

# Challenges Faced by Mathematics Secondary School Teachers in Managing Learning Loss: A Qualitative Study

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## Abstract

Learning loss occurs when students drop out, lowering their academic performance. According to UNICEF, twenty percent of rural children in 2021 were disinterested in education. Quitting school affects students with facility concerns and other issues. This study examines mathematics teachers' challenges and how they address student learning loss in secondary schools in Pasir Gudang, Johor. Purposive sampling selected five individuals for this case study. Interviews and document collection provided study data. The teacher's daily lesson plan, student exam analysis, and semi-structured interviews were collected. The acquired data were thematically and descriptively examined to determine the study topic and connect the research findings to the objectives. The study found that non-attendance, socioeconomic concerns, and a lack of basic mathematical comprehension cause student learning loss in mathematics training. Teachers also face time constraints, failing to motivate students, and failing math achievement. Teachers address this issue via differentiated instruction, modules, and peer mentorship. The study can help educators reduce learning loss. Expanded investigations are needed to understand this issue altogether. Studies on creating customized modules for kids with learning loss or low basic maths skills and the relationship between learning loss and maths accomplishment in school should be done.

**Keywords:** Online Learning, Learning Loss, Challenges, Mathematics Education, Overcome Learning Loss

## Introduction

COVID-19 is an infectious disease induced by a new virus that was first detected in Wuhan, China, in December 2019. On March 11, 2020, the World Health Organization (WHO) proclaimed a pandemic for COVID-19 due to the disease's widespread spread globally. In conjunction with this, the Malaysian government issued the Movement Control Order (MCO) to prevent the spread of the COVID-19 epidemic throughout Malaysia. As soon as this MCO was implemented, most sectors were ordered to close temporarily, and it can be said that nearly all sectors were affected by this pandemic. UNESCO has also mandated the closure of all educational institutions. Therefore, the Malaysian Ministry of Education (KPM) has taken the initiative to replace the traditional learning system with online learning. This shift in the

educational system is being met with little resistance from teachers and students alike. There is apprehension about introducing online learning because it has never been tried at the school level previously. Online education presents several difficulties and concerns. The preparedness level displayed by educators and learners is one such factor. Not all teachers and students are prepared for online learning (Morgan, 2020). Online learning requires teachers to provide stimulation that can boost students' self-learning. It has also contributed to concerns about student attrition in mathematics education.

However, after being implemented for two years (from 2020 to 2021's conclusion), the learning approach is now integrated into everyday society. The pandemic phase of COVID-19 in Malaysia has transitioned to an endemic transition phase, meaning that all primary and secondary school students can return to in-person classroom instruction for the 2022/2023 session beginning in April 2022. Teachers can better recognize student learning problems through face-to-face learning, especially in the learning loss and learning gap concerns that are the subject of heated debate in the media. UNESCO has produced an estimate of 50 percent of students not attending lessons during online learning during the pandemic. However, there is no clear evidence connected to this issue in Malaysia. This number is worrisome because it implies a widespread problem with learning loss and learning gaps in this country, which threatens the future of the young population currently enrolled in school. Moreover, it is said that student participation in this online learning session is unstable because not all students attend every class during online learning. Only some students have access to technology, and some are fortunate to have parents who monitor their academic progress at home. During the online learning period, other students continue to vanish without a trace (Swaby, 2020). The loss of students in this online learning course is concerning to teachers and administrators because it implicates the issue of student attendance. In addition, the MCO restricts teachers' ability to interact directly with their students. This online learning issue affects not only students but also educators. There are teachers with access issues and those needing device-use expertise. Due to the COVID-19 pandemic, the world of education faces numerous challenges. This results in several issues and challenges that the students must confront, and teachers are included in tackling them. One of these is the issue of student learning loss.

