A Study on Factors Affecting University Students' Perception Towards Online Learning Post COVID-19

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Received: April 22, 2024 Accepted: July 16, 2024 Online Published: November 15, 2024

doi:10.5430/jct.v13n5p413 URL: https://doi.org/10.5430/jct.v13n5p413

Abstract

COVID-19 has turned the world upside down and transformed the learning experience of the students through online learning. This study presents a comprehensive exploration of the various factors which influence the students' perceptions of their learning experience in the context of online learning. This research integrates the students' perspective such as their personal satisfaction, classroom interaction, learning preferences and factors such emotional, psychological, physical that affects the efficacy of online learning experience. A mixed methods approach was used to gather both quantitative and qualitative data. The study explored factors influencing students' perspectives towards their learning experiences with a focus on their personal satisfaction, classroom interaction, learning preferences and the impact on academic performance. A total of 209 participants from various universities took part in this research study. The findings contribute to both theoretical understanding and practical implementation of online learning strategies, essential for both learners and instructors alike. This study also offers insights on potential factors faced by university students during online classes such as adaptability to new formats of learning, motivation, classroom interaction, and access to learning resources that seemed to serve as some of the leading factors identified that affects students' overall learning satisfaction. As online learning revolutionized the way students learn and became an integral part of the education process at all levels, his study provides an evaluation on the benefits and the drawbacks of utilizing online learning as well as the effects on students' learning preferences as well as academic performances.

Keywords: online learning, higher education institution, student perceptions, post covid-19, classroom interaction, learning preferences

1. Introduction

Online education is a mode of education that is classified under the umbrella of distance learning (Al-Mawee et al., 2021. According to Asad (2023), the term online can be referred to as distance education or eLearning, as they are equivalent to the utilisation of digital technologies in facilitating learning remotely that is often primarily conducted through digital platforms and the internet. As cited in Basar et al. (2021) and Daulay et al. (2021), online learning refers to an instructional method that takes advantage of digital technologies and is used to facilitate the exchange of knowledge and skills between instructors as well as students.

With the current state of online learning, improvements of technology and shifting educational demands have both contributed to the tremendous rise of online learning over the past few years thanks to the rise of participation an interest of online education (Infante et. al, 2022). The advancement of online learning also has lessened teachers' and students' introversion from adopting technology and online education while also giving them a platform to acquire new skills (Sofi-Karim et al., 2022). People are starting to master new skills using online tools, as well as many online programs have been introduced (Infante et al, 2022). For instance, in the Ministry of Education of Brunei Darussalam, (MoE) has lauched a program called 'Learning Recovery Programme', with the objective of addressing the issue and supporting the students to recover the learning loss during the pandemic period of COVID-19. Azahari (2022), an initiative in the form of a training programme was introduced that aims to ensure adequate preparation for learning by utilising a learning management system (LMS). This platform also supports various learning approaches and addresses the challenges encountered in teaching and learning.

Digital technology has emerged as an integral part of education at diverse levels, ranging from schools to higher education institutions across the globe. The utilisation of digital innovation has been recommended by UNESCO (2023) to broaden access to educational opportunities and promote inclusivity. UNESCO also has been actively involved in efforts to improve the adverse effects of educational disruption with the development of numerous resources that provide outstanding practices, innovative ideas, and recommendations for guidance on a distance learning and distance learning solutions.

The educational system has experienced a massive shift in students' learning experiences after the outbreak of the global pandemic of COVID-19. The pandemic disrupted and revolutionized the way students learn in schools and universities around the world. This has been highlighted by World Health Organization (WHO,2021) that the loss of learning and the impact of not being in school have been challenging regardless that most countries offer remote learning. Many educational institutions from primary level to higher education started to develop initiatives to ensure all educational institutions continue teaching and learning activities in the midst of the pandemic. In this respect, many educational institutions have chosen to invest in technology for education. The impact of COVID-19 pandemic has pushed educational institutions to rapidly shift to online learning systems in order to enable remote student interaction to ensure a seamless experience transition to online learning (Turnbull et al., 2021) by using digital technologies such as Microsoft Teams, Webex and Zoom. The rapid usage of online learning has affected the learning process and students' learning experience that resulted in online learning has becoming a new norm in education around the world. Irrespective, this norm,the effectiveness of conducting this learning style does affect the way students experience their academic performance and their perception towards learning as there are significant relationship between the learning styles, study habits and academic performance of the students (Magulod Jr, 2018).

The global outbreak of COVID-19 that caused increased integration and the adoption of online learning, affected educational institutions across the globe including Brunei Darussalam. In Brunei Darussalam, to enhance the learning experience for the students, online education has undergone substantial expansion and transformation, primarily in response to the COVID-19 outbreak (Kon, 2023). Moreover, the purpose of the widespread adoption of online learning by the government, educational institutions, and students alike is to ensure that education can continue without interruption and to place a priority on the safety of both students and teachers.

Digital learning has become the new norm of education in Brunei Darussalam (Borneo Bulletin, 2021). The Ministry of Education (MOE) of Brunei Darussalam has revealed their support for digital literacy education by establishing the Educational Technology Centre in Brunei Darussalam, which is also part of the Ministry of Education Digital Transformation Plan, prior to the pandemic. In Brunei Darussalam every education institution in has implemented different actions and measures on ways of delivering classes, such as fully face-to-face learning and varied forms of blended learning (Noorashid et al., 2020). For instance, Universiti Teknologi Brunei (UTB) has already introduced a new alternative mode of learning, which is known as hybrid and remote learning modes in response to the COVID-19 outbreak. The institution has implemented an innovative method of teaching and learning to enhance the educational practices by introducing virtual/online education. The purpose of this new alternative mode of learning is to broaden the flexibility of access and reinforce the quality of teaching and learning as well as to provide more flexible study time for the students, demonstrating educational institutions' teaching and learning commitment despite the pandemic by quickly adapting to remote learning methods. Apart from that, the Minister of Education (MoE) of Brunei Darussalam has launched new digital platforms, such as 'Digital Resources Management System (DRMS), MOE TV, and guidebook for blended learning. These are the innovative tools designed to enhance learning experience for the students by providing as guiding platform and offering personalised learning experience (Kon, 2023).

The findings of this study would be beneficial to a diverse group of stakeholders operating specifically within the field of education. The result of this study and perhaps, with further research, educators would be able to employ the most effective strategies and methods in their classrooms. This study will also identify the factors that could represent the challenges of why there are differences in students' learning preferences and their effect on their academic performance. This would be determined through the course of this research.

