



# Deriving better questions: creating better clinical instruction

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**Good teachers use good questions to create significant learning experiences**

Since the time of Socrates, questioning has played an important role in education. Indeed, most educators would consider it a compliment if one referred to their teaching as Socratic.<sup>1,2</sup>

Research has reported that questioning increases learner engagement,<sup>3-5</sup> helps to contextualise difficult material,<sup>2,6,7</sup> forms bridges between disparate material,<sup>7-9</sup> and generally improves the learning environment by creating conversations of depth and breadth.<sup>3,4,10,11</sup> In short, good teachers use

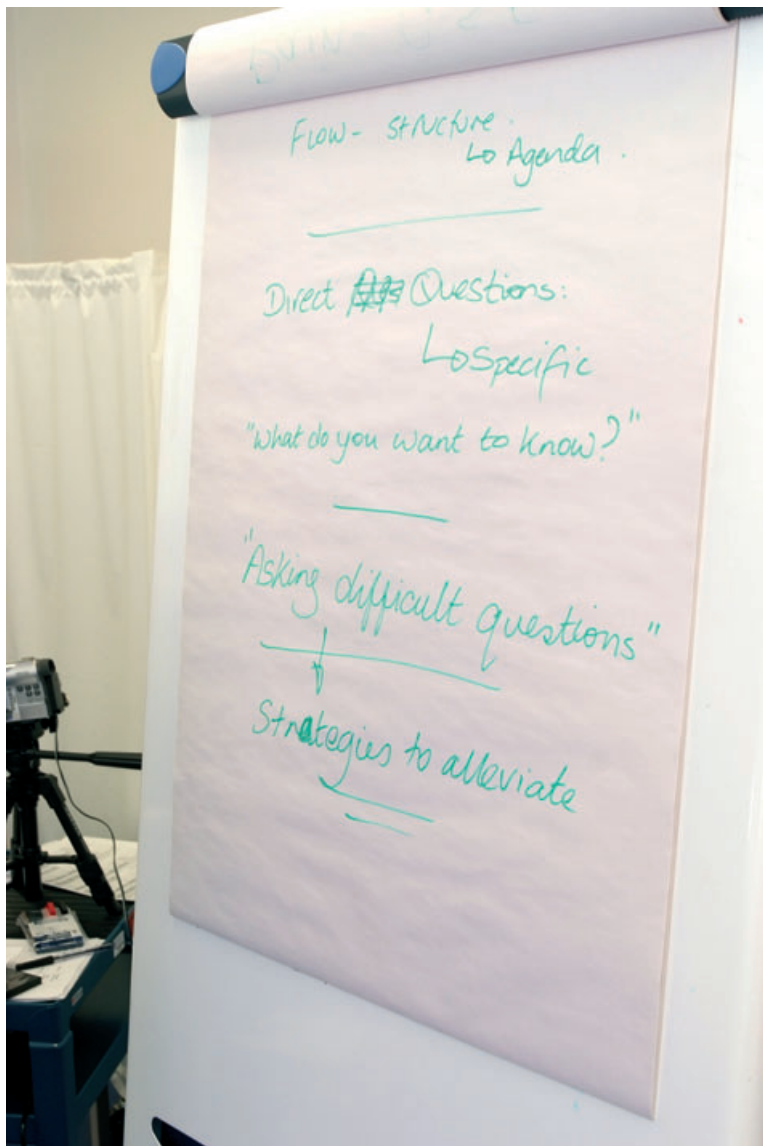
good questions to create significant learning experiences.<sup>5,12,13</sup>

Medical education, especially clinical education, focuses a great deal of attention on questions to move educational objectives forward. Cases develop questions that force a critical appraisal of information. And treating real patients engenders entire sets of authentic questions to be probed and shared.

It is the rare doctor who does not ask questions of his or her team during ward rounds, and for

the most part I suspect that doctors would tell you that good questioning skills develop naturally over time.

However, after many hours of observing clinical and ward teaching, I have some concerns about the natural use of questions by doctors as they teach. Certainly, questions are a part of their toolbox. But are these questions always pedagogically sound? Will they engage students at the proper intellectual and critical levels? Are they enhancing educational activities?



of questioning were quite narrow. As an educator, this caught my attention.

**Education, at its heart, is about learning to ask better questions**

What follows is not an extensive review of the nature of questioning, but rather one educator's insights on how well that pedagogical approach is used in clinical teaching. I have not applied any significant research analysis to my findings here, but hope that these ideas might persuade others to look more systematically at the same phenomena.

