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EXPLORING STUDENTS' PERCEPTIONS OF PRIVATE MATHEMATICS TUTORING IN THREE COUNTRIES

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ABSTRACT

This descriptive quantitative study explored secondary school students' reasons for receiving or not receiving private mathematics tutoring. It also explored the prevalent teaching methods private mathematics tutors use. A questionnaire was adapted to collect data from 1,309 Year 7 to Year 12 students (ages 11 to 17 years) in three countries: Brunei, Indonesia, and Iraq. The results highlight that students may receive private mathematics tutoring to pass national examinations and improve examination scores. Teachers also adapt to teaching approaches that enable students to achieve these teaching and learning goals. This study provides an initial understanding of the common reasons and teaching methods used in private mathetics tutoring across different contexts that prioritise high-stakes examination culture. The results provide implications for how private mathematics tutoring can be used to support effective teaching and learning compared to the high-stakes reasons it seems it promotes. The results also accentuate the need for families and other stakeholders to reconsider private mathematics tutoring as an opportunity to remediate the challenges students encounter in their normal classroom instruction to improve student learning.

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1. INTRODUCTION

During the 20th century, children's learning and development were primarily achieved through formal education. This provided the avenues for children to be educated through the organized and systematic curriculum in the school, with support from

governments and parents (Epstein, 2010; Jansen et al., 2022). Since the turn of the millennium, shadow education (henceforth, private tutoring) has become increasingly visible and considered an international phenomenon (Bray, 2009; Yu & Zhang, 2022). This form of education was more prevalent in Asia, especially in countries such as Singapore, Japan, Korea, and China that prioritise high-stakes examination cultures (Li & He, 2022; Wang & Guo, 2018). The three countries under study share similar characteristics with these countries.

For example, the education system in Brunei is examinations and content-driven. It is considered a high-stakes environment that prioritises learning assessment, although there is recent advocacy by its Ministry of Education toward assessment for learning. At the primary school level, students sit for the Primary School Assessment in Year 6 and proceed to either a four-year programme (Years 7 to 10, ages 12 to 15 years) or a five-year programme (Years 7 to 11, ages 12 to 16 years) at the secondary school level (Ebil & Shahrill, 2023; Ministry of Education, 2013; Shahrill et al., 2022). Since all students in both programmes follow the same curriculum in Years 7 and 8, they all sit for the Student Progress Assessment. At the end of their upper secondary education, students may sit for the International General Certificate Secondary Education Examination or the Brunei Cambridge General Certificate of Education Ordinary Level Examination. Successful students proceed to the sixth form centres or technical or vocational schools. Students are not repeated in the primary schools in Brunei. The Bruniean Ministry of Education stresses problem-solving, creativity, and critical thinking among students, making mathematics a vital subject.

Indonesia has a compulsory 12-year education for all students from the primary to the secondary level. It involves six years in elementary education (Years 1 to 6) and another six years in junior (Years 7 to 9, ages 11 to 14 years) and secondary (Years 10 to 12, ages 15 to 17 years) education before tertiary education. At the end of the six years of elementary education, the student sits for the Minimum Competency Assessment (Marmoah et al., 2021; Rifai & Rombot, 2022). This is used to assess students' numeracy and literacy skills and for school accreditation. At the end of the last six years, students sit for an external examination known as UTBK. This is a computer-based written examination organised by the Higher Education Admission Test Institute (LTMPT). It is a high-stakes university entrance examination, and students who achieve satisfactory scores are admitted to the various higher learning institutions in the country. Indonesia is considered a high-stakes context. Recent data from the Ministry of Education and Culture show that about 53 million students registered for external examinations in 2020 (Directorate General of Early Childhood Primary and Secondary Education, 2020). This situation may contribute to student competition when obtaining admission to higher education institutions. However, at the beginning of 2021, the Indonesian Ministry of Education announced a new policy by cancelling all national examinations due to the COVID-19 pandemic, which might have reduced the perception of students, teachers, and other stakeholders about the high-stake environment in the country.

The pre-tertiary education system in Iraq lasted 12 years. This includes a 6-year compulsory primary stage (ages 6 to 11), a 3-year intermediate stage (ages 12 to 14), and another three years of secondary education (ages 15 to 17). Secondary education is further divided into secondary vocational education and general secondary scientific and literary education (IRFAD, 2014). At the end of primary education, students must pass a standardised national examination before being admitted to intermediate educational institutions. After completing intermediate education, students must sit and pass another standard examination, The National Intermediate Baccalaureate Examinations, before entering a general secondary or vocational school. They further sit for another Baccalaureate

examination after their secondary education before they are admitted to tertiary institutions. A student unable to pass the Baccalaureate examinations may have another opportunity to rewrite the examination within a year. If the student fails the examination for the second time, they are not eligible for higher education (IRFAD, 2014).

Private tutoring became more popular in Iraq during the economic crisis of the 1980s and especially in the Iran-Iraq war, leading to a decrease in the salaries of teachers. After this period, especially during the 1990s, private tutoring became a norm due to poor public education (Shadbash & Albakaa, 2017). The literature provides some evidence of the prevalence of private tutoring in Iraq. In 1996, a study by Jassem and Kazem (2001) revealed that out of 514 Years 6 to 12 students, 21% and 25% of males and females received private tutoring in English and mathematics. In 2019, a random survey from four schools revealed that about 71% of Year 11 students received private tutoring. A more recent study by Kamil (2021) found that of 120 Year 11 students, 70% and 72% of males and females received private tutoring.

Research has shown that private tutoring has become a commercial market and family cost (Yung & Chiu, 2020; Zhang et al., 2020), gaining global prevalence from East Asia to all parts of the world (Bray, 2013; Byun et al., 2018; Guill et al., 2020). These reasons agree with what was said by Zhang and Bray. They stressed that "shadow education has expanded to reach almost all corners of the globe and has become a part of daily life in an increasing number of households" (Zhang & Bray, 2020, p. 323). Private tutoring has become a regular feature of teaching and learning and an institutionalised education practice that occurs outside the regular school hours in southern, western, and northern Europe (Bray, 2023; Park et al., 2016; Zhang & Bray, 2020), America, and other parts of the world (Hajar, 2018; Sriprakash et al., 2016).