1.1 Objective of Study

The purpose of this study is to explore factors that could influence students' perceptions of their learning experiences in the context of online learning. To achieve these research aims, the study investigates the relationship between the variables, namely, students' personal satisfaction, classroom interaction, students' learning preferences, impact of online learning on academic performance and factors such emotional, psychological, physical and the academic performance.

1.2 Research Questions

The use of online learning in the field of education is expanding rapidly, providing individuals who face difficulties with access to education and complete control over their studies. Understanding potential factors that affect students' views and experiences with online education and keep them from engaging in class lessons is still a major area of missing knowledge. To guarantee its efficacy and accessibility, several important limitations and challenges must be addressed, including factors which influence the student's perspective of view. It is important to recognize and understand these factors to effectively build settings for online learning and to ensure that student engagement, satisfaction, and learning outcomes are at their highest possible levels, as this will affect their academic performance. This paper attempts to answer the research questions below:

RQ1 What is the relationship between students' learning preferences through online or face-to-face classes/instruction and their personal satisfaction?

RQ2 To what extent does personal satisfaction among students influence their academic performance in the context of online learning/classes?

RQ3 How does the level of interaction during online learning/classes affect the students' academic performance?

RQ4 What are the factors that affect the students' online learning experience and influence the students' personal satisfaction, classroom interaction, and their academic performance?

2. Literature Review

The COVID-19 pandemic is a global outbreak that has changed the world excessively. According to the Ministry of Health Brunei's press release, they reported the first COVID-19 case that has been identified in Brunei Darussalam on 09 March 2020 (Ministry of Health, 2020). The COVID-19 pandemic has not only impacted the health of the people but also has caused a significant revolution in the educational system throughout the entire world. According to an article, the pandemic has caused major disruptions in education in many countries around the world (Broom, 2022). Broom (2022) also reported that COVID-19 has led to the closure of global education institutions, such as schools and universities due to the rising number of positive cases with over 95% of the world's student population being affected. According to data collected by UNESCO, over 1.6 billion students from 190 countries were impacted due to the closure of education institutions such as schools and universities (Flanagan, 2020).

A study by Haleem et al. (2022) on understanding the role of digital technologies in education with the objectives of determining the need and role of digital technologies in education and to identify the significant challenges of digital technologies has identified the beneficial role of digital technologies such as easy access for the needs and the capability to track attendance and monitor academic performance. In addition, with digital technologies, it provides more flexibility for education with the access to digital knowledge and sourcing information using the online platforms. Mumin & Valdez (2023) noted that the integration of digital technologies has become essential tools for achieving desired educational goals in the middle of the COVID-19 pandemic. However, the paper shows that it has been challenging experience for the Parent-Teachers as the shift in roles and the increasing emergence of new tasks, along with a growing sense of gratitude for the small things they used to take for granted, gave them an entirely new perspective on living in the moment.

Another study by Wenmoth (2022) based on the study evidence review which focused on the role and use of digital technologies, and, on how what has been learned could inform the planned refresh of Education System Digital Strategy indicates the potential role of digital technologies to enhance teaching, learning and administration. Several findings have been found based on their research, such as the need for ways to enhance effectiveness in teaching and learning as there was a lack of access, skills, and capability of using technology.

2.1 Students' Perception Towards Online Learning

There is still a significant knowledge gap in the area of understanding possible factors that influence the perspectives and experiences of students with regard to online education that prevent them from participating in the classroom lessons. Student's perspective refers to the attitude or point of view and how they can understand how the teachers deliver the lessons in the class. Students can be utilised as a tool to assess the effective and performance of the lessons (Gentilucci, 2004). The term students' perspective encompasses the individual's unique viewpoints, beliefs, and experiences concerning different aspects of education, learning, and their comprehensive educational journey.

Focusing on as study by Gentilucci (2004), the importance of students in shaping the learning outcomes in their

classrooms is significant as it helps to identify the factors that contribute to a student's academic performance based upon a thorough comprehension of their individual perspectives on the learning process. The study by Van Wart et al. (2020) has studied that the factors which influence the perspectives of students with regards to satisfactory acceptance encompass their personal perception of their academic performance, level of satisfaction with the support that they receive, comprehension of the methodology, cognitive and emotional stimulation, effectiveness of the learning process, and sense of belonging with an educational community.

Several studies have focused on studying the students' perspective towards online education during COVID-19 pandemic. The students' perspectives towards synchronised online learning were explored in a study by Khalil, et al., (2020) where they explored the learning perspective of undergraduate medical students from University in Saudi Arabia. The result of the study explained both acceptance and challenges faced during online learning. Acceptance such as the improvement on the student's performance due to enhanced utility of time and the challenges, more towards these three challenges, such as methodological, technical, and behavioural challenges. These three challenges were also mentioned in another study by Karagul et al. (2021) and the study also identified the same challenges to be the major challenges faced by the students on learning during pandemic.

In contrast to a study by Almahasees et al. (2021), this study unequivocally demonstrates that both faculty and students perceived online learning during the COVID-19 pandemic more positively than negatively. The research thoroughly investigated their perspectives on the effectiveness, challenges, and advantages of online education in Jordan. The survey unequivocally showed that participants agreed on the usefulness of online education during a pandemic and highlighted undeniable benefits such as self-learning, affordability, convenience, and flexibility. Nevertheless, it unambiguously acknowledged that online learning cannot fully replace face-to-face learning. In contrast to the previous study, which focused primarily on the negative effects of the pandemic on student learning experiences without considering any positive effects, this study confidently acknowledged both the positive and negative aspects. It also confidently highlighted various challenges, including difficulties in adjusting to online learning, lack of motivation and interaction, technical and internet issues, as well as concerns about data privacy and security.

Al-Mawee et al. (2021) conducted a thorough study on students' perceptions of remote learning during the COVID-19 epidemic, focusing specifically on Western Michigan University in the United States. The study aimed to comprehensively analyze students' overall impressions of online learning, detect differences in perceptions among students from different types of colleges, uncover reasons behind differing views between graduate and undergraduate students, and pinpoint student preferences for distance learning (Al-Mawee et al., 2021). Their robust research successfully identified concrete techniques to improve student performance, devised effective strategies to overcome the challenges of distance learning, and decisively outlined the factors influencing students' experiences.

