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ABC of learning and teaching in medicine

Learning and teaching in the clinical environment

John Spencer

Clinical teaching—that is, teaching and learning focused on, and usually directly involving, patients and their problems—lies at the heart of medical education. At undergraduate level, medical schools strive to give students as much clinical exposure as possible; they are also increasingly giving students contact with patients earlier in the course. For postgraduates, “on the job” clinical teaching is the core of their professional development. How can a clinical teacher optimise the teaching and learning opportunities that arise in daily practice?

Strengths, problems, and challenges

Learning in the clinical environment has many strengths. It is focused on real problems in the context of professional practice. Learners are motivated by its relevance and through active participation. Professional thinking, behaviour, and attitudes are “modelled” by teachers. It is the only setting in which the skills of history taking, physical examination, clinical reasoning, decision making, empathy, and professionalism can be taught and learnt as an integrated whole. Despite these potential strengths, clinical teaching has been much criticised for its variability, lack of intellectual challenge, and haphazard nature. In other words, clinical teaching is an educationally sound approach, all too frequently undermined by problems of implementation.

Challenges of clinical teaching

- Time pressures
- Competing demands—clinical (especially when needs of patients and students conflict); administrative; research
- Often opportunistic—makes planning more difficult
- Increasing numbers of students
- Fewer patients (shorter hospital stays; patients too ill or frail; more patients refusing consent)
- Often under-resourced
- Clinical environment not “teaching friendly” (for example, hospital ward)
- Rewards and recognition for teachers poor

The importance of planning

Many principles of good teaching, however, can (and should) be incorporated into clinical teaching. One of the most important is the need for planning. Far from compromising spontaneity, planning provides structure and context for both teacher and students, as well as a framework for reflection and evaluation. Preparation is recognised by students as evidence of a good clinical teacher.

How doctors teach

Almost all doctors are involved in clinical teaching at some point in their careers, and most undertake the job conscientiously and enthusiastically.

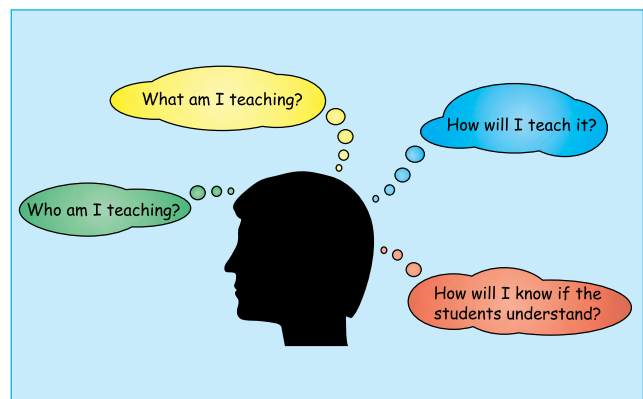
However, few receive any formal training in teaching skills, and in the past there has been an assumption that if a person simply knows a lot about their subject, they will be able to teach



Clinical teaching in general practice

Common problems with clinical teaching

- Lack of clear objectives and expectations
- Focus on factual recall rather than on development of problem solving skills and attitudes
- Teaching pitched at the wrong level (usually too high)
- Passive observation rather than active participation of learners
- Inadequate supervision and provision of feedback
- Little opportunity for reflection and discussion
- “Teaching by humiliation”
- Informed consent not sought from patients
- Lack of respect for privacy and dignity of patients
- Lack of congruence or continuity with the rest of the curriculum



Questions to ask yourself when planning a clinical teaching session

Clinical review

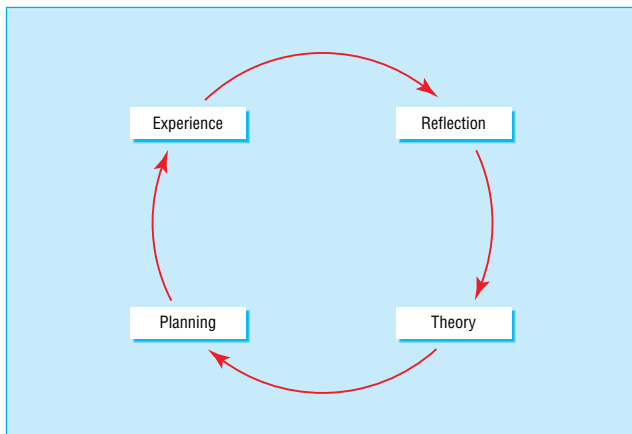
it. In reality, of course, although subject expertise is important, it is not sufficient. Effective clinical teachers use several distinct, if overlapping, forms of knowledge.

