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## Examining the Perceptions and Challenges of Mathematics Homework Practice of Higher Secondary Teachers in Bhutan: A Mixed-Methods Study

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### ABSTRACT

Homework is an integral part of the Bhutanese education system; however, there is limited empirical evidence on its effectiveness at the higher secondary level. This study examines the perceptions and challenges associated with mathematics homework among higher secondary teachers in Bhutan using a convergent parallel mixed-methods design. Quantitative data were collected through an online survey involving 244 teachers from 83 higher secondary schools and 320 students from one school, selected using random sampling. Qualitative data were obtained through semi-structured interviews with 12 teachers. The findings indicate that both teachers and students hold positive perceptions of mathematics homework. However, teachers face several challenges, including assessing students' homework, motivating them to complete it, and identifying authentic learners owing to students copying their homework. Student responses also shed light on the underlying causes of these challenges, such as the homework overload and homework control. The study highlights the need for improved homework practices to enhance the effectiveness of mathematics homework at the higher secondary level.

### INTRODUCTION

Even as we approach the third decade of the twenty-first century, in an era of technological advancements affecting all walks of life, it seems that homework (HW) is still perceived as it always has been - as an integral part of the educational system (Yavich & Davidovitch, 2020). It is a pedagogical instruction that extends beyond mere practice; it serves as a crucial tool for formative assessment, providing teachers with valuable insights into students' understanding, strengths, and areas requiring additional support (Cooper, 2001; Cooper *et al.*, 2006; Ergen & Durmus, 2021; Vatterott, 2010). Additionally, homework can be used to assess the effectiveness of a teacher's teaching (Güven & Akcy, 2019). Thus, homework is an important component of teaching and learning mathematics.

Although mathematics HW is an important component of mathematics education in Bhutan, only a few studies have examined aspects such as homework frequency, purpose, and management in higher secondary schools (Pem, 2024) and factors influencing homework completion in middle secondary schools (Wangchuk & Dorji, 2022). Therefore, there is limited empirical evidence on mathematics homework practices at the higher secondary level in Bhutan. This gap in the literature limits our understanding of how homework is perceived and implemented within higher secondary education. Hence, this study aims to explore the perceptions and challenges associated with mathematics homework practices among higher secondary school teachers in Bhutan.

### LITERATURE REVIEW

Students' Perception and Attitude towards Homework

Homework plays an important role in providing platforms for students to continue learning outside the formal setting of school. However, teachers must first understand the role and importance of homework in learners' lives to successfully promote mathematics homework as a learning opportunity (Xu, 2008). Moreover, the success of doing homework meaningfully depends on the students' perception of homework (Burriss & Snead, 2017; Xu, 2013), as the goal, value, meaning, and significance students attach to homework will determine their success in doing it (Letterman, 2013). Students' positive attitude toward homework is directly associated with homework completion since the amount of homework completion is directly dependent on students' interest in doing that particular homework (Xu, 2011; Xu, 2008). Similarly, Letterman (2013) emphasizes that students who perceive homework assignments as less valuable view homework as having more disadvantages than advantages and therefore choose not to complete their homework. According to findings of Letterman (2013), 68% (68% of 180 participants) of university students felt homework was just "busy work" or of little intrinsic value in high school, although this perception percentage dropped to about 19% when students reached college. On the contrary, studies by Cooper *et al.* (1998) and Xu and Yuan (2003) showed that students have a positive attitude toward homework.

The students' positive attitude towards homework is associated with their positive attitude about school (Sharp *et al.*, 2001). If the students see and understand the purpose of homework, it will motivate them to complete the task (Hayward, 2010). Therefore, students' dedication to homework is determined by their perceptions and positive attitudes toward homework (Burriss & Snead, 2014).

