Teachers’ Devotion to Review Lessons: Insights to the Mathematics Lessons in Brunei Darussalam

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Abstract: The aim of this study is to examine to what extent are the mathematics lessons of four teachers in Brunei Darussalam were dedicated to reviews. In total, 20 video-recorded lessons were collected and coded following the definitions provided by the TIMSS 1999 Video Study. The results indicated that 40% of the lessons were devoted entirely on review with 25% belonging to one teacher in particular. From the interview analysis, one of the key issues that emerged was the pressure of examinations in Brunei that led to the profound emphases on the pace of teaching placed by three teachers in relation to their review lessons. There exists a culture in Brunei where every teacher is obliged to do a lot of preparatory work before the examinations. However, there is also a possibility that the type of instruction that seems characteristic of the majority of the four Brunei classrooms may be a defensible, viable, and effective local solution to the problem on how to maximise test or examination performance. Importantly, this style of teaching may just be in harmony with the school culture.

1. Introduction

A teacher’s desire for their students to have meaningful learning stems from the students’ ability to understand and retain the new knowledge conveyed during the lessons. However, a single exposure to the topic taught may not bode well and may even be inadequate in retaining the knowledge in the long term [1]. For mathematics lessons in particular, teachers will often give classwork or homework to assess their students’ retrieval of knowledge. Additionally, a teacher may spend a portion or an entire segment of a mathematics lesson on reviewing or practicing materials previously taught. As a consequence, the students will more likely possess the opportunity in familiarising themselves and become more efficient with the content already learnt compared to opportunities of learning new content materials [2]. Having tests and examinations are also a norm in schools. There can be many reasons why schools conduct tests and examinations, and one such reasons is that they are intended to evaluate what the students learnt in class within the school year.

In the context of Brunei, previous studies have indicated that the education system is largely content driven [3, 4, 5, 6, 7, 8, 9, 10]. These studies reported that the schools in Brunei placed great emphasis on the preparation of students for forthcoming tests and examinations. A special emphasis was most likely to be given for the national high-stakes pen-and-paper public examinations. Consequently, it was reported that teachers in Brunei often felt the need to rush through the curriculum content even if they knew that their students were unable to follow the lessons given, hence forcing students to learn by rote and memorise information and skills for tests and examinations. Because of
the extensive mathematics course that needed to be covered, the teachers felt the pressure to move through the syllabus as quickly as possible so that there would be plenty of time for preparing students for revision, and especially to work through past examination papers. The emphasis on preparing learners for tests and examinations did not guarantee that learners achieve a genuine understanding of mathematical topics [4, 6].

Some students and their parents, teachers and education authorities believe that the percentages of various grades in public examination provide the most acceptable measure of effective teaching [6, 8, 11]. Clements [3] raised the issue that most Brunei secondary school students were being taught mathematics in traditional ‘chalk and talk’ and ‘drill and practice’ ways of teaching. In Ladi’s [6] study of 191 secondary mathematics teachers in Brunei, she found the orientation towards drill and practice to be common, and in particular, higher among experienced teachers than the novice teachers in secondary schools. Furthermore, Ladi [6] stated, “The teachers were engineered and driven to prepare students for the high-stake pencil-and-paper examinations” (p 156). According to Clements [3], it was feasible that the pattern of low expectations and associated low performance in mathematics in schools in Brunei could be reversed. He also suggested that teachers in Brunei could benefit from broadening their teaching so that students were engaged in rich tasks on a regular basis, and that the Brunei teachers could be convinced that the traditional ‘skill-drill’ approaches to teaching and learning of mathematics at all secondary levels were not working [3].

2. Method

The objective of this present study is to examine the extent in which the mathematics lessons of four teachers from two secondary schools in Brunei Darussalam were dedicated to reviews. Sequences of their mathematics lessons, ranging from 4 to 6 lessons, were video-recorded using a two video camera approach. The different lesson segments of each of the video-recoded lessons were coded following the codings developed and defined in the TIMSS 1999 Video Study [2, 12], as shown in Figure 1.

**Figure 1.** Definitions of the different lesson segments (taken from [2, pp 49–50]).

After all the lesson observations and video-recordings, each of the four teachers was subsequently interviewed using the post-lesson video-stimulated recall interview approach [13]. Presented in Table 1 are the details of the four teachers from the two participating schools.
Table 1. The details of the four mathematics teachers.

| Details                                      | School 1     | School 2     |
|----------------------------------------------|--------------|--------------|
|                                              | Danny        | Iman         | Julia        | Dania        |
| Number of teaching years (at time of study)  | Two years    | Six years    | Two years    | Two years    |
| Qualification                               | Bachelor     | Bachelor &   | Bachelor     | Bachelor     |
|                                              |              | Postgrad Cert|              |
| Students’ ability                           | High-achieving (Express Class) | Average | High-achieving | High-achieving |
| Delivery pace                               | High         | Relaxed      | High         | High         |
| Video-recorded lesson(s)                    | 4th Lesson   | 2nd & 5th    | 2nd Lesson   | 1st & 3rd    |
| chosen for interview                        | Lessons      | Lessons      | Lessons      |             |

During the interview sessions, the teacher was given the option to choose his/her own video-recorded lesson(s). With a remote control in his/her hand, he/she viewed portions of the lesson(s) on the television monitor and was able to pause the recordings if he/she wanted to say something of importance regarding any parts of the lesson events.

