

Students Engagement as A Predictor of Learning Satisfaction in A Synchronous Hybrid Learning Space

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Abstract

This study focuses on the improvement of student engagement and learning satisfaction in synchronous hybrid learning spaces, which combine traditional on-site and online learning. While previous research has explored student engagement and learning satisfaction in on-site and online learning environments separately, there is a lack of literature investigating these factors in the context of synchronous hybrid learning. This study aims to fill this gap by examining the relationship between student engagements and learning satisfaction in synchronous hybrid learning spaces. A cross-sectional method was used to collect quantitative data from 169 students at a Technical and Vocational Education and Training (TVET) institution in Kuching, Sarawak. The study findings indicate that student engagement dimensions, including emotional, cognitive, and behavioral aspects, are predictive of learning satisfaction in both traditional on-site and online settings, as well as in synchronous hybrid learning spaces. These results have practical implications for the design and implementation of synchronous hybrid learning, providing valuable insights for educational practice and policy. By understanding and leveraging student engagement, educators and policymakers can enhance the effectiveness and value of synchronous hybrid learning environments.

Keywords

Student engagement;
student learning
satisfaction;
synchronous hybrid
learning space



I. Introduction

Existing literature consistently demonstrates the importance of student learning satisfaction in relation to academic achievement, successful online learning, and the continuation of online learning after transitioning from traditional teaching (Dhaqane & Afrah, 2016; Rajeh et al., 2021; She et al., 2021). Numerous researchers have investigated the factors influencing student learning satisfaction in both offline and online learning environments. Specifically, engagement competencies, including cognitive, emotional, and behavioral aspects, have been identified as predictors of learning satisfaction in traditional offline and online learning contexts (Fisher et al., 2018; Gao et al., 2020; Kim & Kim, 2021; Rajabalee & Santally, 2020). Put simply, students who actively engage in the learning process are more likely to report higher levels of satisfaction. However, it is important to note that these theories primarily apply to offline and fully online learning spaces, as highlighted by Rajabalee and Santally (2020) and Raes, Detienne, Windey, and Depaepe (2019). Insufficient attention has been given to studying the relationship between student engagement and learning satisfaction in synchronous hybrid settings, where both in-person and remote students participate simultaneously (Raes, 2021; Rajabalee & Santally, 2020; Wang et al., 2017; Xiao et al., 2020).

The global COVID-19 pandemic has had a profound impact on the field of education, necessitating significant changes in educational systems worldwide. Traditional in-person teaching methods have rapidly transitioned to digital formats, requiring educational institutions to adopt new paradigms and offer more flexible learning options, such as synchronous hybrid learning. However, there is a need for studies that explore the relationship between student engagement and learning satisfaction in synchronous hybrid learning environments in order to fully understand and leverage the potential of this approach. Therefore, the purpose of this study was to investigate the connection between student engagement, as measured by various dimensions adapted from the Student Engagement Scale (SES) developed by Doğan (2014), and student learning satisfaction, as measured by the Hexagonal E-Learning Assessment Model (HELAM) proposed by Ozkan and Koseler (2009). A quantitative research design was employed to examine the engagement competencies of 169 students at a Technical and Vocational Education and Training (TVET) institution located in Kuching, Sarawak. The study aimed to address specific research questions and test the null hypotheses related to student satisfaction with synchronous hybrid learning.

1.1 Research Questions

The following is a list of research questions proposed in this study.

- RQ: How does student engagement influence student learning satisfaction in a synchronous hybrid learning space?
- RQ1: How does emotional engagement influence student learning satisfaction in a synchronous hybrid learning space?
- RQ2: How does cognitive engagement influence student learning satisfaction in a synchronous hybrid learning space?
- RQ3: How does behavioural engagement influence student learning satisfaction in a synchronous hybrid learning space?

