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Exploring the Perceptions of Underprivileged High School Students towards Remote Online Learning During the Pandemic

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Abstract: *This mixed-methods study explored the perceptions of high school students towards online learning during the COVID-19 pandemic by examining the factors that affected their academic achievement. The survey results revealed that a lack of social presence contributed to students' disengagement from online learning, affecting their academic performance. A qualitative thematic analysis approach was applied to analyze open-ended questions. The findings from this study demonstrated the importance of giving voice to students and learning from their experiences with online learning during the pandemic. Specifically, this study focused on understanding how students perceived the transition to online learning and how their experiences with online learning affected student learning outcomes.*

Keywords: Online learning, K-12, COVID-19 pandemic, COI, social presence, student engagement, remote learning

Introduction

Due to the COVID-19 pandemic, approximately 1.2 billion children around the world were affected by school closures (Li & Lalani, 2020) and had to experience the challenges of remote learning. After 124,000 public and private schools closed their doors due to the coronavirus pandemic in March 2020, approximately 55 million students in the U.S. had to finish the school year by learning at home (Croft et al., 2020). The transition to emergency remote teaching and learning happened so quickly that teachers did not have sufficient time to prepare resources or become proficient in educational technologies for online teaching (Oliveira et al., 2021). The lack of adequate training in technology for teachers caused a disruption in the learning process for students (Salihagic & Akay, 2022). Regardless of the availability of blended or fully asynchronous online learning, the pandemic closure of schools placed the burden of education mostly on students (Bhamani et al., 2020), hampering their learning skills, such as their motivation to explore new things or expand their knowledge in many subjects (Jou et al., 2022; Sofianidis et al., 2021). Consequently, their lack of motivation to learn contributed to low academic performance, causing them to fall behind in the education that they would typically acquire during normal school years (Jou et al., 2022). The losses were

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much greater for underrepresented, low-income, and at-risk students, as indicated by the decline in learning they experienced in all subjects after the pandemic (Sofianidis et al., 2021). These students faced many challenges during emergency remote K-12 online instruction, such as issues with internet access, technical problems, and lack of adequate support from peers and teachers. These challenges likely contributed to greater learning loss compared to their counterparts (Salihagic & Akay, 2022; Sofianidis et al., 2021). Students from underrepresented groups who were dissatisfied with online learning during the pandemic may have also had issues with other factors, such as learning platforms, which caused barriers for engagement. They may have also suffered from a lack of time management skills, increased anxiety, and pandemic stress (Rajab et al., 2020; Salihagic & Akay, 2022). Therefore, there is a need to explore the lived experiences of underprivileged students in online learning after the pandemic, such as their engagement with teachers and online learning platforms, in order to mitigate the potential for future challenges.

Student Engagement in Online Learning

Student engagement in the traditional classroom has a positive correlation with academic achievement, persistence, and retention; on the contrary, disengagement has a negative impact on student learning outcomes and cognitive development (Bond et al., 2020). The same holds true for online learning environments. Relevant research indicates that most disengaged students' online learning behaviors resulted from less supportive environments, either from teachers or peers (Bond et al. 2020; Chiu, 2021). In online settings, student engagement with instructors serves as one of the essential factors that affects students' satisfaction with an online class because the level of engagement can either foster or hamper students' intrinsic motivation (Chiu, 2021; Tsai et al., 2021). The effectiveness of online learning also depends on students' active learning skills (Salihagic & Akay, 2022), which in turn can be encouraged by the support of teachers (Chiu, 2021; Kurt et al., 2022).

Even though remote learning seemed like a viable option during the COVID-19 pandemic, there was inequality in access to online education based on the socioeconomic status of students (Bozkurt et al., 2020; Sharma et al., 2021). Specifically, students of color had less engagement in remote online learning during the pandemic than their white peers due to a lack of access to stable internet connections; therefore, they needed more support from school administration and teachers. Thus, during the pandemic, teachers' support became essential for students to develop the necessary skills for navigating online learning platforms (Kong, 2020; Shamir-Inbal & Blau, 2021). To enhance student engagement, teachers also had to incorporate online resources and develop additional activities while building effective communication with students and their parents (Kong, 2020). Despite the support of both teachers and parents, students still struggled to maintain their interest in learning and to adjust to online learning environments (Shamir-Inbal & Blau, 2021).

