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# TEACHER QUESTIONING IN A CHINESE CONTEXT: IMPLICATIONS FOR NEW ZEALAND CLASSROOMS

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## Abstract

*Teacher questioning is a very important aspect of teacher-student interaction in classrooms around the world. However, expectations of the purposes and types of these interactions can be variable, particularly across cultural contexts. This qualitative study considers the way teacher questioning is used in a mathematics class in a Chinese primary classroom. The types of questions, expectations for answers and teacher behaviours are described through the use of a short-structured observation. Questions were found to be restricted to a rapid-fire format and only a minority of students were called upon to answer questions. This is contrasted with the expectations of the use of questioning in Western contexts, and highlights the challenges for both Chinese teachers and students when they move into the New Zealand education system.*

## Introduction

The asking and answering of questions is a very natural way people learn from each other (Edwards & Westgate, 1994). Questions are posed to find out what is not yet known and to clarify what is known. It follows that much teacher-student interaction is built around questioning. In schools, questioning has been identified as a key method for eliciting students' knowledge and understanding, and for informing decisions about the next steps in student learning. The use of questioning within stable classroom routines, where teachers and students understand the goals of learning, support these processes (Heritage & Heritage, 2013; Wiliam, Lee, Harrison, & Black, 2004).

Torrance and Pryor (2001) distinguished between closed questioning that focuses on finding out whether the learner knows or can do predetermined things and open questions which are oriented more towards discovering what the learner knows and can do with a focus on further development. Closed questions do not necessarily lead to productive evidence, but do allow students to partake in short exchanges and find out whether their answers are right or wrong, whereas open questions can make thinking visible and can prompt further thought.

The ways in which teachers use questioning has been the focus of research for many years. For example, Harlen (2007) noted that the time students are typically given to answer questions can be as little as a few seconds which is often not enough time. In projects focused on improving questioning techniques and wait time, teachers are often encouraged to alter their questioning behaviour to ask higher order questions and increase wait time – for example allowing students to discuss their answers in pairs before responding. This sort of behaviour leads to teachers asking fewer questions but spending more time on each and allows for better student thinking time. Consequently, students are more likely to demonstrate conceptual understandings and think more deeply, hence providing opportunities to improve learning (Black, Harrison, Lee, Marshall, & Wiliam, 2003; Panizzon & Pegg, 2007).

## Context

The teaching and learning of mathematics in a Chinese primary classroom is quite formal and very different from that typically seen in Western primary classrooms. Classes generally range in size from 35-50 students. Normally there is a blackboard and a data projector in the front of the classroom and the teacher stands at the front of the class for most of the lesson. Students sit in a seating plan arranged by their class teacher and cannot leave their seats without the teacher's permission. In most cases, a teacher only teaches one subject for a short block, e.g. the duration of each mathematics class

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is 35 minutes. Teachers are provided with common lessons and methods for use when making their teaching plans. Teachers are able to adapt lesson plans if they so desire, but most of them adopt the standard lesson structure. It is necessary for teachers to manage their time carefully in order to progress through the designated lesson in 35 minutes, so their lesson speed and the time spent in interactions with students needs to be monitored. If they cannot manage the time well, they will fail to finish their teaching tasks.

Teachers in Chinese schools have been found to use predominantly convergent, lower cognitive level recall questions checking for mastery with their classes (Jiang, 2014; Tan, 2007). They regularly use questions in the first part of their lesson, during the review of relevant prior teaching (Dong, Clarke, Cao, Wang, & Seah, 2018). Although the use of formative assessment practices including the development of effective questioning has been advocated by governmental agencies in China for many years, there has been little evidence of a change in teachers' practice. This is because of the firmly embedded examination oriented culture and its impact on teaching and learning (Zhan & Wan, 2010). In the context of China, it has been argued that "most of the theories and practices are directly imported from Western countries without proper consideration of cultural heritages' compatibility" (Liu & Feng, 2015, p. 3), and this may explain the reticence of teachers to change their questioning style.

Chinese students are often portrayed as passive learners whose goal is to please the teacher and provide correct answers. They are often contrasted to Western students who are typically described as more active learners who are willing to challenge and question the teacher. There is considerable debate about these stereotypes, as on the one hand scholars have linked Chinese teachers and students' classroom behaviours to Confucian heritage culture (CHC) values (Carless, 2011). Within the CHC paradigm, the belief is held that one can find new knowledge in reviewing prior knowledge. Learning-questioning and learning-reviewing are therefore important instructional elements in Chinese mathematics teaching, with teachers posing questions to review prior knowledge and help students make connections to new knowledge (Fan, 2004).