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### Teachers' Perception of Homework

Mathematics teachers have a positive perception of homework (Cooper, 1998; Matei & Ciasca, 2015; Xu & Yuan, 2003). According to Kaur (2011), the perspective of mathematics teachers when assigning homework is to improve students' ability to solve and comprehend mathematical concepts taught in class and to cultivate a sense of responsibility in students. Teachers believe that homework enhances students' mathematics achievement as it fosters independent learning habits and makes students responsible and accountable for their learning (Costley, 2013; Rosário *et al.*, 2019). Congruently, Matei and Ciasca (2015) found in their study that 85.35% of 51 teacher participants agree that homework contributes to students' school success, and 76.47% agree that it increases students' mathematics performance. Similarly, Albelbisi and Yusop (2018) also found that homework enhances students' academic achievement. Therefore, we can conclude that mathematics teachers view homework positively, seeing it as a means to enhance students' problem-solving skills, deepen their understanding of mathematical concepts, and instil responsibility.

### HW Challenges

Homework has benefited students both academically and non-academically; however, there are challenges such as homework completion, individualizing HW tasks, and HW assessment. Letterman (2013) pointed out, "Trying to get students to complete their homework is one of the most frequent and frustrating behaviour problems for educators." Similarly, Chophel and Choeda (2021) found that getting students to complete their homework is a challenge. Additionally, teachers face the challenge of individualising tasks while assigning homework. Rosário *et al.* (2015) report in their findings that individualising tasks as per the needs of students was found challenging by the teachers. Although it was valuable, teachers reported that they faced several constraints in applying this practice, and the reasons stated were the vast syllabi to cover in a year, big class size and different grade levels teachers have to teach; hence, teachers assign the same HW task to all the students most of the time.

Furthermore, Frohbieter *et al.* (2011) concluded that teachers face the challenge of applying formative assessment while assessing students' work, as it requires a lot of time; therefore, this type of assessment practice could rarely happen. Thus, one challenge that teachers often face with homework is the homework assessment. However, Letterman (2013) and Martinez-Sierra *et al.* (2020) assert that evaluating students' homework is crucial because it encourages them to complete it. Effective feedback on homework is crucial for improving

student performance, although it can be time-consuming (Hattie & Timperley, 2007). Similarly, Slaats *et al.* (2018) pointed out that the extensive time required to assess individual students' homework accurately and provide meaningful feedback often makes it difficult for teachers to implement consistent formative assessments, leading to missed opportunities for student growth. Thus, we can conclude that these challenges seem to impact the effectiveness of mathematics homework practices of teachers and also the academic achievements of the students.

In conclusion, the perceptions and attitudes of both students and teachers play a vital role in the effectiveness of mathematics homework in schools. Moreover, the challenges linked to homework greatly influence its overall impact, highlighting the need to closely examine both perceptions and challenges to fully realize its academic and non-academic benefits.

### MATERIALS AND METHODS

This study employed a convergent parallel mixed-method design, collecting qualitative and quantitative data simultaneously. The gathered data were merged and analyzed, and the outcome of the analysis was interpreted to answer the research problem (Creswell, 2014). A total of 244 mathematics teachers from 83 higher secondary schools (HSS) in Bhutan participated in an online survey through random sampling, with 68% male and 32% female. Most teachers (74.2%) had over five years had over five years of teaching experience. Additionally, 12 teachers from seven schools participated in semi-structured interviews, while five focus group discussions (six participants each) were conducted at one HSS using purposive sampling. A cross-sectional survey included 320 students from a Thimphu Thromde HSS (45.9% male, 53.1% female, 0.9% other). Quantitative data were analyzed using SPSS (version 25), while qualitative data were analyzed using Braun and Clarke's thematic analysis (Braun & Clarke, 2006).

### Validity & Reliability

The study's reliability and validity were assessed by triangulating the qualitative data analysis with the findings from quantitative data analysis. To ensure the accuracy of participants' perceptions and experiences, member cross-checking was done, and interviews were recorded (Creswell & Creswell, 2018). Furthermore, the reliability of survey items was evaluated using Cronbach's Alpha. Items with an alpha ( $\alpha$ ) value of 0.7 or higher were retained, while those with a value below 0.7 were either revised or excluded (Heale & Twycross, 2015).