In their systematic review, Bedenlier et al. (2020) reported that when students could effectively engage in online learning, their learning improved as well. Some scholars (e.g., Chiu, 2021; Reeve, 2013) argue that student engagement is not a simple concept; rather, it is a complex construct that includes four dimensions: behavioral, cognitive, emotional, and agentic. Behavioral engagement refers to students' participation and involvement in learning activities. Cognitive engagement is defined as the amount of mental effort students usually spend completing learning tasks. Emotional engagement is defined as students' feelings in relation to their teachers, peers, and school experience as well as their sense of belonging (Reeve, 2013). Agentic engagement refers to students' contribution to learning processes (Chiu, 2021; Reeve, 2013). Chiu (2021) contends that learning platforms have a strong influence on how students are behaviorally, cognitively, and emotionally engaged in learning. However, without the presence of cognitive engagement, behavioral engagement may not be effective in online learning (Chui, 2021). Cognitive engagement is especially valuable in online learning environments because these environments require students to overcome challenges that would not otherwise be present (Bedenlier et al., 2020; Chiu & Hew, 2018). Bedenlier et al. (2020) argue that students may become stressed when they encounter technical problems in online learning, such as difficulty submitting assignments or completing tasks. Therefore, teachers should provide adequate support to cognitively engage students in online learning (Bedenlier et al., 2020; Chiu, 2021). Perception of positive relationships with teachers and peers as well as satisfaction with the content of learning tasks can be described as emotional engagement (Chui, 2021). However, in online learning environments, it is difficult for some students to feel connected to online learning due to their lack of technology skills and experience in communicating online, which in turn results in emotional disengagement, thus negatively impacting students' performance in completing their tasks in online learning (Bedenlier et al., 2020). Consequently, emotional disengagement may hamper students' cognitive engagement. Therefore, students need reliable internet access to be socially present in online learning platforms because stable internet might be a contributing factor for increasing both emotional and cognitive engagement. Moreover, social presence, which coincides with emotional engagement, may have a strong influence on the cognitive development processes of students in online settings. In terms of student engagement, social presence thus becomes one of the essential elements of a positive online learning experience (Ritonga et al., 2022).

Social Presence

The concept of social presence is widely used in the field of online learning (Sanders & Lokey-Vega, 2020; Singh et al., 2022). Social presence refers to favorable conditions that a platform provides for interaction through discussion posts and other forms of engagement (Singh et al., 2022). Social presence in online learning platforms helps establish a dialogue, support collaboration, build a community of inquiry, and foster a sense of belonging where

students feel safe to express themselves openly (Sanders & Lokey-Vega, 2020).

By encouraging social presence, instructors can enhance student learning. For instance, when educators provide opportunities for students to interact in the online learning community, learners tend to feel more connected with their peers and are able to overcome feelings of isolation (Dixson, 2015; Marcus et al., 2021). Social presence was especially essential during the pandemic because students had to transition to online education swiftly and did not have an opportunity to meet their peers in person (Dickinson, 2021). Yates et al. (2020) reported that high school students valued supportive strategies from teachers during the pandemic when they were engaged in online learning. However, social presence should not be understood as simply creating socioemotional presence and building personal relationships among learners. Only purposeful communication that is directly associated with social presence contributes to positive learning outcomes; therefore, social presence that supports the educational objective of the community is necessary in online learning (Garrison, 2007).

Theoretical Framework

Since this study aimed to examine the factors that affect the academic achievement and satisfaction of high school students with online learning during the COVID-19 pandemic, transactional distance theory (TDT) was chosen as the theoretical framework. Within the framework of this theory, distance education is understood as an environment that separates teachers and learners. This separation "leads to a psychological and communications gap, a space of potential misunderstanding between the inputs of instructor and those of the learner, and this is the transactional distance" (Moore, 1993, p. 22). However, this separation is not geographic; rather, it is pedagogical.

Since an online learning environment is built around the structure of a curriculum, both the interactions between teachers and learners and the self-determination of the learner are essential (Murphy & Rodriguez, 2008). Thus, the "qualitative variables," such as dialogue, structure, and learner autonomy (Moore, 1993, p. 23), make up the essence of TDT. Moore (2010) contends that "as dialogue increases, transactional distance decreases [and] as structure increases, transactional distance increases" (p. 19). In other words, dialogue serves as a key variable because teachers and learners are dependent on one another both for knowledge transfer in online settings and the reduction of the transactional distance.

Although course structure and dialogue are essential elements in minimizing transactional distance, these elements should not be overemphasized at the expense of learners' autonomy (Larkin & Jamieson-Proctor, 2013). This is because it is "the learner rather than the teacher who determines the goals, the learning experiences and the evaluation decisions of the learning program" (Moore, 1993, p. 31). Since online learning is heavily dependent on student-

teacher dialogue and course design, these factors also contribute to students' satisfaction and achievement. Therefore, TDT is a suitable theoretical framework for analyzing the online learning experiences of high school students from underprivileged backgrounds and determining how dialogue and structure correspond to the level of learner autonomy.

Purpose of the Study

The purpose of the current study was to gain an in-depth understanding of high school students' perspectives and experiences regarding asynchronous online learning during the COVID-19 pandemic, especially after returning to in-person education in the 2021-22 school year. The current study examined students' social presence, online engagement, and academic achievement. Further, it aimed to explore the factors impacting students' online learning experiences in a hybrid setting. The following research questions guided the study:

RQ1: How do students feel about their social presence in asynchronous online courses during the COVID-19 pandemic?

RQ2: How do students feel about their engagement in asynchronous online courses during the COVID-19 pandemic?

RQ3: What factors impacted students' asynchronous learning experiences?