There are some concerns about the meaning of private tutoring due to its contemporary mode of delivery. Some providers, such as school teachers, commercial companies, and university students, have now inculcated hybrid tutoring involving face-to-face and online teaching and learning (Zhang & Bray, 2020). The emergency of COVID-19 has also resulted in "Zoom tutors," where teaching and learning are conducted online (Rowe, 2021; Shahrill et al., 2021). The ongoing debate regarding the definition of private tutoring is whether online teaching and learning are considered private tutoring (Luo & Chan, 2022). This study does not focus on private tutoring; however, Malik (2017) offers a better conceptualisation of the different reference points in definitions of private tutoring.

This study dwells on the definition of private tutoring provided by Bray (2009). He defined private tutoring as paid supplementary coaching or tutoring that offers additional help for students outside regular school. Since teaching is the main activity in private tutoring, it aims to prepare students for various academic examinations and improve their academic performance in regular schools (Bray, 2009; Wang & Wang, 2022). Therefore, we infer from Bray's definition of whether online teaching and learning can be considered private tutoring. He suggested that private tutoring can be face-to-face or online if it provides paid supplementary tutoring outside school hours to help interested students. Three characteristics of private tutoring have been proposed by Bray (2009): supplementary, privateness, and focused academic subjects. It is supplementary because it covers additional tutoring on subjects already covered in school. It is private because teachers provide tutoring for a fee based on their professional responsibilities and commitments. It includes mathematics, language, and other examinable subjects but excludes sporting, musical, or artistic subjects (Bray, 2009). It is called "shadow education" because it is affected by a change in mainstream education, especially concerning curriculum since it follows the curriculum of mainstream education (Zhang & Bray, 2020).

The literature also highlights several determinants of private tutoring. Students, parents, or both may opt for it because it is associated with high student performance or achievement due to its business-oriented nature (Chen & Kuan, 2021; Mikkelsen & Gravesen, 2021). Based on Brofenbrunner's ecological system theory, private tutoring is considered a microsystem since it interacts directly with the students (Bronfenbrenner, 1995; Kim et al., 2018). For example, Kim et al. (2018) posited that private tutoring is a microsystem that interacts with the students, families, schools, communities, and other social structures that form the micro, meso, macro, and chronosystems. Since students come from these ecological systems, they can shape student decisions to participate in private tutoring. Southgate (2013) also provides an example where parents' higher expectations concerning their children's academic achievement influenced their decisions to engage in private tutoring.

Private tutoring also improves student examination scores, revision skills, confidence, learning strategies, and complements mainstream education (Bray, 2013; Kawedhar et al., 2020). It also improves equity in education (Šťastný, 2022; Šťastný & Kobakhidze, 2020) and provides avenues for parents to prepare their children for mainstream education, serving as avenues to intensify educational competition (Bray, 2021; Jansen et al., 2023; Zhang, 2020). In other studies (e.g., Zhang & Bray, 2017), private tutoring provides an avenue for high achievers to maintain their advantage over low achievers. Additionally, students from higher socioeconomic backgrounds and countries prioritising high-stakes examinations are more likely to participate in private tutoring (Byun et al., 2018; Liu, 2012; Yung, 2021). Conversely, private tutoring has several disadvantages, such as decreasing teacher time and energy in mainstream education (Liu & Bray, 2020). Other shortcomings include exposing students to depression and intellectual oppression, leading to global competition among students, hindering fairness and equal chance of education, and attracting high-achieving students from wealthy homes who can afford such tutoring (Chen & Kuan, 2021; Mikkelsen & Gravesen, 2021; Yung, 2021).

Limited studies have justified a positive perception held by students about private tutoring (e.g., Otto & Karbach, 2019; Raby, 2020; Zhan et al., 2013). These studies conclude that private teachers are patient, provide students with adequate support, and prepare them well for examinations compared to their mainstream teachers. Teachers also use teaching strategies that help improve student examination scores. These teaching strategies include one-on-one engagement with students and solving past examination questions, mainstream exercises, and homework with students (Zhang & Bray, 2020; Zhang, 2016). Most students are also involved in private tutoring because they perceive it as a parental obligation (Bray & Kwok, 2003). However, students perceive private tutoring negatively because it burdens parents financially and creates unfair competition (Chan, 2019; Hajar & Abenova, 2021).

Given the global attention to private tutoring, this study explores its prevalence in mathematics education. Mathematics needs attention because it is a gatekeeper subject of high-stake examinations (Burkhardt, 2007; Wang & Guo, 2018). It trains students to acquire critical thinking and problem-solving skills that provide a foundation for further education (Douglas & Attewell, 2017). It is also considered the subject that has received more attention in the private tutoring market (Zhang et al., 2022). Private mathematics tutoring leads to efficient and purposeful mathematics teaching and learning that improves student performance in mathematics due to the increase in teacher-student interactions (Soeung, 2021; Zhang, 2020).

The study also focuses on the three contexts (i.e., Brunei, Indonesia, and Iraq) for the following reasons. First, contemporary discussions on private tutoring have focused on the global north, with little research on other parts of the world, especially in the global south. Second, a comparative analysis of the prevalence of private tutoring, especially on why

students subscribe to it and the teaching methods teachers use, is limited in these contexts. Third, the authors of this study understand the educational systems and instructional practices in the three countries, making it more convenient to explore the prevalence of private tutoring. The three contexts have similar educational systems regarding the year or grade level and the sequence of external examinations. Their education systems illustrate high-stakes environments, which require students to achieve higher scores or grades to compete for admission to higher educational institutions.