The Cronbach's Alpha ( $\alpha$ ) value for both survey

**Table 1:** Reliability Test

Survey Questionnaire	Cronbach's Alpha	Number of Items
Teachers' perception of mathematics HW.	.75	10
Students' perception of mathematics HW.	.78	13

questionnaires exceeded 0.70, indicating that the instruments were reliable and suitable for data collection.

**Ethical Consideration**

Ethical considerations, including potential harm, confidentiality, informed consent, and voluntary participation, were carefully addressed in this study. Participants were fully informed about the study’s purpose, their roles, potential implications, and their rights before providing consent. Anonymity and confidentiality were strictly maintained throughout the research process. To protect participants’ identities, pseudonyms were

assigned; for instance, interview participants were labelled as ‘T’ (numbered 1 to 12), focus group interviewees as ‘FG01S1,’ and teachers responding to the online open-ended questions as ‘T’ numbered 1 to 244.

**RESULTS AND DISCUSSION**

**Quantitative Results of Teachers’ Perception of Mathematics HW Practice**

Table 2 presents the results of a survey questionnaire on teachers’ perceptions of mathematics homework practice in higher secondary schools in Bhutan.

The overall mean of 3.77 (SD=.89) indicated that teachers

**Table 2:** Teachers’ perception of mathematics homework

Items	N	Mean	SD	Level of Opinion
1. Homework is one of the most important activities in school	244	4.27	1.05	Very High
2. Homework provides feedback on my classroom teaching	244	4.09	0.86	High
3. Mathematics homework enhances students' mathematics learning.	244	4.33	0.74	Very High
4. Homework is an effective way to promote good work habits in students.	244	4.21	0.83	Very High
5. Homework is an effective way to promote a positive attitude about learning in students.	244	4.04	0.82	High
6. It is important to align homework with students' learning styles.	244	4.28	0.72	Very High
7. It is necessary to assign homework to cover the mathematics syllabus.	244	3.25	1.25	High
8. School homework policy is effectively implemented	244	3.22	0.98	Moderate
9. Students are happy when they are assigned mathematics homework.	244	2.90	0.90	Moderate
10. Students enjoy doing Mathematics homework	244	3.15	0.76	Moderate
<b>Average</b>	<b>244</b>	<b>3.77</b>	<b>0.89</b>	<b>High</b>

*Level of opinion: Very low: 1.00-1.80, Low: 1.81-2.60, Moderate: 2.61-3.40, High: 3.41-4.20, Very high: 4.21-5.00 (Level of opinion adapted from Pimentel model, 2010)*

have positive perceptions of mathematics HW practice. Teachers strongly agreed by rating very high on item 1, “Homework is one of the most important activities in school,” with a mean of 4.27 (SD = 1.05) and item 3, “Homework enhances students’ mathematics learning” (M = 4.33, SD = .74). Teachers have rated moderately

on item 9, “Students are happy when they are assigned mathematics homework (M = 2.90, SD = .90),” and it was the lowest-rated item among the ten items. Although teachers have positive perceptions of mathematics HW, they have negative perceptions of students’ HW interest. Table 3 shows the percentage of agreement on a five-

**Table 3:** HW assigned to cover the syllabus

Item 7: “It is necessary to assign homework to cover the mathematics syllabus.”	Frequency	Percent
Strongly disagree	19	7.8
Disagree	62	25.4
Neutral	48	19.7
Agree	68	27.9
Strongly agree	47	19.2
<b>Total</b>	<b>244</b>	<b>100.0</b>

point Likert scale for the item, “It is necessary to assign homework to cover the mathematics syllabus.” It revealed that 33.2% of the teachers disagreed that they assign HW to students to cover the mathematics syllabus, 19.7 % neither agreed nor disagreed with it, however, 47.2% of teachers agreed to it.

Thematic analysis highlighted the significance of homework in mathematics teaching and learning. Teachers (T2, T6, and T9) emphasised the necessity of

daily homework to reinforce concepts, while T7 noted its role in keeping track of lessons learned in the class and fostering exploration beyond textbooks. T10 asserted that mathematics would be incomplete without homework, as it helps assess students’ understanding. Similarly, T1, T5, and T11 pointed out that daily homework is essential due to time constraints in class.

