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satisfaction (t=(-9.96, p<0.01). So, online learning environments supported teacher-student interaction more effectively than peer interaction. Online learning environments still face challenges in promoting engagement and interaction among students. But online learning environments are not able to replicate emotional and social connections as in face-to-face learning. Students expressed moderate satisfaction with online learning experiences.

Conclusion: Many students are able to develop an understanding of diverse viewpoints, stated additional reading, and met some of their learning expectations. Students generally appreciated the accessibility and technical convenience of online learning. Many students also expressed willingness to participate in online classes in the future.

Novelty: This study indroduces that uniquely synthesizes social domains, overcoming the isolation typically found in online environments. The online learning environments should integrate interactive strategies such as discussion, breakout rooms, collaborative projects, and peer-work systems so that the effect on satisfaction, challenging the traditional trade-off between academic and social engagement.

Keywords: assessment, collaborative learning, satisfaction, social interaction, social presence

Introduction

This research paper was developed with a view to assessing students' online learning experience as compared to traditional face-to-face learning. As in many countries, there was a shutdown of educational institutions due to the outbreak of the COVID-19 pandemic in Nepal. The impact was on nearly nine million students in Nepal by the end of April 2020 (United Nations Educational, Scientific, and Cultural Organization 2020). The classroom teaching and one-to-one personal interaction of students and teachers have been extremely affected due to enforced isolation (Khan et al. 2020). The online learning mushroomed, although e-learning had never been adopted and accepted as a real learning or the formal mode of education before this ongoing pandemic (Maharjan, 2020). Educators started to explore different software for online meetings and learning (Nassoura, 2020). There was a paradigm shift to online learning mode using Blackboard, Microsoft Teams, Zoom, or other online platforms to prevent the possible loss of academic sessions. The online learning waved its development, as a result, students as well as teachers were in the process of adapting virtual teaching-learning methodology. There have been immense efforts of institutional administrators, teachers, students, and other stakeholders for the optimal use of the technology and efficient learning process (Henderson et al., 2020). Among several factors to play on the acceptance of technology, factors such as age, gender, prior knowledge of computer literacy, computer self-efficacy, learning styles of individuals, social influence, perceived enjoyment, and perceived usefulness are the vital factors perceived by the students (Al Kurdi et al., 2020; Khan et al., 2020) on online learning.

Online learning has incorporated a wide range of technologies such as the World Wide Web, email, chat, new groups and texts, audio and video conferencing delivered over computer networks to impart education (Kaur,2024). Online learning requires a lot of resources and

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careful planning, where teachers act as facilitators rather than transmitters of content knowledge (Kaur,2024). Eight highly effective pedagogical practices of online learning are fostering relationships, engagement, timeliness, communications, organization of lessons, use of technology, flexibility in learning, and high expectations (Anastasakis et al., 2023). According to them, online instructors have to be attentive, responsive, and timely in responding to emails and text messages. Furthermore, teachers delivering online lessons should have the knowledge and skills on how to use and adapt updated technologies, promptly reply to questions and concerns, and grade and return assignments with feedback on time. Learning system and service quality have the biggest impact on student satisfaction regarding online learning (Sarwar et al., 2020). Guimaraes et al. (2009) suggested user-friendliness, availability, usability, ease of learning, and response time as the characteristics of system quality of online learning. Furthermore, online learning systems should be able to promote educator-to-student contact, monitor students' learning progress, and facilitate the secure sharing of online course materials.

Educational institutions in Nepal during and after the outbreak of COVID-19 have adapted online teaching and learning as one of the modes of learning. The major concern is about the quality of learning, which is closely related to how well the content is designed and executed. The utilization of different online meeting platforms like Microsoft Teams, Google Meet, Zoom, have been used as online teaching methods in Nepal (Acharya et al., 2021; Ghimire, 2023). The effectiveness of learning depends on how the content is designed and executed in the online environment, and also on understanding and addressing the constraints faced by students (Muthuprasad et al., 2021). The use of active pedagogies, as in the classroom such as interaction, collaborative work, problem-solving tasks, etc., was not fully used during online learning (Adhikari, 2021). Teamwork, communication, innovation, creativity, active participation, argumentation, problem-solving, conducting investigations, and tackling complex subject matter are the best strategies for effective teaching in Nepal. Bhattarai (2020) and Adhikari (2021) studied secondary-level students' perceptions of pedagogical change on online learning during the COVID-19 crisis. The study found that students felt difficulties in managing online resources for their learning. The problem lies in the effectiveness of the online delivery mode of the educational program. How students are taking the online learning is to be explored so that the learning system can be upgraded.