At the time of this present study, the Penilaian Menengah Bawah (PMB) examination or the Lower Secondary Assessment was meant for the Year 9 students. These students went through three years of the syllabus, but for the express class, the students covered the three years worth of syllabus within two years of study and sat for the examination in Year 8. In the revised Brunei education system termed Sistem Pendidikan Negara Abad ke-21 (SPN21) or the 21st Century National Education System, the PMB examination has been phased out [14]. The present type of assessment called the ‘Student Progress Assessment (SPA)’ consisting of ‘School-Based Assessment (SBA) and ‘Student Progress Examination (SPE)’ has replaced the PMB examination. The SBA is used to assess Brunei students formatively throughout Years 7 and 8, and then the summative SPE at the end of Year 8. Essentially, the distinctive features of the Brunei classrooms identified in this study would not likely to change with the implementation of the current curriculum.

3. Results and Discussion

The content of the lessons belonging to the four teachers are tabulated in Table 2. The categories ‘All Review’ corresponds to the ‘Reviewing’ definition referenced in Figure 1, while the ‘All New’ relates to ‘Introducing and Practicing New Content’. However, the category ‘Half Review & Half New’ was a combination of both and not specifically classified in the coding provided by the TIMSS 1999 Video Study. This category existed in part due to the analyses made from my in-class observations and all the video-recordings of the mathematics lesson sequences of the four teachers.

Table 2. Content of the lessons of the four mathematics teachers.

| Category                  | School 1 | School 2 | Total (%) |
|----------------------------|----------|----------|-----------|
|                            | Danny    | Iman     | Julia     | Dania     |
| All Review                 | 5        | 0        | 2         | 1         | 8 (40%)   |
| Half Review & Half New     | 0        | 2        | 2         | 3         | 7 (35%)   |
| All New                    | 0        | 3        | 0         | 2         | 5 (25%)   |
| Total no. of lessons       | 5        | 5        | 4         | 6         | 20        |
According to Table 2, 40% of all the video-recorded lessons were categorised entirely on review. And only Danny had all of his lessons devoted entirely on review (which accounts to 25%). Allowing for the hybrid data collection in this study provided some data and insights on teacher intention through the teacher video-stimulated recall interviews [10, 15, 16]. From my analysis of the teacher interview data, one of key issues that emerged was the pressure of examinations that led to the profound emphases on the pace of teaching placed by three teachers (Danny, Julia and Dania) in relation to their review lessons. All the three teachers emphasised their concerns in rushing through and completing the mathematics syllabus so that they can have review lessons before the respective examinations.

Due to the nature of the express class Danny was teaching, he had to rush through the three years of mathematics syllabuses. Hence, it was imperative for him to have ample time to review all the Years 7 to 9 mathematics topics before the PMB examination. Below is an excerpt from Danny’s interview in relation to how he completed the Years 8 and 9 syllabuses within one school year.

- I separate. Because in the beginning, maybe a few months, there was a timetable … I gave them extra class so I can teach Year 8 topics during the normal school hours in the morning, and the Year 9 topics about an hour after school. School finishes at 12:30 pm, but the extra class I taught was from 12:45 pm till 1:30 pm.
- And then at 1.30 pm, they have to attend Religious school. So, that is why they are a bit late for the Religious school. But … it can’t be helped because this class wanted it this way.
- … the parents are okay with it because when I informed them that if I followed the normal lesson periods, there won’t be enough time … because in maths we have to explain and all. In the case of science classes, extra classes were not needed because notes were sufficient for the students to read from. So, for maths, I have to do extra classes in maybe 6 or 7 months … so I can finish the entire Years 8 and 9 syllabuses. Also, I did extra classes during the school holidays.

From his interview, he also mentioned that in his review lessons, he mainly concentrated on giving his students questions that were most likely to come out in the PMB examination, and Danny relied heavily on working from the questions in the past PMB examination papers.

