
Title	Teaching students to ask questions
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Source	<i>SingTeach</i> , 2009(21)
Published by	National Institute of Education (Singapore)

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TEACHING STUDENTS TO ASK QUESTIONS

by Wong Khoon Yoong and Quek Khiok Seng

After spending 10 minutes explaining a math concept to the class, the teacher stops and asks, "Are there any questions?" The class turns absolutely silent and many students cast their eyes downward. The teacher coaxes before a brave student gingerly asks, "We do not understand - could you please explain everything again?"

Article highlights

Why is student questioning important?

What types of questions may students ask in a math lesson?

How can teachers encourage students to ask appropriate questions?

Why is student questioning important?

One of the aims of Curriculum 2015¹ is to prepare students to become self-regulated learners so that they can think and learn independently. Such learners must have the mindset to ask questions in order to deepen their understanding and the ability to frame appropriate questions for this purpose.

Some students are fearful or shy to ask questions in front of their classmates, thinking that their questions are "stupid". Others may not know how to ask appropriate math questions because they have not been trained to do so.

Why is it important for students to ask questions about their math work? Let us consider two psychological reasons.

1. They will learn better and understand more when they can clarify their doubts through asking questions.
2. They can learn from feedback to their queries, whether the feedback is given by the teachers or classmates. By asking questions, the students engage in elaborating on and integrating what is being learnt in an active rather than passive way.

Although many studies have been conducted on the impacts of different types of math questions *teachers* ask in lessons, there has been limited discussion about how to encourage *students* to ask their own questions and how this might influence learning.

The *Enhancing Mathematics Performance* (EMP) study² included a small pilot to investigate this technique among some primary and secondary students.

Types of questions students may ask

Math learning often deals with four aspects: *Meaning, Method, Reasoning, and Application*. A variety of questions may be asked about each of these aspects.

Some sample questions that the students can ask are shown in Figure 1. The questions are printed on laminated cards with an aspect labelled on one side and the sample questions on the reverse side. These are called Student Question Cards or SQCs.

The students can fill in the ellipses (...) with words related to the lessons. Each set of questions also includes an option for "Your own question", for students to ask their own questions.

<p>Meaning</p> <p>M1: What do you mean by</p> <p>M2: What is the difference between and</p> <p>M3: Can you use a diagram to show</p> <p>M4: (Your own question)</p>	<p>Method</p> <p>Md1: Can you show us how to do this problem in another way?</p> <p>Md2: Can you explain/show us this step (....) again?</p> <p>Md3: What will you do next?</p> <p>Md4: (Your own question)</p>
<p>Reasoning</p> <p>R1: Why do you do that?</p> <p>R2: What happens if you change to?</p> <p>R3: (Your own question)</p>	<p>Application</p> <p>A1: Why do we study this topic (....)?</p> <p>A2: How do we use this (....) in everyday life?</p> <p>A3: (Your own question)</p>

Figure 1. Student Question Cards

How can teachers encourage students to ask appropriate questions?

Teachers can design their lessons to include specific question times (QT) for students to ask questions. During these QTs, encourage students to refer to the SQCs to find a question to ask about that part of the lesson.

It has been said "I hear and I forget. I see and I remember. I do and I understand." We wish to add to this saying, "I question and I learn".

Teachers may try different approaches to get their students to learn to ask meaningful questions, including the following:

Ask every student to choose a question from the SQCs and call on a few of them to ask their questions. This forces every student to think about what they are learning.

Ask students who really have doubts about that part of the lesson to ask a question from the SQCs.

Focus on a particular aspect, for example, only reasoning questions. Change the focus during the lesson and across several lessons. This will help students to become familiar with all four ways of thinking about math.

Call on specific students to ask questions from the SQCs. This will encourage participation from as many students as possible, including those who normally keep quiet in class.

Organize students into groups, allow them to discuss the questions to ask, and pick a few groups to ask their questions.

Once a question has been asked, the teacher has to answer it as carefully as possible. The class should pay attention to the teacher's answers to these questions.

The specific questions on the SQCs serve as scaffolding at the initial stage to promote student questioning. With sufficient practice, this scaffolding using the given question prompts can be steadily decreased so that the students become better at asking their own questions.

What has been learned about using this student questioning technique

Two primary and two secondary Math teachers participated in this part of the EMP study. They designed their lessons to incorporate QTs. Every student was given one set of SQCs to use during the study.

The teachers used different ways of selecting students to ask their questions. This flexibility is important to allow teachers to become comfortable with the new teaching technique and to match it with their teaching objectives.

They mentioned that this technique helped to break the monotony of the lessons. It was also useful in getting the quiet students to become more active, though it was sometimes challenging for the teachers to give good answers on the spot to students' questions.

The students generally found the SQCs easy to use, and the primary students reported enjoying the use of the SQCs more than the secondary students. Some students mentioned that the SQCs helped them to formulate questions and the QT gave them a chance to ask questions, while others did not like to be forced to ask questions or were afraid that the teacher would pick on them to ask questions.

A concern was that the extra time for the QT would reduce the time to "cover" the syllabus. Perhaps, when students are competent at asking their own questions and eager to think about the answers, they will become self-regulated learners, making it easier for teachers to teach and to "cover" the scheme of work.

Notes

1. The vision for C2015 is *Strong Fundamentals, Future Learnings*. This means having a clearly defined educational philosophy in school leadership; clear strategic intents and direction to guide the national and school-based curriculum; school autonomy to innovate at school and classroom level; and a comprehensive

mechanism to evaluate if students have acquired the strong fundamentals and are prepared for future learnings, to ensure school accountability. (Ministry of Education, 2009) [Print](#)

2. The *Enhancing Mathematics Performance* (EMP) study was developed to understand the characteristics of pupils who are weak in Mathematics.

Reference

Ministry of Education. (2009, February 17). *Recent developments in Singapore's education system: Gearing up for the future*. Retrieved November 12, 2009, from http://www.bic.moe.gov.sg/fileadmin/BIC_Document/B2/ASEAN/regional09/Singapore.pdf

Read more about this project:

Wong, K. Y., & Quek, K. S. (2009). *Enhancing mathematics performance of mathematically weak pupils: An exploratory study* (Final Research Rpt. for Project No. CRP 47/03 WKY). Singapore: National Institute of Education, Centre for Research in Pedagogy and Practice. Retrieved October 23, 2009, from http://www.crpp.nie.edu.sg/~pubs/CRP47_03WKY_FinalResRpt.pdf

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