1.2 Research Hypotheses

From the research questions identified, the following is a list of null hypotheses of this study:

- Ho: There is no significant influence of student engagement on student learning satisfaction in a synchronous hybrid learning space.
- Ho1: There is no significant influence of emotional engagement on student learning satisfaction in a synchronous hybrid learning space.
- Ho2: There is no significant influence of cognitive engagement on student learning satisfaction in a synchronous hybrid learning space.
- Ho3: There is no significant influence of behavioural engagement on student learning satisfaction in a synchronous hybrid learning space.

II. Review of Literature

2.1 Synchronous Hybrid Learning

The COVID-19 pandemic has significantly transformed the field of education, necessitating a departure from traditional offline classrooms to an online learning environment. This shift has posed numerous challenges for students, teachers, and educational institutions as they strive to adapt to the new reality. In response to these challenges, a more flexible approach to learning known as hybrid learning has emerged (Ng, 2021). Hybrid learning combines the strengths of offline and online learning by

alternating between physical classroom sessions and online learning platforms, allowing students to engage with content asynchronously, resulting in an optimal learning experience (Boyarsky, 2020; Wang et al., 2017).

The term "synchronous" was later introduced to describe the hybrid classroom model, where in-person and remote learning take place concurrently, with lessons delivered synchronously to both groups of students. This approach is known as synchronous hybrid teaching (Wang et al., 2017). The pandemic has expedited the adoption of synchronous hybrid learning as a potential solution to overcome the limitations of offline, online, and asynchronous hybrid learning methods, enabling the coexistence of in-person and remote learning through the integration of emerging technologies in the context of the 4th industrial revolution (Ng, 2021; Times Higher Education, 2021).

The outbreak of the Covid-19 virus has highlighted the vulnerability of the educational system and emphasized the need for students to develop digital skills to remain relevant in the modern world (Bozkurt & Sharma, 2020; Omotayo & Haliru, 2020; Times Higher Education, 2021). A McKinsey survey conducted between 2020 and 2021, which involved 100 executives across various industries and countries, revealed that nine out of ten organizations plan to incorporate a combination of remote and on-site work in the post-pandemic future (Alexander et al., 2021). As workplaces transition into hybrid models, the adoption of hybrid learning will continue to provide valuable training to equip students with the skills needed for the 21st-century workplace beyond the pandemic (Timlon, 2021).

2.2 Student Engagement

Student engagement encompasses a student's commitment to learning, active interaction with course content, teachers, and peers, as well as their participation in the educational environment to achieve desired outcomes (She et al., 2021; Rajabalee & Santally, 2020; Satuti et al., 2020). Extensive research has emphasized the multidimensional nature of student engagement and its significant relationship with positive learning outcomes, such as increased student learning satisfaction, academic success, and higher retention and completion rates (Fredricks, Blumenfeld, & Paris, 2004). To comprehend student engagement fully, it is essential to consider its three dimensions: emotional engagement, cognitive engagement, and behavioral engagement (Fredricks et al., 2004).

Emotional engagement refers to the students' subjective experiences of interest, boredom, happiness, sadness, and worries related to their learning activities or environment (Fredricks et al., 2004). It encompasses students' reactions to learning and the emotions associated with their academic performance (Doğan, 2014).

Cognitive engagement focuses on the willingness and ability of students to undertake learning tasks and the effort they invest in them (Corno & Mandinach, 1983). Doğan (2014) describes cognitive engagement as students' commitment to learning and their strategic decision-making processes related to their learning. Similarly, Fredricks et al. (2004) define cognitive engagement as students' willingness and ability to engage in self-directed learning, which is closely linked to motivation.

Behavioral engagement refers to students' observable behaviors of involvement, effort, attention, perseverance, and positive conduct during learning activities (Fredricks et al., 2016). Similarly, Doğan (2014) associates behavioral engagement with students' active participation and behaviors that indicate their engagement in learning.

Extensive research emphasizes the crucial role of student engagement in effective learning across different educational modes (Fisher et al., 2018). Positive student engagement has been found to have significant impacts on learning satisfaction, academic success, retention, and completion rates (Gao et al., 2020; Kim & Kim, 2021; Rajabalee & Santally, 2020). In other words, students who lack engagement in the learning process are more likely to experience lower levels of learning satisfaction, academic setbacks, and higher attrition rates.

