

Learning in practice

What can experience add to early medical education? Consensus survey

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Abstract

Objective To provide a rationale for integrating experience into early medical education (“early experience”).

Design Small group discussions to obtain stakeholders’ views. Grounded theory analysis with respondent, internal, and external validation.

Setting Problem based, undergraduate medical curriculum that is not vertically integrated.

Participants A purposive sample of 64 students, staff, and curriculum leaders from three university medical schools in the United Kingdom.

Results Without early experience, the curriculum was socially isolating and divorced from clinical practice. The abruptness of students’ transition to the clinical environment in year 3 generated positive and negative emotions. The rationale for early experience would be to ease the transition; orientate the curriculum towards the social context of practice; make students more confident to approach patients; motivate them; increase their awareness of themselves and others; strengthen, deepen, and contextualise their theoretical knowledge; teach intellectual skills; strengthen learning of behavioural and social sciences; and teach them about the role of health professionals.

Conclusion A rationale for early experience would be to strengthen and deepen cognitively, broaden affectively, contextualise, and integrate medical education. This is partly a process of professional socialisation that should start earlier to avoid an abrupt transition. “Experience” can be defined as “authentic human contact in a social or clinical context that enhances learning of health, illness or disease, and the role of the health professional.”

Introduction

It is nearly a century since Abraham Flexner began to direct massive endowments from North American philanthropists towards reforming medical education.¹ So great was Flexner’s influence that his model of preclinical education in science preceding apprenticeship to clinical scientists employed by universities became an assumption of 20th century medical education. However, 21st century conceptions of professionalism are much broader.² Doctors must communicate well, respect their patients’ wishes and needs, and be accountable to society. In their education, “insufficient weight has been given to the ethical, attitudinal, and interpersonal features of medical practice.”³ Modern medical education must therefore lay affective and social as well as scientific foundations.^{4–6} At the same time, Flexner’s preclinical to clinical sequence is being challenged by early clinical exposure.^{7–9} To explore the rationale, interrelations with

professionalism, and learning outcomes of “early experience,” we framed the research question: “What can experience add to early medical education?” Our theoretical orientation was that an answer given by a community of practice^{7–10} would be valid, so we should develop a theory grounded in the experiences of students and staff.

Methods

Origin of the research question

The University of Manchester’s medical curriculum (www.medicine.man.ac.uk) is problem based, community oriented, and fully horizontally integrated,¹¹ but it provides little early clinical experience. We decided to consult widely with stakeholders, including St Andrews University, whose medical science graduates enter Manchester phase 2, and two new partner organisations, Keele University and Preston and Chorley Hospitals. We framed the topic as “learning from early experience,” to avoid preconceptions associated with the terms “early clinical experience,” “teaching,” “community based,” and “professionalism,” which pervade the literature on vertical integration.

Method

A qualitative, grounded theory approach¹² best matched our research context, question, and theoretical orientation.

Sampling strategy and participants

We purposively recruited 33 students and 31 staff to represent all years of the curriculum; teachers of behavioural and biomedical science; a spread of primary, community, and specialist clinical disciplines; and the deans and associate deans of all three medical schools.

Discussions

Leaders of the Medical Students’ Representative Council met the researchers to set a research agenda. Then staff and students attended semistructured group discussions, five including only staff and three including only students. Staff and students attended separately to encourage free expression of opinions. Staff from related disciplines and students from the same curriculum phase attended together to identify shared views. Each was facilitated by the first author and at least one other researcher. The template had four questions: “Why should we provide early experience?” “What disadvantages could you foresee?” “What is happening at present?” and “How should we do it?” We explored participants’ responses openly in early discussions and guided by the evolving theory in later ones.

Analysis

Each discussion was audiotaped, transcribed verbatim, and open coded by one researcher using NUD*IST 4 and, later, NVivo

software (QSR, Doncaster, Australia) promptly, so it could inform subsequent discussions. A second researcher compared the coding with the original transcript. A series of subsequent validation procedures is summarised in box 1.

Results

Medical education without early experience

Sense of vocation

Students entered medical school “just itching to be a doctor.” The destination was distant yet “what [we] are doing it for.” But their early medical education was not vocational (box 2; section 1, subsection A, participant i). Without experience, students could not judge if medicine was right for them. Contact with patients and “feeling medical-ish rather than sitting with your textbooks for six hours” would be exciting and “keep your learning online.” No respondent dissented from the vocational view, but teachers rarely voiced it.