Given this analysis, it is anticipated that most students may see private tutoring as one of the helpful ways to improve their learning, especially in mathematics. This may make private mathematics tutoring an essential venture for teachers and students. There is also little research on private tutoring in mathematics in the Bruneian context (Gan & Shahrill, 2019; Shahrill et al., 2022; Shaya et al., 2020) and Iraq (Bray & Hajar, 2023; Jassem & Kazem, 2001; Kamil, 2021). A similar gap is identified in Indonesia. Suryadarma et al. (2006) indicated widespread private tutoring at the primary but not the secondary level. Other studies have also focused on private tutoring in chemistry (Kawedhar et al., 2020) and English (Tarigan & Lasnumanda, 2020), but not mathematics. To fill these gaps, this study explored secondary school students' reasons for receiving or not receiving private mathematics tutoring. It also explored the prevalent teaching methods private mathematics tutors use. The following research questions guided this study: (1) What percentage of students receive or do not receive private mathematics tutoring? (2) Why do students receive or do not receive private mathematics tutoring? and (3) What is or are the prevalent teaching method(s) in private mathematics tutoring?

2. METHOD

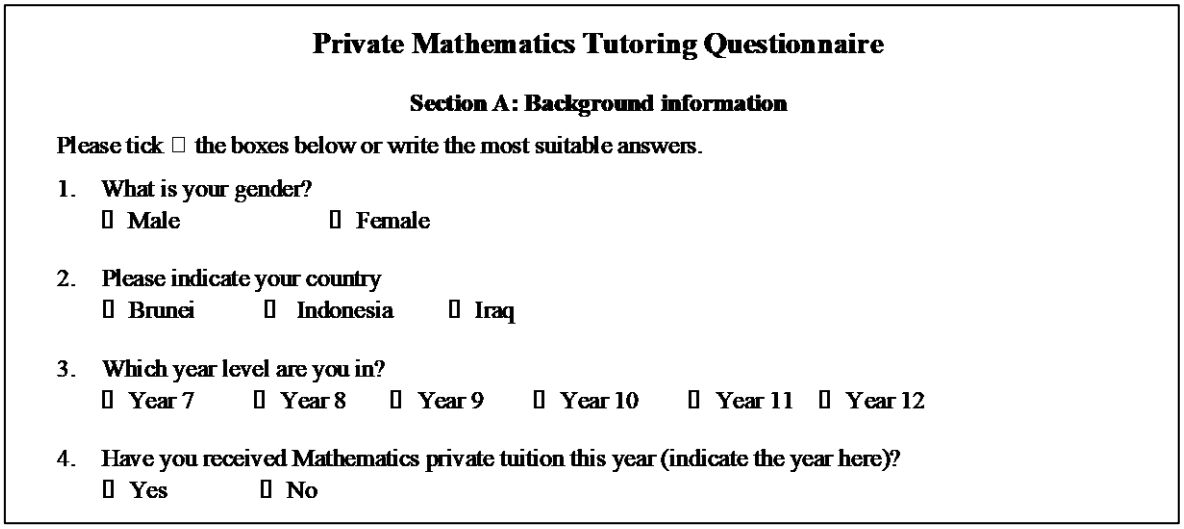
Descriptive research design through a quantitative approach was used to describe, observe, and perform a numeral analysis on the prevalence of private tutoring in mathematics. This design was most suitable because it allowed us to collect quantitative data at one time by administering the same questionnaire on the views or perceptions of students about private tutoring in mathematics (Creswell, 2014). Convenient sampling was used to select 1,309 Years 7 to 12 students who could respond to the questionnaire in the three study contexts. The distribution of participants from the three countries in terms of gender and year levels is shown in Table 1.

Table 1. Distribution of participants

Description		**Brunei** N (%)	**Indonesia** N (%)	**Iraq** N (%)
Gender	Male	387(47.4%)	160(42.9%)	58(48.3%)
	Female	429(52.6%)	213(57.1%)	62(51.7%)
	Total	*816 (100%)*	*373(100%)*	*120(100%)*
Year levels	7	193(23.7%)	58(15.5%)	21(17.5%)
	8	156(19.1%)	107(28.7%)	29(24.2%)
	9	214(26.2%)	45(12.1%)	37(30.8%)
	10	175(21.4%)	92(24.7%)	18(15.0%)
	11	78(9.6%)	49(13.1%)	8(6.7%)
	12	--	22(5.9%)	7(5.8%)
	Total	*816(100%)*	*373(100%)*	*120(100%)*

Of the 1,309 students, 816 were from Brunei (Shahrill et al., 2022), 373 were from Indonesia, and 120 were from Iraq. In all three contexts, more than 50% of the students were females, which outnumbered their male counterparts (see Table 1). In Brunei, most of the students (26.2%) were in Year 9 compared to the other year levels. A higher percentage (28.7% and 24.2%) of the students in Indonesia and Iraq, respectively, were in Year 8 (see Table 1). The lowest percentages of students in the three contexts were from Year 12.

This study adapted statements from extant literature (e.g., Bray, 2010; Bray et al., 2018; Bray & Kwo, 2016). The statements were used to develop a questionnaire to measure what accounts for private tutoring among students and teachers' teaching methods in private mathematics tutoring. The questionnaire consisted of three sections. The first section focused on respondents' background information, presented in Figure 1.



Private Mathematics Tutoring Questionnaire

Section A: Background information

Please tick □ the boxes below or write the most suitable answers.

1. **What is your gender?**
   □ Male □ Female

2. **Please indicate your country**
   □ Brunei □ Indonesia □ Iraq

3. **Which year level are you in?**
   □ Year 7 □ Year 8 □ Year 9 □ Year 10 □ Year 11 □ Year 12

4. **Have you received Mathematics private tuition this year (indicate the year here)?**
   □ Yes □ No

Figure 1. Background information of participant

This section also asked respondents to indicate if they received private mathematics tutoring or not. The second section elicited responses on the reasons why students received or did not receive private mathematics tutoring. The third section elicited responses on teachers' prevalent teaching approaches in private mathematics tutoring. Statements in the second and third sections were measured on a 4-point scale from 1-strongly disagree to 4-strongly agree, as seen in Figure 2.

