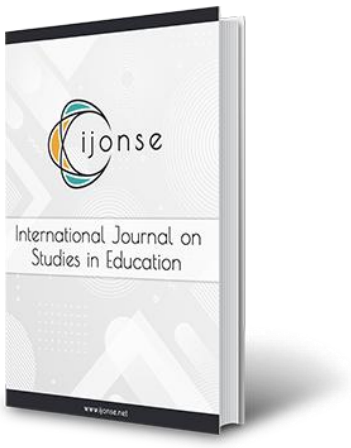

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Pre-University Students' Perception towards the Use of Online Learning in Mathematics Subject

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Abstract

COVID-19 has had a major influence on higher education, requiring a faster digitization of course materials, integrating academics who work from home, and modifying student funding policies in reaction to border closures abroad. In order to adjust to the situation, faculties are required to close and switch to a new style of instruction. Accordingly, the purpose of this study is to close this gap by examining the perspectives of pre-university students about the use of online learning in mathematics lessons with regard to content delivery, engagement, and assessment. In this quantitative study, 74 students were chosen at random to respond to a series of questionnaires. A descriptive analysis of the data was conducted to determine the percentages, means and standard deviation. According to the data analysis, pre-university students at UNIMAS generally have a good opinion of the usage of online learning in mathematics subjects in terms of engagement, material delivery, and evaluation.

Introduction

Several higher education institutions were forced to react quickly upon the COVID-19 pandemic hit at the end of 2020 semester, converting their courses to an online format to ensure the educational process could be continued while obeying the lockdown rules and regulation. According to Crawford (2023), higher education has been significantly impacted by COVID-19, from the need for quicker digitalization of course materials to the integration of academics who work from home overnight to adapting student finance methods in response to international border closures. In fact, faculties were forced to close down and switch to a different mode of learning in order to adapt with the scenario (Imran, Fatima, Salem, & Allil, 2023). In other words, in order for many colleges to stay open, they were forced to switch to an online teaching model. Faculty members were compelled to immediately adjust the manner that education was given because of this circumstance, and they began searching for advice, resources, and technologies to assist them in converting undergraduate courses in general and chemistry courses in particular to an online format (Chan, 2023). As a result of this occurrence, there have been numerous blogs, webinars including in-depth conversations on the tools and conversion process, and emails from IT experts and university administration aimed at developing and ensuring the efficacy of online learning for the learning process.

The advent of online learning in educational environments has caused a paradigm shift in the educational field.

The use of online learning has been more flexible and priced since COVID-19. According to Ho, et al. (2023), since COVID-19 stroke the world, the use of online learning has become a trend which promote flexibility in learning with affordable price. Due to this circumstance, a greater number of students can participate in online learning, which has raised the standard of instruction. In line with this statement, it is essential that the online learning environment be meticulously planned, built, and customized to increase students' enthusiasm to interact with the material daily (Dhawan, 2020). This is since efficient preparation and instruction are essential elements of the learning process that guarantee teachers may improve both the general calibre of student results and the efficacy of the classroom. As online learning can be conducted at any time and from any location, it can therefore fulfil the requirements for both synchronous and asynchronous mode (Fadhilah, Sutrisna, Muslimah, & Ihsan, 2021). Students now can acquire knowledge from anywhere at any time. Additionally, this situation allows teachers and students to be able to interact and communicate with one another outside of the classroom. Put another way, this arrangement provides teachers with the ability to oversee instruction and learning that happens outside of the classroom while still giving pupils the chance to develop and strengthen their exploration and thinking skills and pick up new knowledge that they may apply to their innovative endeavours.

Online learning has quickly evolved from a specialized substitute to a widely used teaching strategy in recent years (García-Morales, Garrido-Moreno, & Martín-Rojas, 2021). Accordingly, the circumstances have affected how people learn latest information and abilities. Numerous other variables, such technology improvements, have also contributed to this change by altering society's need for its use in education. Aside from that, many educational institutions see that online learning is necessary because of worldwide occurrences like the COVID-19 epidemic. Due to this, students may access a variety of courses and learning materials from any location in the globe. Put another way, learning is made possible by the internet, which gives access to information from anywhere in the globe (Ali, 2020; Bowman & Crowe, 2023; Liu, 2023; San Pablo & Prudente, 2024). Students are free to absorb information at their own convenience and speed. In conjunction to this flexibility, education has become more inclusive, enabling people from a variety of backgrounds and situations to take advantage of learning opportunities that would not have been available to them otherwise (Paudel, 2021). Additionally, multimedia-rich information improves comprehension and engagement for students of all ages. Furthermore, by encouraging a culture of lifelong learning, online learning has completely transformed conventional educational methods.