Emotional challenges

“Coming from school where everyone was normal” and meeting seriously ill people challenged students. To be first insulated from it and then “dumped into a hospital environment ... might be too much for you,” “scar you,” and teach you to “cut off” (box 2; 1, B, i). Both junior and senior students described entering the clinical environment as “being thrown in at the deep end,” where “you might sink or swim,” but it was also exciting. They might experience as much excitement with less stress if they were “tired into it” and might “more or less understand the stress it might cause you, and [learn to] ... deal with it better.” Supportive teachers and a positive experience, such as following a mother through pregnancy, would “break them in gently.” As a counter-argument, some students had found overcoming their reactions to human dissection motivating.

Staff saw encountering serious illness as “traumatic” but did not recognise the method of learning could also be traumatic. Students feared being made to feel inadequate in professional settings. A specific example was “going into surgery and being taken apart for our lack of anatomy knowledge.” Others were not knowing how to approach patients, having to get used to being in hospital, “wearing a white coat and being seen as a medic,” and not knowing practical things. Another aspect was switching their method of learning from textbooks to patients (box 2; 1, B, ii). Students were divided on how fast they should face the challenge of learning in clinical situations. Some felt that junior students had enough challenges without adding early experience (box 2; 1, B, iii).

Taken as a whole, students’ narratives portrayed medical education as vocationally driven, emotionally laden, and involving an abrupt switch in the method of learning from inanimate resources to practitioners and ill people in practice settings. Staff narratives had little to say on these issues.

What early experience could add

Experience as a “broadener”

Staff and students agreed that early experience could fill a gap, but their gaps differed. For staff, it was in students’ prior life experiences. For students, it was in the course. Staff saw students as having generally limited prior life experience, “coming from a sheltered, protected school environment,” needing to encounter social diversity and develop social awareness, and needing time for intellectual and emotional development. Early experience would give them a better understanding of “the human

condition,” so they came out “reasonably rounded doctors, both

Box 1: Validation procedures

“Respondent validation”

We agree with Barbour, who argues that respondents can refine interpretations, although not strictly “validate” them.¹³ Once the first and second researchers had agreed on an open coding and descriptive interpretation of a transcript, they emailed it to the participants, inviting comment. Criticisms led to review and modification of the interpretation; new comments were handled as additional “raw data.” Seven people replied, supporting Barbour’s opinion that respondent validation may be relatively unproductive.¹³

Scrutiny within the research team

After respondent validation, a third researcher reviewed each transcript, respondents’ comments, and the final analysis, searching for bias in the evolving interpretation and statements that negated it. The first researcher combined all completed interpretations in a single, grounded theory analysis. He constantly compared the evolving interpretation with the primary and secondary materials, and the two other researchers critiqued it. At this stage we formulated a definition of experience as “authentic (real as opposed to simulated) human contact in a social or clinical context that enhances learning of health, illness, and disease; and the role of the health professional.”

Workshop including lay people

The next validation stage was to invite 73 students and staff, again purposively recruited to balance disciplines and curriculum years, and five lay people who support our education programme as standardised patients, to attend a one day workshop dealing with the same questions as the focus groups. Few workshop participants had also contributed to the focus groups. In facilitated discussion groups staff, students, and lay people (now mixed, to accentuate differences of perspective) considered “What sort of doctors do we want to produce?” and “How could early experience help produce them?” Group outputs were synthesised in a plenary session to provide collective answers to “Why provide early experience?” At this point, the interim grounded theory analysis was revealed so participants could compare and contrast the two (very similar) sets of conclusions, before considering “What experiences should we offer, and what should we guard against?” A final, plenary session arrived at a synthesis of the day’s findings. The proceedings were not audio recorded, but the researchers participated actively, and transcribed and analysed contents of flip charts to test the accuracy of their evolving interpretation.

Validation within the medical school

We used the grounded theory analysis, now refined by the workshop, as a rationale for changing the Manchester curriculum, as requested by the General Medical Council. So the interpretation was critiqued and debated in all high level curriculum committees.

International perspective

We presented a near final data analysis to 30 people representing seven European countries, Malaysia, South Africa, and North America, who were attending an interactive workshop at an international conference on medical education. They spent a half day in small groups, critiquing the evolving theory and inventory of learning outcomes. Their “minute paper”¹⁴ evaluations were transcribed (by TD), and again test the accuracy of the evolving interpretation.

Final report

We prepared this report by reorganising the existing codes and adding extra levels of detail to the coding hierarchy. We report the data in language as close as possible to the respondents’ in the main text, referenced to verbatim quotations in box 2, to remain faithful to the original data.

Box 2: Extracts of text**1 Medical education without early experience***A Sense of vocation*

i FY1 768 Junior student: "it's like we're here and it's not happening."