A study by Ji, Park, and Shin (2022) investigated the relationship between engagement, readiness, and satisfaction in a synchronous online second language learning environment during the early phase of the COVID-19 pandemic, from the beginning to the end of the semester. Their findings revealed that emotional, cognitive, and behavioral engagement were significant predictors of learning satisfaction at the end of the semester, but not at the beginning, suggesting that readiness also plays a crucial role in online course satisfaction.

Furthermore, a study examining engagement in a synchronous hybrid classroom, which included both in-person and online students, found that in-person and visible remote students demonstrated higher levels of engagement compared to remote students who were not visible on the screen (Raes, 2021). This finding aligns with the research by Huang, Zhao, Shu, and Huang (2017), who discovered that remote students felt excluded from the synchronous hybrid learning environment when physically separated from the on-site class, particularly when they encountered technological challenges without immediate assistance.

Therefore, measuring the level of student engagement allows educational institutions and instructors to adapt their practices in response to changes in student engagement, commitment, and attitudes towards learning (Eliveria, Serami, Famorca, & Cruz, 2019; Mandernach, Donnelly-Sallee, & Dailey-Hebert, 2011).

2.3 The Influence of Student Engagement on Student Learning Satisfaction

Student engagement plays a vital role in ensuring the quality of online learning, as it has been shown to positively impact student learning satisfaction and indirectly influence student perseverance and retention (Kim & Kim, 2021; Rajabalee & Santally, 2020). Previous studies have consistently demonstrated the correlation between student engagement and learning satisfaction, highlighting its significance as a strong predictor of student satisfaction in both physical and online learning environments (Chen & Stotlar, 2012; Obiosa, 2020; She et al., 2021). For online learning specifically, Trisanti et al. (2021) found that emotional and cognitive engagement significantly influenced student learning satisfaction. However, behavioural engagement had no significant effect, possibly due to reduced interaction with teachers and peers compared to face-to-face learning (Trisanti et al., 2021).

In traditional offline learning, student engagement has been consistently correlated with and predictive of student learning satisfaction (Howson & Matos, 2021; Obiosa, 2020). Pelletier et al. (2016), however, reported no significant association between student engagement and learning satisfaction in on-site classrooms, with expected grades being the primary predictor of satisfaction.

In the context of hybrid learning, Xiao et al. (2020) found that only cognitive engagement significantly predicted student learning satisfaction, while emotional and behavioural engagement did not. This finding may be attributed to the flexible nature of hybrid learning, which allows learners to choose and explore the learning options that best suit their preferences. The results may also be influenced by self-selection bias, as learners opt for fully online, fully on-site, or hybrid learning options. Consequently, further

research is needed to validate the findings of Xiao et al. (2020) regarding the sole predictive power of cognitive engagement for student learning satisfaction in the hybrid learning environment.

2.4 Conceptual Framework

A conceptual framework serves as a visual representation of the researcher's comprehension of key variables and their potential interconnections in a study (Regoniel, 2015; Swaen, 2022). In this study, a conceptual framework has been developed based on an extensive review of relevant literature to illustrate the anticipated relationship between student engagement and student learning satisfaction within a synchronous hybrid learning environment. Figure 1 presents the main variables of the study, with student engagement being the independent variable and student learning satisfaction as the dependent variable.