How students learn

Understanding the learning process will help clinical teachers to be more effective. Several theories are relevant (see first article in the series, 25 January). All start with the premise that learning is an active process (and, by inference, that the teacher's role is to act as facilitator). Cognitive theories argue that learning involves processing information through interplay between existing knowledge and new knowledge. An important influencing factor is what the learner knows already. The quality of the resulting new knowledge depends not only on "activating" this prior knowledge but also on the degree of elaboration that takes place. The more elaborate the resulting knowledge, the more easily it will be retrieved, particularly when learning takes place in the context in which the knowledge will be used.

Experiential learning

Experiential learning theory holds that learning is often most effective when based on experience. Several models have been described, the common feature being a cyclical process linking concrete experience with abstract conceptualisation through reflection and planning. Reflection is standing back and thinking about experience (What did it mean? How does it relate to previous experience? How did I feel?). Planning involves anticipating the application of new theories and skills (What will I do next time?). The experiential learning cycle, which can be entered at any stage, provides a useful framework for planning teaching sessions.

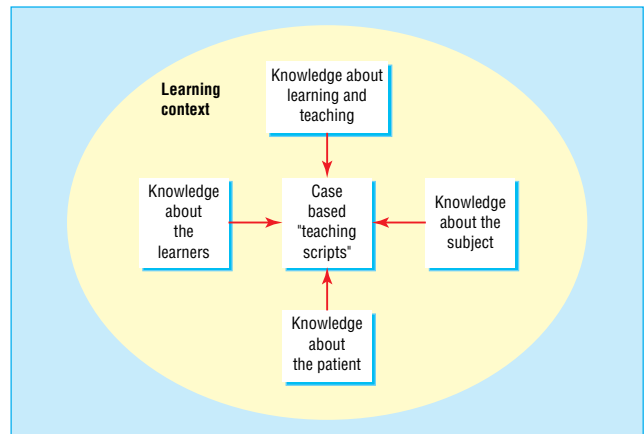


Experiential learning cycle: the role of the teacher is to help students to move round, and complete, the cycle

Questions

Questions may fulfil many purposes, such as to clarify understanding, to promote curiosity, and to emphasise key points. They can be classified as "closed," "open," and "clarifying" (or "probing") questions.

Closed questions invoke relatively low order thinking, often simple recall. Indeed, a closed question may elicit no response at all (for example, because the learner is worried about being wrong), and the teacher may end up answering their own question.



Various domains of knowledge contribute to the idiosyncratic teaching strategies ("teaching scripts") that tutors use in clinical settings

How to use cognitive learning theory in clinical teaching

Help students to identify what they already know

- "Activate" prior knowledge through brainstorming and briefing

Help students elaborate their knowledge

- Provide a bridge between existing and new information—for example, use of clinical examples, comparisons, analogies
- Debrief the students afterwards
- Promote discussion and reflection
- Provide relevant but variable contexts for the learning

Example of clinical teaching session based on experiential learning cycle

Setting—Six third year medical students doing introductory clinical skills course based in general practice

Topic—History taking and physical examination of patients with musculoskeletal problems (with specific focus on rheumatoid arthritis); three patients with good stories and signs recruited from the community

The session

Planning—Brainstorm for relevant symptoms and signs: this activates prior knowledge and orientates and provides framework and structure for the task

Experience—Students interview patients in pairs and do focused physical examination under supervision: this provides opportunities to implement and practise skills

Reflection—Case presentations and discussion: feedback and discussion provides opportunities for elaboration of knowledge

Theory—Didactic input from teacher (basic clinical information about rheumatoid arthritis): this links practice with theory

Planning—"What have I learned?" and "How will I approach such a patient next time?" Such questions prepare students for the next encounter and enable evaluation of the session

Effective teaching depends crucially on the teacher's communication skills. Two important areas of communication for effective teaching are questioning and giving explanations. Both are underpinned by attentive listening (including sensitivity to learners' verbal and non-verbal cues). It is important to allow learners to articulate areas in which they are having difficulties or which they wish to know more about

In theory, open questions are more likely to promote deeper thinking, but if they are too broad they may be equally ineffective. The purpose of clarifying and probing questions is self evident.

Questions can be sequenced to draw out contributions or be built on to promote thinking at higher cognitive levels and to develop new understanding

Explanation

Teaching usually involves a lot of explanation, ranging from the (all too common) short lecture to “thinking aloud.” The latter is a powerful way of “modelling” professional thinking, giving the novice insight into experts’ clinical reasoning and decision making (not easily articulated in a didactic way). There are close analogies between teacher-student and doctor-patient communication, and the principles for giving clear explanations apply. If in doubt, pitch things at a low level and work upwards. As the late Sydney Jacobson, a journalist, said, “Never underestimate the person’s intelligence, but don’t overestimate their knowledge.” Not only does a good teacher avoid answering questions, but he or she also questions answers.