Next, the 2022 newspaper contains several heartfelt expressions of parental concern for their children's educational development. Due to their work obligations, parents cannot monitor their children's learning at home during the pandemic. Parents can observe that there are still children who cannot read, and some report that their child's performance has deteriorated from comprehending basic mathematical concepts to being unable to recall them. Therefore, the school's inauguration for the 2022/2023 school year provides parents with the opportunity to ensure that their children can learn with the attention of teachers at school. Nevertheless, it is challenging for teachers to identify all students with learning loss issues. Not all institutions have an intervention plan to address this problem. Moreover, the lack of research on this issue in Malaysia cannot provide teachers with the information regarding the comprehension and treatment of student learning loss following school closures during a pandemic. Therefore, researchers are interested in scrutinizing and researching this topic to provide exposure and information regarding student learning loss in mathematics courses. This study focuses on the difficulties mathematics teachers confront and the measures taken to address the issue of student learning loss in secondary schools based on school location. This research was conducted to cover a gap in the literature regarding the issue of student learning loss in mathematics education. In addition, this study aims to identify the causes of

student mathematics education loss. Next, this research will investigate how teachers perceive the issue of student learning loss in mathematics education. The findings of this study may aid teachers in enhancing the quality of their teaching. This study can raise teachers' awareness by enhancing their comprehension of student learning loss. In addition, teachers can employ appropriate and pertinent instructional strategies to match the level of their students. Teachers can reduce the problem of learning loss and educational disparities between students by utilising the most effective instructional strategies.

### Literature Review

According to Engzell et al (2020), students studied less after the MCO was instituted. This learning loss was initially applied to students from disadvantaged backgrounds or less fortunate families. Due to school closures, the socioeconomic disparity widens. In addition, historical data provides researchers with information regarding where student learning should be assessed annually through standardized testing. Learning loss occurs when educational progress is not made at the same rate as the previous year (Pier et al., 2020). Not all pupils suffer from learning loss. Even though most of the analysed literature indicates that students experience some level of learning loss, some studies indicate this is untrue. Maldonado and De Witte (2020); Kuhfeld et al (2020) discovered, for instance, that learning loss exists in some subjects but significantly impacts others. While Tomasik et al (2020) discovered that the pandemic affected primary school students, they found that secondary school students experienced no learning loss.

In an Australian study, Gore et al (2021) discovered no evidence of learning loss in third- and fourth-year students' literacy and mathematics skills, except for ICSEA primary school students, who experienced moderate learning loss. In addition, Gonzalez et al. (2020), who studied university students in Spain, found that despite having cognitive disorders during the pandemic, university students' knowledge levels increased and did not decrease; this study focused on STEM subjects at a single university. However, previous studies were conducted abroad, and there is scant evidence of COVID-19-related learning loss studies in Malaysia.

Next, numerous factors hinder the operation of online education. Internet access factors Shela and Shafie (2020), lack of a device to attend online classes, socioeconomic issues, learning fatigue or exhaustion, and others (Ahmad, 2021). These factors can contribute to mathematics disengagement issues. If, in the past, the dropout factor was more of a socioeconomic and ambient background issue that led to student dropout Subra et al (2019), the current situation is different in that students face learning loss problems in learning. According to Ahmad (2021), Malaysia must still prepare to conduct online learning. Internet access in this country is still inadequate, and not all households have access to suitable devices to follow online learning. 1.85 million Malaysian pupils from all levels of education have device issues (KPM, 2021). Both issues contribute to mathematics learning abandonment issues.

In addition, students need help comprehending mathematical concepts when learning online, resulting in student attrition. This is because most teachers conduct online learning in a one-way format, where only the teacher communicates, and students are forbidden from speaking or interrupting when the teacher is instructing. Due to the lack of communication between teachers and students, students are less likely to ask what they need help comprehending when studying mathematics (Ahmad, 2021). Moreover, the readiness of teachers to conduct online learning also contributes to the mathematics learning loss problem. Most teachers need to learn how to use applications that can assist them in teaching

mathematics, particularly applications that contain mathematical materials such as protractors and others. In addition, students are overburdened by the intense online learning curriculum, which includes light subjects such as Art Education, Physical Education, and Health. The burden is felt when they are required to adhere to online learning, such as the face-to-face learning schedule at school, and the excessive number of assignments makes most students unmotivated and sluggish to study. This burden has yet to be accounted for in calculating the load at home or in their environment. Consequently, some students avoid following online learning, which can result in students abandoning their studies. This problem of dropping out of school can result in a wasted generation in the future due to falling behind in education (Ding, 2021).

