Scaffolding Students' Learning through Teacher's Questioning

Nazli Noor Marmin
Ministry of Education, Brunei Darussalam
Email: nazli.marmin@paprashidah.moe.gov.bn

Rohani Matzin, Rosmawijah Jawawi, Shamsinar Husain, Nur-Ashikin Petra, and Yusimah Amjah
Universiti Brunei Darussalam, Brunei Darussalam
Email: {rohani.matzin, rosmawijah.jawawi, shamsinar.hussain, ashikin.petra, yusimah.amjah}@ubd.edu.bn

***Abstract*—Questioning plays a significant role in teaching as teachers' questions can help develop students' learning and enhance students' engagement in the classroom. The purpose of this study was to investigate on the types of questions asked by Commercial Studies teachers and on how they used questions to scaffold their students' learning. The study focused on three secondary schools in Brunei Darussalam. The data collection processes involved classroom observations during Commercial Studies lessons and interviews with three teachers. The findings showed that the questions asked by Commercial Studies teachers varied according to the purpose of the lessons and teachers' perceptions on the requirements of syllabus and examinations. Teachers were observed to have used questions to scaffold students' learning by utilising lower-level questioning which focused on remembering, understanding and applying in order to engage the students with the new content. As the students progressed, the teachers began to employ higher order questioning which focused on analysing, evaluating and creating. As part of the process of scaffolding, the teachers drew on students' personal experiences, linked what students had known to the new content, broke the questions into parts and offered clues or hints to the students. This study also recommended for teachers to be given professional development training to further improve their questioning techniques.**

***Index Terms*—Commercial studies, questioning techniques, scaffolding, teaching methods**

I. Introduction

With the National Education System for the 21st Century (SPN21) in place in Brunei, Commercial Studies teachers are facing a number of challenges of how to create conducive learning environment that is effective for students to attain good achievements, and at the same time develop their lifelong learning skills [1]. Based on authors' observations, most students encountered difficulties when they were asked to extend their knowledge in higher order thinking skills in Commercial Studies examination paper. Hence, it is imperative for teachers to re-examine the way that they teach in their classrooms, and one way to do this is by investigating teachers' classroom questioning.

Questioning is one of the most frequently used teaching strategies in the classroom. Asking questions is a crucial factor for teachers to involve their students in their lessons [2]. Teachers' questions can be classified as content-related and non-content related [3]. Content-related questions are those questions directly related to the subject content and non-content related questions are those related to non-subject issues, such as teachers' questions used to check on students' readiness to start the lesson [4]. Content-related questions are categorized according to the cognitive level of Bloom's revised taxonomy that consists of lower order thinking and higher order thinking dimensions. The lower order questions are focused on students' remembering, understanding, and applying skills [5]. Whereas, questions that focused on analyzing, evaluating and creating skills are considered as higher order questionings. Teachers' questions categorized as low cognitive questions are important as teachers use recall questions to help students to remember the previous lessons [6]. However, teachers seem to use low order cognitive questions more during teaching, such as knowledge and comprehension types of questions to cover the curriculum in the given time [7].

Teachers' questions can help to scaffold students' learning by improving their lower order thinking skills to higher order thinking skills [8]. Teachers can consider the following guidelines for scaffolding instruction to help them use questions effectively in their lessons [9]. Teachers first need to assess the students' current knowledge on the subject matter in order to scaffold their learning to the next level. The questions are then used to relate to what the students have already understood regarding their learning. Teachers then need to use the questions to break learning tasks into small and manageable tasks to guide students' understanding of the subject content. In order to assist the students to construct their knowledge, the teachers then can use verbal cues and prompts. However, once the students manage to perform the tasks, teachers can reduce the amount of scaffold provided [10].

Effective questions can improve students' learning by developing their thinking skills and understanding of the

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lessons [11]-[13]. Therefore accordingly, the research questions that underpinned this study are: What are the types of questions asked by teachers during the Commercial Studies lessons? And how did teachers use questions to scaffold students' learning?