B Emotional challenges

i SY1 493 Junior student: "You might learn the cut-off factor, which I understand ... a lot of people think you've got to get as a doctor. You just go home and forget about things, but then maybe you'd not become as good a doctor if you can cut off that easily."

ii TFF 26 Senior student: "one of the difficulties that faces a student going from the second to the third year is the change from learning from textbooks and resources provided within lectures ... to actually learning from people ... And, so some people can go running away back to their textbooks when you should really be learning how to learn from people themselves."

iii FY1 744 Junior student: "you have come straight from school, you are 18, and you have just come away from home, and you are trying to manage a life, and ... is it going to be too much?"

Junior student: "But, if we are taking a medical degree, we expect that to some extent."

2 What early experience could add*A Experience as a "broadener"*

i FY1 975 Junior student: "I think that is a really good idea. I think it is a good point to go out and meet people who may not necessarily be ill or have anything wrong with them, but just to meet people from lots of different backgrounds because coming to medical school, you don't really meet that diverse a range of people, most people who come here are really quite well off."

ii FY1 350 Junior student: "The idea of having clinical sessions through years 1 and 2 ... is about being ... all round, learning psychosocial things, learning how to do skills, and various things rather than just patient contact."

iii CPH 733 Staff member: "I would ... see this early experience as a sort of counterbalance to say: 'Hey, stand back for a moment, let's see where this fits into the broader picture, what is it that doctors do, what are patients, what are populations, what is society?'"

*B Experience to achieve affective outcomes**Confidence*

i SY1 651 Junior student: "Starting early, as well ... would help you in how to act around patients, because I know we do work experience in hospitals, but we've never really been in the position where we are medical students and a bit more, not authoritative."

Motivation

ii SY1 1260 Junior student: "I think the most important thing I draw from this whole discussion is the enthusiasm and the motivation it would bring to you."

iii FY1 802 Junior student: "And we had a kidney transplant guy come to talk to us, and it was really good because he was talking all about himself and where he trained, and what he did, and what he enjoyed, and what he didn't enjoy. How many hours per week he does, just stuff like that, and it made it all so much more real, and you could just imagine yourself doing it, and it was just really good."

iv SY1 1041 Junior student: "I would want it to make me think one day you can be a doctor, because some way along the line in the first and second year, you forget, you can easily forget that you are going to be a doctor at the end of this course."

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Box 2 (continued)

v FY1 1245 Junior student: "Just being with someone who is qualified and just watching what they do on a day to day basis, and just seeing what it is like to be a proper, qualified doctor doing things because I can't, at this moment in time, imagine myself doing that, to be honest. Sitting and struggling with textbooks and not understanding, and wading through everything, I can't ever imagine being able to go 'all right, that is what is wrong with that patient,' with a team of people. I think that would be a really good idea."

Self awareness

vi KPM 595 Staff member: "To look at under what conditions do they study best, what subject do they like best, and why, what does this contribute to their personal motivations and so on? I think all of those things are really helpful for students to get to know themselves better, to prepare themselves better for a career in medicine, and I would argue the sooner we do it the better."

Awareness of others

vii BSD 225 Staff member: "Understanding other people's lifestyles and value systems before moving to understanding those people, then, as patients"

*C Experience to support cognitive processes**Strength and depth of learning*

i FY1 108 Junior student: "It is very much easier to link what you have learnt if you can say: 'Oh yes, well I saw somebody with that,' and then that creates a picture in your mind, and it actually helps you to remember why things are linked that way and what the conditions are, and how they work."

ii STA 604 Staff member: "What I'm quite keen to do is to give students experience of the things that there is evidence of. So, rather than just learning in a lecture that men die younger, they should go out and talk to people about when people die and bring back the evidence."

Contextualising learning

iii FY1 396 Junior student: "It will be interesting to see how the physiological things that we learn about week in and week out affect patients, and what the tests that everyone does, what that shows you in real life."

iv TFF 693 Senior student: "I remember after having read lots about the nervous system and then seeing it demonstrated, we saw someone with hyperreflexic knee reflexes, everyone's face just lit up, it was so satisfying to see what really happened, and then there was a woman with diabetes who told a hilarious story about having a hypoglycaemic attack, and she was weeing in the wardrobe. It was hilarious, but it was also relevant."

Developing intellectual skills

v SY1 51 Junior student: "I think it would be a good thing to see their train of thought as they go through seeing a patient, because that would help you in the way you approach PBL if you could see how somebody who is qualified structures their questions and their thought processes."