Before the final administration of the questionnaire, a pilot test was conducted using 72 Year 6 students. Of these students, 30 were from Brunei, 22 from Indonesia, and 20 from Iraq. In the Brunei context, the second and third sections of the questionnaire had Cronbach's alpha reliability estimates (α) of 0.83 (mean=4.51, SD=1.76) and 0.87 (mean=4.97, SD=1.70). In Indonesian and Iraqi contexts, α-estimates were 0.79 (mean=3.99, SD=1.67) and 0.81 (mean=4.22, SD=1.59), and 0.73 (mean=4.78, SD=1.59) and 0.74 (mean=4.50, SD=1.59), respectively. This indicates satisfactory internal consistency (Pallant, 2010).

After data collection, the questionnaires were serially labelled and coded in SPSS, which aided the analysis. A frequency count was performed to check and address all missing values. Descriptive statistics such as frequencies and percentages, as well as bar graphs, were used to analyse the cleaned data. For interpretation, the 4-point Likert scale was collapsed into two categories: 'disagree' and 'agree.'

Section B: Reasons for taking or not taking private mathematics tutoring

Please indicate the extent to which you agree or disagree with the following statement that focuses on why **did** or **did you not** take Mathematics private tuition. Rating: 1-strongly disagree to 4-strongly agree.

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
I took it because ……				
1. I want to learn Mathematics better.	☐	☐	☐	☐
2. I want to improve my examination scores.	☐	☐	☐	☐
3. My parents chose it for me.	☐	☐	☐	☐
4. No one in my family can help me with my homework.	☐	☐	☐	☐
5. In my tuition class, the tutor mainly focuses on exercises.	☐	☐	☐	☐
6. to prepare for the national examination (e.g. SPE, CIE 'O' Level examination).	☐	☐	☐	☐
7. to follow my friends who take tuition.	☐	☐	☐	☐
8. I don't understand what the teachers teach in class.	☐	☐	☐	☐
I did not take any, because…..				
9. I don't have time.	☐	☐	☐	☐
10. I don't have the money.	☐	☐	☐	☐
11. My parents don't want me to do it.	☐	☐	☐	☐
12. My parents don't want me to do it.	☐	☐	☐	☐
13. I am already doing well enough in school.	☐	☐	☐	☐
14. I can prepare myself for the national examination (e.g. SPE, CIE 'O' Level examination).	☐	☐	☐	☐
15. Not many of my friends are doing it.	☐	☐	☐	☐
16. It doesn't seem worth the money.	☐	☐	☐	☐

Section C: Prevalent teaching method in private mathematics tutoring

Please indicate the extent to which you agree or disagree with the following statement that focuses on the prevalent teaching method(s) your teacher uses in private mathematics tutoring. Rating: 1-strongly disagree to 4-strongly agree.

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
17. In my tuition class, the tutor follows the school curriculum.	☐	☐	☐	☐
18. In my tuition class, the tutor uses different textbooks from the school ones.	☐	☐	☐	☐
19. In my tuition class, the tutor mainly focuses on examination questions.	☐	☐	☐	☐
20. In my tuition class, the tutor usually assigns homework.	☐	☐	☐	☐
21. In my tuition class, the tutor mainly focuses on exercises.	☐	☐	☐	☐

Thank you very much for your time in responding to this questionnaire.

Figure 2. Participants' reason about their decision

3. RESULT AND DISCUSSION

3.1. Students who receive or do not receive private mathematics tutoring

The percentages of students who receive or do not receive private tutoring are shown in Table 2. The results show that most of the students in Years 7 to 12 did not receive private

mathematics tutoring in Brunei (80.1%) and Indonesia (71.8%). Most of the Year 9 students (86.4%) and Year 8 students (23.3%) in Brunei and Indonesia, respectively, did not receive private tutoring. This contrasts with the Iraqi context, where 61.7% reported receiving private mathematics tutoring.

Most of the students who received private tutoring in the Bruneian context were in Years 8, 10 and 11, with 26.9%, 18.3%, and 53.8%, respectively. The percentages of Indonesian students who received private mathematics tutoring must follow a clear pattern based on year levels. However, the students in Year 10 reported the highest percentage of 10.2%. In the Iraqi context, there is an increase in the percentage of students who receive private mathematics tutoring.

For the few higher year levels (Years 10, 11, and 12), 10 out of 18, 6 out of 8, and 6 out of 7 students reported receiving private mathematics tutoring. The results suggest that the year levels can explain the prevalence of private mathematics tutoring in all contexts. Students at higher year levels may engage in private mathematics tutoring compared to students studying at the lower year levels.

Table 2. Students receiving or are not receiving private mathematics tutoring

	Brunei		**Indonesia**		**Iraq**	
Year	**Received**	**Don't receive**	**Received**	**Don't receive**	**Received**	**Don't receive**
7	17 (8.8%)	176 (91.2%)	24 (6.4%)	34 (9.1%)	15 (12.5%)	6 (5.0%)
8	42 (26.9%)	114 (73.1%)	20 (5.4%)	87 (23.3%)	17 (14.2%)	12 (10.0%)
9	29 (13.6%)	185 (86.4%)	3 (0.8%)	42 (11.3%)	20(16.7 %)	17 (14.2%)
10	32 (18.3%)	143 (81.7%)	38 (10.2%)	54 (14.5%)	10(8.3%)	8 (6.7%)
11	42 (53.8%)	36 (46.2%)	13 (3.5%)	36 (9.6%)	6(5.0%)	2 (1.7%)
12	--	--	7 (1.9%)	15 (4.0%)	6(5.0%)	1 (0.8%)
Total	162 (19.9%)	654 (80.1%)	105 (28.2%)	268 (71.8%)	74 (61.7%)	46 (38.3%)

Brunei (n=816), Indonesia (n=373), Iraq (n=120)

3.2. Reasons for receiving or not receiving private mathematics tutoring

Figure 3 to Figure 8 summarizes why students receive or do not receive private tutoring in mathematics in Brunei, Indonesia, and Iraq, respectively.