2.2 Learning Preferences between Online or Face-To-Face Classes/Instruction

In a recent study by Mumin & Salleh (2021), researchers found that students had different preferences for online and face-to-face classes. Some students favored online learning due to their comfort in that environment. The study also suggested changes in learning preferences, likely influenced by technological advancements and the shift to online learning during the COVID-19 pandemic. In comparison to the study Amir et al. (2020), another study which compared distance learning and classroom learning aimed to evaluate the student perception from both types of learning experience in undergraduate dentistry study program at a university in Indonesia. Results from the study identified several factors that influence the student preference such as the duration of study, the difficulty in communicating for group discussion and less learning satisfaction. The study did find, however, that first-year students favoured online learning because they felt it was a more effective learning strategy because it gave them more time for material review and study.

In the study by Mather & Sarkans (2018), their study on investigated the students' perspectives on learner preferences, interactivity, workload, performance, and difficulties. Regarding the learner preferences, differences were observed in terms of the responses provided by the participants regarding to their preferred modes of learning. The results of the study revealed that students who preferred online, preferred it because it was flexible and convenient for them. Students who expressed a preference for face-to-face learning emphasised the importance of interaction as it facilitated enhanced learning outcomes through the availability of immediate feedback.

2.3 The challenges of Online Learning on Students' Academic Performance

Focusing on the challenges of Online Learning on students' academic performance, in a study by Mumin & Valdez (2023), the focus was on managing heutagogy during the COVID-19 pandemic through virtual learning and its impact on Academic Identity Status (AIS) and Communities of Practice (COP) among first-year undergraduates. The research

clearly highlighted the challenges faced by students, including insufficient digital literacy, unsuitability of online learning for specific modules, and a lack of motivation in the online learning environment.

Another research on a systematic review on the effects of students' achievement due to the closures of school because of COVID-19 (Hammerstein et al., 2021). investigated the general effect on the student achievement in spring 2020 which focuses only on primary and secondary education and the differential effects on specific student groups due to the closures of schools. They did their systematic review research through their search on the Web of Science database articles published between March 1, 2020, and April 30, 2021. Based on their review, they found more towards the positive effects from the adaptation of online learning, such as more accessibility for students to learn on their own time and space, as a result even the low-performing students gets more improvement on the academic and also with the increased use of software students were familiar working with online learning, therefore, they are able to continue learning as normal. However, the study found that the only learning losses are likely due to the cumulative nature of learning processes and student achievement.

Kuhfeld et al. (2023) has highlighted where in 2021, the COVID-19 pandemic has affected devastating impacts to the education institutions such as significant staff shortages, high absenteeism rates and quarantines due to the ongoing closures of schools and universities. Additionally, mental health issues among children and teachers are also affected with higher rates of violence and misbehaviour and worries about wasted instructional time. Moreover, a study by Li (2022), this study has also identified several factors that get affected during the pandemic such as on the student performance. The study has aimed to identify the variables or factors that influence the academic performance of the students and based on their research, factors such as fear, digital inaccessibility, teaching capability, psychological well-being, and work-life are likely to influence the academic performance of the students.

Basar et al. (2021) conducted a comprehensive case study that thoroughly examined the effectiveness and challenges of online learning for secondary school students. They concluded that online education can be highly ineffective due to the severe lack of interaction in virtual classrooms, hindering group work and decreasing overall learning motivation. The study also boldly asserts that the absence of face-to-face interaction diminishes the students' sense of urgency and motivation to perform well in their online classes.

Additionally, Karagul et al. (2021) conducted a rigorous investigation into the self-reported digital literacy levels of students at various school levels and the statistically significant relationship between these levels and the major technology-related challenges faced by learners during online learning amid the COVID-19 pandemic. The study confidently concluded that all participants considered themselves digitally literate due to their daily use of technology. Furthermore, the study adamantly identified the major challenges faced by students online, including adaptation problems to online education, technical and internet issues, and concerns related to data privacy and security.

A study by Amir et al. (2020) focuses on various challenges caused by online learning. It was indicated that the challenges have to do mainly with internet usage, such as unstable internet connection, extra financial for the internet quota and towards the internal factors such as time management and difficulty to focus while learning online for a longer period (Amir et al., 2020).

The study by Khalil, et al. (2020) has identified the three challenges related to student’s performance are methodological, such as being limited and having the problems with maintaining the quality in the way the lectures were delivered. Also, problems related to the time allocated for the online classes’ session. Besides that, technical was mentioned as one of the challenges faced by the students as well, problems are mostly related to internet connectivity and the use of tools in online platforms. Lastly, behavioural challenges, the students ‘perspectives towards online learning were also stated to be the challenges faced by the students, such as getting pressure, academic performance was negatively affected due to lack of motivation during online classes and lack of classroom interaction. This suggests that these three factors are most likely to be the most common challenges faced by the students with their learning experiences during online. According to Karagul et al. (2021), similar challenges were experienced by study participants. Among the problems mentioned were students' difficulties adapting to online learning and technological issues as well as a lack of motivation. In addition, the overwhelming impact of group work was identified as an additional challenge that had not been addressed in previous research. In addition to unequal work distribution and lack of interaction, influenced the students’ satisfaction with online learning (Mather & Sarkans, 2018).

3. Methodology

3.1 Respondents

Stratified sampling method was used to obtained data from a representative sample of a population. This design

improves the precision of target parameter estimations while providing flexibility in sampling techniques across strata and particular population groupings that are simple to target (Qian, 2010). In this study, I have divided the sample into relatively similar subpopulations (strata). The sample consists of students aged 18 to 45 and above from the Higher Education System in Brunei Darussalam. The population was chosen to provide significant contributions to the understanding of the learning processes, as well as the identification of factors influencing students' perspective towards their online learning experience and to determine the effectiveness of online learning on the students' academic performance. The inclusion criteria specified that participants must be students from Higher Education Institution in Brunei Darussalam, namely, Universiti Teknologi Brunei (UTB), Universiti Brunei Darussalam (UBD), Universiti Islam Sultan Sharif Ali (UNISSA), Kolej Universiti Perguruan Ugama Seri Begawan (KUPUSB) and Politeknik Brunei. Additionally, it is important that the student falls within the specified educational level and had prior exposure to online learning environments. The population was chosen also because students in higher education actively participate in the educational process (Park, 2003), therefore, research can gain insights into the effectiveness of different learning approaches, such as online learning. In addition, this study is considered a significant contribution to the deeper field of educational research, with potential implications for the evolution of educational practices and improving the effectiveness of student learning outcomes as they require efforts on many fronts (Dunlosky et al., 2013).