### **Research Questions**

This qualitative study aims to investigate the difficulties mathematics teachers in the Pasir Gudang district face in addressing the issue of learning loss among secondary school students. In addition, this research aims to determine mathematics teachers' comprehension of the issue of learning loss and to identify the factors that contribute to learning loss in mathematics subjects. This study also seeks to identify methods or interventions used to address the issue of student learning loss in mathematics subjects in secondary institutions in the Pasir Gudang district. Based on the objectives above, the following research queries were developed:

RQ1: What does the mathematics teacher think about the issue of student learning loss in the eyes of maths lessons?

RQ2: What difficulties do mathematics teachers encounter in addressing issues of student learning loss in maths subjects?

RQ3: What factors contribute to student learning loss in mathematics subjects?

RQ4: How do teachers overcome or intervene to prevent mathematics learning loss at school?

### **Research Methodology**

This study uses a qualitative research design because its purpose is to investigate the difficulties mathematics teachers face in addressing the issue of learning loss among secondary school students, the types of learning loss in mathematics education, and the interventions implemented in learning and facilitation to address this issue. The selected research location is a few secondary schools within Pasir Gudang district in Johor. This location was chosen because the researcher received information that student absenteeism causes many students to drop out and be expelled from school. The problem has created the issue of learning loss as wanted to be studied in this study. In addition, the researcher considers the limitations of time and movement in conducting this study. In addition, the cost factor also plays a role in the selection of the study location. Therefore, the researcher has chosen an area close to the researcher's location to facilitate the study, which is in the state of Johor as the study location.

The study population consisted of secondary school mathematics teachers in the Pasir Gudang, Johor district. In this study, the researcher selected participants through purposive sampling with specific and general characteristics desired by the researcher. As Richards and Morse (2007) recommended, study participants were selected by purposive sampling. Five participants were selected from high school mathematics teachers in the Pasir Gudang, Johor district. According to Patton (2017), there is no rule in determining the sample size for a

qualitative study. Therefore, the researcher appointed five teachers to facilitate the researcher to obtain and analyse data considering the constraints and limitations of this study. The general characteristics of participants required by the researcher are mathematics teachers, teaching mathematics at the secondary school level, having teaching experience for three years or more and having teaching experience before the pandemic, during the pandemic and after the pandemic. The selected teacher teaches students in the lower performance class for the specific characteristics required in this study. This is because the problem to be studied commonly exists among students in the lower performance class.

The methods used are literature review, interviews, and document analysis. The literature review is an essential part of this study. Through this study, information such as definitions and concepts related to the study can be obtained. The literature review is constructive in introducing the study and the theoretical foundation in chapters one and two. From the literature review as well, research on related past studies can be done and can identify the position of this study. In addition, it can help the researcher draft the interview form's content. In addition, the main instrument in this study is using the interview method. Interview questions are semi-structured question types. The interview sample consisted of five experienced mathematics teachers in the Pasir Gudang, Johor district. Gay et al (2009) defined a semi-structured interview as a combination of structured and unstructured interviews. Semi-structured interviews can address the need for a standing response where each participant can be asked the same question, but the conversation can be expanded between the interviewer and the participant based on the needs of the interviewer, and the participant can change the questions based on the needs of the situation (Boeijie, 2010; Lichtman, 2006; Wisker, 2008). This interview aims to get teachers' views on the challenges faced in dealing with the issue of learning loss among students in the context of mathematics education as well as interventions carried out by teachers to overcome this issue.

The researcher also analysed the participant's documents by looking at the daily lesson plan (RPH), work results and student exam results before, during and after the pandemic. This instrument helps the researcher select interview participants to strengthen the research further. Documents are essential in every case study (Simons, 2009; Stake, 1995; Yin, 2003). According to Darusalam and Hussin (2018), document analysis helps the researcher confirm the information obtained through interviews and can be used to add research evidence. The string, the documents collected in conducting this study, are informal documents that will help improve the quality and as evidence to support the study. Data analysis methods are carried out after data collection. Once the data is collected, the researcher analyses the data and reduces unnecessary data. Next, the data that has been analysed is reported in the form of a table and given a detailed explanation of each data obtained. The information reported is the conclusion and verification obtained by the researcher on the study conducted. For the interview instrument, a thematic analysis was conducted on the audio recording of the interview to obtain themes up to the narrative writing process. Meanwhile, document analysis is carried out through descriptive analysis and observation to distinguish the documents obtained.