- So, what I recalled back here [referencing to a particular event in his chosen lesson shown on the TV monitor] are the questions that will always come out in the PMB exam … so this is why I always refer to the past year papers.
- When I give an explanation, these students can understand a bit faster … These are ‘express’ students. But it’s okay lah because when they enter Year 8 after Year 7, they have to learn the Year 8 and Year 9 topics at the same time.
- … within one year. Because the other subject teachers, like science, are doing the same. That is why … sometimes when we teach we just summarise because if not, there won’t be enough … not enough time. So, we only concentrate on revision … From there, we focus on the questions.
- … If students finish the questions I gave in the review lessons early, that is why I told them to bring … I said bring your PMB book … So when they finish early, they won’t waste time … just continue with the questions from the PMB book as their revision.
- … When I do the recall of the topics we already did … that is their notes for them. I know they are very lazy to bring their classwork books … so, I told them … it’s important to bring the PMB past year book … It’s important for those who finish answering the questions early, start working on the PMB past year questions.

Based on Danny’s interview responses, there are two important features in relation to his review lessons. Firstly, the emphasis on summarising his prior mathematics teaching so as to spend or concentrate most of his class time on revising (indicated by the bold text in his quote above), and secondly, the heavy reliance on the PMB examination questions as his students’ main source of
revision. The first feature justifies why I coded all five of his video-recorded lessons entirely on review. Because of time constraint as well as the pressure of the PMB examination, not only made him rushed through the syllabus, it also suggests that Danny placed great importance on having the review lessons. For the second feature, Danny discovered a pattern (not given in the interview example above) from the past papers of the PMB examination as to what type of questions that will most likely come out in the examination. And for this reason, he mainly conducted the review lessons on working from the past paper questions.

Similarly, Julia and Dania also voiced their concerns in regards to rushing through and completing the Year 8 mathematics syllabus before the special holidays (the 10 days break to celebrate the end of the fasting month and Eid celebration, at the time of study). In addition, two days after the break, all students in School 2 must sit for their End of Year examination. That was why both teachers in School 2 had to have review lessons, and three of these review lessons from School 2 coincidentally happened within the video-recording phase of my study.

For Julia:

- And then I said today we are going to do pie chart. I think that time also [referencing to a particular event in her chosen lesson shown on the TV monitor] we’re running, rushing … to finish the syllabus for the exam.
- … that’s why, you see [referencing to a particular event in her chosen lesson shown on the TV monitor]. Yeah. It’s rushing, isn’t it? Because I need to finish the pie chart at that day. Because the next day we’ll probably do revision.
- ... So … that’s why you’re also rushing, and me and umm … Dania is also trying to finish it that day, so everything was really rushing that day.

For Dania:

- In the university, you are asked to do like, okay, let them understand, don’t rush, don’t rush. But, we have meetings every week, “have you completed this syllabus? That syllabus?” In the end, which one do we choose?
- Similarly, in this school, we are still forced to speed up as well. Finish the syllabus. Finish the syllabus.

At this point, I was curious how Dania will be able to know that her students understood the topics taught if she was focused in finishing the syllabus within the allocated time frame.

Interviewer: So you don’t … you don’t emphasise whether the students understood the topic?
Dania: Depends on their homework then, right? If their homework is okay, then okay I’ll just assume they’ll understand. If their homework is not okay … ah terrible … then, you know, I have to call them individually lah.

The above quotes emphasised the three teachers’ perceived need for speed. The importance attached to examinations is clearly a key reason for the high pace of curriculum delivery in the lessons of Danny, Julia and Dania (refer also to Table 1). Comparatively, Danny had to prepare his students for a more advanced examination than the other teachers. Notably, only Iman seemed relaxed about the situation (of not rushing through and completing the syllabus within an allocated time frame) because he preferred spending more time on explanations. However, he also suggested that if the mathematics syllabus was shortened, more time could be invested in the effective teaching of mathematics.

- But I believe, in maths, suppose that we are given more time, and the syllabus is shorter than (this one) ah, like they can be more effective. Yeah … that is the biggest challenge lah, actually.
- To me, it’s like a win-win situation. If I prefer quality, and I’ll spend more on explaining and so on. But if I choose to go on with quantity, it’s like, I just go on with the lesson, I don’t care whether the students can get it or not, so it’s a matter of … finishing up this syllabus and so on.
• So to me, I prefer the first part, which is … though I have to spend lots of time on explaining but for me, what’s the point of teaching lots of things whereby … you can’t get anything.

Why are there such differences in the teachers’ attitudes towards completing the syllabus and preparing students for the forthcoming examinations, between a more experienced teacher and the three novice teachers? Several hypotheses that I can suggest are, since Danny, Julia and Dania were inexperienced, they felt pressured into performing well in their mathematics teaching in order to prove to their superiors that they were capable of teaching mathematics well (seeing as they were still considered ‘new’ teachers at the time of study). Most importantly, their mathematics teaching performance will be measured by how their students perform in mathematics tests and examinations.