## METHOD

More than 100 hours of direct observation of clinical and ward instruction were undertaken: in January and February 2007 at the University of South Florida College of Medicine's (USFCOM) campus clinic; and in June and July 2007 at Tampa General Hospital. Sixteen doctors were observed individually (eight at both sites) on two separate occasions, and three other doctors were each observed on a single occasion. Observations were generally four-hour sessions, though some took place over three hours. All observations were scheduled in advance.

The process of observation was straightforward. I observed many clinician interactions during the sessions. These included time with students, time with colleagues and staff, time with patients, and on occasion in the clinical setting, time alone.

I took notes on behaviour, attitudes, strategies, conversations and other details in the learning environment. Later I expanded these into brief narratives which I gave to each doctor so that feedback could be provided on my observations. From these notes and the doctors' insights, I distilled information about the questions used in the teaching engagements with students.

Questioning as pedagogy is only as good as the questions being asked. If there is no well-focused intent in the questioning strategy, learners may fail to develop a proper understanding from the learning context.<sup>2-7</sup> If instructors do not contrive sets of questions and follow them up properly, learners will retain information that is disjointed and unconnected.<sup>7-9</sup> Education, at its heart, is about learning to ask better questions, and without great questions it won't matter whether instructors use Socratic methods or not to drive their teaching.

## PURPOSE

As a part of a study seeking to describe a model of clinical instruction, data were gathered on questions used by clinical and ward doctors as they worked with medical students and residents. While these data were not the main focus of the initial study, they do reveal some significant patterns of questioning, as well as the way these patterns reflect the quality of the questions being asked.

Predictably, many questions were asked of students by their instructors. However, a close scrutiny of the questions revealed that their range and the methods

### Box 1. Effective question use for clinical instructors

- Always target a specific student before asking a question: 'Scott, what results do you expect on Mr Jefferies' complete blood count?'
- Make sure initial questions fit the specific context of the patient (follow-ups may expand into hypothetical situations)
- Always provide feedback to a student's response; and let that feedback spawn another question
- Question students to evaluate other students: 'Caroline, what did you think of Amit's response?'
- Be aware of the types of questions your students do and do not want to answer – and ask both types
- Use questions to encourage alternative perspectives: 'Aisha, imagine your diagnosis is wrong. What do you do next?'
- Use questions to probe critical thinking: 'Chen, you've presented good reasons to support your diagnosis. With which one am I most concerned?'

Participant observation explores the lived experience of people in particular tasks. It has a long and highly regarded track record in anthropological research.<sup>15</sup> It is an essential method for researchers hoping to build relationships with, and not merely to gather data from, those being studied.<sup>16</sup> It is not just the collection of data, but rather a way of thinking about the people from whom the data is collected.<sup>17</sup> In this sense, it was the perfect vehicle for this research, as I was hoping to uncover through my explorations both a system and some ways to influence that system.

Thomas Beckman writes that direct observation is a difficult but significant way to understand the salient issues of clinical teaching. The difficulty, he claims, is for the observer to disconnect from the clinical context of the patient case. The observer must set aside diagnostic knowledge and look only at the teaching practices being employed.<sup>17</sup>

Beckman's study used doctors as observers but, as he notes, these observers 'realized that they gave less attention to the teaching environment than to the existing patient-care issues'.<sup>17</sup> Extensive training was provided, and the doctor-observers needed numerous bedside observations before they were able to develop insights into pedagogic

practices. This makes sense, as doctors are trained to make medical diagnoses, not to provide evaluation on teaching interactions.

My training, though – to Ph.D. level – is as an educator, and consequently I observe through a lens that sits outside the doctors' paradigm, and am not encumbered by thoughts of diagnosis or treatment plan. I look for teaching because that is what I see best.

### QUESTIONING WHILE TEACHING

Questions function in several ways within learning environments. They allow an immediate diagnosis of student understanding while involving the student in the construction of knowledge. They change the context of the case at hand, expanding the learning potential, and help to engender introspection on the part of all the learners present, because questions not only work in the reciprocal conversation between the two people involved but, when asked well, they also unite the team in cognitive processing.<sup>18</sup>

During my observation time, myriad questions were asked by clinical and ward instructors. As might be expected, most were linked contextually to the patient under discussion, though occasionally some were offered that attempted to move the students

to a different context. Initially, I was pleased with the questioning I observed, particularly on the wards, where questions drove much of the learning. But after looking at my notes, I saw that the range and method of questioning was quite narrow, even if the occurrence was frequent.