## **Findings and Discussion**

### **Demographic analysis of the respondents**

Five secondary school mathematics teachers from the Pasir Gudang district, Johor have volunteered as study participants. Study participants were selected using purposive sampling. The five participants meet the criteria stated in the previous chapter: they have more than

three years of teaching experience and have teaching experience before, during and after the COVID-19 pandemic. The table below shows the background of the participants for this study.

Table 1

*Demographic analysis of respondents*

Participant code	Gender	Academic Qualifications	Teaching Experience	Teaching level
TB/I-01	Female	Degree	10	High school
TB/I-02	Female	Degree	6	High school
TB/I-03	Female	Degree	16	High school
TB/I-04	Male	Degree	16	High school
TB/I-05	Female	Degree	27	High school

Based on the table above, only one male participant is in this study. The rest are female participants. Not many male teachers agreed to be interviewed for this study. However, this study does not emphasize the gender of the participants because it is not listed in the selection criteria of the study participants. Next, all study participants have an academic qualification at the bachelor's degree level with education. In addition, all participants have the criteria set by the researcher, which is to have more than three years of teaching experience, and the range of teaching experience for the participants of this study is from 6 years to 27 years.

**Teachers' Views on Learning Loss in Mathematics Education**

Table 2

*Teacher's Views on Learning Loss in Mathematics Education*

Participant code	Teacher's Definition on Learning Loss in Mathematics Education
TB/I-01	More about losing in terms of learning or a person's learning is disrupted.
TB/I-02	Related to the student's weakness in learning mathematics, especially basic topics such as addition, subtraction, multiplication, division and the basics of algebra. If the student cannot master this basic math, it will be difficult for the child to learn.
TB/I-03	Left behind in study.
TB/I-04	Student dropout in mathematics learning, the delivery of teaching and learning cannot be implemented for students due to certain circumstances or factors.
TB/I-05	If students didn't attend online learning class before, they will have a problem with the loss of knowledge or learning in the past.

The results show that all teachers have almost the same understanding. They view learning loss occurs when student's dropout or lose learning due to certain factors. Various views were given by the participants on this issue. In the beginning, not all teachers are clear about this and are confused between learning and student dropouts. After explaining what is meant by learning loss, the participants gained a little insight into this issue. They concluded that loss in terms of learning or knowledge of a subject is a learning loss. A participant explained the situation where his students lost two years of learning due to the COVID-19 pandemic. When



the school was opened, and learning took place face-to-face, the teacher found that the students who were now in the form two were still weak in study, especially in basic mathematical operations. They cannot master the form one syllabus. Even worse, they do not remember what they learned in year six. This shows that students who do not follow the learning during MCO will lose part of their learning. This finding is in line with the study by Haser et. al (2022) stated that learning loss is when learning does not occur when the school is closed, and learning has been forgotten. In addition, Schult et. al (2022) stated that this learning loss is where a person loses in learning.

### Student Learning Loss Factors in Mathematics within Pasir Gudang District Schools

Table 3

*Teacher's Views on Factors of Learning Loss in Mathematics Education*

Factors	Participant code	Teacher's Views on Factors of Learning Loss in Mathematics Education
Absence	TB/I-04	<i>"Students who dropped out and did not go directly into the online learning class likely do not know anything when they enter school."</i>
	TB/I-05	<i>"Sometimes there are days when many people join and there are days when the data runs out, students does not join the class and stay silent. When school open, the number of student attendance is unsatisfactory."</i>
Socioeconomics	TB/I-04	<i>"Not all children have access to study, especially those who come from poor families."</i>
	TB/I-05	<i>"Not everyone has a mobile phone. Some students need to share their gadget because they have a lot of siblings." "There are many records of PPD. Many people must drop out of school. They do not show up, and few people appeal to return to school because they already have a job and are comfortable earning money and their parents do not care. Maybe it is because they are from the underprivileged, so when they are comfortable like that, they do not think studying is important because they can work even without studying. This is to prevent it. If it is junior high, he does not dare to work anymore, and it's just a matter of interest."</i>
Basic Knowledge of Mathematics	TB/I-01	<i>"They do not even master in basic math. It looks like a loss when they want to do math in class. They do not master the basic operations, especially multiplication, division, and subtraction. I can see this from my students work because I teach students in the back grades."</i>
	TB/I-02	<i>"Most students do not have basic knowledge of mathematics such as addition, subtraction, multiplication, and division. They can quickly drop out of learning when they do not have that knowledge. It is hard when they want to solve basic algebra questions so they cannot do other questions. They will easily give up when they enter a new chapter in study."</i>