Methodology

This study used a mixed-methods design (Cresswell & Plano Clark, 2017) that relied on both qualitative and quantitative methods to explore the perceptions of high school students towards online learning during the COVID-19 pandemic. IRB exemption was obtained on April 4, 2022. To examine students' experiences with online learning during the pandemic, secondary data from the Charter School Network (CSN) was used. Data for this study comes from 395 students in six schools (out of 1,800) who responded to a voluntary online survey conducted in Spring 2022 by CSN to learn more about students' online learning experiences.

Quantitative Research Instruments

The quantitative research instruments were the Social Presence (SP) survey and the Engagement (Eng) survey. The SP survey includes nine survey items measured on a five-point Likert scale: 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. Nine SP survey items (Sp1-Sp9) were adopted from the survey developed by Arbaugh et al. (2008). The items measure students' perceptions of affective expression (AffExp), open communication (OpCom), and group cohesion (GrpCoh).

The Engagement (Eng) survey has 15 items that are measured on the same five-point Likert scale mentioned above. The survey items were adopted from Sun's Engagement Scale, which was developed by Sun and Rueda (2012).

Social Presence (SP) Data

According to the original CoI instrument, Cronbach's alpha for social presence was 0.91, which indicated significant internal consistency reliability.

Survey items for measuring "Social Presence": CoI Survey; 9 Items; 3 Dimensions
Affective expression (AffExp) Sp1. Getting to know other course participants gave me a sense of belonging in the course. Sp2. I was able to form distinct impressions of some course participants. Sp3. Online or web-based communication is an excellent medium for social interaction.
Open communication (OpCom) Sp4. I felt comfortable conversing through the online medium. Sp5. I felt comfortable participating in the course discussions. Sp6. I felt comfortable interacting with other course participants.
Group cohesion (GrpCoh) Sp7. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust. Sp8. I felt that my point of view was acknowledged by other course participants. Sp9. Online discussions help me to develop a sense of collaboration.

Engagement Data

Perceptional Engagement (Eng) data in CSN's secondary data was comprised of Emotional Engagement (EmoEng) (Cronbach's α=0.88), Cognitive Engagement (CogEng) (Cronbach's α=0.75), and Behavioral Engagement (BehEng) (Cronbach's α=0.63). While a value of around 0.70 or greater for Cronbach's α is widely considered desirable, some scientists find α values between 0.60 and 0.70 to be questionable but still acceptable (Taber, 2018; Gliem & Gliem, 2003).

Survey items for measuring Engagement (Sun, 2015); 15 items, 3 dimensions
Behavioral engagement (BehEng) Eng1. I follow the rules of the online class. Eng2. I complete my homework on time. Eng3. I check my schoolwork for mistakes.
Emotional Engagement (EmoEng) Eng4. I like taking the online class. Eng5. I feel excited by my work at the online class. Eng6. The online classroom is a fun place to be. Eng7. I am interested in the work at the online class. Eng8. I feel happy when taking online class. Eng9. I feel bored by the online class. Eng10. I talk with people outside of school about what I am learning in the online class.
Cognitive Engagement (CogEng) Eng11. I study at home even when I do not have a test. Eng12. I try to look for some course-related information on other resources such as television, journal papers, magazines, etc. Eng13. When I read the course materials, I ask myself questions to make sure I understand what it is about. Eng14. I read extra materials to learn more about things we do in the online class. Eng15. If I do not know about a concept when I am learning in the online class, I do something to figure it out.

Actual Student Achievement Data (Final Grade)

Students' final course grades (Final_Grd) were used to measure actual student achievement. Final grades were the cumulative points (out of 100) that students earned in their online courses. All final grades were automatically generated as percentages by the Edgenuity learning management system at the end of the 2021-22 school year. Points for final grades came from assignments, tasks, quizzes, chapter tests, and final exams, all of which were readily available in prepopulated courses.

Qualitative Data

For the qualitative methods, the textual data from 210 (out of 395) very short responses to an open-ended question in CSN's survey were used. The open-ended question was as follows: "What are some of the factors that impacted your learning experience in this class? Positive or negative! Please feel free to share details so we can take those into consideration."

Despite being limited, this data was essential for this study because open-ended questions may yield in-depth insights into the topic that is under examination, thus supporting the findings and theoretical frameworks utilized in the study (Farber, 2006). As the responses to an open-ended question were the only method for gathering information, they were reviewed thoroughly to better understand the phenomenon under study. Braun and Clarke's (2012) thematic analysis approach was applied when analyzing qualitative data.

Participants and Research Setting

CSN is a nonprofit charter school network that serves under-resourced communities in urban areas located in six different states in the Midwestern United States. CSN serves more than 1,800 high school students in its six brick-and-mortar high schools. In the 2020-21 school year, CSN implemented remote learning due to the COVID-19 pandemic. In the following school year f 2021-22, CSN's high school students returned to in-person learning settings as guided by the state agencies. While CSN offered a traditional education model in physical classrooms in 2021-22, it continued offering a hybrid model that included asynchronous online course offerings for various reasons, including credit recovery, expanding elective course options, and maintaining mandatory course offerings in the absence of certified teachers. During the 2021-22 school year, CSN's 1,800 high school students were enrolled in one or more online courses offered through Edgenuity, one of the country's major online education providers. Edgenuity usually serves more than four million students in 20,000 schools nationwide, including schools in 20 of the 25 largest school districts (Edgenuity, 2022). Students were assigned to certain class periods and a physical classroom during the day to complete their online courses that had pre-populated learning material. Their interaction with online course teachers was conducted through messaging and emailing.