Others researchers question whether CHC is, in fact, the reason for differences in Chinese students and those from Western contexts. For example, Cheng, Andrade and Yan (2011) suggest that the difference may be explained by thinking style as they found that American students tended to be analytic in thinking style while Chinese students both in China and USA were holistic in thinking style i.e. they tended to be more likely to focus on the big picture of knowledge and delay their responses in the classroom to this end.

### **An example of questioning in a Chinese classroom**

The following small scale study highlights questioning typically observed in a Chinese classroom. This study was completed in a primary classroom in Shanghai with 35 Grade 3 students who were about nine years old. The Mathematics content of the observed class focused on the use of the area formula for rectangles. In this observation, we only collected data in the "review of relevant prior knowledge"; the first part of the lesson where most questions were used. Every question posed by the teacher in the first part of the lesson was recorded and analysed.

Before the structured observation, we prepared an observation schedule and designed a framework to display how to code each question posed by the teacher during the class. There are four aspects to question descriptions:

#### **A. The type of questions**

##### **1. About an objective fact**

There is a specific and accurate answer. The teacher has already had a standard answer he/she will accept.

##### **2. About personal opinion**

There is not a standard answer. This kind of question is personal and requires students' deeper thinking.

## 3. Non-academic question

Questions that are not relevant to what is being taught, but relevant to some non-academic issue e.g. “where is my blackboard eraser?”

## B. Who the teacher calls to answer

1. Calls on someone before posing the question
2. Calls on someone who has volunteered to answer
3. Calls on someone who has not volunteered to answer
4. All students answer together (Choral answering)

## C. Wait time after posing a question

1. A pause for seconds before calling on someone to answer
2. Almost no pause before calling on someone to answer
3. Call on someone before posing the question

## D. The mood/tone of the teacher when posing the question

1. Encouraging students to think about a challenging question
2. A dry tone, just posing a question
3. Threatening the students (e.g. If you cannot give the correct answer, you have to write it down ten times.)

**Example coding for the first question in the lesson**

It is a question about an objective fact, so it was coded as 1.

The teacher asked every student to answer the question together, rather than call anyone’s name, so it was coded as 4.

There was no pause before calling, so it was coded as 2.

The teacher asked the question in a dry tone, so it was coded as 2.

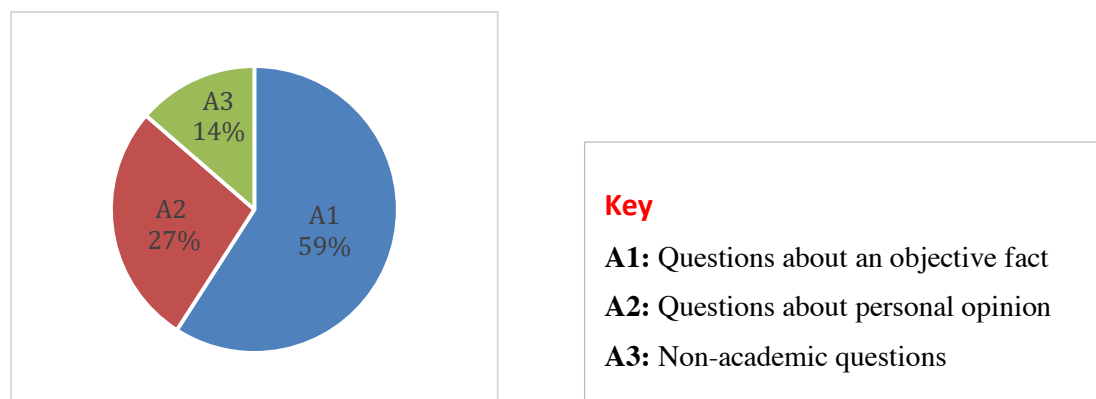
Question	Code			
	A	B	C	D
1	1	4	2	2

**Findings****Style of questioning**

In the first section of the lesson, lasting 7 minutes and 20 seconds, the teacher asked 22 unique questions, repeating 3 to other students, so posed questions 31 times in total. On average the teacher posed a question every 14 seconds. The rhythm and pace of the first part of the lesson was very fast with the teacher posing questions almost continuously.