3.2 Instruments

A survey questionnaire was used to gather both quantitative and qualitative data. It was divided into four main sections: Sections A to C focused on quantitative data, and Section D was used for qualitative data through open-ended questions. The Likert scale measured respondents' opinions, while open-ended questions were analysed using thematic content analysis.

Section A comprises 5 questions, covering Question 2 to Question 7, focusing on gathering basic demographic information about the respondents. Section B is divided into B1 and B2. In Section B1 (questions 8 to 13), respondents were probed about their past experiences with online learning during the COVID-19 pandemic. Section B2 (questions 14 to 20) delves into respondents' current or most recent online learning experiences post-COVID-19. Section C comprises questions 21 to 25, utilizing a Likert scale format to assess various aspects such as personal satisfaction, classroom interaction, learning style preferences, the impact of online learning on academic performance, and factors influencing the overall online learning experience.

Additionally, in Section C, Likert scale was used to measure the respondents' opinions by asking the extent to which they agree or disagree with a particular statement in the questionnaire and with the support of open-ended questions as this approach is frequently used for performance evaluations following educational interventions, assessments, and feedback (Sullivan & Artino, 2015). The aims are to provide a comprehensive understanding of the respondents' level of agreement, ranging from "Strongly agree" to "Strongly disagree." Finally, Section D features questions 26 to 30, which are open-ended and invite respondents to share their overall impressions of online classes, as well as provide any additional comments or recommendations regarding their online learning experiences.

3.3 Data Collection Techniques and Procedures

Data were collected with two methods of data collection, quantitative and qualitative method through online survey. A survey questionnaire was distributed through students' university email account, which is exclusively accessible to students enrolled at University Teknologi Brunei (UTB), as well as multiple social media platforms, including WhatsApp, Twitter, and Instagram. The distribution of the survey was done through the utilisation of posters which included a hyperlink to the survey for those students from other universities. The purpose of utilizing the platforms is that these platforms can ensure that questionnaire reached the intended audiences. The purpose of utilising the platforms is that these platforms can ensure that questionnaires reached the specific audiences and the most convenient method.

A survey content was meticulously developed and administered using Microsoft Forms, an electronic web-based survey tool, for pilot-testing, response evaluation, and result exportation to Excel for subsequent analysis. The survey commences with a Participant Information Sheet, through which comprehensive details about the research study, its objectives, procedures, and contact information for further inquiries are provided to all participants. Prior to their involvement in the research study, explicit informed consent was obtained from each participant, with an acknowledgment of their consent being obligatory. Furthermore, participants were assured of the strict confidentiality of their responses.

A pilot study of the questionnaire was carried out before the survey was distributed to the target population sample, the

actual data gathering stage. The purpose of the pilot testing was to evaluate the suitability and efficiency of the questionnaire. A small number of the participants were selected from among the target population's volunteers. The questionnaire had to be completed by the participants, who were also requested to comment on its length, relevance, and clarify. The effectiveness of the questionnaire was improved, and any potential problems were addressed from the reliability test in SPSS to ensure the consistency and assess measurement of any error based on the findings of the pilot-testing stage. Analysing method such as Cronbach's Alpha for reliability analysis, frequency analysis, descriptive analysis, comparison of means test and Pearson correlation analysis are among that can be analysed through SPSS (UBC Library Research Commons, n.d.)

3.4 Data Analysis Technique

The participants were given a set period of 14 days to complete the survey as it was done during the semester break. After collecting a sufficient number of participants, the gathered responses will undergo a data cleaning process before proceeding to the analysis stage. Next to that, the data is saved in an Excel spreadsheet for the purpose of coding before transfer into SPSS and analysing stage. Reliability analysis using SPSS was employed to assess the validity and consistency of the data based on the Likert scale items included in the distributed questionnaires.

Once the distributed survey questionnaires' responses were collected and imported into Microsoft Excel for the purpose of conducting more comprehensive and in-depth data analysis utilizing the Statistical Package for Social Sciences (SPSS). According to the survey, a sample size of 211 participants was initially obtained.

Prior to gathering information in an Excel spreadsheet, the data undergoes a coding process to ensure that all data is presented in numerical form. This is done to facilitate data analysis in SPSS while maintaining consistency in data presentation, thereby avoiding confusion during the coding process. Upon the successful conversion of all nominal data to numerical data, the data were compiled into one Excel spreadsheet and orderly arranged based on the relevant information columns. After conducting a thorough analysis, it was discovered that only 209 respondents could be included as two had to be excluded as the respondents had never taken part in online learning.