*D Experience to teach subject matter**Foundation sciences*

i TFF 305 Senior student: "It emerges really, really well when you speak to a patient. You do use non-verbal cues and everything that we did read about when you speak to a patient, and you also have to have your knowledge of anatomy ... I think the problem in the first two years is that we are only doing the psychology part, and not really applying it, so we become a bit 'is this worth it at all?,' whereas it does have its use, but ... we don't see it."

ii CPH 146 Staff member: "But we also need them to broaden out into their understanding of the sciences of the whole person, of society, of the population. And, there is an anxiety that students are much less good at doing that throughout the course, and I think the question we have to address is what kind of experience of any kind outside the lecture theatre, the book, the PBL case will actually enable them to broaden, to develop their understanding in those particular sciences."

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Box 2 (continued)

iii KPM 154 Staff member: "So, I think there is something to be said for saying 'Where can intellectual disciplines that are necessary in the early years and the ground work be built up?,' and we may need to look wider than (the medical school) and the libraries."

iv STA 643 Staff member: "We can demonstrate to them that people will have a statement of what they think is important to their health whilst simultaneously telling you that what they do to their health is different. It's important to minimise stress, but they say that they don't. It's important to give up smoking, but they don't. We can also demonstrate to them things that are quite theoretically based, like, that people's beliefs, not the medical evidence, will influence their behaviour. And so rather than us just teaching that in a lecture our students are going out and finding out that this is true of the family that they interview."

Communication

v FY1 376 Junior student: "What we are doing is a gentle introduction ... [having] ... a chat with patients ... is something that is really difficult. Going and taking a history is one thing, but actually just going and having a chat with somebody is much more difficult. The history is quite a nice logical process, and you can learn that, and it is like rote learning really, but going and talking to somebody, making conversation with them, that is almost a first step."

vi KPM 800 Staff member: "I think people are not very good at finding out what people feel, you know the subjectivity of things, and there is a rigour to finding out that, which could be helpful."

Other clinical skills

vii TFF 228 Senior student: "Although some clinical skills are important, it is having that fundamental knowledge of the biosciences; it is so much easier to look at it clinically in the hospital if you have a sound knowledge of the system."

Professional roles

viii KPM 323 Staff member: "We should ... aim to socialise them on a wider basis than the model of the profession that is still rather predominant."

ix STA 1560 Staff member: "experiencing the other health professions ... in order ... to get a feel for how they fit in with everything else."

socially, in egalitarian terms, and in terms of their knowledge," with "improved people skills" and awareness of how illness affects families. Students agreed (box 2; 2, A, i), but, for them, the gap was "being put away in this academic building," "surrounded by the brightest people from schools all over the country" and needing to be "reminded ... there is an outside world." Interacting with people would relieve their "tunnel vision" in a way problem based learning did not. The agenda should be broad (box 2; 2, A, ii), a view echoed by one community clinical teacher who saw the science base as "very, very narrow" (box 2; 2, A, iii) Common ground between the perspectives of students and staff was a need to educate whole people and keep them in touch with society and its needs.

Experience to achieve affective outcomes

Confidence—Students spoke of needing to build confidence to talk with patients and act appropriately in their presence "as medical students rather than friends" (box 2; 2, B, ii).

Motivation—Early experience would be "exciting," "amazing," "terrific," "incredibly positive," "excellent," and "lovely," and give students "zest for the course" (box 2; 2, B, ii), although it might be "difficult" and "frustrating if the emphasis went too far into spending ... time in hospitals." A junior student who had "got a buzz" out of work experience and come into medicine for people contact found it "cut out totally" from the course. Learning

theory without practice was demotivating because students "lost the ... greater scheme of things." Early experience could motivate by adding interest and variety, helping students feel less "bewildered by the background" (including healthcare systems and contexts) and connecting them with realities to which they could aspire (box 2; 2, B, iii and iv). Students recognised their need to develop a professional identity and saw contact with doctors as a highly motivating way of doing so (box 2; 2, B, v). Staff recognised the motivating effect of experience but warned against providing it out of "tokenism."

Self awareness—According to staff, providing experience at such a critical time in the development of students' value systems could build an awareness of their professional status and future responsibilities, encourage humility, and help integrate personal and professional development (box 2; 2, B, vi).

Awareness of others—Staff felt that experience could help students understand more about people (box 2; 2, B, vii). It could teach them "what it is like to feel unwell," to recognise and value diversity, acknowledge patients' expertise, and respect confidentiality. This would occur through socialisation and role modelling. Students agreed that "It is very good for medical students to be on the other side of the fence" and suggested that meeting people who misuse drugs or alcohol on their own ground rather than in a healthcare setting would prevent students from developing judgmental attitudes.