II. Methodology

The aim of this study is to gain information on the types of questions used in the upper secondary Commercial Studies classrooms. A qualitative research approach is used in the research and it is designed as a case study. Three schools and three teachers were selected to participate for the data collections. The participants consisted of two females and one male of varying years of teaching experience ranging from 4 years to 35 years. They were chosen based on their schools' accessibility, their teaching experience and their-schools' academic achievement in public examinations. For Teacher 1 (T1), she was selected due to convenience as the first author had taught in the school before. Teacher 2 (T2) was chosen, as the subject teacher was an award recipient of special mentioned award conferred by His Majesty, the Sultan of Brunei Darussalam during the Teachers Day celebration. Whilst Teacher 3 (T3) was chosen due to his school's achievement that was often ranked as the highest in terms of students' academic achievement in the Cambridge O-Level examination.

Data was obtained from nine classroom observations and three teachers' interviews. Interview questions and observation protocol sheet were used to collect data. The interview questions were prepared after the observations to seek further information and to clarify some of the teachers' behaviours observed during the teaching processes. During the classroom observations, the observation protocol sheet was used to record the actions and verbal interaction between teachers and students. For data analysis, teachers' questions were first categorized into content and non-content related question. The numbers of questions asked for each category were recorded according to the frequency and the percentage of questions asked, whereas the content-related questions were categorized based on Bloom's revised Taxonomy. The data were then summarized and analysed according to the thematic areas based on Silver's[9] guidelines for scaffolding instruction as presented in the findings section below. The interview questions were analysed verbatim in order to clarify teachers' actions during the teaching process.

III. Results and Discussion

A. Types of Questions Asked in the Classroom

Table I shows the breakdown of questions asked by the three teachers during the total of three observations for each teacher. These questions were categorized as content-related and non content-related types of questions. Based on Table I, it was interesting to find the questions asked by the three teachers varies in numbers. T2 asked 184 questions as compared to T3 with 89 questions and T1 with 46 questions in the three lessons observed. During the observations, T2 was noticed to focus her teaching technique solely on oral questioning. She was observed to ask more on factual questions that required students to reply in short sentences during the recall of the lesson. T2 was also observed to bring some elements of real issues in the classroom for students to discuss.

As for T3, he was observed to integrate technology in his lesson and supported it with questioning techniques to further enhance his teaching. For instance, in one of his lessons, T3 was observed to show a video to the students. Through this video, he probed questions to help students build their knowledge and understanding. T3 was also observed to ask questions that required students to think deeply and the students need more time to answer the questions.

TABLE I. Number of Content and Non-Content Related Types of Question Asked during the Classroom Observations

Types of Questions	Content-Related	Non-Content Related	Total Questions
T1	31 (67.4%)	15 (32.6%)	46
T2	162 (88%)	22 (12%)	184
T3	62 (70%)	27 (30%)	89
Total	255 (79.9%)	64 (20.1%)	319

T1=Teacher 1, T2=Teacher 2 and T3=Teacher 3

T1 asked the least number of questions because during the observation, T1 was focusing on drilling students with past year examination questions. Limited interactions were observed during the lessons as students were busy answering the questions on their own. T1 was also observed to question students on several occasions to guide students in developing the answers.

It was found that the number of questions asked by teachers depend on the nature of their lessons and the strategies that they used in their teaching. Besides this, Table I also indicates that out of 319 questions posed, 255 are of content-related questions (79.9%) and 64 are non-content related (20.1%).

B. Content-Related Type of Questions

The content-related questions are divided into two cognitive categories: *lower order and higher order*, as shown in Fig. 1.

1) Lower order questions

This study showed 29.4 percent of the total questions asked by the teachers are of remembering type of questions. Teachers were observed to frequently ask questions that require students to remember and recall their previous learning. T1 scored the highest percentage of asking remembering type of questions (48.4%) as compared to T2 (28%) and T3 (22.6%) as the purpose of her lessons was for the students to revise on past year examination questions and to check their understanding on previous topics. She focused her questions on the examination questions that required students to recall what they had studied. Likewise, T2 and T3 were observed to ask remembering type of questions to recap what they had taught previously before moving to the new topic and also to involve students in their teaching and learning process.