4. Findings and Discussions

4.1 Relationship between Students' Learning Preferences and Personal Satisfaction

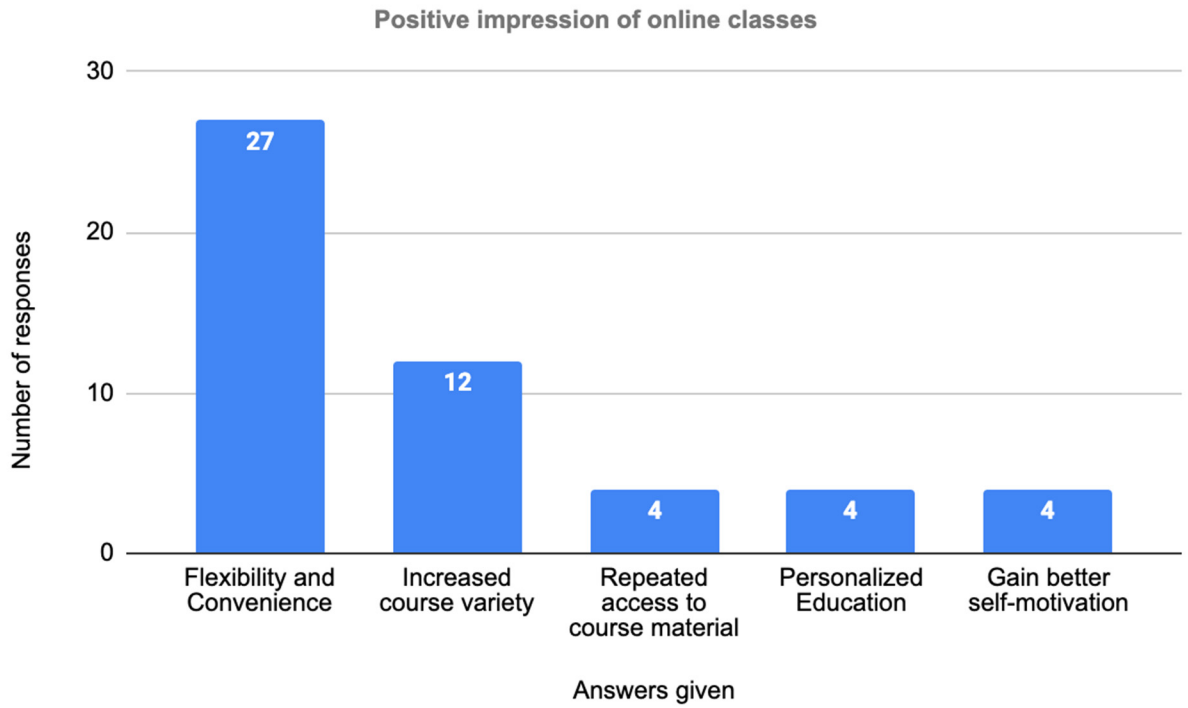

Figure 1. Positive Impression of Online Classes

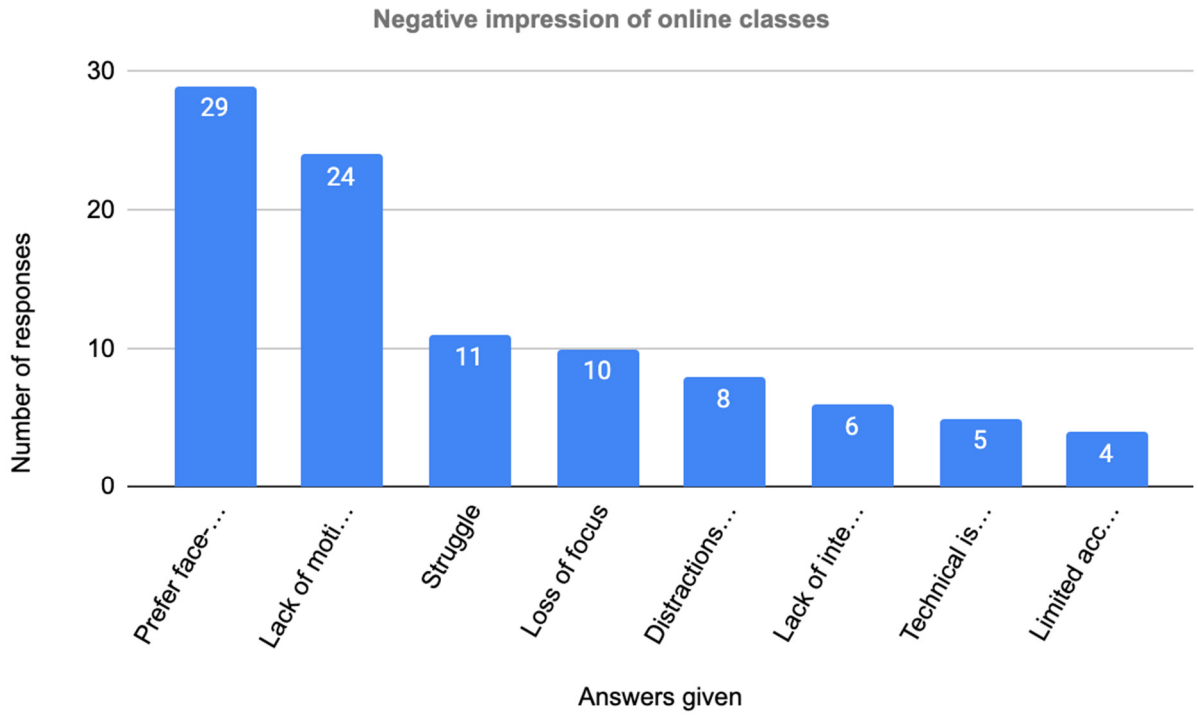

Figure 2. Negative Impression of Online Classes

Research Question 1: What is the relationship between students' learning preferences through online or face-to-face classes/instruction and their personal satisfaction?

For the first research question (RQ1), the research has shown that there is a moderate positive correlation between the two main variables, students' learning preferences on online/face-to-face classes and personal satisfaction. Students with higher learning preferences in both ways (online/face-to-face) are more likely to experience an increase in their personal satisfaction. As a result, students with effective engagement with their preferred learning style are also more likely to experience a sense of satisfaction with their learning experiences.

The analysis has been derived based on *Figure 1 and 2,* which showed students' overall impression of online classes. The results have shown a mixed impression of online learning, with both positive and negative overall impressions.

As shown in the *Figure 1.* And *Figure 2*., in comparison, between the positive and negative impression, the results have identified that students show more inclination towards negative impressions of online classes. Factors such as lack of motivation, struggle to adapt, loss of focus, distractions, lack of interaction, limited resources and limited access to resources were some of the factors mentioned by the respondents on the reasons and why they had negative impressions towards online learning. Based on these results, the responses indicated that there is a significant relationship between students' learning preference online or face-to-face classes/instruction and their personal satisfaction.

The findings are supported by the past research (e.g. Mather & Sarkans, 2018) which have investigated students' perspective on their learning preferences between online learning and face-to-face. In this current study, the findings revealed that the respondents emphasised on the flexibility and convenience of online learning, and this was more so during the COVID19 pandemic. However, students also agreed on the importance of face-to-face interaction and learning to promote better academic performance. The findings based on Amir et al. (2020), have identified several factors which influence student preferences such as the duration of study, the difficulty in communicating for group discussion and less learning satisfaction. Amir et. (2020) also described that in their study, they found that first-year students preferred distance learning compared to seniors as distance learning was a more efficient learning method as it provided more time to study and to review learning materials. Another past study, Gopal et al. (2021), has identified four factors that significantly influence the level of students' learning satisfaction and performance during online classes. The factors such as the quality of instructor, course design, prompt feedback, and expectation of students were

identified by the researcher as positively impact students' satisfaction and further student's satisfaction positively impact students' performance. Furthermore, the study asserted the most prominent factors influencing student's satisfaction is the quality of the learning experience during online classes. As a result, an effective and quality learning experience could highly boost the student's learning satisfaction and performance. Findings of this study does shows there is significantly mixed perceptions of learning preferences and satisfaction as students have their own personal learning preferences through online or face-to-face classes/instruction and their personal satisfaction,

4.2 Relationship between Students' Learning Preferences and Personal Satisfaction

> Research Question 2: To what extent does personal satisfaction among students influence their academic performance in the context of online learning/classes?