Objectives

The research was carried out to investigate students' perception of online-learning experience with reference to the face-to-face learning mode. The objective of the research was to determine students' perception of online learning based on the social presence, social interaction, collaborative learning, and their satisfaction.

Conceptual Framework

This study focused on social presence, social interaction, collaborative learning, and satisfaction dimensions of Spears (2012) to measure the level of student satisfaction in traditional and online environments. Social presence is considered a social effect that is primarily influenced by the extent of individuals' participation in particular occasions (Peacock

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et al., 2020). It is a communicator's sense of awareness of the presence of another individual through interaction (Kreijns et al., 2022). In the context of online learning, social presence is defined as the ability of students in a community of inquiry to project themselves socially and emotionally, as 'real' people (i.e., their full personality), through the medium of communication being used (Waddington & Porter, 2021). Online learners must develop social bonds, which enable them to feel secure and open to communicating with their peers (Peacock et al., 2020).

Social interaction is the interaction between learners and instructors that occurs when instructors adopt strategies to promote interpersonal encouragement and social integration (Wachid et al., 2025). Learner-learner, learner-instructor, and learner-content interactions are the three well know the category ofinteraction online learning (Lanier et al., 2022) as well as face-to-face learning. Anastasakis et al. (2023) expanded Moore's interaction model by adding three new types of interaction: instructor-instructor, instructor-content, and content-content interaction. The key to successful online education is instructor-student interactions, and the more often the interactions between the instructor and student occur, the more engaged the students are in their courses (Leary & Rice, 2022).

Collaborative learning is an instructional approach in which a small number of learners interact together and share knowledge and skills to reach a specific learning goal (Yang, 2023). Collaborative learning is an instructional method in which students work in groups toward a common academic goal (Spears, 2012). Zeinali et al. (2021) argued for the importance of collaborative learning and social integration to enhance learning outcomes, increase learner satisfaction, and promote the use of computer-mediated communication (CMC). A collaborative learning environment is a form of learner-learner interactions, and is built with the assumption that students will co-construct knowledge and move towards a shared understanding of the domain (Vespone, 2023). The collaborative environment is necessary for online learning for several reasons (Kaminskiene et al., 2020). It allows students to forge deeper knowledge. It encourages new ideas and critical thinking. It fosters shared goals and the beginning of the learning community. It accommodates all types of learners and their unique styles. It supports and acknowledges cultural differences in learning.

Although course grades are often used as an indicator of student achievement in online instruction (Zheng et al., 2020), attitudinal constructs such as student satisfaction, referring to student perceptions of learning experiences and perceived value of a course, are considered as important as cognitive factors in explaining and predicting student learning in online settings (Baber,2020). Kaban (2021)suggested that the learners, who have a higher level of social presence, are more satisfied with online learning.

Satisfaction can be seen from two perspectives. One self-efficacy and self-regulated learning. Self-efficacy refers to the belief in one's capability to organize and execute internet-related actions required to accomplish assigned tasks (Kuo et al., 2020). Online learners need to possess high internet self-efficacy to complete required tasks for an online course delivered through the internet (Kuo et al., 2020), as online learning relies on the internet delivery through which various types of activities, including group discussions, collaborative projects, and

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communication with instructors or classmates, take place (Keaton & Gilbert, 2020).
Self-regulated learning refers to the degree to which students metacognitively, motivationally, and behaviorally participate in their learning (Hamzah et al., 2023). The importance of self-regulation in student performance is evident not only in traditional face-to-face learning settings but also in online learning (Hamzah et al., 2023). Motivational self-regulation (Artino, 2007), and meta-cognitive self-regulation (Puzziferro, 2008) are positively correlated with student satisfaction at a significant level. Compared with face-to-face teaching, students participating in online learning may experience external temptations or interference at home during the epidemic (Su & Guo, 2021). Scholars like Panigrahi, Srivastava, and Sharma (2018) argued that students need more self-discipline in online education in contrast to a conventional classroom. These core concepts are presented in Figure 1.