	TB/I-03	<i>"One of the factors of learning loss is in terms of basic mathematics. When they lost the basic, it is really hard for them to catch up in class."</i>
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The types of dropouts in mathematics at school obtained from the study's findings have been categorized into three: non-attendance, socioeconomics, and basic mathematical knowledge. Every teacher gives a different view. The type of dropout given by the informant teachers was categorized as a factor in dropout in other studies. Badriyatun (2013) states that there are two types of dropouts: intentional and forced. Socioeconomic factors, incentives and attitudes cause intentional dropout. At the same time, forced dropouts are students who fail exams and have no opportunity to continue their studies but still want to study. Initially, the original question for research question two was related to the type of dropout. However, research question two has been changed to factors that cause learning loss in mathematics because all the participants were confused and could not distinguish between the type of learning dropout and the factors that cause learning dropout. However, the factors the participants gave are closely related to the type of dropout mentioned above. This dropout factor plays the most significant influence on student learning.

Each factor the participants gave can be linked to the theory of planned behaviour discussed in the literature review section. Attitudes, perceptions, and environmental factors influence students' intentions to learn. Therefore, the actions taken by students when these three elements were disrupted resulted in students not attending class during online learning. When students do not follow the online or offline learning classes conducted by the teacher, this will impact the student's level of mastery in the class. It can be seen in the student exam results when the exam is conducted after several months of face-to-face schooling. The passing percentage of students is declining in mathematics subjects. When item analysis was carried out by the participants on student exam questions, the participants found that the problem of students' lack of knowledge in basic mathematics significantly influenced this issue.

Table 4

*Analysis of the percentage of students passing mathematics during MCO and after MCO*

Participant code	Number of students in class	Pass percentage before MCO (%)	Pass percentage after MCO (Mid Year Exam - %)	Pass percentage after MCO (Final Year Exam - %)
TB/I-01	27	29.63	22.22	29.00
TB/I-02	27	69.23	62.9	55.00
TB/I-03	26	11.54	11.54	15.34
TB/I-04	26	0	0	7.69
TB/I-05	28	0	3.57	10.71

The table above shows the pass percentage of students obtained from the math subject headcount data provided by the teacher. The data provided is limited to one class they teach only. The data provided is the data of second-level students who are in junior high school. Second-form students have gone through the online learning phase during the MCO, the phase before school closure, and the school opening phase after the COVID-19 pandemic. Here it can be seen that there is a decrease in the passing percentage after the MCO, which



is the mid-year exam (PPT) for class I-01 teachers by 7.41% and I-02 teachers by 6.33%. For I-03 and I-04 teachers, no change in percentage was recorded. In contrast, I-05 teachers have an increased percentage of 3.57%. In addition, the data shows that there is an increase in the pass percentage after the PKP during the end-of-year examination (PAT), namely I-01 teachers by 6.78%, I-03 teachers by 3.8%, I-04 teachers by 7.69% and I-05 teachers by 7.14%. However, there is a decreased pass percentage for the I-02 teacher class which is 7.9%. Based on the percentages shown, all classes of participating teachers increased the passing percentage except for I-02 teachers.

### Challenges Faced by Teachers in Dealing with Student's Learning Loss in Mathematics Education

There will undoubtedly be difficulties in dealing with a problem or circumstance. Teachers experience various difficulties when addressing the problem of maths learning loss in the classroom. Time limits are one of the difficulties that teachers encounter. The difficulty for teachers in replicating the curriculum taught during online learning is time constraints. This is because to prepare pupils for tests adequately, teachers must also catch up with the current year's curriculum. In addition, the mathematics syllabus in the typical Malaysian maths curriculum is overly extensive, making it challenging for teachers to cover everything quickly. Teachers can only repeat the material on the syllabus that they believe is crucial for students to understand.