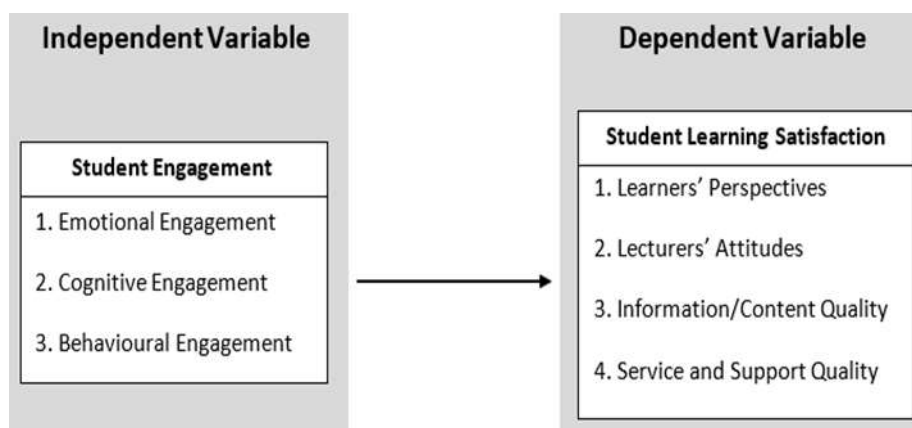


Figure 1. Conceptual Framework

III. Research Method

This study employed a descriptive research design to collect quantitative data from a sample population and conduct statistical analysis to examine the impact of student engagement on student learning satisfaction in synchronous hybrid learning spaces. A cross-sectional method was utilized to gather quantitative data from a sample of 169 Technical and Vocational Education and Training (TVET) students at a specific point in time. The data collection instrument consisted of a 6-point Likert scale online questionnaire, which assessed the relationship between student engagement and student learning satisfaction in the synchronous hybrid learning environment.

To ensure accurate findings, the online questionnaire was adapted from two validated and reliable scales: the Student Engagement Scale (SES) developed by Doğan (2014) and the Hexagonal E-Learning Assessment Model (HELAM) developed by Ozkan and Koseler (2009). The questionnaire encompassed three main components: students' profiles, dimensions of student engagement, and dimensions of student learning satisfaction. The students' profile section included three items: academic department, academy program, and gender.

The dimensions of student engagement were divided into three subscales: emotional engagement (ten items), cognitive engagement (fourteen items), and behavioral engagement (nine items), adapted from Doğan (2014). The dimensions of student learning satisfaction were assessed across four categories: learners' perspectives (ten items), lecturer attitudes (twelve items), information content and quality (fifteen items), and service and support quality (ten items), adapted from Ozkan and Koseler (2009).

A pilot test was conducted to establish the reliability of the research instrument, and the Cronbach's alpha reliability coefficient for the online questionnaire with a 6-point Likert scale was found to be .972, indicating high reliability.

The initial step in the data collection process involved seeking permission from the director and department head of the targeted TVET institute to gather data from students in the mathematics, science, and computer departments. Once permission was obtained, the potential participants were provided with information about the study objectives and given the opportunity to consent or decline participation. To facilitate data collection, the course lecturers who teach these subjects were contacted via email and provided with an online questionnaire link, accompanied by a brief explanation of the study's purpose.

Subsequently, the course lecturers distributed the online questionnaire link to the students who agreed to take part in the study. This distribution occurred through various channels, including the CIDOS e-learning portal, email, and WhatsApp Web. The questionnaire link was made available for a duration of two weeks to allow sufficient time for student participation. Upon completion of data collection using Google Forms, the collected quantitative data was organized and analyzed using the Statistical Package for Social Sciences (SPSS).

IV. Discussion

4.1 Respondent Profile

Table 1 presents the distribution of student respondents based on various demographic factors. The findings indicate that the highest percentage of participants (21.9%, N=37) belonged to the Electrical Engineering Department. Conversely, the Commerce Department had the lowest percentage of student respondents (7.1%, N=12).

When considering the academy programmes, the highest percentage of student participation (16.6%, N=28) was observed among students enrolled in the Diploma in Information Technology (Digital Technology) programme. On the other hand, the lowest percentage of student participation (3.0%, N=5) was among students in the Diploma in Business Studies programme.

Out of the total 169 students who completed and returned the online questionnaire, the majority of respondents were male (52.7%, N=89). This indicates a gender diversity within the sample. Overall, the collected data exhibits a significant diversity of TVET students across different academy departments, academy programmes, and gender categories.