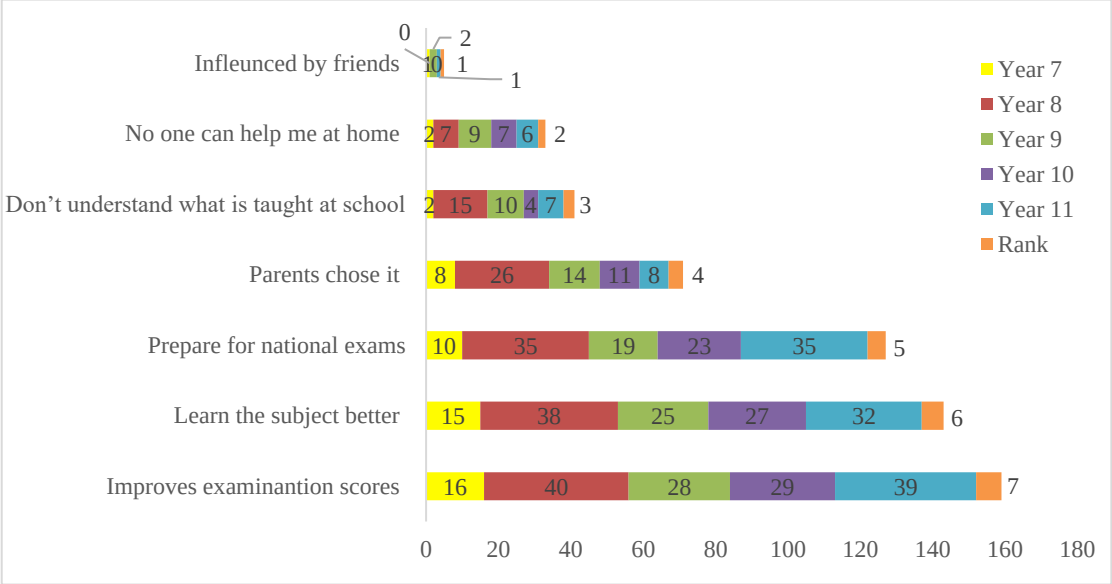


Figure 3. Reasons for private mathematics tutoring in Brunei (N=162)

The results in Figure 3 show that of the 162 Bruneian students of all year levels who received private mathematics tutoring, their main reasons were to improve examination scores (n=152), learn mathematics better (n=137) and prepare for national examinations (n=122).

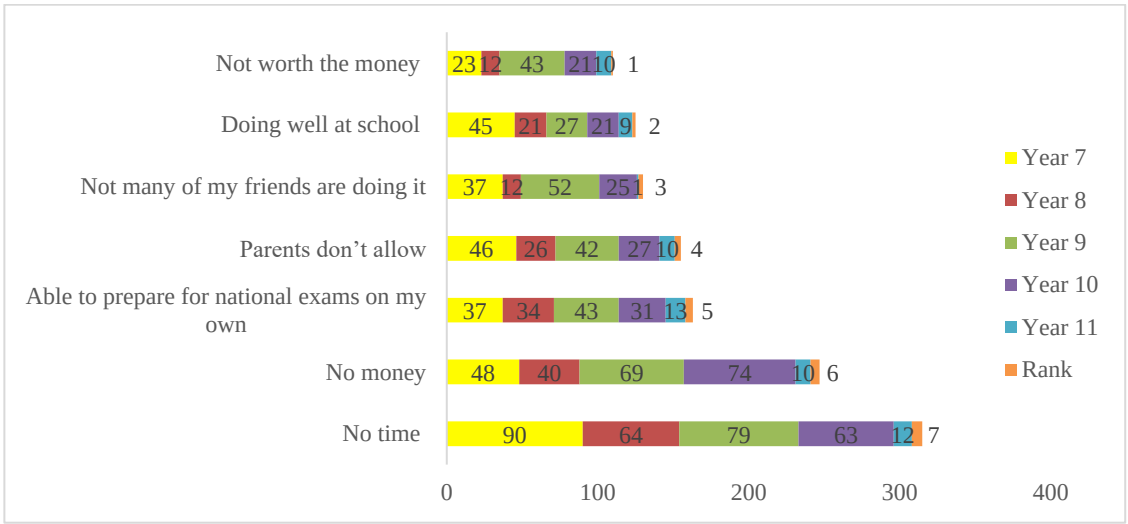


Figure 4. Reasons for not receiving private mathematics tutoring in Brunei (N=654)

The reasons for not receiving private mathematics tutoring are presented in Figure 4. From the 654 students of all year levels in Brunei who did not receive private mathematics tutoring, they attributed it to three main reasons: the lack of time (n=308) and money (n=241) and the ability to prepare for national examinations themselves (n=158).