Conversely, although remote learning provides convenience, it also demands self-control and drive from students (Esra & Sevilen, 2021). Learning results may be influenced by the absence of in-person interaction between students and lecturers or classmates. This can occasionally cause emotions of alienation or disinterest (Chiu, 2023). In conjunction to this statement, a successful online education must include creative teaching methods, robust support networks, and supportive learning communities to guarantee that the learning process will result in students succeeding in the subjects being taught (Giatman, Siswati, & Basri, 2020). Furthermore, concerns regarding certification validation and quality assurance have been brought up by the quick growth of online education. This is a result of the massive growth in online learning, which makes it essential to make sure that courses fulfil stringent requirements and offer legitimate credentials. To maintain academic integrity and credibility, accrediting agencies and institutions are always evolving in how they assess and approve online learning opportunities.

Previously, there are many studies conducted reflecting on the teaching of Mathematics subject other than online education. A research conducted by Cevikbas and Kaiser (2020) stated about the application of flipped classroom in teaching mathematics. In this study, it is identified that the use of flipped classroom promotes studnets' mathematical thinking other than improving their understanding towards the subject. This result is supported by another study conducted by Wei, et al. (2020) whereas the study suggests that the use of flipped classroom improve students' performance in Mathematics subject. Apart from that, in order to support this argument, a study conducted by Algarni and Lortie-Forgues (2023) also suggests that the use of flipped classroom improves students' self efficiency. Another study conducted by Ahmed, Mengistie and Wondimu (2020) highlighting the use of problem-solving method in teaching Mathematics subject. In this study, it is indicated that the use of problem-solving method helps the students to progress effectively in classroom. This finding is supported by a research conducted by Nurlinda, Azis and Nasution (2024) whereas their research indicates that the use of problem-solving methods in teaching Mathematics subject improves students self-efficacy in learning the subject in classroom. In fact, Effendi, Herpratiwi and Sutiarso (2021) in their study indicate that the use of problem-solving method in learning Mathematics subject improve students' understanding apart from training the students to enhance their critical thinking. Another method used by mathematics teachers to teach mathematics subject is cooperative learning. According to Cheng (2023), the use of cooperative learning in Mathematics classroom enables the students to become active learners other than providing them a room to share their resources more efficiently. This finding is supported by Hasanah (2020) in her study whereas the finding indicates the use of cooperative learning can improve students' communication among each other during mathematics lesson.

In summary, the state of online education today represents a dynamic and changing field of study. It provides never-before-seen access, flexibility, and learning possibilities, but it also brings with it difficulties like the digital divide and the requirement for efficient pedagogical methods. The evolution of social requirements and technological advancements will influence how we gain information and skills in the digital era. This will also affect the future of online learning.

Problem Statement

The issue of inadequate communication can impact students' performance as well as their entire learning process (Erlangga, 2022). Communication is crucial in education because it fosters understanding, cooperation, and support (Bachmann, Pettit, & Rosenbaum, 2022). Communication channels that are constrained or ineffective affect several critical aspects of students' effectiveness in online learning settings. Online systems frequently allow for asynchronous communication through message boards, discussion boards, and email (Huang, 2022). Students may encounter response time delays because of the asynchronous nature of the procedure, which can make it challenging for them to receive timely feedback or clear up any misconceptions. This lack of timely communication may have a negative impact on students' performance on examinations and assignments as well as their failure to maintain a regular study regimen (Conrad, et al., 2022). It is undeniable that effective communication fosters a sense of community and engagement among students (Sriram, et al., 2020). In face-to-face conversations, nonverbal cues like body language and facial expressions are crucial tools for expressing understanding and emotions. These cues support the growth of trust and interpersonal rapport, both of which are

necessary for creating a supportive learning environment. Students' sense of community and belonging might be diminished in online learning situations when nonverbal cues are absent, since interactions can come off as detached or impersonal. As a result, students might feel disconnected or alienated, which could be bad for their motivation and performance.