### Type of questions

**Figure 1: Types of questions asked**

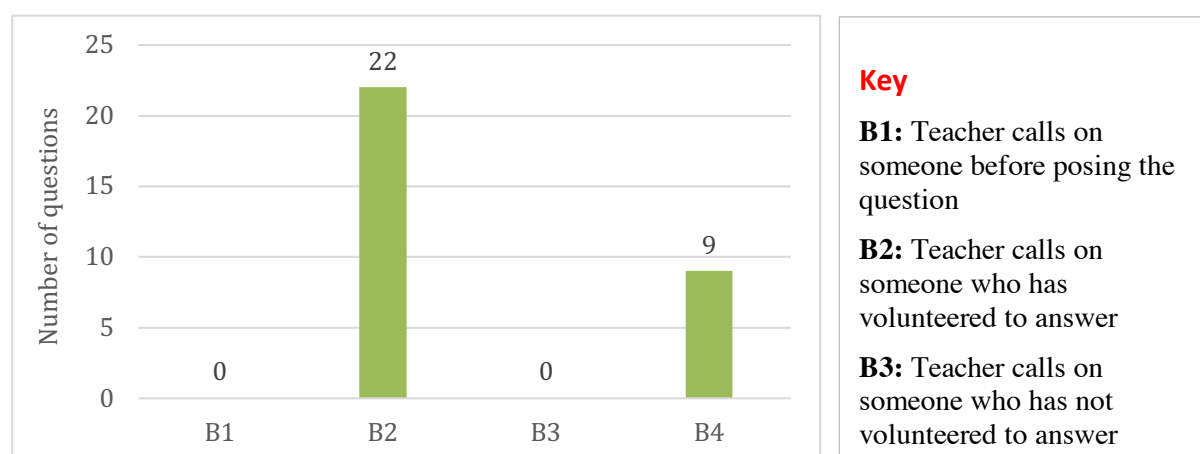


59% of questions that were asked by the teacher focused on objective facts, 27% were about personal opinions and 14% were about non-academic issues. It is understandable that the teacher focused on asking questions about objective facts, given that the main aim in the first part of the lesson was to help students recall their prior knowledge.

### Who the teacher calls to answer the question

In terms of who the teacher called to answer questions, the data is summarised in Figure 2.

**Figure 2: Who the teacher calls on**



In this study, the teacher never called on anyone before posing a question and never called on students who did not volunteer to answer. The majority of questions were answered by the same individuals who volunteered to answer questions, while 29% of questions were answered by students chorally.

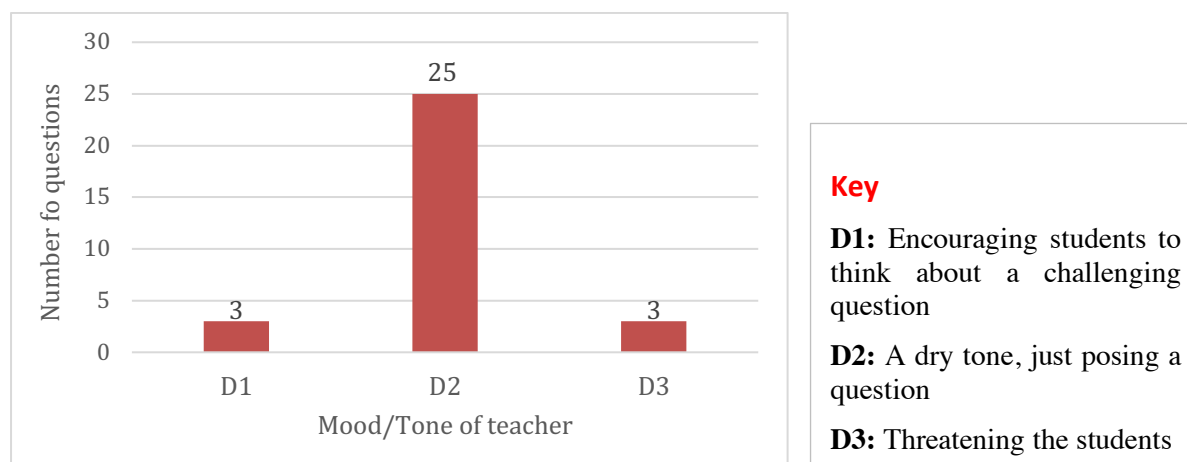
### Wait time

In this study, the teacher consistently called on students immediately after posing a question, allowing no thinking time for students. In only one instance did the teacher pause, and this was for a question about students' personal opinions.

### The mood/tone of the teacher when asking questions

Figure 3 summarises the data collected about the mood/tone of teacher when posing questions.

**Figure 3: Mood/tone of the teacher**



The final focus for questions was the mood or tone of the teacher when she posed the question, recognising that these judgements are somewhat subjective. A threatening tone appeared three times. Two of them in respect to questions about objective facts and one in a question about non-academic issues. It was obvious from her tone that the teacher paid great attention to the questions about objective facts. She expected her students to master the knowledge, and if they failed to remember facts, she criticised them and directed them to learn again.

In summary, it was clear through the observations made in this class that the teacher prioritised the use of questions in the first part of the lesson. She almost entirely used a ‘rapid fire’ approach to questioning, focusing on factual recall for the majority of questions and providing no thinking time for students. She only called on those students who had raised their hands to answer her questions, meaning that a large proportion of the class was never called upon individually. Some choral responses were expected, but again this meant some students were not necessarily involved in offering answers, enabling some students to ‘fly under the radar’ by not being noticed when they did not know the answers. Her tone was dry and unanimated for the most part, with emotion evident in only a few instances.