Eight out of twelve interviewed teachers agreed that homework enhances students’ mathematics learning

by promoting practice, revision, and deeper conceptual understanding (T2, T3, T5, T6, T7, and T11). T5 and T8 added that those students who are committed to doing HW perform better in tests as they seek help and explore various problem-solving strategies.

Furthermore, qualitative data indicated that homework fosters personal traits such as time management and independent learning. T1 stated that students who complete homework develop self-discipline and avoid procrastination. Other teachers (T2, T3, T5, and T11) asserted that homework encourages students to take responsibility for their learning. However, most teachers believed students generally lack interest in mathematics homework. While some students enjoy it, the majority perceive it as a burden, leading to frustration and irritation (T1, T5, T6, T7, T8, T9, and T10).

From the above findings, the study concludes that teachers hold a positive perception of mathematics HW. They view mathematics HW as valuable for enhancing academic achievement and reinforcing classroom learning. This aligns with findings by Burriss and Snead (2014), Cosley (2013), Güven and Akcy (2019), and Xu and Yuan (2003), who reported similar views. However, some teachers noted that most students show little interest in homework, and only those who complete it sincerely benefit. Suárez *et al.* (2019) also noted that high school students who put in effort, manage time well, and complete homework outperform their peers. Thus, the concern here is that although HW benefits students academically, there seems to be a majority of students who are not interested in doing HW. This could be because students are not able to understand the importance and usefulness (utility value) of doing HW. Suárez *et al.* (2019) found that,

to some extent, “students’ dedication to HW depends on HW utility perceptions.” Hence, looking into ways to make students understand the utility value of HW appears important, as it could motivate students to do HW.

The study found that HW supports students’ personal character development, helping them become responsible, self-disciplined, and independent learners. This may be due to the minimal supervision involved and the need to manage time alongside other home activities. Such conditions encourage self-directed learning and build responsibility. This aligns with the findings of Matei and Ciasca (2015), Rosário *et al.* (2019) and Costley (2013). Overall, homework helps cultivate essential habits like time management, responsibility, and self-discipline.

Another key finding is that homework is often assigned to help cover the vast mathematics curriculum (see Table 3). Both qualitative and quantitative results show that teachers use homework as a tool to complete the syllabus, likely due to time constraints. Dorji and Tshering (2020) also noted the vastness of the curriculum. However, this approach may reduce the effectiveness of homework, making it repetitive and dull for students. Abdelfattah and Lam (2018) found that repetitive homework can lead to boredom. When the focus shifts to syllabus completion over meaningful learning, student engagement may suffer. This suggests a need to reconsider the current curriculum to enhance both learning and homework practices in Bhutan’s higher secondary schools.

#### Students’ Perception of Mathematics HW Practice

Table 4 shows the results of a survey questionnaire on students’ perceptions of mathematics homework practice. Students have high positive perceptions of mathematics

**Table 4:** Students’ perception of mathematics homework practice

Items	N	Mean	Std. Deviation	Level of opinion
1. Mathematics Homework is important	320	4.32	0.67	Very High
2. I like doing Mathematics Homework	320	3.53	0.87	High
3. I feel confident when I work on mathematics homework.	320	3.36	0.93	Medium
4. I complete my mathematics homework on time.	320	3.53	0.89	High
5. It is ok for me to copy homework from friends.	320	2.70	0.89	Medium
6. My mathematics teacher provides written feedback on my homework.	320	3.48	0.93	High
7. I understand why teachers assign mathematics homework to us.	320	4.15	0.75	High
8. I get help from my teacher while doing mathematics homework after school hours.	320	2.98	1.06	Medium
9. My mathematics teacher checks and assesses my homework regularly.	320	3.73	0.87	High
10. I am motivated to complete my mathematics homework when teachers check and assess the homework.	320	4.00	0.82	High
11. Doing mathematics homework helps me to participate in class discussions.	320	3.93	0.79	High
12. Doing mathematics homework helps me to revise the mathematics lessons taught in class.	320	4.29	0.68	Very High
13. Doing homework regularly makes me an independent and self-directed learner.	320	3.99	0.84	High
<b>Average</b>	<b>320</b>	<b>3.69</b>	<b>0.85</b>	<b>High</b>