Unquestionably, peer distractions can be eliminated at home when learning online. But because of this circumstance, many students find it challenging to secure a quiet study area when they are living at home with their families. Put differently, students could have encountered disruptions from relatives during their virtual learning sessions. Because of this circumstance, the students were unable to focus fully on the lesson and the instructor, which reduced the session's efficacy. Put another way, students find it more difficult to do their work at home since they are preoccupied by more enjoyable activities like family outings. Furthermore, some students may have additional family duties that limit their time for schoolwork while everyone is at home, which makes them less likely to value online learning. Previous study has demonstrated that these external barriers affect underrepresented minority students' academic performance, especially in lower-level gateway courses. This circumstance made it even more crucial for teachers to design projects that consider the limited time that students have available, as they are already in a continual state of rivalry with other activities for their students' attention.

One key reason to be concerned is the apparent reduction in the quality of information delivery. In conventional classroom settings, face-to-face interactions are highly appreciated because they enable teachers to evaluate student reactions, adjust their teaching methods, and provide prompt answers to questions. On the other hand, online learning platforms run the risk of coming off as impersonal or distant as they lack nonverbal cues and immediate feedback. This might convey the idea that the material distribution process is less engaging or effective in forging strong ties between educators and students. Moreover, one may contend that deep learning and critical thinking are hampered by online education's reliance on digital information. There is concern that students may not truly engage with the material if they rely too much on a superficial grasp of it, even with the wealth of information available through digital means. It is commonly believed that traditional methods, such as in-person debates, practical exercises, and class discussions, are more effective in fostering critical analysis and knowledge synthesis, which enhances comprehension of challenging subjects.

Another issue with online learning is that students frequently lose motivation when they are left on their own without the presence of peers or lecturers to provide them with physical support. Other variables that influenced motivation were peer interaction and outside resources. For most students, motivation and the desire to do well seemed to change, but not in the same manner. Additionally, some students may find that the flexibility of online learning works against them. It seems good to be able to set their own hours, but it requires a lot of self-control and time management skills. Numerous students struggle to maintain their motivation when they are not given the structure and responsibility of regular in-person lessons. Students that procrastinate frequently end themselves in a vicious circle of stress and poor motivation because of delaying assignments or study sessions. One potential cause of demotivation in online courses is the absence of possibilities for experiential learning. Replicating disciplines that require actual application, like scientific labs and art classes, in a virtual environment might be difficult. If they lack access to the necessary tools or resources, students may find it difficult to remain interested

in the subject and may even get disengaged from it.

Research Objective

The main aim of conducting this study is to fill the gap by investigating Pre-University students' perception towards the use of online learning in Mathematics lesson. There are three objectives in this research. The first research objective is to investigate UNIMAS Pre-University students' perception towards the use of online learning towards content delivery aspect during Mathematics lesson. Next, the second research objective is to investigate perception towards the use of online learning towards interaction aspect during Mathematics lesson. Lastly, the third research objective is to investigate UNIMAS Pre-University students' perception towards the use of online learning towards assessment during Mathematics lesson. lesson.

Hence there are three research questions can be found in this research which are:

-What is UNIMAS Pre-University students' perception towards the use of online learning towards content delivery aspect during Mathematics lesson?

-What is UNIMAS Pre-University students' perception towards the use of online learning towards interaction aspect during Mathematics lesson?

-What is UNIMAS Pre-University students' perception towards the use of online learning towards assessment during Mathematics lesson?

Methodology

Research Design

The present study employs a quantitative research design. In this study, a quantitative research strategy is used to allow the researchers to extrapolate the results from a sample group to the entire population. As quantitative research is organized and grounded in statistics, it allows researchers to make inferences and choose the best course of action.

Population and Sample

The population of Pre-University students in UNIMAS consist of Life Science and Physics students. Hence, to conduct this research, a total of 74 respondents had been selected randomly to answer a set of questionnaires to conclude the research objectives.

Research Instrument

A research instrument is a tool that researchers may use to collect, measure, and analyse data about topics of interest in their research (Monday, 2020). To guarantee that all study objectives may be met, it is crucial for the researcher to select an appropriate research instrument. The researcher used three components of the instrument created by Charaboty et al. (2021) to carry out this investigation. This tool, which takes the shape of a Likert scale,

will be used to provide personalized answers to each of the three research questions that will be determined to support the goals of the study. In this survey, a response of 5 indicates "strongly agree", a response of 4 indicates "agree", a response of 3 indicates "agree", a response of 2 indicates "disagree", and a response of 1 indicates "strongly disagree".