Exploiting teaching opportunities

Most clinical teaching takes place in the context of busy practice, with time at a premium. Many studies have shown that a disproportionate amount of time in teaching sessions may be spent on regurgitation of facts, with relatively little on checking, probing, and developing understanding. Models for using time more effectively and efficiently and integrating teaching into day to day routines have been described. One such, the “one-minute preceptor,” comprises a series of steps, each of which involves an easily performed task, which when combined form an integrated teaching strategy.

Teaching on the wards

Despite a long and worthy tradition, the hospital ward is not an ideal teaching venue. None the less, with preparation and forethought, learning opportunities can be maximised with minimal disruption to staff, patients, and their relatives.

Approaches include teaching on ward rounds (either dedicated teaching rounds or during “business” rounds); students seeing patients on their own (or in pairs—students can learn a lot from each other) then reporting back, with or without a follow up visit to the bedside for further discussion; and shadowing, when learning will inevitably be more opportunistic.

Key issues are careful selection of patients; ensuring ward staff know what’s happening; briefing patients as well as students; using a side room (rather than the bedside) for discussions about patients; and ensuring that all relevant information (such as records and x ray films) is available.

Teaching in the clinic

Although teaching during consultations is organisationally appealing and minimally disruptive, it is limited in what it can achieve if students remain passive observers.

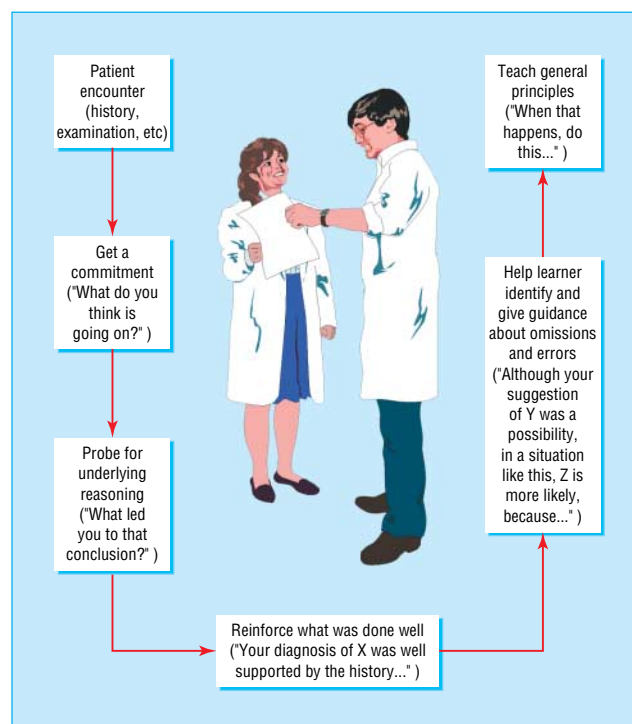
With relatively little impact on the running of a clinic, students can participate more actively. For example, they can be

How to use questions

- Restrict use of closed questions to establishing facts or baseline knowledge (What? When? How many?)
- Use open or clarifying/probing questions in all other circumstances (What are the options? What if?)
- Allow adequate time for students to give a response—don’t speak too soon
- Follow a poor answer with another question
- Resist the temptation to answer learners’ questions—use counter questions instead
- Statements make good questions—for example, “students sometimes find this difficult to understand” instead of “Do you understand?” (which may be intimidating)
- Be non-confrontational—you don’t need to be threatening to be challenging

How to give effective explanations

- Check understanding before you start, and as you proceed, and at the end—non-verbal cues may tell you all you need to know about someone’s grasp of the topic
- Give information in “bite size” chunks
- Put things in a broader context when appropriate
- Summarise periodically (“so far, we’ve covered . . .”) and at the end; asking learners to summarise is a powerful way of checking their understanding
- Reiterate the take home messages; again, asking students will give you feedback on what has been learnt (but be prepared for some surprises)



“One-minute preceptor” model

Teaching during consultations has been much criticised for not actively involving learners

Clinical review

asked to make specific observations, write down thoughts about differential diagnosis or further tests, or note any questions—for discussion between patients. A more active approach is “hot seating.” Here, the student leads the consultation, or part of it. His or her findings can be checked with the patient, and discussion and feedback can take place during or after the encounter. Students, although daunted, find this rewarding. A third model is when a student sees a patient alone in a separate room, and is then joined by the tutor. The student then presents their findings, and discussion follows. A limitation is that the teacher does not see the student in action. It also inevitably slows the clinic down, although not as much as might be expected. In an ideal world it would always be sensible to block out time in a clinic to accommodate teaching.