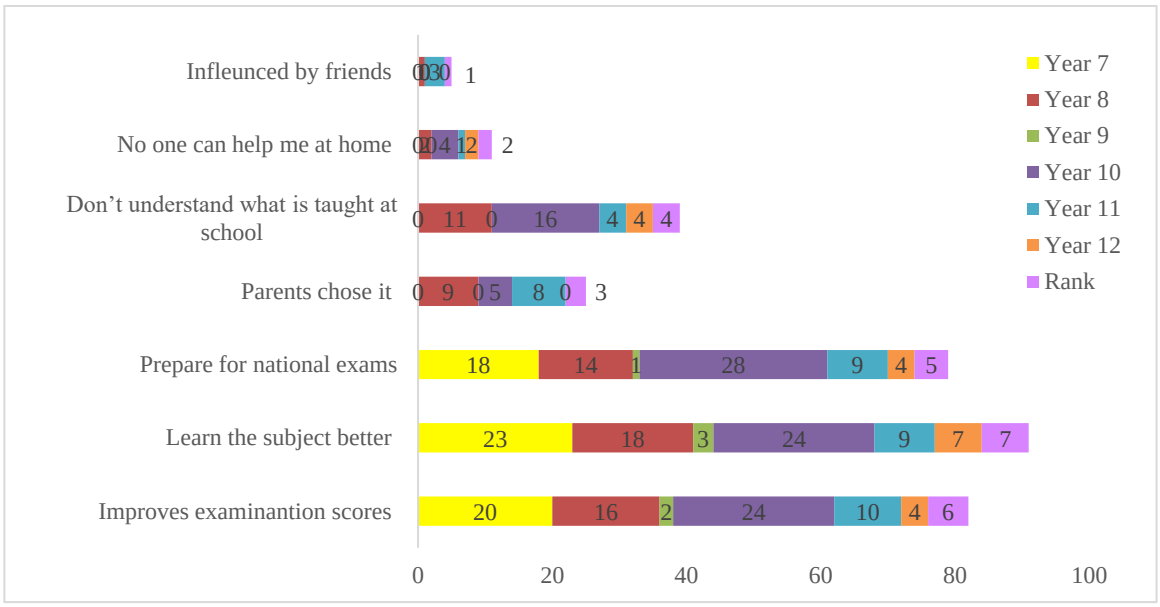


Figure 5. Reasons for private mathematics tutoring in Indonesia (N=105)

Figure 5 summarises why students receive private mathematics tutoring in Indonesia. From the 105 Indonesian students from all year levels who received private mathematics tutoring, their main reasons were to learn mathematics better (n=84), improve examination scores (n=76), and prepare for national examinations (n=74) (see Figure 3). This suggests that the sampled Indonesian students tend to use private mathematics tutoring to gain conceptual understanding compared to passing examinations or improving their examination scores.

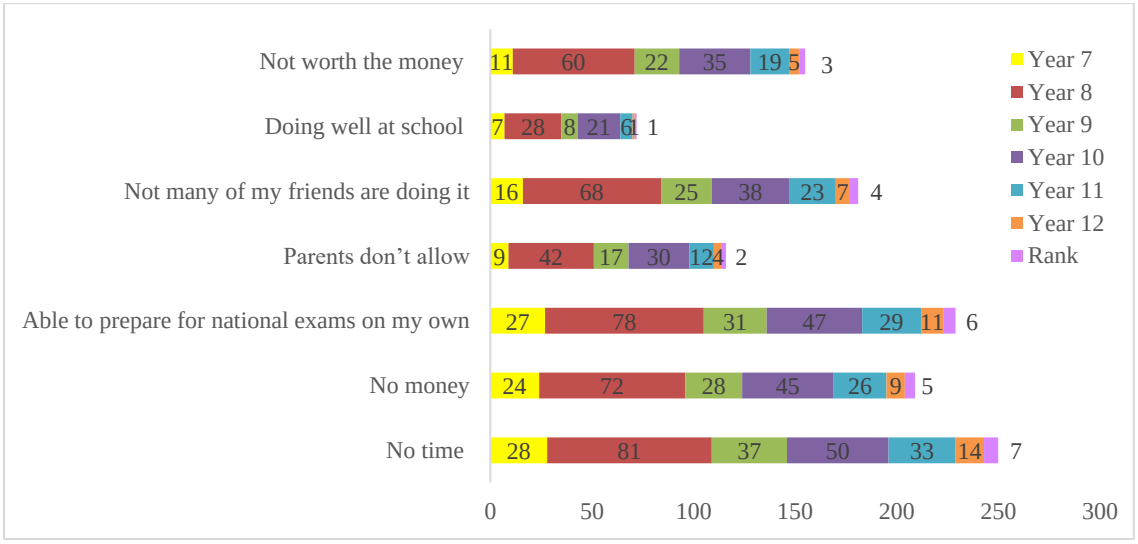


Figure 6. Reasons for not receiving private mathematics tutoring in Indonesia (N=268)

Figure 6 shows why the sampled Indonesian students did not receive private mathematics tutoring. From the 268 students of all year levels who did not receive private mathematics tutoring, they attributed it to three main reasons, namely the lack of time (n = 244), the ability to prepare for national examinations by themselves (n=223), and the lack of money (n=204).

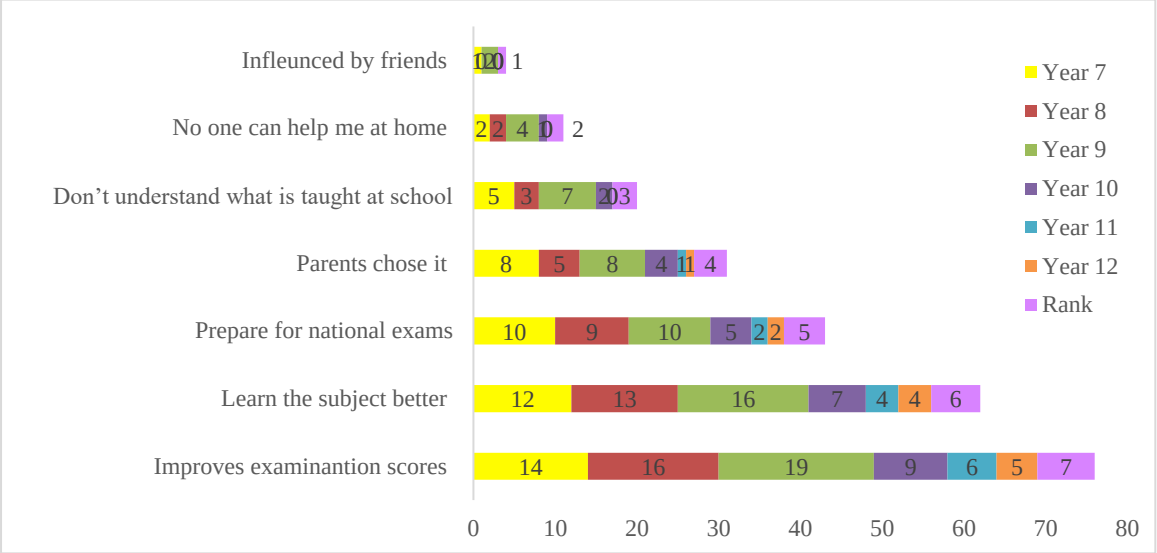


Figure 7. Reasons for private mathematics tutoring in Iraq (N=74)

Meanwhile, Figure 7 summarises why students receive private mathematics tutoring in Iraq. Most Iraqi students from all year levels reported that the main reasons for receiving private mathematics tutoring are to improve their examination scores (n=69), learn mathematics better (n=56), and prepare for national examinations (n=38). The reasons why most Iraqi students did not receive private tuition are illustrated in Figure 8.