A series of questionnaires was first distributed to thirty randomly chosen UNIMAS Pre-University students as part of the study. There are three primary items in the questionnaire. These three items were taken from prior research that Charaboty et al. (2021) did. The purpose of this inquiry is to find out what UNIMAS Pre-University students think about using online learning to supplement traditional classroom instruction in chemistry. The second part of the question then asks what UNIMAS Pre-University students think about using online learning to enhance engagement during chemistry classes. Finally, to find out what UNIMAS Pre-University students think about using online learning for evaluation in chemistry classes.

The goal of quantitative research is to improve understanding of the social domain (Mohajan, 2020). Researchers use quantitative approaches to observe situations or events that affect individuals (Mohajan, 2020). According to Mohajan (2020), quantitative research produces objective facts that may be clearly communicated using numbers and statistics. The researchers take a deliberate, scientific approach to this so that other researchers may replicate the findings. Additionally, the researchers employ a quantitative research methodology to find out what the Pre-University students at UNIMAS think about the usage of online learning in Chemistry classes.

Data Analysis

Finding patterns and links in both historical and current data is referred to as descriptive analysis. It is sometimes referred to as the most fundamental kind of data analysis because it just defines correlations and patterns. To ascertain the UNIMAS Pre-University students' opinions about the usage of online learning in chemistry classes, the researchers in this study employ descriptive analysis. The researchers think it is more accurate to evaluate the data descriptively using percentage, mean, and standard deviation because the data is based on a questionnaire in the form of a Likert scale. The researcher will utilize SPSS 26 version software to analyse this data. Formulas for percentage, mean, and standard deviation are shown below.

$$\text{Percentage (\%)} = \frac{\text{Number of value}}{\text{Total value of Samples}} \times 100\%$$

$$\text{Mean, } \bar{x} = \frac{\sum x_n}{\text{N}},$$

where $\sum x_n =$ Sum of values in the data, and $N =$ Number of values in the samples

$$\text{Standard Deviation (SD), } \sigma = \sqrt{\frac{\sum (X - \mu)^2}{\text{n-1}}},$$

where, $X =$ Value in the samples data distribution, μ = Mean of the samples and n =

Total number of observations

Findings

The researcher will go into further detail on the results of the disseminated survey questions in this section. As a result, the researcher will go into further detail about the results of the independent one sample T test, where inferences were drawn from the data using the mean and standard deviation.

Table 1 Students' Opinions towards Content Delivery related to Mathematics Online Education at Foundation Level

No	Item	Scale	N (%)	Mean	SD
1.	Adequate study materials are available online.	1	0 (0.00%)	4.43	0.664
		2	1 (1.35%)		
		3	4 (5.41%)		
		4	31 (41.89%)		
		5	38 (51.35%)		
2.	Slideshows make lectures more informative.	1	0 (0.00%)	4.54	0.666
		2	2 (2.70%)		
		3	1 (1.35%)		
		4	26 (35.14%)		
		5	45 (60.81%)		
3.	Note-taking software helps in sharing course materials between the lecturers and students.	1	0 (0.00%)	4.58	0.641
		2	2 (2.70%_		
		3	3 (4.05%)		
		4	22 (29.73%)		
		5	48 (64.86%)		
4.	Online tools for problem solving, programming and designing can enrich a course.	1	0 (0.00%)	4.53	0.555
		2	0 (0.00%)		
		3	2 (2.70%)		
		4	31 (41.89%)		
		5	41 (55.41%)		

Note: Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Not Sure*, 4 = *Agree*, 5 = *Strongly Agree*

Table 1 showed the findings for the students' opinions towards content delivery related to mathematics online education at foundation level. Based on the findings, it has shown that the means of the students' responses to the items were between 4.43 to 4.58. For item 1, "Adequate study materials are available online.", it was found that most of the students were strongly agreeing to the statement (N = 38 (51.35%), Mean = 4.43, SD = 0.664). The finding for item 2, "Slideshows make a lecture more informative.", also indicated that majority students were strongly agreeing to the statement (N = 45 (60.81%), Mean = 4.54, SD = 0.666). For item 3, "Note-taking software helps in sharing course materials between the lecturers and students.", most of the students were also strongly

agreeing to the statement (N = 48 (64.86%), Mean = 4.58, SD = 0.641). The students' responses to item 4, "Online tools for problem solving, programming and designing can enrich a course.", were also generally toward strongly agreeing to the statement (N = 41 (55.41%), Mean = 4.53, SD = 0.555).