Table 5

*Teacher's Challenges in Dealing Learning Loss*

Challenges	Participant code	Teacher's Views on Factors of Learning Loss in Mathematics Education
Time Constraint	TB/I-01	<i>"For me the biggest challenge is time. We don't have enough time to review the lessons they missed before the MCO period. I need to continue teaching because there are many syllabuses to teach."</i>
	TB/I-04	<i>"When schools open, many teachers have to re-run teaching for the one-year topics taught during MCO, but only briefly. Not having enough time is also a challenge. There is no enough time to catch up with the previous and current syllabus while polishing their basic knowledge back."</i>
Motivation	TB/I-02	<i>"The biggest challenge that I think all teachers in Malaysia are facing is that it is difficult to get students interested in learning mathematics. Then it's hard to make them realize that math is easy and not difficult."</i>
	TB/I-05	<i>"It's hard to attract student in class."</i>
Achievement	TB/I-03	<i>"When you ask them questions, they will answer that they understand everything, but when they take the exam, you can see how their knowledge is."</i>
	TB/I-04	<i>"Most notably, the students' end-of-year assessment scores did decline severely. Answering the assessment is just like playing a game for them."</i>

Among the challenges teachers face in dealing with learning loss is time constraints; it is challenging to attract students' interest in learning, and student achievement is decreasing. The challenge stated is a common challenge that can be seen in other studies, especially in the problem of attracting students' interest in learning mathematics. This student's interest

has become research often done yearly because students' interest affects their learning. Most students nowadays are less interested in mathematics because, for them, mathematics is the most challenging core subject. This results in their interest in learning mathematics decreasing. When students' interest decreases, their class involvement will usually decrease. This is supported by the study of Haser et al (2022), stating that it is challenging to attract the interest and involvement of students in the class even if the teacher has changed the teaching method.

Student engagement is still low due to unequal student access to learning materials. However, Engzell (2021) states in his discussion that Hippel's (2020) study shows no significant relationship between dropout and student achievement during the COVID-19 pandemic. In addition, teachers found that student performance is deteriorating as a challenge because it affects students' math achievement in school. This challenge is closely related to the interest and involvement of students in class. When they lack basic knowledge, they are not interested in learning, and their involvement in class decreases, which can be seen when they sit for exams. Most participants said that students take the assessment as a trivial matter and often leave it blank when answering exam questions. The elimination of essential exams such as UPSR and PT3 is also one of the factors why students take assessments at school for granted because they are assessed based on their performance in class only.

### **How Teachers Overcome the Issue of Student Learning Loss in Mathematics Education**

There are several ways to overcome the issue of student learning loss in mathematics at school. Among them is peer coaching, holding extra classes, using transit records in class, and doing differentiated learning. The methods given by the participants are the methods teachers can use during teaching and learning sessions in the classroom to reduce student learning loss in mathematics subjects. According to Mahyudi (2021), various strategies or methods can be used to overcome this student's learning loss if it is appropriate for the student's level. Setyosari et al (2023) also stated that teachers need to improve their teaching using computer technology to attract the interest of students who have dropped out of learning mathematics to learn. To attract students' interest in learning mathematics, teachers need to reduce the use of conventional methods in the classroom. This is because the current generation is less focused on learning that is only based on chalk and talk. Generational differences and the passage of time require a change in the teacher's teaching style so that the learning sessions suit the students.

Based on the findings of the interviews, teachers employ a variety of approaches, strategies, and instructional techniques to close the learning loss gap in the classroom. One is conducting additional training after the course is over or administering a test. These tests and activities gauge how well-versed students are in a particular area of mathematics. Teachers differentiate learning in the classroom as well. Differentiated learning can be used when there are three levels of pupils in a class—excellent, average, and weak. This method requires the teacher to prepare three sets of questions, categorised as excellent, medium, and weak, depending on the student's level of mastery. Additionally, the instructor implements a catch-up strategy in class to assist learners in responding to questions at the mastery level 1 (TP1) and mastery level 2 (TP2) levels. Next, teachers employ peer coaching or mentee mentoring, in which exceptional students support weak and average classmates during class. This strategy is considered good and productive because pupils are now embarrassed to ask the teacher questions. They feel more at ease approaching friends. Therefore, this approach can

be used in the classroom to enhance learning and boost students' motivation to learn from their friends.