Level of opinion: Very low: 1.00-1.80, Low: 1.81-2.60, Moderate: 2.61-3.40, High: 3.41-4.20, Very high: 4.21-5.00 (Level of opinion adapted from Pimentel model, 2010)

HW (M=3.69, SD=.85) in general. Of the 13 items, item 1, “Mathematics HW is important” (M = 4.32, SD = .67), was rated the highest, and item 5 “It is ok for me to copy homework from friends” (M = 2.70, SD = .89) was rated the lowest. However, the standard deviation of .89

indicates some variation in the level of agreement among respondents. Students believe that mathematics HW is important, and some students believe that it has to be done by oneself.

Table 5 shows that students have rated high on item 4, “I

**Table 5:** HW completion in percent

Item 4: “I complete my mathematics homework on time.”	Frequency	Percent
Strongly Disagree	4	1.3
Disagree	31	9.6
Neutral	122	38.1
Agree	117	36.6
Strongly Agree	46	14.4
<b>Total</b>	<b>320</b>	<b>100.0</b>

complete my mathematics homework on time.” (M=3.53, SD=.90) However, there is a variation with SD (.90) in response; the majority of the students neither agreed nor disagreed that they completed their HW on time (38.1%), and 10.9% of them disagreed that they completed their HW on time.

Thematic analysis revealed that students viewed mathematics homework as essential. Most interviewees acknowledged its importance, with FG02S2 stating that homework enhances conceptual understanding of class lessons, and other peers nodded in agreement. FG01S3, FG03S1, and FG04S5 shared that doing HW help them to retain mathematics knowledge. However, FG01S6 and FG01S5 admitted to doing homework primarily for continuous assessment (CA) marks.

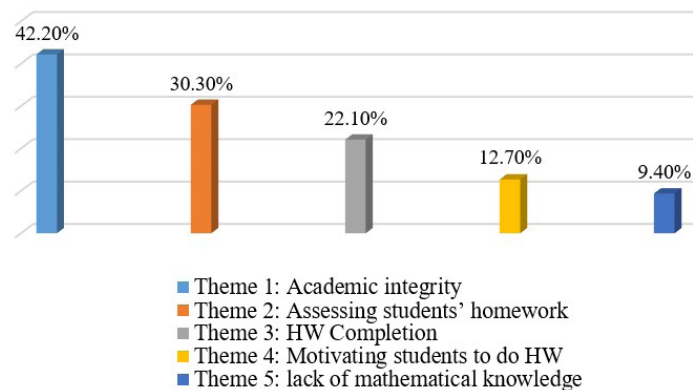
The analysis also highlighted concerns about homework assessment. Teachers generally checked whether students completed their HW or not, but did not always correct it. FG04S5 expressed the need for corrections, arguing that merely verifying completion does not help students identify mistakes. Similarly, FG02S1, FG03S2, FG03S3, and FG05S4 stressed that without corrections, students risk learning incorrect concepts and making errors in exams.

From the qualitative and quantitative analysis of the data,

the study confirms that the success of doing homework meaningfully depends on the students’ perception of homework (Burriss & Snead, 2017). The present study found that students have positive perceptions of mathematics HW; they believe that mathematics HW is important to enhance their mathematics achievement, as it provides an opportunity for them to get a better understanding of the concepts learned in the class. Xu and Yuan (2003) reported similar findings; they found that students have a positive attitude toward homework. However, the findings also revealed that there remains a segment of students who view copying homework as acceptable, which can undermine the effectiveness of homework as a learning tool. Therefore, fostering a culture of academic integrity and helping students recognize the true value of homework is essential for maximizing its educational benefits.