Table 1 displays the frequencies and percentages of students from each of the six high schools: School 1 - 6. Table 2 shows the distribution of students across grade levels within the dataset. For instance, 83 students in Grade 11 make up 21.0% of the total, and Grade 12 has the highest frequency of students at124, accounting for 31.4% of the total, with a valid percent and cumulative percent of 31.4% and 100.0%, respectively. Table 3 presents the frequencies and percentages of different racial categories: Asian, Black, Hispanic, White, and Other. The "Black" category has the highest frequency, with 280 students identified as Black, accounting for 70.9% of the total number. In Table 4, the frequencies and percentages related to students' demographics are presented: gender, SES, ESL, and SPED. There were 167 male students, accounting for 42.3% of the total students, and 228 female students, representing 57.7% of the total. Students from the low SES category accounted for 93.2% of the total number of students. Students receiving ESL services represented 19.7% of the total, and students receiving Special Education services represented 8.6% of the total.

Table 1
Participants by Schools (N = 395)

School	Frequency	Percent
1	32	8.1
2	136	34.4
3	11	2.8
4	87	22.0
5	64	16.2
6	65	16.5
Total	395	100.0

Table 2
Grade Levels (N = 395)

Grade Level	Frequency	Percent
9	112	28.4
10	76	19.2
11	83	21.0
12	124	31.4
Total	395	100.0

Table 3
Students by Race (N = 395)

Race/Ethnicity	Frequency	Percent
Asian	22	5.6
Black	280	70.9
Hispanic	74	18.7
White	16	4.1
Other	3	.8
Total	395	100.0

Table 4
Demographic Profile of Students (N = 395)

Variable	Attribute	Frequency	Percent
Gender	Male	167	42.3
	Female	228	57.7
SES	Low	368	93.2
	High	27	6.8
ESL	No	317	80.3
	Yes	78	19.7
SPED	No	361	91.4
	Yes	34	8.6

Data Analysis

Quantitative data was analyzed with performing descriptive statistics (frequencies, percentages, means, and standard deviations). Additionally, chi-square test, t test, Pearson correlation analysis, and regression analysis were performed. The results of the statistical tests are discussed in the Results section.

Braun and Clarke's (2012) six-stem thematic analysis was followed for the qualitative data analysis, which includes becoming familiar with the data, generating codes, constructing themes, reviewing, defining themes, and reporting findings. The researchers familiarized themselves with the data and engaged in multiple rounds of coding before assigning descriptive codes, which are defined as words or phrases that mark important statements related to research questions (Saldaña, 2011). Sutton and Austin (2015) define coding as the process of "identification of topics, issues, similarities, and differences that are revealed through the participants' narratives and interpreted by the researcher" (p. 228).

The coding process was done manually, allowing the researcher to reflect, analyze, and interpret while staying immersed in the data (Denzin & Lincoln, 1994). After generating the codes related to research questions and the theoretical framework, the researcher coded the material by looking for broad similarities in meaning between the participants' comments and the research questions, categorizing each similar grouping as a "bucket of codes" (Roller, 2016, p. 20). In other words, each code represented a bucket of similar responses. These groupings of similar responses allowed researchers to identify patterns or themes in the data overall. For instance, the response, "Edgenuity was easy to use" fell into the "positive comments" bucket. Then, the researcher extrapolated the theme "Teacher's and Peers' Roles" from codes in the Teacher Support Category [Buckets/Codes] – e.g., "The teacher impacted my experience positively."

In sum, the researcher identified shared features, or buckets/codes, in the responses, and then grouped the buckets/codes into second-level categories, which then became the themes. For instance, the theme "Comments about Edgenuity" was developed from codes in the "Edgenuity Platform buckets/codes – e.g., "Edgenuity does not teach," and "Learning through Edgenuity was very pleasant" – as well as from "Teacher Support Category" codes – e.g., "teachers teach not Edgenuity." After categorization, themes were identified in that theoretical framework and research questions could frame this process (Saldaña, 2009). This process allowed for an in-depth focus on data, resulting in outlining aspects of a phenomenon or rich descriptions of concepts related to research questions.

Results

The purpose of this study was to gain an in-depth understanding of students' perceptions of online learning during COVID-19 by examining their social presence, engagement, and academic achievements in online settings. In this section, findings will be presented by descriptive statistics followed by bivariate and multivariate results.

Descriptive Results

Table 5 provides information on the frequencies and percentages of different areas of study: English, Math, Science, Social Studies, Foreign Language, Health, and Other Subjects. The "Math" subject has the highest frequency of 106, meaning that 106 out of the 395 students took a math class.