Table 2. Students' Opinions towards Interactions related to Online Education at Foundation Level

No	Item	Scale	N (%)	Mean	SD
1.	Lecturer-student interaction takes place better in physical classroom than through online platforms.	1	0 (0.00%)	4.77	0.455
		2	0 (0.00%)		
		3	1 (1.35%)		
		4	15 (20.27%)		
		5	58 (78.38%)		
2	Use of digital pen makes a lecture more interactive.	1	0 (0.00%)	4.54	0.686
		2	0 (0.00%)		
		3	8 (10.81%)		
		4	18 (24.32%)		
		5	48 (64.86%)		
3.	If the lecturer and students show their faces, then a lecture becomes more interactive.	1	0 (0.00%)	4.53	0.744
		2	0 (0.00%)		
		3	11 (14.86%)		
		4	13 (17.57%)		
		5	50 (67.57%)		
4.	If the lecturer allows the students to post comments in the chatbox during a lecture, then it becomes interactive.	1	0 (0.00%)	4.30	0.840
		2	2 (2.70%)		
		3	12 (16.22%)		
		4	22 (29.73%)		
		5	38 (51.35%)		

Note: Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Not Sure*, 4 = *Agree*, 5 = *Strongly Agree*

Table 2 showed the findings for the students' opinions towards interactions related to mathematics online education at foundation level. Based on the findings, it has shown that the mean of the students' responses to the items were between 4.30 to 4.77. For item 1, "Lecturer-student interaction takes place better in physical classroom than through online platforms.", it was found that majority of the students were strongly agreeing to the statement (N = 58 (78.38%), Mean = 4.77, SD = 0.455). The findings in item 2, "Use of digital pen makes a lecture more interactive.", also indicated that most of the students were strongly agreeing to the statement (N = 48 (64.86%), Mean = 4.54, SD = 0.686). For item 3, "If the lecturer and students show their faces, then a lecture becomes more interactive.", it showed that students were also strongly agreeing to the statement (N = 50 (67.57%), Mean = 4.53, SD = 0.744). Likewise, findings for item 4, "If the lecturer allows the students to post comments in the chatbox during a lecture, then it becomes interactive.", also indicated that students were strongly agreeing to the statement (N = 38 (51.35%), Mean = 4.30, SD = 0.840).

Table 3. Students' Opinions towards Assessments related to Online Education at Foundation Level

No	Item	Scale	N (%)	Mean	SD
1.	Online tests and quizzes effectively evaluate the knowledge of students.	1	0 (0.00%)	4.57	0.643
		2	0 (0.00%)		
		3	6 (8.11%)		
		4	20 (27.03%)		
		5	48 (64.86%)		
2.	Weekly assignments and tests help in the learning process.	1	0 (0.00%)	4.53	0.707
		2	0 (0.00%)		
		3	9 (12.16%)		
		4	17 (22.97%)		
		5	48 (64.86%)		

Note: Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Not Sure*, 4 = *Agree*, 5 = *Strongly Agree*

Table 3 showed the findings for the students' opinions towards assessments related to mathematics online education at foundation level. Based on the findings, it has shown that the mean of the students' responses to the items were between 4.53 to 4.57. For item 1, "Online tests and quizzes effectively evaluate the knowledge of students.", it was found that majority of students were strongly agreeing to the statement (N = 48 (64.86%), Mean = 4.57, SD = 0.643). Finding in item 2, "Weekly assignments and tests help in the learning process.", also indicated that most of the students were strongly agreeing to the statement (N = 48 (64.86%), Mean = 4.53, SD = 0.707).

Discussion

Students at Universiti Malaysia Sarawak Pre-University have a good opinion of using the online approach to conduct Mathematics classes, according to the findings and data analysis. Therefore, to wrap up the study, this part will go into further detail on the conclusions and data analysis.