Category	Questions Domain	T1 F % N=31	T2 F % N=162	T3 F % N=62	Total F % N=255	Overall Percentage %
Lower order level	Remember	15 (48.4%)	46 (28%)	14 (22.6%)	75	29.4
	Understand	9 (29%)	84 (51.9%)	18 (29%)	111	43.5
	Apply	5 (16%)	9 (5.5%)	7 (11.3%)	21	8.2
	Analyse	2 (6.5%)	7 (4.3%)	8 (13%)	17	6.7
Higher order level	Evaluate	-	10 (6.2%)	10 (16%)	20	7.8
	Create	-	6 (3.7%)	5 (8%)	11	4.3

F=frequency of questions asked, %=Percentage of question asked, N=Total number of content related questions *asked, T1=Teacher 1, T2=Teacher 2 and T3=Teacher 3*

Figure 1. Frequency of cognitive level of question asked by the three teachers

In this study, the understanding type of questions formed the majority of the questions asked (43.5%). According to the teachers, these types of questions were asked to lead the discussion between students and taking them into higher levels of thinking. Teachers were also observed to use questions to check students' understanding of the lessons. From one of the observations made, through questions, the teacher was able to identify some common mistakes made by students such as misconceptions on the concept of "bank overdraft". Students mistakenly thought bank overdraft was depositing money rather than lending money. The teacher would repeat the same process of correcting the students' misconceptions of other concepts through questioning, explanations and examples until the students understood the concepts very well.

While the lower order questions cannot prepare students for independent learning or examinations for instance, the 'yes' or 'no' questions and the short answer questions are effective in the early part of the lesson.

2) Higher order questions

Although all the teachers observed indicated their reasons for asking questions were to develop their students' thinking as well as to help them develop in constructing the sentences, most questions asked during the lessons were of fairly lower order type of questions. The teachers were observed to ask less of these four types of questions; apply, analyse, evaluate and create. These questions often require students to respond in longer expressions and complex sentences and this might contribute to the difficulty for the teachers to use in the classroom. Besides, students took more time to respond to these types of questions. This is illustrated in the following excerpt with T2 (Excerpt 1), in which she mentioned that her covering the subject syllabus had prevented her from asking higher order questions.

Excerpt 1:*"….to develop thinking, asking questions could really help but to improve results?...no, because of the syllabus requirement and exam format. As long as there is a need for students to sit for exam and obtain a good grade, teacher will drill the students. Asking questions to develop thinking is time consuming, teachers need to catch up syllabus and focus on exam questions". (T2)*

Likewise, T1 also stated that the nature of her lesson hindered her from asking the higher order questions. There was no evidence during the observation that T1 asked the evaluating and creating type of questions. During the interview, T1 clarified that her main objective was for the students to be able to answer her questions. Hence, she focused on the technique on developing and building on students' answers based on students' knowledge and understanding.

In contrast, T2 and T3 were observed to ask few questions on higher cognitive level since they were teaching new content. It was evident from the observations that there were efforts made by these two teachers to ask questions on developing students' thinking from 'remembering' to being able to 'create' type of thinking. Most of these higher order questions were practiced during the lesson development session.

3) Non-Content related type of questions

The non-content related questions were observed used either to monitor students learning or to encourage students to answer[4]. Examples of non-content related questions being asked in this study were "Have we done bank loan and bank overdraft?," "Do you understand," and "Are you ok?". According to the teachers, there were various reasons for asking these questions. For instance during the interview, T1 mentioned that the purpose of the question was*"…. to check students' understanding before going on to the next chapter. As an enhancement to make students understand the topic."*

According to T2, the non-content related questions were asked to build rapport with students and ensure that they were ready for the lesson. T2 was observed to ask few questions that were not related to the subject content such not as "Are you ok?" and "What time did you sleep last night?". Non-content related questions, which involved teachers managing the lessons, are equally effective in the teaching and learning process. It also encouraged students to answer questions, motivate, guide and lead them as well as to discipline students during the teaching process.