The second research question (RQ2) focused on investigating the extent of personal satisfaction among students within the context of online learning/classes. As shown in *Table 1,* based on the Pearson Correlation analysis between students' personal satisfaction and the academic performance during online learning/classes, the results show that there is a positive correlation between students' personal satisfaction and their academic performance (0.604).

Table 1. Pearson Correlation Analysis between Students' Personal Satisfaction and the Academic Performance

Correlations			
		Personal Satisfaction	Academic Performance
Personal Satisfaction	Pearson Correlation	1	0.604**
	Sig. (2-tailed)		0.000
	N	209	209
Academic Performance	Pearson Correlation	0.604**	1
	Sig. (2-tailed)	0.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

From the analysis, it showed that when the respondents are satisfied with the online learning experiences, with the right amount of support and appropriate learning materials, respondents can do well in their online classes. In other words, the respondents can achieve their personal satisfaction and can meet the expectations of online learning classes. So, there is likely to be a negative correlation between lower academic performance, then there is likely to be a decrease in the respondents' personal satisfaction. This is consistent with the findings based on previous study (e.g., Wart, 2020) who described that the satisfactory acceptance encompasses the students' personal perception of their academic performance. Similar to the work of Li et al. (2023), researcher also identified students' preference as the influencer to the learning satisfaction of the students and act as a mediator in the relationship between their learning experience and overall satisfaction.

In addition, an analysis on the respondents' comfort with the time allocated for their classes during the online learning session was also made for this study. From the quantitative analysis, most students (69.4%) responded, "Yes", indicating their agreement with the question, "Are you comfortable with the time allocated for each of your classes/modules during online learning/lessons?". This is further supported based on the findings found in *Figure 3 through* thematic analysis.

It was found that there were mixed responses on students' comfort level with the time allocated when some of the respondents stated, *"We still have the flexibility on the time, adjustment can be made depending on the situation and the discussions," (R23*); *"The allocated time for each class/module allows me to adequately cover the material and engage in meaningful learning without feeling rushed or overwhelmed." (R68),* and *"The time allocated is the same as normal classes time allocated" (R46).*

From these responses, it can be inferred that the positive response of "Yes", indicated that in general, students in this study are comfortable with the allocated time and able to cover most of the topics within the time given. Moreover, students are also given flexibility with the time, therefore, they can do adjustment with the time during online classes.

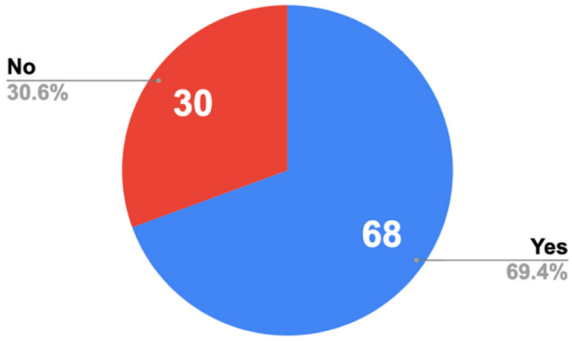

Figure 3. Student's Comfort with Online Class Time Allocation

This is contrary to the small percentage (less than 30.6% of all respondents) who gave negative responses of "No" which indicated that there are some respondents, who are not comfortable with the time allocated. The respondents shared responses, such as, *"Nobody can stay focus in 6 hours lecture" (R26); "Since most of the online classes are held close to each other, there was little to no cool down time for processing what I had learnt because by the time they are over I just want to rest from screen time overload"* (R72*)* and *"Sometimes we had 3 hours straight of lecture, it made me become less interested attending this one class."* (R96)

Several other reasons were also provided by the respondents on why they stated "No" as the respondents. The data suggests that these respondents were likely to be influenced by the amount of time they had to spend online, staring at the (computer) screen during online classes, and there was not a suitable amount for the time allocated for the online classes, for example, "*can't concentrate/tiring to look at screen for more than 1.50 - 2 hours straight"(R31)*, "*No time boundaries especially when the classes was conducted during pm and on Sunday" (R71)* , *"Too long, lost focus after 1.5-2hr in" (R77) and "Because zoom has time limits now , and the lecture explain everything too fast." (R66*). Consequently, the students' motivation to attend online classes were also affected due to the time duration spent online.

Overall, these findings also reflected that students' personal satisfaction of the time allocation for online had also influenced their academic performance in the context of online learning/classes. The findings supported the results based on the correlation analysis found in ***Table 2*** *indicating* that there is also some correlation between the two variables.

Table 2. Correlation between Students' Personal Satisfaction and Students' Academic Performance during Online Learning/Classes

Correlations			
		Personal Satisfaction	Academic Performance
Personal Satisfaction	Pearson Correlation	1	0.604**
	Sig. (2-tailed)		0.000
	N	209	209
Academic Performance	Pearson Correlation	0.604**	1
	Sig. (2-tailed)	0.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

Furthermore, in terms of the problem of time allocated for online classes, these results have been found in past research by Khalil, et al. (2020) in which the study has identified time allocation to also be a problem that has influenced students' learning experience and affected their academic performance during online learning. Similarly, the problem with the duration of the study has also been identified in another study by Amir et al. (2020).

The results in the study have shown that to a certain extent, the respondents' satisfaction of online learning and their academic performance are related to several other factors including allocation and suitability of time as well as learning resources that are required for effective online classes and learning. In other words, in the context of online

learning/classes, the more time spent does not necessarily mean that online class is the most effective and best way to learn and to help students help them academically (academic performance).

4.3 Level of Interaction during Online Learning

Research Question 3: How does the level of interaction during online learning/classes affect the students' academic performance?

Table 3. Descriptive Summary of Student Interaction in Online Classes

Descriptives				
			Statistic	Std. Error
Classroom Interaction	Mean		2.68	0.049
	95% Confidence Interval for Mean	Lower Bound	2.58	
		Upper Bound	2.78	

The third research question (RQ3) focused on investigating the level of interaction during online learning/classes and how it affects students' academic performance. Based on the findings in ***Table 3,*** it *displays* a descriptive summary of students' classroom interaction. The findings suggest that the amount of interaction occurring among the students during online learning/classes analysis has a medium impact on their learning as the average rating and mean scores for students' class interaction during online learning or classes stands at 2.68 (see Moidunny, 2009).