For example, the question 'What do you want to do now?' was asked by every doctor I observed, though some paraphrased it: 'So, what do we do with that?', 'What do you want to do about that?' or 'Where do we go after that?' Intuitively, it is a great question, as it poses a next step for a young learner, and we want our students to be clear about the process that reveals the next step.

But often this was a singular question, with no intention of follow-up, used as a catch-all for every situation. As such, it denied the relationship that ought to develop between teacher and learner, a relationship around which the educational environment should be built. Considering the educational importance of that relationship, it makes little sense that instructors use the same question with every student, because each student and each case will be different. The more my notes revealed this ubiquitous 'What do you want to do now?', the more I longed for specific questions that dignified the actual context in which the

instructor and student were working. For example:

- What should we watch for in the next 24 hours?
- How do we decide if this patient can go home today?
- How do we know this patient must stay a further day in hospital?
- You've given me three good reasons for your diagnosis. With which one am I most concerned?
- After all you've told me, what would I expect to see on a complete blood count (CBC)?
- You've got your mind focused on a plan. Imagine for a moment you are wrong. What will you do next?

Each of these questions make specific what the initial question only generalises. As such, the questions define the learning environment, whereas the initial question only alludes to it. Questions like these demand a specific answer that can be evaluated, but the initial question was far too open-ended for strict evaluation. Moreover, each question speaks to a different kind of learning relationship. Students respond to questions that explore a particular context, and they connect with the teachers who ask them.<sup>6,8,9</sup> When students connect with their instructors, good learning happens.

Other questions were almost as ubiquitous as the one mentioned above. Most instructors asked their students 'Why do you think that?' or 'What else can you tell me about that?' And nearly every doctor-instructor asked a student 'What are the lab results for this patient?'

Again, these questions are intuitively solid. But consider the answer to the latter question. The results will be delivered as a list of data, a set of information from which an

interpretation might be made. Is this how we want our students to learn medicine? Is that how you want your doctor to think of your lab results? For more significant learning to occur, we should ask the question so that students understand that the *list* of data is less important than what the data *mean*:

- Which is the most important of the lab results you received for this patient?
- What is the possible red herring within the lab results you received for this patient?
- How will you explain the significance of the white blood cell count to this patient?
- How do these lab results compare with the results you received for this patient yesterday?

Each of these questions encourages the learner to construct an understanding that goes beyond mere data. Each forces the learner to think about the patient, not just the data. And each could be evaluated within a frame of critical thinking, a skill we must spend more time on in our teaching.

## DISCUSSION

Research has been fairly clear on the power of inquiry-based learning: generally, students who learn through an inquiry-based approach have a better grasp of the material in question.<sup>19-21</sup> But this same research is quick to point out that the nature of the questions and the process of the asking are central to the success of this type of learning. The craft of asking good questions is one that depends on several convergent skills: the use of the proper tone, the correct phrasing and sequencing, and the blending of brief-answer versus discussion-based questions. Teachers also need to know the personalities and interaction methods of their

students when throwing questions into the learning environment.<sup>22</sup>

Questions become stronger by the degree to which they are intentional.<sup>5,6,8,9,18</sup> Intentional questioning means asking a specific student a specific question about a specific situation. It means dignifying the relationships that are being built between the teacher and the student, and between the student and what is to be learnt. Intentional questions change the nature of most learning environments, where the most common questioning method presents open-ended questions in open-response fashion.

My observations of ward teams support this thinking: most attending doctors ask most questions of the full team simultaneously. Rarely do the questions focus on the specific patient and the students at hand.

This is problematic to the degree that all students are seen as prototypes of medical students or young doctors, and not as individual learners with highly differentiated learning styles. If we frame our teaching so that all students receive the same set of questions, regardless of the learning context, we negate the individual needs that each student brings to the learning environment. This practice lowers the engagement and the expectations of both the student and the instructor, as it removes the relational element of the learning process.

Much more significant learning comes when instructors begin to frame their questions and evaluate responses within specific contexts. Exploring the kinds of questions that our ward and clinical instructors use will be instrumental in improving the nature of clinical teaching.

**Students respond to questions that raise a particular context**

**Research has been fairly clear on the power of inquiry-based learning**

## Intentional questions change the nature of most learning environments

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