4) Relating Lesson Content with Students' Current Knowledge and Experience

It was also observed that T2 structured her questions to link from one aspect to another. For example, from the calculation of the car loan, she then moved on by asking students to make decision on what would happen if customers were unable to settle the loan repayment and linked it to the concept students needed to know, which was 'security'.

Besides that, she also asked students to interpret on the calculation, for example, by asking students, "Who can tell me what this figure indicates?" The teacher provided opportunities for students to answer questions that elicit their higher order thinking skills.

5) Breaking tasks into small, manageable tasks for students' understanding

For T1, when the students encountered a problem in completing the task (answering the question), T1 would simplify the questions, for example, when asking students to "explain when commerce is needed between wholesaler and retailer," the students were guided throughout the process by breaking down the questions into parts.

When T1 posed a much higher level of question to students, *"What difficulties would there be for wheat farmers if banking services did not exist?,"* she guided the students by asking them to "…look at the services provided by bank, what are the services?". Consequently, the students managed to mention the services provided by the banks after the teacher's scaffolding. The teacher then further instructed the students to focus on the "means of payment" and even gave some hints on "on-line payment" and asked students to think of the answer. Thus, T1 guided students by breaking the questions into parts in order to help them through the process.

6) Using verbal cues and prompts to assist students

T1 consistently gave cues and hints to assist students in their answers. She was observed to model the answer before asking students to answer on their own. For instance, when she asked students to explain about how banking could help commerce, she realized most students answered by defining "banking" rather than explaining how it could help in the process of distribution of goods (commerce). She showed students how to connect the answer to the question.

As for T3, he prompted students by posing a few questions after showing a video on advertisement of "Toyo Tires". He asked students to decide on the type of advertising involved. It was observed during the lessons that through the interaction during question and answer process, together with the guidance provided by teachers, the students were able to complete and solve the problems given.

IV. Conclusions

In this study, it was observed that teachers' questioning was the most used teaching strategy in the classroom. It was found that the type of questions asked by the three teachers observed varied according to the purpose of their lessons. Generally, the teachers in this study utilised lower cognitive type of questions as they reasoned that higher order questions required students to response in longer expression and required more time to think. Most of the questions asked required students to respond in ether a single word or short sentences to recall their understanding on the previous topic. Additionally, teachers were found to simplify the questions by rephrasing them to enable students to answer difficult questions. Verbal cues and prompts were also used to assist students in answering the questions. However, teachers need to find ways to improve their way of questionings in order to develop students' understanding of their teaching. Higher order questions need to be employed to facilitate students' progress in their learning [14]-[16]. Therefore, it is recommended for teachers to be further trained to help them develop their questioning techniques in the classroom.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Nazli Noor Marmin and Rohani Matzin conducted the research; Shamsinar Husain, Nur-Ashikin Petra and Yusimah Amjah analyzed the data; Rosmawijah Jawawi, Nazli Noor Marmin and Rohani Matzin wrote the paper; all authors had approved the final version.

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Nazli Noor Marmin, Master of Education, Universiti Brunei Darussalam, Brunei, 2015. She is an Education Officer under the Ministry of Education.

Rohani Matzin, PhD, Curtin University of Technology, Australia, 2004. She is currently a Senior Assistant Professor at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam.

Rosmawijah Jawawi, PhD Education, Institute of Education, University of London, 2009. She is currently a Senior Assistant Professor at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam.

Shamsinar Husain, PhD in Education, University of Exeter, United Kingdom, 2009. She is currently a lecturer at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam.

Nur-Ashikin Petra, PhD in Education, International Islamic University Malaysia, 2013. She is currently a lecturer at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam.

Yusimah Amjah, Master of Education, University Wales of Institute Cardiff, United Kingdom, 2005. She is currently a lecturer at the Sultan Hassanal Bolkiah Institute of Education, Universiti Brunei Darussalam.