Table 1. Respondent Profile (N=169)

Profile	Description	Frequency	Percentage
Academy Department	Civil Engineering Department	35	20.7%
	Electrical Engineering Department	37	21.9%
	Information Technology and Communication Department	28	16.5%
	Mechanical Engineering Department	41	24.3%
	Commerce Department	12	7.1%
	Petrochemical Engineering Department	16	9.5%
	Academy Program	Diploma in Civil Engineering	12
Diploma in Building Services Engineering		11	6.5%
Diploma in Geomatics		12	7.1%
Diploma in Electronic Engineering (Communication)		18	10.7%

	Diploma in Electrical & Electronics Engineering	19	11.2%
	Diploma in Information Technology (Digital Technology)	28	16.6%
	Diploma in Mechanical Engineering	8	4.7%
	Diploma of Mechanical Engineering (Automotive)	11	6.5%
	Diploma in Mechanical Engineering (Manufacturing)	6	3.6%
	Diploma in Mechanical Engineering (Air Conditioning and Refrigeration)	16	9.5%
	Diploma in Accountancy	7	4.1%
	Diploma in Business Studies	5	3.0%
	Diploma in Process Engineering (Petrochemicals)	16	9.4%
Gender	Male	89	52.7%
	Female	80	47.3%

4.2 Inferential Findings of Student Engagement on Student Learning Satisfaction in Synchronous Hybrid Learning Space

Table 2 presents the inferential findings regarding the relationship between student engagement and student learning satisfaction in a synchronous hybrid learning space. The analysis revealed that the predictor variable, emotional engagement, was statistically significant and included in the regression model at $p < .05$. The correlation coefficient between the predictor variable and student learning satisfaction in a synchronous hybrid learning space was found to be .796, indicating a strong positive relationship.

Moreover, the coefficient of determination (R^2) value of .633 indicates that approximately 63.3 percent of the variation in student learning satisfaction in synchronous hybrid learning spaces can be attributed to emotional engagement. This highlights the substantial impact that emotional engagement has on students' satisfaction with their learning experiences.

The results of the ANOVA test confirmed that there is a significant relationship between the predictor variable (emotional engagement) and student learning satisfaction, at the $p < .05$ level of significance. Specifically, the test revealed that emotional engagement significantly predicts student learning satisfaction, as indicated by the significant F-value [$F(1, 167) = 287.94, p < .05$].

The analysis extended to include cognitive engagement as a predictor variable, which was found to be significant at $p < .05$. The correlation coefficient between cognitive engagement and student learning satisfaction in a synchronous hybrid learning space was .932, indicating a strong positive relationship. The coefficient of determination (R^2) value of .869 demonstrated that approximately 86.9 percent of the variation in student learning satisfaction can be explained by cognitive engagement.

The ANOVA test results confirmed the significant correlation between cognitive engagement and student learning satisfaction at the $p < .05$ level of significance. Specifically, the test yielded a significant F-value [$F(1, 167) = 1105.02, p < .05$], indicating that cognitive engagement significantly predicts student learning satisfaction.

Moving on to behavioural engagement, the findings were also included in the regression model at $p < .05$. The correlation coefficient between behavioural engagement and student learning satisfaction in a synchronous hybrid learning space was .860, signifying a strong positive relationship. The coefficient of determination (R^2) value of .740 indicated that approximately 74 percent of the variation in student learning satisfaction is attributable to behavioural engagement.

Consistent with the previous analyses, the ANOVA test results revealed a significant relationship between behavioural engagement and student learning satisfaction at the $p < .05$

level of significance. Specifically, the test demonstrated a significant F-value [$F(1, 167) = 476.17, p < .05$], indicating that behavioural engagement significantly predicts student learning satisfaction.