**Challenges Faced by Mathematics Teachers**

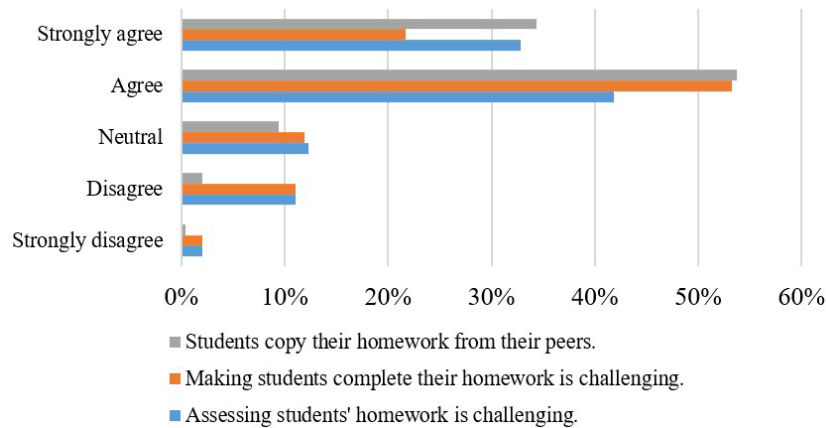
Figure 1 shows the analysis of online open-ended response questions on HW challenges, and Figure 2 presents a degree of agreement on a Five-point Likert scale regarding homework challenges faced by 244 teachers who participated in the online survey questionnaire.



**Figure 1:** HW challenges faced by the teachers

The study included an open-ended question alongside the survey to explore challenges faced by mathematics teachers in assigning homework. This allowed teachers to share their perspectives, leading to several key themes (see Figure 1). Analysis showed that 42.2% (103) of teachers identified a lack of academic integrity, as students copied homework from peers or the internet.

Additionally, 30.3% (74) of teachers found individual assessment of homework challenging, while 22.1% (54) struggled to ensure homework completion. Furthermore, 12.7% (31) reported difficulty in motivating students due to students' lack of interest in doing HW, and 9.4% (23) noted that students' weak mathematical foundation hindered homework completion.



**Figure 2:** HW challenges faced by the teachers

Figure 2 showed data collected using Five-point Likert scale through online survey from 244 teachers, this data indicated that 215 teachers (88.1%) agreed that students copy homework from peers, 183 teachers (75.0%) found it challenging to ensure homework completion, and 182 teachers (76.4%) reported difficulties in assessing students' homework.

some students regularly come with incomplete tasks, often mentioning lack of time or knowledge as a reason. T3 added that despite repeated reminders, students still failed to submit homework on time. Similarly, T1, T6, T8, T9, and T10 reported that students were reluctant to submit homework, often providing excuses such as forgetting books, having other homework, or lacking time.

**Qualitative Analysis of HW Challenges**

Academic integrity of the students, HW completion and HW assessment, motivating students to do HW and students' lack of mathematical knowledge were the five themes that were revealed from the data.

**Assessing Students' HW**

Assessing students' homework was one of the challenges mathematics teachers face; the following voices of the interviewees revealed the existence, for instance, T9 stated, "I just correct randomly since we have a large number of students; we don't have much time to assess every HW that was assigned." T1, T6, and T8 shared that assessing the students' homework every day is challenging because of the large class size.

**Academic Integrity of the Students**

Eight of twelve teachers reported that students frequently copied their homework from peers. T10 stated, "Hardly one student does the homework; the rest copy." The same sentiment echoed when T1, T3, T4, T6, and T9 shared that it was challenging to identify authentic learners. T12 also noted that half of the students lacked academic integrity. T8 emphasized that students often copied from friends or the internet.

However, T3 expressed

When teachers give homework to students, some tend to do it sincerely; it matters how teachers assess them. So if teachers check and assess students one by one, then all students tend to do the HW sincerely; if teachers fail to check their homework, some students are reluctant to do the homework on time.

Students admitted to copying due to time constraints or fear of punishment. For example, FG01S1 explained, "I copy when there is too much homework and I can't manage time," and FG01S3 shared, "I copy when homework from multiple subjects is due at the same time and I can't finish." Additionally, some students, like FG03S2 and FG05S3, copied to avoid punishment, such as standing in front of the class. FG01S3 stated that HW were copied for CA marks.