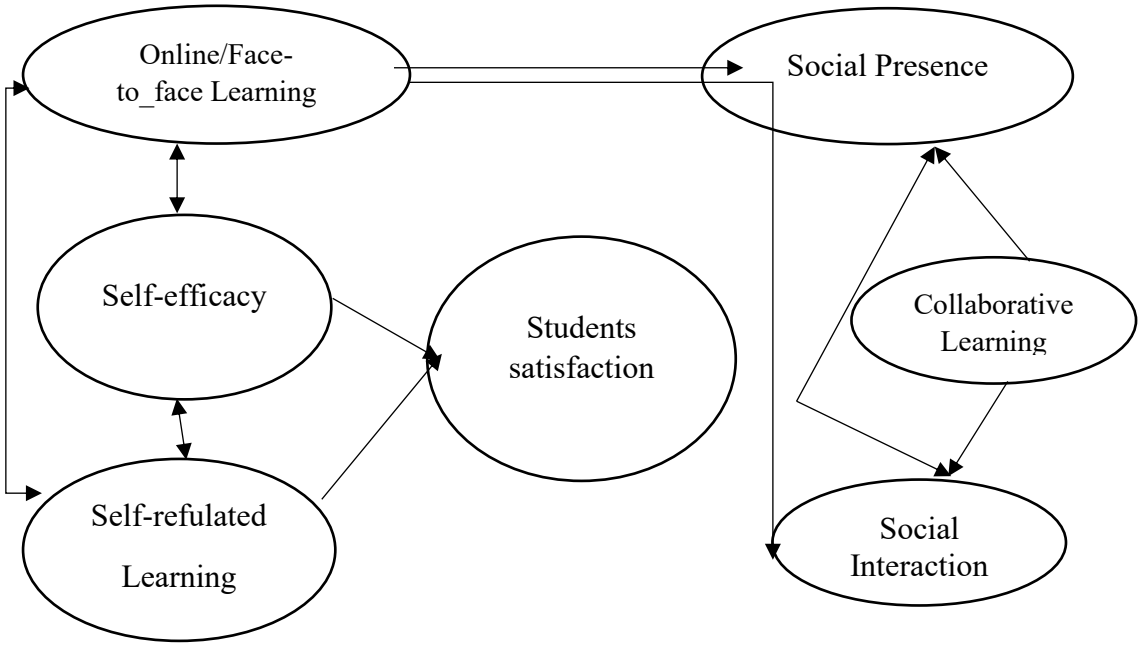

Figure 1
Conceptual Framework of Students' Perception in Online and Face-to-Face Learning

Research Design

The study is based on a survey design to measure the effectiveness of online learning as perceived by students who have been learning in online mode as well as in physical classrooms. The study conducted a face-to-face survey at their respective schools. The study was conducted in Kathmandu Valley. A consultation call was made to the school principal or coordinators regarding the purpose, and if it was noticed that some of the students were studying online, then we selected the school. A total of 34 secondary schools running online classes as well as face-to-face learning classes from Kathmandu, Lalitpur, and Bhaktapur districts were selected. Researchers visited different schools of Kathmandu Valley at the researcher's convenience for data collection. The students present on the day and interested in participating in the survey

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were selected as respondents of the survey. Students studying in grades 10 to 12, who had also been studying in an online mode, were asked to fill out the questionnaire. Table 1 shows the number of students selected for the study from different schools in the Kathmandu valley.