Table 5
Area of Study (N = 395)

Area	Frequency	Percent
English	30	7.6
Math	106	26.8
Science	42	10.6
Social Stud	54	13.7
Foreign Lang	68	17.2
Health	63	15.9
Other Subjects	32	8.1
Total	395	100.0

Table 6 provides data on the responses to survey items represented by Sp1, Sp2, Sp3, Sp4, Sp5, Sp6, Sp7, Sp8, and Sp9. The highest two percentages within the "Strongly disagree" and "Strongly agree" rows are as follows: Sp9 has the highest "Strongly disagree" percentage amongst all with a 19.0% observation rate, which means students disagreed most strongly with the following statement: "Sp9. Online discussions help me to develop a sense of collaboration."

Sp6 has the highest "Strongly agree" percentage with a 14.9% observation rate, which means students agreed most strongly with the following statement: "Sp6. I felt comfortable interacting with other course participants."

Table 6
Attitude towards Social Presence (SP) (N=395)

Rating	Sp1 %	Sp2 %	Sp3 %	Sp4 %	Sp5 %	Sp6 %	Sp7 %	Sp8 %	Sp9 %
Strongly disagree	17.7	14.2	15.7	15.2	15.9	12.9	13.9	15.4	19.0
Disagree	19.2	20.3	18.5	20.5	18.5	18.7	16.7	15.2	15.2
Neither agree nor disagree	37.2	33.9	34.7	26.3	33.2	31.4	38.2	36.7	37.5
Agree	14.7	20.0	22.3	25.1	19.0	22.0	18.5	20.0	18.0
Strongly agree	11.1	11.6	8.9	12.9	13.4	14.9	12.7	12.7	10.4

Table 7 presents responses to 15 statements represented by Eng1, Eng2, Eng3, Eng4, Eng5, Eng6, Eng7, Eng8, Eng9, Eng10, Eng11, Eng12, Eng13, Eng14, and Eng15. The highest percentage in the "Strongly agree" row is 40.8%, and this is the percentage of students who indicated that they strongly agreed with the statement Eng1: “I follow the rules of the online class.” The highest rate of the "Strongly disagree" row is 36.2%, and it is the percentage of students who indicated that they strongly disagreed with the statement Eng9: “I feel bored by the online class.” The highest rate of the "Neither agree nor disagree" row is 35.4%, and it is the percentage of students who indicated that they strongly disagreed with the statement Eng15: “If I don’t know about a concept when I am learning in the online class, I do something to figure it out.”

Bivariate Results

The Chi-square test reveals important insights regarding the relationship between race and responses to statement Sp1 (Sp1. “Getting to know other course participants gave me a sense of belonging in the course.”) (see Table 8). Among participants who identified as "Black," 20.0% (or 56 students) strongly disagreed with Sp1. Additionally, 20.4% (or 57 students) disagreed with Sp1. Furthermore, 32.5% of respondents in the "Black" category (or 91 students) neither agreed nor disagreed with Sp1. The total number of responses within the "Black" category amounted to 280. The statistical analysis involved calculating the chi-square statistic ($\chi 2$), resulting in a value of 9.84 with 4 degrees of freedom. The associated p-value of 0.043 indicates a statistically significant relationship between race and responses to Sp1. In contrast, within the "Other" category, 48.7% of participants (or 56 students) neither agreed nor disagreed with Sp1, while 13.0% (or 15 individuals) agreed with Sp1. The "Other" category consisted of 115 students from all non-black races. Overall, the findings suggest a noteworthy association between race and responses to statement Sp1, particularly within the "Black" category.

Table 7
Attitudes towards Engagement (Eng) (N = 395)

	Engagement														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rating	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Strongly disagree	5.6	10.4	9.4	29.6	29.1	29.9	27.6	29.9	36.2	29.6	27.1	26.1	13.9	25.1	11.6
Disagree	8.6	14.2	11.4	18.0	21.3	20.5	20.0	24.3	20.0	19.5	23.0	21.5	21.0	22.8	16.2
Neither agree nor disagree	15.7	28.9	29.9	21.5	22.5	25.3	28.6	22.5	21.3	27.1	30.6	29.4	35.4	29.9	32.4
Agree	29.4	25.1	28.4	12.4	13.7	9.4	11.1	10.9	13.4	12.9	10.1	12.9	18.7	12.2	22.8
Strongly agree	40.8	21.5	21.0	18.5	13.4	14.9	12.7	12.4	9.1	10.9	9.1	10.1	10.9	10.1	17.0

Table 8
Chi-Square Test of the Relationship Between Race and Sp1 (N = 395)

Race	SP1							
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total	$\chi 2$ (df)	*p*
Black	56 (20.0)	57 (20.4)	91 (32.5)	43 (15.4)	33 (11.8)	280	9.84 (4)	.043
Other	14 (12.2)	19 (16.5)	56 (48.7)	15 (13.0)	11 (9.6)	115		
Total	70 (17.7)	76 (19.2)	147 (37.2)	58 (14.7)	44 (11.1)	395		

The analysis of Table 9 reveals several significant relationships between races and different variables. The most significant relationship is observed between race and Eng1 (Eng1. “I follow the rules of the online class”). The chi-square statistic ($\chi 2$) calculated for this relationship is 15.68 with 4 degrees of freedom. The associated p-value is 0.003, indicating statistical significance at the conventional threshold of 0.05. This finding suggests a strong relationship between race and responses to Eng1. Similarly, the second highest significant relationship is found between race and Eng4 (Eng4. “I like taking the online class”), with a chi-square statistic of 15.11 and a p-value of 0.004. This indicates a significant association between race and responses to Eng4. Furthermore, the third highest significant relationship is identified between race and Eng7 (Eng7. “I am interested in the work at the online class”), where the chi-square statistic is 17.14 and the p-value is 0.002, suggesting a statistically significant relationship between race and responses to Eng7.