**Motivating Students to Do HW**

Teachers shared that it was difficult to motivate students to do HW, as students lack interest in the subject, for instance, one of the participants shared.

**HW Completion**

A major challenge for teachers was getting students to complete their mathematics homework. T8 noted that

T55 stated;

Usually, Bhutanese students have a fixed mindset that they cannot do well in mathematics, and only geniuses do well in mathematics. That's why students don't like the subject itself, and it is very difficult when assigning homework because most of them never try at all.

Similarly, T 80 shared, “Students don’t take much interest in mathematics, as they still have in their minds that mathematics is a very difficult subject, so they do not try at all.” The same was echoed when T6, T48, T50, T66, T80, T160, and T175 shared that some of the students are not interested in mathematics as they feel that it is a tough subject. On the other hand, T231 shared that it was difficult to convince those students who do not have a habit of writing HW.

### **Lack of Students’ Basic Mathematical Knowledge is Affecting HW Completion**

Teachers mentioned that students lack basic mathematics knowledge; thus, students were not able to do their HW. For instance, T102 shared, “The aptitude of children is mostly found low for the subject, which does impact the way he or she does the homework.” Other respondents, T54, explained that students who have a poor foundation in mathematics seem to struggle in completing the homework, and T197 stated that students lack interest in doing HW due to a lack of basic mathematical knowledge. T1, in his one-on-one interview, shared, “Students’ poor knowledge is a problem; if the basic knowledge is not there, solving homework will be very difficult, and whenever knowledge is poor, there will be a case of copying the same work of other students.” Similarly, T6 and T9 expressed their concern over students’ lack of basic mathematical knowledge, hindering their mathematics performance at present.

### **Challenges Faced by Students While Doing Mathematics Homework**

Completing homework was a challenge for many students. FG03S5 mentioned that mathematics homework often overlapped with other subjects, making it difficult to manage. FG01S2, FG04S6, FG02S1, FG04S1, and FG01S4 shared that homework overload was an issue, especially with mathematics HW being assigned on daily basis and other subjects two or three times a week. FG01S4 suggested having a homework gap to allow time for rest, which the group agreed with.

Students also struggled with homework when they didn’t understand the class material. FG05S3 shared, “I don’t understand the class lessons, so I can’t do my homework.” Other students, like FG04S2 and FG03S3, also mentioned difficulties due to a lack of understanding and often resorted to copying.

Additional challenges included attending to tuition, household chores, helping at shops, and a lack of a suitable place to do homework. FG01S4 shared, “I don’t have enough time because of household chores, and also I don’t have proper place to do homework.” FG04S2 and FG05S4 added that helping parents in running the shop and doing household task affected their homework completion. FG03S3 explained, “I don’t have time because I’m tired from tuition.”

From the qualitative and quantitative analysis of the data on HW challenges, the study found that homework completion is a major challenge for teachers. This

aligns with Chopel and Choeda (2021) and Letterman (2013), who noted it as a common and frustrating issue. Students reported that helping with family businesses, household chores, attending tuition classes, and HW overload affected their homework completion, with homework overload being a key factor. Xu (2013) also identified time management as a challenge. On the other hand students believe that their inability to complete their HW is due to lack of conceptual understanding of the concepts taught in the class, this aligns with findings of Protheroe, (2009) and Sayan and Mertoğlu (2020), students will feel discouraged and frustrated if they have to solve mathematics problems at home without fully understanding the concept in class. Thus, HW schedule and assigning HW after confirming every student understood the concept taught appear important to address the issue of HW completion.

On the other hand, homework overload hinders students’ ability to complete their HW. Although the survey item “I complete my homework on time” had a high mean of 3.53, the standard deviation of 0.90 suggests varied responses, likely due to many choosing a neutral option (see Table 5). Qualitative data confirmed that homework overload is a concern, with many teachers assigning work simultaneously and math homework given almost daily. Letterman (2013) similarly found that long assignments and limited time reduce student motivation. This suggests that homework overload can be counterproductive to learning and academic achievement. Other studies also link excessive homework to lower performance (Güven & Akcy, 2019; Trautwein *et al.*, 2009).