Table 1

Distribution of Research Respondents in Kathmandu Valley

District	No of Schools	Grade X	Grade XI	Grade XII	Total
Kathmandu	12	146	131	114	391
Lalitpur	12	153	133	132	418
Bhaktapur	10	109	175	149	433
Total	34	408	439	395	1242

Instrument and Analysis Process

Seven statements representing social presence, six statements representing social interaction, five statements representing collaborative learning, and eight statements for assessing satisfaction were selected to assess the perception of students regarding online learning experience and face-to-face learning. These statements are derived from the research of Spears (2012). Students were asked to rate on the Lekert scale. The A response 'strongly agree or agree' to the statement regarding online learning was counted as one for calculating frequency. The Cronbach's alpha of 0.783 shows that the questionnaire was reliable for measuring perception of online and face-to-face learning. To calculate the score of the statement, 1 to 5 scores were given to responses of strongly disagree to strongly agree, respectively, for calculating the mean and applying the t-test. The percentage, mean, and t-test were used to analyze data.

Results and Discussion

Students' perceptions of online learning and face-to-face learning are mainly presented in four main themes: social presence, social interaction, collaborative learning, and satisfaction. Finally, students' perception of online learning is presented based on the percentage.

Social Presence

Students' grading on the seven statements regarding their perception of social presence in online learning is presented in Table 2. The complementary percentage is of face-to-face learning.

Table 2

Frequency and Percentages for Perceptions of Social Presence

Statemets	Online Learning	
	N	Percentage
I feel comfortable talking in the classes	523	42.11
I feel comfortable introducing myself in the classes	724	58.29
The course introductions enable me to form a sense of the community	698	56.20

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I feel comfortable participating in the class discussions	636	51.21
The instructors create a feeling of community	872	70.21
The instructors facilitate discussion in the course	806	64.90
I feel that my points of view are acknowledged by other friends in the classes	493	39.69

Table 2 shows the frequencies and percentages of students who strongly agreed or agreed with statements, based on their perceptions of social presence in online and face-to-face classes. A majority of students feel comfortable introducing themselves in online classes. More students feel that course introductions enable them to form a sense of the community via online classes. A majority of students responded that the teachers created a feeling of online learning as a community. In the majority of online learning, instructors used discussion in the course, and students also felt comfortable participating in discussions. Still, online classes were not very helpful for talking and sharing ideas. Other people's ideas are not acknowledged in online classes than in face-to-face mode. Furthermore, mean difference of students perception score on social presence was tested and presented in Table 3.

Table 3

Means, Standard Deviations, and t-test Results of Perceptions of Social Presence

Mode of Learning	M	SD	t	Df	P
Online	3.31	0.80	-9.482	1241	0.000
Face-to-face	3.91	0.63			

Table 3 shows that there is a significant difference between students' perceptions of social presence in two different learning modes: online and face-to-face learning. Students perceive a stronger social presence in face-to-face learning than in online learning modes. Students in face-to-face learning have a greater sense of connectedness, interaction, and sense of belongingness. As we all experience, face-to-face learning naturally encourages direct communication, emotional connection, and non-verbal interactions. Though there is growing interest in online learning, students perceive that social presence can be developed more in face-to-face learning than in online learning. The results suggest that teachers need to enhance components of social presence in online learning mode.

Social Interaction

The response given on six statements regarding their perceptions of social interaction in online and face-to-face learning is presented in Table 4.

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Table 4

Frequencies and Percentages for Perceptions of Social Interaction

Statements	Online learning	
	N	Percentage
I noticed the courses are an excellent means of social interactions	863	69.48
I feel comfortable interacting with the other students in the course	563	45.33
The amount of interaction with the other students in the courses was appropriate	579	46.62
The quality of interaction with other students in the courses was appropriate	653	52.58
The amount of interaction with the teacher in the courses was appropriate.	762	61.35
The quality of interaction with the teacher in the courses was appropriate	642	51.69

Table 4 shows the mixed results regarding students' perceptions of social interaction in online learning. There is a moderate perception of social interaction quality and communication within online classes. This can be seen from the result that a large majority of students (69.48%) agreed that online modes provide an excellent means of social interaction. Many students perceived that the amount of interaction with teachers was appropriate, whereas the quality of student-student interaction was not as per students' expectations. The mean difference between the two modes of learning was calculated and presented in Table 5.