Table 4. Correlation of Factors Affecting Online Learning Experience

Correlations								
		Personal Satisfaction	Classroom interaction	Academic Performance	Emotional	Psychological	Physical	Academic
Personal Satisfaction	Pearson Correlation	1	.580**	.604**	.188**	.152*	.112	.238**
	Sig. (2-tailed)		.000	.000	.006	.028	.108	.001
	N	209	209	209	209	209	209	209
Classroom Interaction	Pearson Correlation	.580**	1	.502**	.212**	.187**	.188**	.344**
	Sig. (2-tailed)	.000		.000	.002	.007	.006	.000
	N	209	209	209	209	209	209	209
Academic Performance	Pearson Correlation	.604**	.502**	1	.248**	.299**	.169*	.472**
	Sig. (2-tailed)	.000	.000		.000	.000	.014	.000
	N	209	209	209	209	209	209	209
Emotional	Pearson Correlation	.188**	.212**	.248**	1	.565**	.465**	.446**
	Sig. (2-tailed)	.006	.002	.000		.000	.000	.000
	N	209	209	209	209	209	209	209
Psychological	Pearson Correlation	.152*	.187**	.299**	.565**	1	.463**	.492**
	Sig. (2-tailed)	.028	.007	.000	.000		.000	.000
	N	209	209	209	209	209	209	209
Physical	Pearson Correlation	.112	.188**	.169*	.465**	.463**	1	.388**
	Sig. (2-tailed)	.108	.006	.014	.000	.000		.000
	N	209	209	209	209	209	209	209
Academic	Pearson Correlation	.238**	.344**	.472**	.446**	.492**	.388**	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	
	N	209	209	209	209	209	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

As shown in ***Table 4*** there is also some correlation between classroom interaction and academic performance. There is positive correlation between the two variables with the correlation coefficient of 0.502**. A positive correlation indicates that when one variable (and in this case, classroom interaction) increases, the other variable (academic performance) also increases. In other words, in terms of the level of classroom interaction, the higher the interaction, it is likely to be associated with better academic performance and the lower the interaction, there is likely to be lower

academic performance among respondents. Therefore, the level of interaction during online learning/classes appears to have had some effect on the respondents' academic performance.

When comparing the findings of the current and earlier findings, in terms of level of interaction, there is further support from past studies, in which according to Basar et al. (2021), the level of interaction has some influence on the students' academic performance as they were not able to perform well when it comes to class assignments especially in group work. The lack of interaction also dwindles the learning motivation and have resulted in lower academic performance during online learning. Moreover, a study conducted by Muzammil et al. (2020), has also identified the significant impact on the interaction among students and teachers.

4.4 Factors Affected during Online Learning.

> Research Question 4: What are the factors that affect the students' online learning experience and influence students' personal satisfaction, classroom interaction, and their academic performance?

The fourth research question (RQ4) focused on investigating factors that affect students' online learning experience and how these factors are related to other variables, including students' personal satisfaction, interaction, and academic performance. Based on the findings of the quantitative and qualitative data, there is a significant relationship between these variables, namely emotional, psychological, and physical factors. The findings in Table 14 (see Page 47) have shown that there is a low correlation (0.112) between physical factors and personal satisfaction. For the rest of the variables, there is a higher correlation between physical and classroom (0.188**) and between physical and academic performance (0.169**). These results showed that the main three factors, namely emotional, psychological, and physical during online learning classes/experiences appear to have some impact and in part influence respondents' learning experience, in relation to their students' personal satisfaction, classroom interaction, and academic performance.

As shown in *Table 5* displays the thematic analysis on the investigation on which of the following factors: emotional, psychological, and physical.

Table 5. Thematic Analysis of Factors Affecting Online Learning.

Number of responses	Related responses to factors below
76	**Psychological** (e.g. lack of motivation, stress, loss of focus, depression, burnout etc.)
37	**Emotional (**tired, get bored, nervous, anxious, insecure, etc.)
26	**Physical** (e.g. severe eye strain, backaches due to poor sitting posture, etc.)
12	**Academic** (results dropped, low concentration, less willing to study etc.)

The results showed several responses related to the three factors. Focusing on the factors, the one with the highest number of responses is psychological, which indicates that psychologically the students were affected and influenced the students' personal satisfaction, classroom interaction, and their academic performance. Secondly, in terms of emotional factors, followed by physical and academically.

Psychological factors emerged as the most prominent with a total number of 76 responses indicating their psychology to be affected by their online learning experience. These factors affected the students' personal satisfaction, class interaction as well with their overall academic performance during online learning from the thematic analysis, respondents stated psychological factors can include aspects such as motivation, loss of focus, depression, and burnout due to the amount of workload given to them, which can greatly influence a student's ability to engage effectively in online learning. This statement can be related to a past research, in which group and unequal work distribution was identified as an additional challenge and influenced the students' satisfaction with online learning (Mather & Sarkans, 2018). Wenmoth (2022) also highlighted the increase of workload as one of the factors faced by students during online learning. For instance, the responses that were given related to psychology are *"Stress too much work." (R37),* "*Insure, burnout, time consuming and stressful in terms of psychologically during COVID. Not freely." (R169),* "*Psychologically, it was tiring due to having to see and face the same thing every day, I actually became burnt out." (R186), "Psychologically, it made me very stressed because I cannot disconnect from school" (R187), "It gave me depression because of less interaction with the people." (R193), "Online learning can sometimes be stressful, as you may feel like you're missing out on the in-person interaction and support of traditional classroom settings." (R197), "Less motivating, lower down my self-esteem" (R200) and "become more introverted, mentally worn out due to stress from online classes." (R201).*

Emotional factors ranked second in terms of impact. Emotional factors can greatly affect students' motivation and engagement in the online learning environment, thus influencing their overall experience. Based on the thematic analysis in this study, emotional factors such as feeling tired, bored, nervous, and anxious were the most common answers given by the respondents related emotional factors. For instance, through thematic analysis, responses provided related to emotion, such as *"Emotionally, I find it challenging to stay motivated without the physical presence of teachers and classmates, resulting in decreased enthusiasm and engagement." (R19), "Emotionally, it is tiring to cope up with studies because of being alone and not interacting physically with my other friends" (R83), "Emotionally drained from hours of straight lecture." (R137), "For emotionally, I got nervous because of being a first timer in using technology further for learning. Sometimes I got demotivated." (R151) and "Emotionally, it is draining as we are doing the same thing at the same place, in front of our electronic devices)" (R180).*

Physical factors, as having an impact on students' capacity to fully participate in online classes and contribute to their overall learning experience as students were experiencing physical problems, such as severe eye strain and backaches due to poor sitting posture. In supporting the statement, responses were provided related to the factors such as "*It is tiring, and it can hurt my eyes sometimes because of too much screen time." (R26)*, "*Physically, severe eye strain from watching 1 hour of screen." (R37)*, "*Physically, potential issue on health conditions such as eye strain, backaches due to poor sitting posture etc.*" *(R47)*, "*Online learning has physical implications. Students often spend long hours sitting in front of screens, which can lead to physical discomfort, eye strain and sedentary behaviour." (R80)* and *"physically it has affected my eyesight." (R122)*.