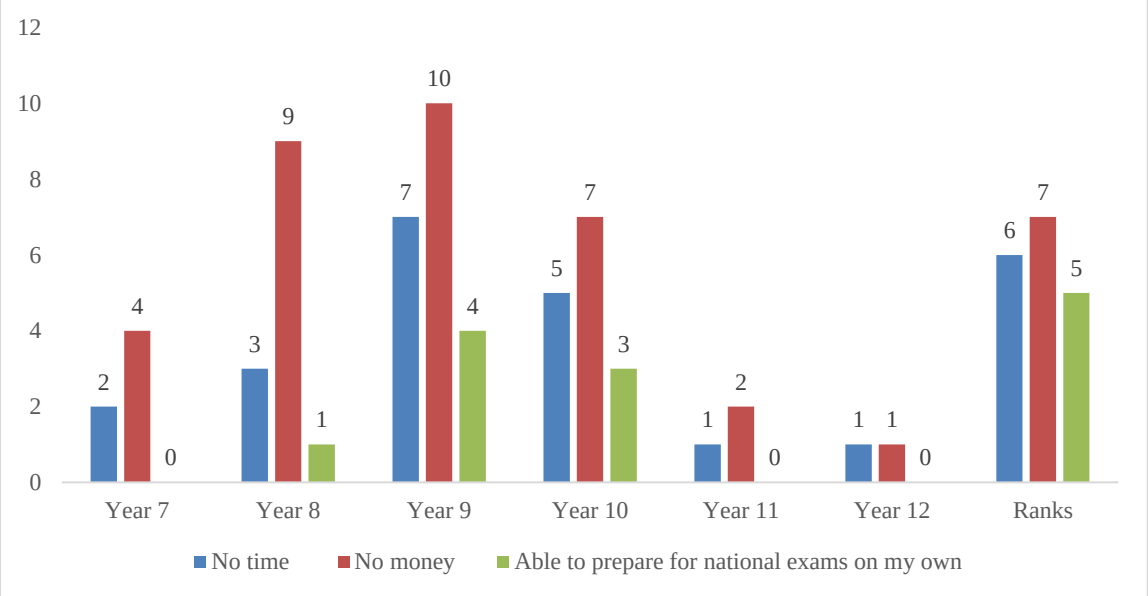


Figure 8. Reasons for not receiving private mathematics tutoring in Iraq (N=46)

From the 46 Iraqi students of all year levels who did not receive private mathematics tutoring, their main reasons are the lack of money (n=33) and time (n=19) and their ability to prepare for national examinations on their own (n=8). The other factors were not included in Figure 6 because they recorded zero responses.

Regardless of how students prioritised their reasons for receiving private mathematics tutoring in three contexts, the results show that most received tutoring to improve their examination scores, prepare for national examinations, and learn mathematics

better. Bruneian and Iraqi students were more concerned about using private mathematics tutoring to prepare and pass the examination. Conversely, Indonesian students use private mathematics tutoring to improve their mathematical learning. Most of the students did not receive private tutoring in mathematics because of the lack of time, money, and ability to prepare for national examinations by themselves. These reasons cut across all students from Years 7 to 12.

3.3. The prevalent teaching methods used in private mathematics tutoring

Table 3 summarises students' views on the prevalent teaching method used in private mathematics tutoring. Of the 162 Bruneian and 74 Iraqi students who received private mathematics tutoring, more than 82% and 90% reported that their private tutors focused on solving examination questions and giving exercises (see Table 3). Although 89.5% of Indonesian students said that their private tutors used exercises, they also agreed that 91.4% of their tutors followed the school curriculum. The results from the three contexts indicate that most private mathematics tutors solve examination questions and give exercises while following the school curriculum.

Table 3. The prevalent teaching method in private mathematics tutoring

Statements	Brunei		Indonesia		Iraq	
	Total Agree N (%)	**Total Disagree N (%)**	**Total Agree N (%)**	**Total Disagree N (%)**	**Total Agree N (%)**	**Total Disagree N (%)**
The tutor follows the school curriculum	128 (74.1%)	34 (25.9%)	96 (91.4%)	9 (8.6%)	63 (85.1%)	11 (14.9%)
The tutor uses a different textbook	98 (60.5%)	64 (39.5%)	54 (51.4%)	51 (48.5%)	11 (14.9%)	63 (85.1%)
The tutor focuses on solving examination questions	143 (88.3%)	19 (11.7%)	84 (80.0%)	21 (20.0%)	69 (93.2%)	5 (6.8%)
The tutor usually assigns homework	82 (51.0%)	80 (49.0%)	55 (52.4%)	50 (47.6%)	53 (71.6%)	21 (28.4%)
The tutor focuses on giving exercises	134 (82.7%)	28 (17.3%)	94 (89.5%)	11 (10.5%)	69 (93.2%)	5 (6.8%)

Brunei (n=162), Indonesia (n=105), Iraq (n=74)

3.4. Discussion

Although most of the students that participated in this study did not receive private mathematics tutoring, the current results showed that private tutoring has become widespread (Byun et al., 2018; Yung & Chiu, 2020; Zhang & Bray, 2020; Zhang et al., 2020), especially in mathematics (Burkhardt, 2007; Wang & Guo, 2018; Zhang et al., 2022). Several factors that may or may not account for private mathematics tutoring were found in this study. The lack of time and money may not account for private mathematics tutoring, which confirms the literature (e.g., Liu & Bray, 2020; Mikkelsen & Gravesen, 2021; Yung, 2021). This is expected because private tutoring typically attracts students from wealthy homes and higher achievers, resulting in unhealthy competition and hindering fairness in

educational delivery (Chen & Kuan, 2021). The results also indicate that when students believe they can prepare for national examinations alone, they may not receive private mathematics tutoring, confirming the high-stakes reasons attached to private tutoring.