The results shown in *table i* suggest that foundational level students have good attitudes on the way in which mathematics curriculum is delivered online. The majority of students highly agreed with the first item's statement, "Adequate study materials are available online." The research by Busto, Dumbser, and Gaburro (2021) supports this conclusion, as it shows that the researchers considered supplemental online resources as well as materials utilized in online learning to be valuable. Indeed, according to Alabdulaziz's research from 2021, there are a plethora of internet resources available for studying mathematics. Apart from that, the majority of students were found to highly agree with the item 2 finding, which read, "Slideshows make a lecture more informative." Actually, Bringula, Reguyal, Tan, and Ulfa's (2021) earlier research shown that students favor the usage of PowerPoint slides in online instruction. These results make it clear that students place a high value on the usage of slides in online instruction. Next, the majority of students strongly agreed with item 3: "Note-taking software helps in sharing course materials between the lecturers and students."

In addition, note-taking software has been shown by Sardin, Dewi, Saleh, and Alrahhal (2023) to enhance students'

mathematical learning creativity. In addition, Kulikova (2021) states that using note-taking software greatly facilitates students' ability to take notes during online instruction. Other than that, students' opinions on the usage of note-taking software in online learning are good, according to Sa'diyah, Muchyidin, and Izzati (2022). Last but not least, the majority of students strongly agreed with the statement in item 4, "Online tools for problem solving, programming, and designing can enrich a course," while responding to the question. This result is consistent with that of Humble, Mozelius, and Sällvin (2020), who found that using online resources to teach mathematics can increase students' success. In conclusion, it can be seen that UNIMAS Pre-University students' have a positive perception towards the use of online learning towards content delivery aspect during Mathematics lesson.

It is evident from the results in *table ii* that students have favourable attitudes toward interactions pertaining to foundational online mathematics education. Most students highly agreed with item 1's assertion that "Lecturer-student interaction takes place better in physical classroom than through online platforms". Put differently, UNIMAS Pre-University students discover that in-person classroom interactions are preferable than virtual ones for learning. This might be because of the lack of a specific activity that would enable lecturers or professors to assist students throughout the session (Tay, Lee, & Ramachandran, 2021). Most students highly agreed with the statement in item 2, " Use of digital pen makes a lecture more interactive" according to the data. According to research by Ben Abu and Kribushi (2022), using a digital pen really influences students' willingness to learn, boosts their self-efficacy, and creates a pleasant learning environment.

Furthermore, a lot of educators and instructors utilize digital pens during lectures (Alabdulaziz, COVID-19 and the use of digital technology in mathematics education, 2021). It was evident from item 3 that students highly agreed with the statement, " If the lecturer and students show their faces, then a lecture becomes more interactive". This result is consistent with study by Chakraborty et al. (2021) that suggests that if a lecturer displays their face during an online session, it would be more participatory. Similarly, the results for item 4, which said that " if the lecturer allows the students to post comments in the chatbox during a lecture, then it becomes interactive" likewise showed that students highly agreed with the statement. Cheng, Croteau, Baral, Heffernan, and Heffernan (2024) claim that chat boxes may be utilized to give students an engaging atmosphere while doing online instruction. In summary, UNIMAS Pre-University students view the usage of online learning as beneficial for the interaction component of mathematics classes.

The results for the students' perceptions of assessments pertaining to foundational online mathematics education were finally displayed in *table iii*. Regarding item 1, " Online tests and quizzes effectively evaluate the knowledge of students", most students were found to strongly agree with the statement. Indeed, this result is consistent with the study of Ilgaz and Afacan Adanır (2020), which found that most students noted the usefulness, dependability, and effectiveness of online assessments. Most students highly agreed with the finding in item 2, which read, "Weekly assignments and tests help in the learning process." This conclusion is consistent with studies by Chakraborty et al. (2021), which found that students felt weekly assignments and examinations aided their online learning experience. In conclusion, the use of online learning for evaluation during mathematics lessons is well-received by UNIMAS Pre-University students.

Conclusion

In conclusion, overall, UNIMAS Pre-University Students exhibit a positive perception towards the application of online learning in Mathematics. This positive feedback highlights the effectiveness and potential advantages of integrating online learning platforms in the Mathematics curriculum. Consequently, it is crucial for Mathematics lecturers, not only at UNIMAS but also at higher educational institutions globally, to promote and incorporate online learning methods. Embracing these digital tools can provide numerous benefits, enhancing the learning experience and outcomes for students. Therefore, further support and development of online learning resources in Mathematics should be encouraged to maximize these advantages.

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