In summary, the analysis was conducted using data obtained from a widely distributed survey questionnaire in Higher Education Institutions located in Brunei Darussalam. Conducting frequency analysis, descriptive analysis, and Pearson correlation analysis are essential statistical tests, this is to analyze and summarize the data as well as determine the relationship between variables. The goal of the experiment was to see if students' personal satisfaction, classroom interaction, students' learning preferences, impact of online learning on academic performance and factors such as emotional, psychological, physical has an overall effect on the academic performance of the students during online. Not to mention the demographic data utilized as control variables, such as age, gender, ethnicity, education level, place of study and year of study. The data revealed the transition to online learning has resulted in both positive and negative effects on the academic performance of students. The present findings demonstrated that variables such as students' personal satisfaction, classroom interaction, students' learning preferences, impact of online learning on academic performance and factors such emotional, psychological, and physical do significantly act as the influencer to the students' academic performance.

5. Conclusions

The purpose of this study was to identify the factors influencing students' perspectives during online learning and the resulting impact on their academic performance. The findings indicate that factors, such as lack of motivation, difficulty in adapting, loss of focus, distractions, insufficient interaction, and limited resources, contribute to negative impressions of online classes. The overall impression of online classes leans towards the negative among students. Effective engagement with their preferred learning style is shown to enhance learning satisfaction for students.

The study also highlights students' discomfort with the time allocated for online classes. Challenges, including difficulty in focusing during extended lectures, inadequate breaks between classes, screen time overload, and overall fatigue from prolonged online sessions, negatively affect students' motivation for participating in online classes. Furthermore, classroom interaction significantly impacts students' academic performance, with higher levels of interaction correlating with positive academic outcomes, and lower levels of interaction associated with negative academic results.

This study aims to identify factors influencing students' perspectives and academic performance in online education. It highlights lack of motivation, difficulty in adaptation, distractions, and limited resources as contributors to negative impressions. Students express discomfort with the timing of online classes, citing issues such as difficulty in maintaining focus, insufficient breaks, and overall fatigue. The study also emphasizes the close relationship between classroom interaction and students' academic performance, with higher levels of interaction linked to positive outcomes.

In conclusion, the current study demonstrates the overall perception on online learning during Post COVID-19 among university students. The findings from this study revealed that there were differences in the perspectives of the students, regarding their personal satisfaction, classroom interaction and learning preferences between online learning and face-to-face learning. Also, to meet the expectations of online classes and support the students' satisfaction with their

online learning experiences, students needed proper resources or learning materials, in addition to a proper quality learning experience.

6. Implications and Recommendations

In light of the findings, it is apparent that online learning does not universally cater to the learning needs of all students. Numerous influencing factors hinder students' full engagement with online classes, as a preference for traditional face-to-face learning persists. Notwithstanding varying sentiments, a predominant majority of respondents emphasized the necessity of physical interaction for optimal academic performance. To ensure equitable accessibility and proficiency in online learning, proactive measures are imperative to facilitate a seamless transition to technology-based education in Brunei Darussalam.

In order to advance the current study, future research could explore additional factors that may influence students' perspectives toward online learning. This is particularly relevant as the topic is still in the developmental stage following the outbreak of the COVID-19 pandemic. Such exploration could yield a deeper understanding of students' perspectives toward online learning and lead to enhanced learning experiences. It is imperative for future research to consider other potential variables or factors, such as technological issues including internet connectivity. This specific factor, which was extensively discussed in this study, has been shown to significantly influence students' academic performance during online classes.

Furthermore, digital learning has become the new norm of education in the sultanate country (Borneo Bulletin, 2021). In addition, the Ministry of Education (MOE) of Brunei Darussalam also revealed their support towards digital literacy education by establishing the Educational Technology Centre in Brunei Darussalam. Following are the recommendations I could offer based on the present study findings:

1. The government/education institutions need to start encouraging all teachers/lecturers to start using one digital-based education platform such as Microsoft Teams as it offers unique features that can enhance the interaction during learning process, this is because based on the findings, majority of the students indicated that classroom interaction is one of the factors that influenced their online learning experiences and academic performance.
2. Factors such as struggle to adapt to new formats of learning, time allocation, loss of focus, motivation, interaction, distractions, technical difficulties, and limited access to learning resources were identified as the most common factors that influenced students' perspectives towards online and their academic performance. Therefore, it is recommended for the institutions sector to enhance the abilities to provide quality and learning experiences that are suitable for the students' learning capability and satisfaction.
3. Training programs should be oriented towards specialized courses so the educators/lecturers can acquire enough knowledge on how to use various digital devices and platforms.
4. The time allocated for online learning was identified as one of the factors that influenced students' learning satisfaction. It is suggested to find the best solution to identify the most suitable time for learning and to fit in every topic or class with the time. It was mentioned that students only preferred for only certain subjects or modules to be online as not all are recommended as not all are fitting with the time.
5. *Emotional, Psychological,* and *physical,* are the three factors identified with the highest frequency of responses as among factors that have affected the students' online learning experiences. Therefore, a workshop or seminar to familiarise the learners on how to use digital platforms in a healthy manner without influencing those factors are highly recommended and required to reduce any issues related to those mentioned factors.

7. Significance of the Study

The findings of this study will be beneficial to diverse group of stakeholders operating within the field of education and the society at large, given that there are benefits as well as drawbacks in implementing online learning into the process of education. With the result of this study and possible further research, educators will be able to employ the most effective strategies and methods in their classrooms. The study also identifies the factors that could potentially represent the problem of why there are mixed perceptions on student's learning preferences and their effect on their academic performance.

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Acknowledgments

I would like to express my sincere gratitude to my supervisor who assisted in conducting the study, Dr. Mas Ayu Mumin, for her invaluable guidance, feedback, and support throughout my research. Her extensive knowledge and experience were instrumental in the completion of this journal.

Authors contributions

Dr. Mas Ayu Mumin, was responsible for study design and revised the drafted manuscript. As well as, reading and approved the final manuscript. In this journal also, we both agreed with combining our research to support the validity of this journal.

Funding

Not applicable

Competing interests

Not applicable

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.