The presence of malpractice, such as students copying homework from peers and the internet, was another finding from the analysis of the qualitative and quantitative data, which aligns with Rosário *et al.* (2019). Such practices limit the educational benefits of homework, even when done regularly. Glass and Kang (2022) also found that copying homework didn’t benefit students in enhancing their learning. The current study revealed that homework control, such as deducting marks or scolding, may encourage students to copy to avoid punishment, as confirmed by student responses. Trautwein *et al.* (2009) and Rosario *et al.* (2018) similarly reported that strict control can lead students to copy from high-achieving peers. Thus, homework control appears to contribute to a lack of academic integrity, which not only reduces learning but may also foster unethical behaviour over time.

Assessment motivates students to study and learn mathematics; it motivates them to be engaged in mathematics; without an assessment, students would not be interested in participating in class, paying attention, and doing homework, or in a broader sense, they would not be interested in learning (Martnez-Sierra *et al.*, 2020). The present study found that assessing HW was challenging due to the large class size and time constraints, although 88.1% of the teachers agreed or strongly agreed that assessing students’ HW motivated them to complete their HW (see Figure 2). A similar conclusion was reached by Frohbieter *et al.* (2011). Thus, it is evident that HW

assessment, which is one of the core components of the HW process, is negatively affected by large class size and time constraints.

In addition, the study revealed that motivating students to do mathematics HW was difficult owing to students' lack of interest in the subject because of their preconceived belief that mathematics is difficult. Teachers reported that students believe that mathematics is a difficult subject and that it is only for those students who are academically good. This is consistent with the study of Xu (2020), who concluded that, at the student level, homework interest was positively related to self-concept, that is, students' perceptions of their ability to do mathematics. The lack of "self-concept" is one of the barriers to self-regulating one's homework completion. As reported by Cleary and Zimmerman (2004, p.542), the first step in training individuals to become self-regulated is to cultivate the belief that academic success is under student control. A similar conclusion was drawn by the findings of Utha *et al.* (2021). Their study concluded that some secondary students found mathematics difficult, although some found it easy, and those who found mathematics difficult believed that mathematics was not for them. Therefore, students with this mindset might accept failure before even giving it a try, or they might become complacent, believing that they could not do well in mathematics because it is a difficult subject. Thus, as suggested by Utha *et al.* (2021), making an effort to change this mentality would be valuable in mathematics.

One of the concerning results shown by this study is that the students' HW completion is affected by their lack of basic mathematical conceptual knowledge. Teachers believe that the majority of students have a poor mathematical foundation, so they are not able to do their homework independently, although the tasks assigned are similar to what was done in class. A similar conclusion was reached by Sayan and Mertoglu (2020), who reported that the key factors that generally affect students' motivation in doing HW are concentration, reluctance, and insufficient knowledge of the students. Therefore, focusing on providing a good mathematical foundation to students seem important so that higher secondary students will be able to handle the mathematical content knowledge taught at their level and eventually be motivated to learn mathematics independently.

## CONCLUSION

This study examined the perceptions and challenges of higher secondary mathematics teachers in Bhutan regarding homework, using a mixed-method approach. The study established that teachers view homework as an important instructional practice for academic achievement and personal development of the students. On the contrary, teachers asserting that majority of students are not interested in doing HW and HW practice being used to cover a vast curriculum pose concerns. While students generally see homework as helpful, teachers face issues like low completion rates, academic integrity,

and motivation, which are often linked to homework overload and HW control. These findings offer valuable insights into current practices highlighting the need for more balanced and meaningful homework strategies that consider both instructional goals and students' well-being.

## Recommendation

The study has identified some of the challenges the teachers are facing; such data may be useful to mathematics teachers of HSS, school administrators and the Ministry of Education and Skills Department when designing HW policies. Addressing these challenges seems important to change the students' attitude towards mathematics learning.

## Limitations/Delimitations

The study did not involve parents, although they have an important role to play when it comes to HW of the students.

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