### Discussion

The way in which questioning is used in a class communicates what is valued within that context. In this study, the teacher asked low-level questions mostly focused on objective facts, to which there were standard answers she would accept. This aligns with findings from other studies which have found that Chinese teachers often use recall questions to check for mastery (Jiang, 2014; Tan, 2007). In this context, achieving mastery is an important goal for learners, as new knowledge is seen to always be built on the basis of prior knowledge (Fan, 2004). The data collected from the observation reveals the teacher’s questioning skills, especially for lower order questions.

Questions that can encourage students to think critically are defined as higher-order questions and many researchers suggest these questions are more powerful for learning (Heritage & Heritage, 2013; Wimer, Ridenour, Thomas & Place, 2001). However, the contradictory forces at play within an examination focused culture in China, and the complexities involved when a policy is imported from the West, means that teachers may lack the motivation to change their questioning style (Lui & Feng, 2015; Zhan & Wan, 2010). Lui and Feng (2015) suggest that success through the introduction of changes from the West depend on ‘how to make it happen in a “Chinese” way’ (p. 13).

The teacher in this study called on those students who raised their hands to answer her questions. This can be seen as a practice that shows the teacher’s respect to students who know the answers. However,

some may think this is not a good practice, because once students notice that the teacher will never call them if they do not raise their hands, they may not bother to think about the answers to the questions. Alternatively, students may raise their hands when they do not know the answer and thereby be seen as knowing the answer, even though they do not know it. Research shows that it is important for teachers to ensure that every student in the classroom is thinking about the questions that are asked (Black, Harrison, Lee, Marshall, & Wiliam, 2003), but currently in this study, the teacher's practice does not facilitate this.

On the other hand, this practice can be seen as being a result of the teacher caring about the smooth flow of the class. If she does not want to hear a wrong answer and then have to stop and spend some time to correct the student's answer, it is more efficient in terms of flow to ask students who will know the correct answer. That answer now gets to count as the 'right' answer and all members of the class as overheard audience are understood to know that answer. In Figure 2 we can see 29% of questions were answered by students altogether, which means these questions were very easy to answer, and students are taken to know that choral answer whether they do or not. It is true that the students shouting out the answers together can quicken the rhythm of the class but it does not necessarily follow that every student knows the correct answer.

In terms of wait time after posing a question, the teacher almost never gave students time to think, once the question had been asked. The one and only pause was given after a question that required students' personal opinions. Again, this would indicate to us that the teacher was trying to maintain a fast rhythm in the class. This lack of wait time has been noted in many studies and teacher questions (Harlen, 2007), and a lack of wait time is not helpful for students who need some time to think about how to answer questions. Moreover, the lack of wait time together with security that you will not be called upon unless you have your hand up, may lead some students to not think about the question if they know they do not need to answer it. It would appear that an increase in wait time might mean more students in this class would have time to think of answers.

The tone of the teacher asking the questions was generally dry and dull. This could indicate that the teacher was 'going through the motions' of checking on prior knowledge of the students, without having any personal engagement in the process. Rather than asking questions in ways that would pique the interest of her students, she appeared to work through the questions quickly and without a particular interest in stimulating further thinking or questions from her class. This could be linked to the tight time frame she had to work within, and the fact that the answers she asked were either right or wrong. Her focus appeared to be on procedural display to confirm previous learning, rather than to probe for deep understanding.

### **Implications for New Zealand classrooms**

This small study adds to the literature that describes the sorts of questioning that occurs in classrooms in China. With the understandings that this study and other literature provide, it is useful to consider the implications for Chinese teachers and students who make the transition to New Zealand or other Western classrooms. Teachers in New Zealand are expected to use questioning as a fundamental element of their formative assessment practice, with many teacher education programmes using Blooms taxonomy as a questioning framework. Chinese teachers entering the profession in New Zealand may need support to broaden their questioning style and their understanding of the purposes of questioning in the New Zealand setting. Similarly, students arriving from China would have an understanding of behaviours during questioning which may be at odds with what is expected in New Zealand classrooms. Here again, an explanation and readjustment will be required for these students so that they can fit more easily into their new context.

This study may also be of use to New Zealand teachers as they consider their own questioning practices. A review of the sorts of questions they use, and when they use them could inform their decisions, particularly when they reflect on their motivation in using questions. There are implications for learning that are evident in the type of questioning teachers use, so this study may prompt New Zealand teachers to consider their questioning more deeply.



In conclusion, this study has demonstrated that in a Mathematics class in a Chinese school, a particular style of questioning was predominantly used. Expectations by the teacher and students within this class were clear and the importance of maintaining a brisk pace, or rhythm, was evident. It follows then, that Chinese teachers and students who move to other schools where the expectations around questioning are quite different might be challenged by their new environment, and may need support.

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