Overall, these findings and my hypotheses appear to support several of the findings stated earlier in the study by Ladi [6]. Importantly, her study provided the local context and evidence for my hypotheses. For example, she found that some of the factors that significantly influenced the method of mathematics teaching included: ‘Syllabuses must be completed as scheduled (89%)’, ‘Too many topics in the syllabus (81%)’, and ‘Emphasis on passing examination (93%)’. Although another factor ‘Teacher’s performance is measured according to the outcomes of the examination results’ was reported by a smaller proportion of teachers (65%) than the three other factors, this indicated that the teachers still felt that their performance was assessed according to their students’ results in the examination. Additionally, Ladi [6] reported “The school administration to some extent places a considerable emphasis upon students’ progress as a means of judging the performance of teachers and link(s) teachers’ achievement of progress with students’ achievement in the examination results” (p 88). If this was truly the case in Brunei, how can a teacher distance him or herself from the notion of being judged so as to not affect their mathematics teaching, at the same time teach mathematics effectively rather than inefficiently, as well as teach for the sake of students’ understanding of mathematical content rather than for the short-term benefits of test performance?

Suffolk [9] suggested that if students spent extra time learning the topics taught, then fewer revision times would be required. This has been the attitude of Iman, the teacher with the longest mathematics teaching experience out of the four teachers (at the time of study). Perhaps, coming from a non-mathematics education background, he valued the benefit of giving adequate explanation. According to his interview data, he placed his students’ mathematics learning on the delivery of his mathematics content as the top priority. Iman preferred to spend more time on explaining, so possibly to him, it is a long-term investment in helping with his students’ learning. However, I cannot verify as to how effective his actions were in terms of test performances or whether his students actually understood his teachings because this study does not address students’ level of achievements or students’ perceptions of their mathematics learning.

With the emphasis made by Iman on explanation and understanding that by his own statements took longer, will he encounter the risk of not covering all the Year 8 mathematics content? All four teachers followed the same Year 8 mathematics syllabus as the rest of the other Year 8 classes in Brunei (excluding the international schools). In addition, according to the ‘Scheme of Work’ that was the reference to the delivery of the mathematics topics I collected from all the teachers (except for Danny since he followed the Express Class ‘Scheme of Work’), Iman covered the same Year 8 mathematics syllabus content as the two teachers in School 2. However, I was not able to verify whether Iman had in fact covered the entire syllabus before the End of Year examination. This was because I completed video-recording his lessons about two weeks before the End of Year examination for School 1. Whereas the other three teachers, they managed to complete the entire Year 8 mathematics syllabuses (as indicated by the imperative need to have review lessons to revise the topics taught that year).

From the interview data, three out of the four teachers emphasised the importance of examinations. As a consequence, the pace of their mathematics instruction (for Danny, Julia and Dania) was rushed so that they could complete the syllabus on time in order to have review lessons immediately before
the respective examinations. In contrast, Iman’s pace of instruction was more relaxed because of his dedication to promote student learning.

4. Conclusion
The issue on the heavy emphasis to prepare students for impending tests and examinations has been a great debate among the researchers in Brunei in the past few decades. We have a culture in Brunei where every teacher is obliged to do a lot of preparatory work before the examinations. Maybe we should not be quick to judge that this approach might not work. Perhaps, there is a possibility that the type of instruction that seems characteristic of the majority of the four classrooms may be a defensible, viable, and effective local solution to the problem on how to maximise test or examination performance. Even more simply, that style of teaching may just be in harmony with the school culture, which may itself reflect the values of the school and examination systems. It does certainly seem to be the case for School 2. This school is among the best schools in the nation. Due to pressure exercised by the school administration, the parents and even the Ministry of Education, high expectations are most likely to come from School 2 rather than School 1, to produce the best results among the best students in Brunei.

It would appear that the culture of the school had, in some ways, influenced the practices of the two ‘new’ teachers in School 2. Julia and Dania clearly indicated, from their interviews, the pressure to complete the syllabus before the final year examinations. This pressure came from their weekly meetings, when more senior colleagues would ‘pounce’ on them with repeated questions like “Have you finished the syllabus?” Questions such as this would certainly put more pressure on these new teachers to teach in a hurried fashion rather than making sure students understood the mathematics work they did during the lessons. Apparently, we are not alone in facing this dilemma in Brunei. In Australia, Prescott and Cavanagh [17] followed four beginning (or first-time) secondary mathematics teachers and interviewed them so that they could “probe the participants’ views of themselves as developing teachers and the particular impact of the school culture in their schools of employment” (p 409). Their findings, such as feeling the pressure from colleagues so that materials were covered in time for examinations and success predominantly measured by acceptable scores on common tests, clearly resonate with the findings of this present study, which is that of the three relatively novice teachers Julia and Dania, including Danny. In this respect, I agree with Prescott and Cavanagh [17] when they said the culture of the school can be seen as influential in determining the beginning teachers’ practices in Brunei.

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