Table 5

Mean, Standard Deviation, and t-test for Perceptions of Social Interaction

Class	M	SD	t	df	P
Online	3.35	0.82	-8.663	1241	0.000
Face-to-face	3.95	0.65			

Table 5 shows that there is a significant difference between students' perceptions of social interaction in two different learning modes: online and face-to-face learning. Students perceive stronger social interaction in face-to-face learning than in online learning modes. Students in face-to-face learning have a greater sense of connectedness, interaction, and sense of belongingness. The results suggest that teachers need to enhance components of social interaction in online learning mode.

Collaborative Learning

The response of the five statements regarding their perceptions of collaborative learning in online and face-to-face classes is presented in Table 6.

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Table 6

Frequencies and Percentages for Perceptions of Collaborative Learning

Statements	Online learning	
	N	Percentage
I felt part of a learning community in my courses	714	57.49
I actively exchanged ideas in my classes	677	54.51
I was able to develop new skills and knowledge from other friends in my classes.	647	52.09
I was able to develop problem-solving skills through peer collaboration.	652	52.50
Collaborative learning in my courses was effective	708	57.00

Table 6 shows that the students' perceptions of collaborative learning in online learning are moderately positive in different aspects of collaboration. The results suggest that online learning provides opportunities for interaction, knowledge sharing, and peer support to some extent. Collaborative learning in an online mode of experiences may not have been fully satisfactory, as the percentages are just above the middle values. This indicates that online classes can support collaborative learning. Their effectiveness depends heavily on institutional design, use of interactive tools, and facilitation strategies adapted by the teachers. Many students perceived limitations in peer-interaction and social connectedness. There might be physical presence, reduced spontaneity, and limited opportunities for informal discussion, which might have contributed less to social interaction. The result suggests that there is a need to strengthen interactions and collaboration learning strategies so that students can interact with each other. The test of the mean difference between online and face-to-face modes of learning was calculated and presented in Table 7.

Table 7

Mean, Standard Deviations, and t-test Results for Perceptions of Collaborative Learning

Class	M	SD	t	df	P
Online	3.30	0.93	-9.18	1241	0.000
Face-to-face	3.99	0.75			

Table 7 shows that the mean perception score on collaborative learning in online mode is significantly less than that of face-to-face learning. This indicates that students perceived collaborative learning much more positively. Table 6 suggests that online learning modes were able to support collaboration partially. The results show that face-to-face learning modes provide stronger opportunities for interaction, teamwork, and peer engagement. The data shows that there is a statistically significant difference between the mean score of students' perception of collaborative learning between online learning and face-to-face learning. Students reported a higher perception of collaborative learning in face-to-face learning than in online learning.

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Thus, the perceived collaborative learning is high in face-to-face learning. This can be because face-to-face learning provides immediate interaction, direct communication, non-verbal cues, and stronger engagement in activities than existing online learning. This suggests that collaborative strategies should be added to online learning by integrating digital tools.

Satisfaction

The students were asked to respond to eight statements regarding their perceptions of satisfaction in online and face-to-face classes, and presented in Table 8.

Table 8

Frequencies and Percentages for Satisfaction

Statements	Online Learning	
	N	Percentage
I was able to learn in the courses	728	58.62
I was able to learn from course discussions	713	57.41
I was stimulated to do additional reading on the topics discussed in the courses	708	57.00
Discussions assisted me in understanding other points of view	801	64.49
The learning activities and assignments of the class met my learning expectations	677	54.51
The teachers for the course met my learning expectations.	759	61.11
The courses met my learning expectations.	626	50.40
I believe that I can achieve a better grade	683	54.99

Table 8 shows that the students' satisfaction with online learning is positive across different aspects. The majority of students responded that they were able to learn courses effectively and benefit from the course discussions. As a result, students engaged in exploring additional resources that stimulated independence in learning and curiosity. Many students were satisfied with the teacher's support and teaching as per their expectations. But comparatively, the percentage of students meeting their expectations in assignments is significant. A majority of students responded to their beliefs on achieving better grades through online learning with moderate confidence. It can be concluded that students were moderately satisfied with online learning experiences. Moreover, the significant difference between mean scores was tested and presented in Table 9.