Table 2. Coefficient value for the influence of student engagement on learning satisfaction

Independent variable	Dependent Variable: Learning Satisfaction		
	β	β	β
Emotional Engagement	.796		
Cognitive Engagement		.932	
Behavioural Engagement			.860
R	.796	.932	.860
R ²	.633	.869	.740
Adjusted R ²	.631	.868	.739
F value	287.94*	1105.02*	476.17*
Durbin Watson	1.99	1.66	1.94

Note:

*Significant at the level of .05

4.3 Hypotheses Result of Student Engagement on Student Learning Satisfaction in a Synchronous Hybrid Learning Space

Table 3 presented the findings pertaining to the hypotheses regarding student motivation and student learning satisfaction in a synchronous hybrid learning space. The analysis revealed a positive and significant correlation between intrinsic goal orientation and student learning satisfaction in the synchronous hybrid learning environment ($r = .796, p < .05$). Consequently, the null hypothesis Ho1(a), which states that there is no significant influence of emotional engagement on student learning satisfaction in a synchronous hybrid learning space, was rejected.

Similarly, the analysis indicated a positive and significant correlation between cognitive engagement and student learning satisfaction in the synchronous hybrid learning space ($r = .932, p < .05$). Therefore, the null hypothesis Ho1(b), proposing that there is no significant influence of cognitive engagement on student learning satisfaction in a synchronous hybrid learning space, was also rejected.

Furthermore, the analysis demonstrated a positive and significant correlation between behavioural engagement and student learning satisfaction in the synchronous hybrid learning space ($r = .860, p < .05$). As a result, the null hypothesis Ho1(c), which posits that there is no significant influence of behavioural engagement on student learning satisfaction in a synchronous hybrid learning space, was rejected as well.

Table 3. Hypotheses result from student engagement in student learning satisfaction

Hypotheses	Description	Result
Ho ₁	There is no significant influence of emotional engagement on student learning satisfaction in a synchronous hybrid learning space.	Rejected
Ho ₂	There is no significant influence of cognitive engagement on student learning satisfaction in a synchronous hybrid learning space.	Rejected
Ho ₃	There is no significant influence of behavioural engagement on student learning satisfaction in a synchronous hybrid learning space.	Rejected

4.4 The Influence of Student Engagement on Student Learning Satisfaction in a Synchronous Hybrid Learning Space

The inferential findings of this study reveal that student engagement competencies play a significant role in predicting student learning satisfaction in a synchronous hybrid learning space. Notably, cognitive engagement emerges as the strongest predictor, accounting for 86.9 percent of the variance in student satisfaction. Cognitive engagement refers to students' willingness, ability, and effort to undertake learning tasks, as described by Corno and Mandinach (1983) and Doğan (2014). This competency is particularly crucial in a synchronous hybrid learning space, where students must actively plan, organize, and navigate various learning options available to them.

Furthermore, behavioural engagement explains 74 percent of the changes in student learning satisfaction. Positive behaviors related to attentiveness and active participation in the learning process contribute to higher satisfaction in a synchronous hybrid learning environment. Additionally, emotional engagement accounts for 63.3 percent of the variance in student learning satisfaction. This indicates that students' satisfaction is influenced by their overall learning experience, the services and facilities provided by the institution, and their interactions with others.

These findings demonstrate that student engagement, which has been widely recognized as a predictor of learning satisfaction in traditional and online classrooms, also holds true in synchronous hybrid learning spaces. The integration of the best elements from both offline and online learning environments in a synchronous hybrid approach can offer numerous benefits. When effectively designed and implemented, this flexible, accessible, and engaging learning space fosters rich teaching presence, social presence, and cognitive presence (Wang et al., 2017). It promotes the development of study habits among remote learners, enhances accessibility to learning materials, and integrates educational technology tools to enhance the overall learning experience (Romero-Hall & Vicentini, 2017). It also facilitates improved communication, supports dynamic interactions, encourages multiple perspectives, enhances social competencies, and provides immediate teacher-student feedback (Priess-Buchheit, 2020). Moreover, the simultaneous presence of offline and online students fosters a seamless student experience, increases course versatility, and enhances accessibility (Angelone, Warner, & Zydney, 2020).

In summary, student engagement, which has been identified as a predictor of learning satisfaction in traditional and online classrooms, remains applicable in synchronous hybrid learning spaces. Both offline and online students require competencies in cognitive, behavioural, and emotional engagement to achieve a fulfilling learning experience. These competencies are equally important in both traditional and online learning environments.