The patient's role

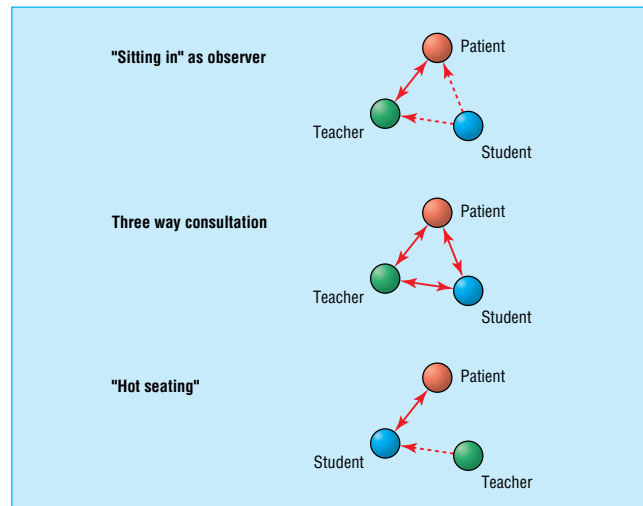
Sir William Osler's dictum that “it is a safe rule to have no teaching without a patient for a text, and the best teaching is that taught by the patient himself” is well known. The importance of learning from the patient has been repeatedly emphasised. For example, generations of students have been exhorted to “listen to the patient—he is telling you the diagnosis.” Traditionally, however, a patient's role has been essentially passive, the patient acting as interesting teaching material, often no more than a medium through which the teacher teaches. As well as being potentially disrespectful, this is a wasted opportunity. Not only can patients tell their stories and show physical signs, but they can also give deeper and broader insights into their problems. Finally, they can give feedback to both learners and teacher. Through their interactions with patients, clinical teachers—knowingly or unknowingly—have a powerful influence on learners as role models.

Drs Gabrielle Greveson and Gail Young gave helpful feedback on early drafts.

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The ABC of learning and teaching in medicine is edited by Peter Cantillon, senior lecturer in medical informatics and medical education, National University of Ireland, Galway, Republic of Ireland; Linda Hutchinson, director of education and workforce development and consultant paediatrician, University Hospital Lewisham; and Diana F Wood, deputy dean for education and consultant endocrinologist, Barts and the London, Queen Mary's School of Medicine and Dentistry, Queen Mary, University of London. The series will be published as a book in late spring.

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Seating arrangements for teaching in clinic or surgery

Working effectively and ethically with patients

- Think carefully about which parts of the teaching session require direct patient contact—is it necessary to have a discussion at the bedside?
- Always obtain consent from patients before the students arrive
- Ensure that students respect the confidentiality of all information relating to the patient, verbal or written
- Brief the patient before the session—purpose of the teaching session, level of students' experience, how the patient is expected to participate
- If appropriate, involve the patient in the teaching as much as possible
- Ask the patient for feedback—about communication and clinical skills, attitudes, and bedside manner
- Debrief the patient after the session—they may have questions, or sensitive issues may have been raised

Suggested reading

- Cox K. Planning bedside teaching. (Parts 1 to 8.) *Med J Australia* 1993;158:280-2, 355-7, 417-8, 493-5, 571-2, 607-8, 789-90, and 159:64-5.
- Parsell G, Bligh J. Recent perspectives on clinical teaching. *Med Educ* 2001;35:409-14.
- Hargreaves DH, Southworth GW, Stanley P, Ward SJ. *On-the-job learning for physicians*. London: Royal Society of Medicine, 1997.

One hundred years ago

A “surgical marvel” at the London Hospital

That modest institution the London Hospital, which does so much good by stealth and doubtless blushes to find it fame, and which has been the scene of so many surgical triumphs, has, if the *Pall Mall Gazette* is to be believed, almost beaten its own record. A man was “stabbed through the heart” and afterwards “had the puncture sewn up at the hospital.” The operation, says our contemporary, was, though not unique, a very remarkable one. Remarkable indeed it must have been beyond anything in the annals of surgery if the description of it given by the *Pall Mall Gazette* is correct. After being informed that “an operation on the

heart is difficult, not only owing to the paramount importance of the organ, but because of its deeply-imbedded position in the body, and in order to do his work the surgeon had to temporarily displace the breast, cartilage, ribs, and lungs,” we are further told that “it was at first thought that *the heart itself would have to be removed*.” Fortunately this formidable contingency was avoided, for, “on washing away the blood clots and raising it a little the puncture was found.” The man, we are glad to learn, continues to improve, and we hope that he will live long in undisturbed possession of the heart which he so nearly lost. (*BMJ* 1903;ii:1332)