Overall, these findings underscore the substantial impact of race on individuals' responses to variables Eng1, Eng4, and Eng7.

Table 9
Race and Other SP and Eng Relationships (N = 395)

Variables (relationships)		$\chi 2$ (*df*)	*p*
Race	SP3	11.24 (4)	.02*
Race	SP8	12.05 (4)	.17
Race	SP9	12.81 (4)	.12
Race	Eng1	15.68 (4)	.003**
Race	Eng4	15.11 (4)	.004**
Race	Eng7	17.14 (4)	.002**
Race	Eng8	13.73 (4)	.008**
Race	Eng9	10.02 (4)	.04*

Note: $p < .01$**; $p < .05$*

T-Test Results

Final grade averages for race categories are shown in Table 10. The highest mean is observed for the White category with a mean of 76.63. This indicates that, on average, individuals belonging to the White racial category have relatively higher scores or ratings compared to other racial categories in the context of the measured variable.

The second highest mean is observed for the Hispanic category with a mean of 72.5159. This suggests that, on average, individuals belonging to the Hispanic racial category have relatively higher scores or ratings compared to some other racial categories, but lower than the White category.

Table 10
Final Grade Averages of Race Categories (N = 395)

Race	*N*	*Mean*
White	16	76.6331
Black	280	62.1925
Asian	22	66.8927
Hispanic	74	72.5159
Other	3	59.3467

When students in the Black category were compared to the other races, the difference in final grades was found to be statistically significant at $p < .001$. The statistical analysis revealed an F-value of 19.71 and a t-value of -3.12, with 393 degrees of freedom. As shown in Table 11, the mean final grade for the Other race group was 71.6, while the mean final grade for the Black race group was 62.1. This significant difference in means further supports the finding that there is a statistically significant disparity in final grades between Black students and students from all other racial groups combined.

Table 11
Black and Other Race Categories Comparison (N = 395)

Grade	Race	N	Mean	SD	Std. Error Mean
Final Grade	Black	280	62.19	29.39	1.76
	Other	115	71.67	21.88	2.04

Pearson Correlation Analysis

Among the various relationships examined, several statistically significant associations were identified, as shown in Table 12. First and foremost, a noteworthy correlation was observed between Final_Grd and SP_Ovrl, with a correlation coefficient of 0.186. This positive correlation signifies a moderate relationship between overall student perception of their social Presence (SP_Ovrl) and their final grades (Final_Grd). Secondly, a strong positive correlation of 0.738 was found between OpComSP and GrpCohSP, indicating a high relationship between open communication (OpComSP) and group cohesion (GrpCohSP). Lastly, a correlation coefficient of 0.486 was noted between SP_Ovrl and BehEng, suggesting a moderate relationship between overall social presence (SP_Ovrl) and behavioral engagement (BehEng). These findings highlight the significance of these relationships in understanding the connections between variables such as students' social presence, grades, communication, cohesion, and behavioral engagement.

Table 12
Correlation Matrix (N = 395)

	Final_ Grd	Aff ExpSP	OpCom SP	GrpCoh SP	SP_ Ovrl	Beh Eng	Emo Eng	Cog Eng	ENG_ Ovrl
Final_Grd	1								
AffExpSP	.143**	1							
OpComSP	.200**	.710**	1						
GrpCohSP	.157**	.709**	.738**	1					
SP_Ovrl	.186**	.889**	.909**	.905**	1				
BehEng	.224**	.397**	.441**	.475**	.486**	1			
EmoEng	.161**	.564**	.627**	.583**	.657**	.473**	1		

CogEng	.069	.527**	.585**	.613**	.639**	.547**	.654**	1	
ENG_Ovrl	.152**	.603**	.670**	.674**	.721**	.716**	.858**	.887**	1

**. Correlation is significant at the 0.01 level (2-tailed). N=395 for all correlations.

Multivariate Results

The regression analysis conducted using SPSS focused on investigating the relationship between the dependent variable, Final Grade, and several predictor variables. The overall model was found to be statistically significant at a level of $p < 0.001$, with an F-value of 5.26 and 7 degrees of freedom. The coefficient of determination (R2) indicated that the predictor variables collectively accounted for 8% of the variance in the Final Grade.