On the other hand, most students may receive private mathematics tutoring because it improves their examination scores, prepares them for national examinations, and helps them learn mathematics better. These results align with the literature that has reported similar reasons for private tutoring (e.g., Bray, 2013, 2021; Jansen et al., 2023; Zhang, 2020). This implies that students' performance is strongly related to the reasons for receiving private mathematics tutoring. Interestingly, these factors are predominant in three study contexts. Given that the three countries are examination-oriented environments, it is not surprising that students attributed their reasons for receiving private mathematics tutoring to passing their examinations and improving their examination scores, which are the main aims of receiving private tutoring (Bray, 2009; Byun et al., 2018; Liu, 2012; Wang & Wang, 2022). It has also been established that the higher expectations of students in high-stakes educational contexts expose them to private tutoring (Southgate, 2013). For example, the Indonesian context justifies how high-stakes environments are associated with private supplementary tutoring. In 2021, the Indonesian government cancelled its national examinations because of the COVID-19 pandemic, and it was at that time that data for this study was collected. This might have accounted for why most Indonesian students attached conceptual reasons to private mathematics tutoring compared to Bruneian and Iraqi students. This implies that although students can be in a low-stakes environment, they may still prefer private supplementary tutoring to improve their performance in examinations.

Given the emphasis on passing examinations and improving students' scores, private mathematics tutors also use teaching methods to suit their client's needs. The students in this study believed that most of their private tutors solved examination questions and gave exercises. Consistent with the literature, Shahrill (2018) found that mathematics teachers drilled past examination questions with their students. This was because teachers believed that their educational environment prioritises passing examinations. This might have accounted for why students receive private mathematics tutoring when progressing to higher year levels. This may be due to the examination-oriented culture and competition that students and teachers believe exists in their contexts (Chen & Kuan, 2021). Other studies (e.g., Zhang & Bray, 2020; Zhang, 2016) emphasised that it is more convenient for private tutors to solve examination questions and mainstream exercises or homework in one-on-one private tutoring.

The results also show that teachers follow the school curriculum in their private mathematics tutoring. This agrees with the results of Zhang and Bray (2020), who revealed that private tutoring follows the primary school curriculum. Since students need to pass examinations in which questions are set based on the school curriculum, private tutors are expected to follow the mainstream curriculum, as this study has reported. The results of this study also showed that most students reported that financial problems prevented them from receiving private mathematics tutoring. When parents or families face financial burdens or low income, it limits their children's chances of receiving private tutoring, although these children may need it. Therefore, low family income is seen as a microsystem factor that may explain student involvement in private mathematics tutoring (Bronfenbrenner, 1995; Kim et al., 2018). Most students received private mathematics tutoring because of the high-stakes environment in all three contexts. This requires students, teachers, and parents to develop appropriate strategies for students to pass examinations and achieve higher scores. This suggests that external educational decisions or policies can influence student learning (Bronfenbrenner, 1995), and students may not have control of these decisions or policies (Luo & Chan, 2022). Since all three study contexts prioritise high-stakes examinations,

students might be compelled to engage in private tutoring to improve their academic achievement (Southgate, 2013). This could force teachers to use teaching methods such as drilling past examination questions to achieve these goals.

4. CONCLUSION

This study determined the percentage of students who receive or do not receive private mathematics tutoring. It also explored why students receive or do not receive private mathematics tutoring. The prevalent teaching method(s) used in private mathematics tutoring was also explored. Drawing on the experiences of students from three countries, namely Brunei, Indonesia, and Iraq, the results showed that most Bruneian and Indonesian students still needed to receive private mathematics tutoring compared to Iraq. This was attributed to the need for more time, money, and students' ability to prepare for national examinations alone. For the few students who received private mathematics tutoring in three study contexts, factors such as preparing students for national examinations, improving their scores, and helping them learn mathematics better influenced their decisions. The students also believed that their private mathematics tutors solved past examination questions, gave exercises, and followed the school curriculum in their private mathematics tutoring.

The results highlight that students tend to receive private mathematics tutoring when they find themselves in an examination-oriented environment. In this environment, teaching and learning seek to achieve higher exam scores and passes, especially when students progress to higher year levels. For this reason, private mathematics tutors use instructional methods to help prepare students for examinations to improve their scores. Teachers drill and solve past examination questions, mainstream exercises, or homework to enhance their academic success. This implies that private mathematics tutoring is product-oriented. Due to its market value, especially in a high-stakes environment, it must focus on improving and monitoring student learning. However, it may provide alternative ways to pass examinations and improve student scores. Since these have been the notable reasons for private tutoring, it can serve as an essential way to make formative decisions about students. It can be leveraged to supplement, monitor, and improve student learning compared to using private tutoring to meet high-stakes demands. Since private tutoring mainly involves one-on-one student-tutor meetings, private tutors can use it as a diagnostic opportunity to spend time with participating students, understand their needs or challenges, especially from mainstream classes, and provide remediation to improve their learning. This could happen if families and other stakeholders reconsider why and how private tutoring in mathematics and other mathematics subjects is conducted.

This study provides a quantitative analysis of why students receive or do not receive private mathematics tutoring and the teaching methods used. Using quantitative data from a relatively uniform larger sample from each country would have been interesting. Furthermore, using interview data to validate the quantitative results would have also been interesting. Analysing the views of private mathematics tutors could have helped confirm the study results. Nevertheless, this study provides an initial understanding of private mathematics tutoring from three countries, which provides implications for effective private mathematics tutoring in the three study contexts and similar contexts. Future researchers could explore students' perceptions of private mathematics tutoring using mixed-method approaches. This could broaden the generalisability of the results of this study. Exploring teachers' perceptions of private mathematics tutoring, as well as the nature of private mathematics tutoring in low-stake environments, could be considered by future researchers.

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