Table 9

Means, Standard Deviations, and T-test for Satisfaction

Class	M	SD	t	Df	P
Online	3.42	0.77	-9.96	1241	0.000
Face-to-face	4.01	0.24			

The result in Table 9 shows that students in face-to-face learning responded higher satisfaction level than students in online learning. The difference between the mean satisfaction scores is statistically significant. This indicates that face-to-face learning environments provide more

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satisfying learning experiences than online learning. This face-to-face learning environment is associated with direct interaction with teachers and friends, immediate feedback, better engagement in learning, and stronger monitoring systems. Students also showed moderate satisfaction in online learning; challenges such as technological barriers, limited engagement tools and techniques, and a long-term habit of face-to-face learning might have resulted in less satisfaction. Thus, teachers should strengthen interactions, instructional design, technological support, and the learners' monitoring system so that students get satisfaction in online learning.

Students' Online Learning Experiences

Students responses to the eleven statements to measure the students online learning experience are presented in Table 10.

Table 10

Frequencies and Percentages of Students' Experience of Online Learning

Statement	Frequency	Percentage
As a result of my experience with online classes, I would like to participate in online classes in the future.	682	54.91
Using online course messages is a pleasant way to communicate with others	821	66.10
Online classes are technically reliable	801	64.49
Online classes allow me to build more caring social relationships than face-to-face classes	354	28.50
Online learning environments are better than face-to-face learning environments	334	26.89
Guidelines are provided (e.g., How to use relevant online tools?) before starting online lectures by your lecturer	965	77.70
Online tools are easy to use	1032	83.09
You are satisfied with the student-teacher interaction during online teaching and learning	708	57.00
You have the facility to ask questions or clear doubts during online lectures	842	67.79
Possibility of distractions from other family members during online lectures	472	38.00
The home environment is suitable for participating in online lectures	867	69.81

The results of Table 10 show the mixed students' perceptions of online and face-to-face learning experiences. More than half (54.91%) of students responded that they would like to participate in online learning in the future. This indicates that there is a growing trend in online learning. A majority of students agreed on the technical reliability and found online communication pleasant during the meeting. Similarly, two-thirds of the students got

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guidelines for using online classes. Almost all (83.09%) of the students experienced accessible and manageable online learning. A majority (57.00%) of students were happy with student-teacher interaction in online learning. Most of the students (2 out of 3) of the students got the opportunity to ask questions and clear doubts during online learning. A majority of students had an appropriate home environment for online learning. However, some findings show limitations and concerns about online learning. Very few (28.50%) of the students got social relationships than in face-to-face learning. They also preferred face-to-face learning as a better option. About a third of students got distracting environment during online classes from family members. Thus, the environment at home can be a factor in distracting from effective learning and concentration. Overall, the results show that students prefer online learning as flexible, accessible, and technologically compatible.

Conclusion

In the Nepalese school learning system, online learning can provide contingent opportunities for learning with the help of internet technologies. As we all have been practicing, face-to-face learning has a significant role in addressing social presence, social interaction, collaborative learning, and satisfaction issues more than the online counterpart. Although students showed moderately positive perceptions towards online learning, the face-to-face learning environments were perceived positively in all dimensions. Students perceived significantly higher social presence in face-to-face learning than in online learning. Although online learning environments were able to provide opportunities for communication and engagement, they are not able to replicate emotional and social connections as in face-to-face learning. Online learning environments supported teacher-student interaction more effectively than peer interaction. Online learning environments still face challenges in promoting engagement and interaction among students. Students perceived collaborative learning more positively in face-to-face classes than in online classes. Online learning environments are still not able to provide richer opportunities for teamwork, interaction, discussion, and collaborative learning as in face-to-face learning mode. Students expressed moderate satisfaction with online learning experiences. Many students were able to develop an understanding of diverse viewpoints, stated additional reading, and met some of their learning expectations. Students associated online learning with technological difficulties, limited interaction, reduced motivation, and noticed challenges in maintaining engagement. Students generally appreciated the accessibility and technical convenience of online learning. Many students also expressed willingness to participate in online classes in the future. Online learning environments should integrate interactive strategies such as discussion, breakout rooms, collaborative projects, and a peer-work system so that students can develop a sense of belongingness and connectedness. Teachers should use different tools to engage students in activities and monitor their work.

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