Among the predictor variables, two variables, OpComSP and BehEng, demonstrated statistically significant relationships with the Final Grade, as shown in Table 13. Specifically, OpComSP had a coefficient of 4.504, a t-value of 2.131, and a p-value of 0.034, suggesting a significant impact on the Final Grade. Similarly, BehEng had a coefficient of 8.382, a t-value of 3.320, and a p-value of less than 0.001, indicating a strong and significant influence on the Final Grade. These findings highlight the meaningful effects of OpComSP and BehEng on predicting the Final Grade within the regression model.

Table 13

Linear Regression Results (N = 395)

Variables	Coefficients			t	Sig.
	B	Std. Error	Beta		
(Constant)	41.370	5.624		7.356	<.001
AffExpSP	-.369	2.124	-.013	-.174	.862
OpComSP	4.504	2.113	.175	2.131	.034
GrpCohSP	.551	2.193	.021	.251	.802
BehEng	8.382	2.524	.302	3.320	<.001
EmoEng	5.803	3.569	.218	1.626	.105
CogEng	-1.863	3.905	-.068	-.477	.633
ENG_Ovrl	-10.337	8.858	-.315	-1.167	.244

In contrast, the remaining predictor variables, namely AffExpSP, GrpCohSP, EmoEng, CogEng, and ENG_Ovrl, did not exhibit statistically significant predictive power. The p-values associated with these variables exceeded the threshold of 0.05, indicating that they did not have a significant impact on the Final Grade in the regression model.

Results and Findings from Qualitative Data

The analysis of the responses to an open-ended question ("What are some of the factors that impacted your learning experience in this class? Positive or negative! Please feel free to share details so we can take those into consideration") revealed that the responses were related to the platform, online learning environment, and comments about teachers. There were 210 student responses to this open-ended question. Of those responses, 184 were valid entries, and they were organized under three themes: 1) teachers' and peers' roles, 2) comments about Edgenuity, and 3) experience with an online learning environment. The categorization of entries may be found in Appendix A. Each theme is discussed below.

Theme 1: Teacher's and Peers' Roles

Responses from open-ended questions showed that the teachers' role was important for students to stay engaged in online learning. When teachers supported the students, the students reported positively. For instance, "The teacher impacted my experience positively." Students also shared that they liked having support from teachers (e.g., "Teacher presence helped them stay motivated," "Teacher always had explained well for us to understand," "Our teacher gave us incentives that allowed me to want to do my work and earn something," and "The teacher was always encouraging with everyone!"). Some students commented that not having a teacher made the learning process harder because they could not get the help they needed. For instance, comments relating to the lack of teacher presence included the following: "I wish I had a real teacher instead of taking it from Edgenuity," "I do not have an actual teacher for the class, so it is very difficult," or "If I do not understand something I cannot get help." Some of the comments regarding peers included "Support from peers were helpful" or "I got to understand some Spanish conversations between my Spanish speaking friends."

As seen from the comments, students were more encouraged to learn in the online courses where teachers were available to provide support. On the contrary, when teachers were not present, students expressed their frustration with the online learning platform and online classes.

Theme 2: Comments about Edgenuity

Findings from the open-ended question revealed that students commented about the course design and usefulness of the online platform. Comments were either positive or negative. Some of the positive comments included the following: "Learning through Edgenuity was very pleasant because they did everything possible for you to understand" or "I feel like Edgenuity is easier to learn than a teacher trying to explain something that I know or I won't be able to understand." Positive statements support the fact that the students were able to engage with the platform and found it to be effective in learning, showing positive engagement. Some of the strong negative comments were "Edgenuity does not teach, teachers do. This should be removed from the curriculum and NOT be replaced with another online course just as useless as Edgenuity" or "I highly dislike Edgenuity it is not a good site." Negative statements on Edgenuity demonstrate students' disengagement with online learning.

Theme 3: Experience with an Online Learning Environment

Students' comments about online learning varied as well. Some students reported having positive experiences with online learning. For instance, one of the students shared, "What I feel like some of the factors that impacted my [online] learning experience in a positive way because it made me learn new stuff every day and made mostly everything was clear that I did not have questions." Other students said, "It was easy to keep up with the online course material," "Getting to learn different things that you really get to learn," and "it is great to review [materials]." Some of the negative comments were "I do not like online classes, they are boring and long, especially sitting here looking at a screen for hours. I would rather do paperwork learned that I will never want to do another online course because I do not think it gives me all the information I need. I also do not learn much from it" or "I would have preferred a real class. I felt more stressed than engaged about it since I was not a fan of completing it at home."

In sum, the findings from the open-ended question revealed that the students preferred engagement either with the teachers or the platform. The teachers played a great role in whether or not students had a positive experience with online learning. Some comments regarding online learning and the online platform showed that students' learning preferences played a role in whether they liked online or in-person learning.

Discussion

This mixed-methods study aimed to examine high-school students' perceptions of online learning. The first research question that guided the study was "How do students feel about their social presence in asynchronous online courses during the COVID-19 pandemic?" The findings from the survey results showed that social presence was an important predictor variable that had a significant positive impact on the final grade. When the means of final grades were compared, the Black students' mean score was lower than students from other races. This finding is aligned with Sofianidis et al.'s (2021) study that reported that, after the pandemic, the learning outcomes of students from underrepresented and low socioeconomic status decreased because those students had experienced greater challenges.