Integrating 21st-century learning (PAK21) can also help teachers attract students' interest in learning in the classroom. This is because PAK21 prioritizes student-based learning, where the teacher acts as a facilitator, and the student acts to carry out what the teacher gives. Students will learn faster through this kind of learning because they are actively involved in the learning session. The active involvement of students in learning sessions will improve students' skills and knowledge in the classroom. Improving the skills and knowledge of students in the classroom will reduce the educational gap and learning loss of students in learning mathematics. The effort or way the teacher overcomes this issue will be able to help students so that they no longer fall behind in learning mathematics. In addition, student interest and student math achievement will increase when teachers diversify teaching methods appropriate to the student's level of education. This is because students will be more confident and believe they can solve math problems.

### **Conclusions**

The level of students' mathematical knowledge is becoming more and more worrying. This can be seen through the percentage of Malaysian students' mathematics passing at a low level compared to other countries. Therefore, teachers must use methods that attract students in the class to attract students' interest and encourage student involvement in teaching and learning sessions. Teachers must be competent in diversifying learning techniques or methods to continue attracting students' interest. The lack of student interest in learning mathematics contributes to the problem of student dropout. Student dropout will cause students to be behind and unable to develop their potential in the classroom. The results show that all teachers have almost the same understanding of learning loss in mathematics education. Each factor the participants gave can be linked to the theory of planned behaviour discussed in the literature review section. The result shows the pass percentage of students obtained from the math subject exam analysis data provided by the teacher. The data provided is the data of second-level students who are in junior high school. The difficulty for teachers in replicating the curriculum taught during online learning is time constraints. Teachers can only repeat the material on the syllabus that they believe is crucial for students to understand. The challenge stated is a common challenge that can be seen in other studies, especially in the problem of attracting students' interest in learning mathematics. The study of Haser et al. supports this. However, Engzell (2021) states in his discussion that Hippel's (2020) study shows no significant relationship between dropout and student achievement during the COVID-19 pandemic. This challenge is closely related to the interest and involvement of students in class. The methods given by the participants are the methods teachers can use during teaching and learning sessions in the classroom to reduce student learning loss in mathematics subjects. This is because the current generation is less focused on learning that is only based on chalk and talk. Teachers differentiate learning in the classroom as well. This method requires the teacher to prepare three sets of questions, categorised as excellent, medium, and weak, depending on the student's level of mastery. Integrating 21st-century learning (PAK21) can also help teachers attract students' interest in learning in the classroom. Improving the skills and knowledge of students in the classroom will reduce the educational gap and learning loss of students in learning mathematics.

Weaknesses in mastering the fundamentals of mathematics will cause students not to be able to follow future learning because every topic learned in mathematics requires basic

knowledge of mathematics and a connection with the previous topic. Therefore, it is vital to understand what is said about student dropout in mathematics so that teachers, educators, and the Ministry of Education can overcome this problem. The problem of dropping out of learning is not a tiny problem because, if seen in the long term, students like this will be unable to contribute their skills to the family, society, and country. This will cause education in Malaysia to decline further and be behind because students cannot contribute to the country's progress. This study can provide information to all educators in dealing with the issue of student learning loss in mathematics. It can also benefit teachers to use recommendations or interventions in their teaching and learning sessions. In addition, the research findings can help the school prepare or intervene in mathematics education. District education office (PPD) and KPM can use this study's findings to improve Malaysia's education system so that all students gain equality in learning. In addition, this study can generate new ideas for other researchers, especially in looking at learning loss in mathematics in Malaysia. This is because this kind of research is less done in the country. As a suggestion for further research, future researchers can conduct research as below

1. Construction of special modules for students with learning loss problems or low basic math skills.
2. Studying the relationship between learning loss and students' math achievement at school.
3. Studying the relationship between learning loss and students' interest and motivation in mathematics at school.
4. Studying students' socioeconomic relationships and learning loss in mathematics.
5. Interventions that the Ministry of Education and Culture can do to reduce the gap in students' mathematics learning at school.

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