The findings of this study contribute to the limited body of research exploring the relationships between student engagement and satisfaction in synchronous hybrid learning spaces. One of the few quantitative studies in this area is 'What makes learners a good fit for hybrid learning? Learning competencies as predictors of experience and satisfaction in hybrid learning space' by Xiao et al. (2020). Their study focused on 211 students enrolled in a hybrid finance course at Shanghai Open University. In contrast to the present study, Xiao et al. (2020) found that cognitive engagement was the sole strong predictor of hybrid learner satisfaction, while behavioural and emotional engagement did not significantly predict satisfaction in the hybrid learning setting. The discrepancy in results can potentially be attributed to various contextual factors, including differences in age groups, course levels, student demographics, instructors, curriculum, and course quality (Jasper, 2021; Xiao et al., 2020).

Several reasons may account for the differences observed between the study by Xiao et al. (2020) and the current study. Firstly, the participants in the present study were TVET students aged 18 to 21, who are digital natives with strong digital literacy skills and prior experience with synchronous hybrid learning since the early phase of the COVID-19 pandemic. Moreover, this study was conducted during the endemic phase of the pandemic. Conversely, the participants in the study by Xiao et al. (2020) were aged 20 to 60, with 59 percent majoring in finance and 40.8 percent in other fields. They were intentionally enrolled in a hybrid learning finance course, specifically designed to introduce them to hybrid learning as they had no prior experience in this mode. These differences in sample profiles between the two studies could contribute to the partial discrepancy in findings.

Additionally, the respondents in the present study were TVET students who attended synchronous hybrid lectures both offline and online simultaneously. In contrast, Xiao et al. (2020) might have captured the satisfaction of learners who were either fully engaged in traditional offline learning or fully engaged in online learning, as participants were free to choose their preferred mode of attendance. Therefore, the perceived hybrid learner satisfaction in Xiao et al.'s study may be biased due to the self-selection of learning modes, potentially reflecting experiences, and competencies of solely offline or online learners.

Overall, the differences in sample profiles and the potential biases arising from self-selection of learning modes may explain the partial discrepancy in findings between the study by Xiao et al. (2020) and the present study.

V. Conclusion

Previous studies have extensively examined the predictors of student satisfaction in traditional offline and online settings, with student engagement consistently emerging as a significant factor. Building upon these findings, the present study concludes that student engagement, encompassing emotional, cognitive, and behavioural dimensions, significantly influences student learning satisfaction in a synchronous hybrid learning space. These research findings hold implications for policymakers, educational institutions, and lecturers involved in the planning, design, implementation, and enhancement of synchronous hybrid learning spaces.

To optimize student learning satisfaction in synchronous hybrid learning, institutions and lecturers should focus on understanding and addressing the various dimensions of student engagement. Identifying areas for improvement and tailoring the learning experience to meet students' specific needs are essential steps toward enhancing satisfaction. Additionally, this study highlights the positive impact of highly competent lecturers who possess expertise in designing and implementing synchronous hybrid learning courses. Therefore, investing in lecturer training specifically geared towards teaching in synchronous hybrid learning environments is crucial for fostering student engagement and ultimately increasing learning satisfaction.

Nevertheless, this study is not without limitations. Future research endeavors should aim to replicate and validate these findings to ensure their robustness. Moreover, employing mixed methods research, expanding the sample size to include a more diverse population, and examining additional or alternative predictor variables, such as ICT infrastructure facilities and readiness, would provide a more comprehensive understanding of synchronous hybrid learning spaces.

In summary, student engagement serves as a significant indicator of student learning satisfaction in synchronous hybrid learning spaces. This study underscores the importance of addressing different dimensions of student engagement to enhance the learning experience and suggests the need for lecturer training to improve instructional quality.

While this study acknowledges its limitations, it encourages further research to validate and expand upon its findings for a more comprehensive understanding of synchronous hybrid learning environments.

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