The responses to the open-ended question also showed that social presence was essential for students to have a positive online learning experience. Students shared that they liked having support from teachers and peers, which resulted in their reporting positive experiences with the online classes that they had taken. This finding is consistent with Yates et al.'s (2020) study, which reported that high school students valued supportive pedagogical strategies from teachers during the pandemic when they were engaged in online learning. Additionally, this study also supports Marcus et al.'s (2021) study's findings, which concluded that when students had a positive relationship with their teacher, it encouraged a positive attitude among students, which in turn helped them deal with the challenges of online learning. This finding also supports the

transactional distance theory because the dialogue and interaction with teachers and online learners served as a significant aspect of students' positive experiences with students. When teachers provided support, the transactional distance decreased (Moore, 1993) and students were more motivated to learn since the learners did not have the opportunity of having face-to-face classroom interactions with the instructors.

As for the findings in relation to the second research question ("How do students feel about their engagement in asynchronous online courses during the COVID-19 pandemic?"), the results of the survey showed that behavioral engagement was one of the predictor variables that positively affected final grades. Students' responses to the open-ended question revealed that their responses were controversial. Some students had positive experiences with online learning because some of them could keep up with the online course materials and they could learn different things. Relevant literature (e.g., Chiu, 2021; Tsai et al., 2021) also supports the fact that student engagement, either behavioral, emotional, or cognitive, serves as an essential factor that affects students' motivation to learn and to succeed in online learning. Students in this study also reported that online learning was overwhelming for them because they had to complete tasks by themselves with limited support from teachers.

The statistical analysis showed that the most significant relationship is observed between race and Eng1 (Eng1. "I follow the rules of the online class"). Compared to other races, most Black students (40.40%) reported that they could not follow the rules of online classes, while only 27.40% reported that they could follow those rules. This finding supports the relevant literature (e.g., Jou et al., 2022) that demonstrated that the pandemic closure of schools placed the burden of education mostly on students and their families. Furthermore, students from underrepresented groups were more affected, resulting in less motivation to learn in an online setting.

Several students' responses to the open-ended questions also showed that students demonstrated emotional engagement with online learning because some of them liked taking online classes, while others found online classes boring. The Pearson correlation results also showed that final grade and emotional engagement items were highly correlated, demonstrating that students in this study experienced either positive or negative psychological reactions toward online learning. This finding supports the assertions in Marcus et al. (2021) that the role of emotional engagement should not be undermined in online learning. Emotional engagement is especially important to examine during the pandemic because students could display strong emotional engagement towards online learning and that engagement could be positive when they could complete the tasks independently (Marcus et al., 2021).

In sum, the present study's findings were consistent with relevant literature and the principles of Moore's (1993) theory of transactional distance. The essence of the theory of transactional distance is the role of interactions and communication in an online learning environment. This study also highlighted the importance of the role of social presence (i.e., students' dialogue and interactions with the teacher) for understanding the course content and getting the support they needed.

Conclusion

The COVID-19 pandemic brought unique challenges to K-12 education, placing a great burden on students and their families. The sudden transition to online distance education was challenging for most students in this study, especially students from minority groups, because even prior to the pandemic, these students struggled from lack of access to educational resources. The present study explored students' perceptions of online learning and reported that regardless of the availability of blended or fully asynchronous online learning, the pandemic closure of schools placed the burden of education mostly on students. The roles of instructors and peers were the positive factors that contributed to a positive perception of online learning.

The researchers reviewed the findings through the lens of transactional distance theory (TDT) to contribute to distance learning research and literature with the aim of examining students' satisfaction with fully online courses and to measure students' autonomy and satisfaction with an online platform. The present study's findings demonstrated the relevance to TDT because the themes were in tandem with Moore's Theory of Transactional Distance. The role of teachers and peers can be categorized under the concept of "dialogue" because participants in this study found teacher support and feedback in online learning to be important. Another qualitative variable, "autonomy," was also related because several students mentioned that the online learning environment encouraged students to learn new things every day by placing them in charge of their learning. The online course design on the platform can be attributed to TDT's "structure" concept because several students reported that the platform was organized in a manner that made the learning process easy. However, some students reported that the structured online learning through the platform did not meet their needs because they felt that they could not gain knowledge. This finding demonstrates that enforcing structured learning through a platform may negatively affect the quality of interactions [dialogue] and learner autonomy. Therefore, the researchers recommend the revision of the theory's qualitative variables so that they reflect the needs of today's online learners. Future research could also examine students' emotional engagement with online courses to foster their participation in online learning. Additional studies using other forms of research are necessary in order to better inform the future of online learning.

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APPENDIX

A. Qualitative Responses by Themes

210 out of 395 students responded to the open-ended question. 184 responses were categorized by themes. The remaining 26 responses could not be categorized as they were unrelated entries such as N/A, yes, no, etc.

Qualitative Responses by Themes

Theme	Positive	Negative	Total
Edgenuity	14	33	47
Online Learning	56	52	108
Support - Teacher/Peer	19	10	29