Overall—The narratives contained rich affective content with different but very similar perspectives. Students wanted to build confidence and a sense of identity and sustain their motivation; staff wanted students to become more aware of themselves and others.

Experience to support cognitive processes

Here, the perspectives of staff and students were concordant.

Strength and depth of learning—Information that was linked to visual images, particularly of patients, would be easier to recall, linked with other information, and understood rather than memorised by rote (box 2; 2, C, i). Experience could make information more believable (box 2; 2, C, ii) and help students understand difficult subject matter such as epidemiology and ethics.

Contextualising learning—Seeing theory put into practice, contact with patients and doctors, and recalling or coding information in "real" situations would contextualise knowledge, strengthen it, put it into perspective, and prepare students to apply it in practical situations (box 2; 2, C, iii and iv).

Developing intellectual skills—Experience could stimulate students' intellectual development, encourage them to evaluate the way they learnt (box 2; 2, B, vi) and teach study skills that would be useful later. It could develop a questioning attitude by exposing students to uncertainty and link the intellectual skills of problem based learning (PBL) with those of practice (box 2; 2, C, v).

Experience to teach subject matter

Foundation sciences—Although biological sciences were scarcely mentioned, staff and students argued strongly that experience could strengthen learning of behavioural and social sciences by showing their importance and integrating them into the curriculum. Reciprocally, behavioural and social sciences would provide a theoretical framework for interpreting experience (box 2; 2, D, I and i). One teacher described "the wider community" as a "laboratory where students could ground their learning of behavioural and social sciences" (box 2; 2, D, iii). Another gave specific examples of how experience could teach those sciences (box 2; 2, D, iv).

Communication—Learning interpersonal communication (“people skills”) through early experience was seen as important by staff and students, on the grounds that good communication “is the most important thing,” takes a long time to develop, and is difficult. Early experience could show students that they needed to develop an ability to communicate well and identify people who would struggle later in their education through lack of it (box 2; 2, D, v). It could help students strike the right balance between social and professional skills in their communication with patients (box 2; 2, D, v; and 2, B, i). Whereas students stated their goals for early communication learning in general terms, staff had more specific goals, such as learning the appropriate use of open and closed questions, and finding out what people feel (box 2; 2, D, vi). One theme brought up repeatedly by students and scarcely apparent in staff transcripts was learning to communicate as a way of building confidence, “knowing what they were doing,” feeling “less useless” in clinical settings, and starting to act in a professional capacity.

Other clinical skills—Staff saw value in learning “living anatomy” and laying a basic science foundation for clinical procedures. Students felt that they would be better equipped to go on to wards if they had learnt some skills. To record an electrocardiogram by using modern machines on patients in a hospital rather than “ancient” machines on peers in the medical school would “put everything more into perspective.” Overall, skills were more a vehicle for patient contact, and part of an “all round” training (box 2; 2, A, ii) than an end in their own right. Neither staff nor students wanted them to be learnt at the expense of basic sciences (box 2; 2, D, vii).

Public health—Staff, only, discussed public health. Their opinions were sharply divided as to whether it could be learnt experientially at all, let alone early. One respondent regarded disease encountered experientially as “anecdote”; another argued that specific instances of disease could teach generalities by showing how “people as human beings fit into a population view” (box 2; 2, C, ii). Experience could show that diseases have environmental determinants, and resources for treating them are not limitless.

Professional roles—Staff felt that experience could teach students about their future role as a doctor, although it must not channel them into stereotypical behaviour (box 2; 2, D, viii). It could teach them how doctors interrelate with other health professionals (box 2; 2, D, ix). Finding out through experience what career options exist within the profession would motivate students to study.

Discussion

Principal findings and meaning

Respondents generally favoured early experience, provided it did not weaken the learning of bioscience. Staff had additional concerns about cost and logistics. Our theory is that experience could strengthen, deepen, broaden, contextualise, and integrate early medical education: strengthen and deepen, cognitively, by complementing existing teaching and learning and helping students develop intellectual skills; broaden, by accentuating affective dimensions of learning; contextualise, by linking theoretical learning to the settings, roles, and responsibilities of practice; and integrate, by at once stimulating students’ intellects, motivating them, and encouraging them to reflect on their progress towards professional roles and responsibilities. These benefits, we think, would be complementary to any contextualising and integrating effect of problem based learning

The narratives depict medical education as a process of socialisation into a profession. Students were disappointed to

enter medical school and not to meet patients and doctors. Two to three years later, without any preparation in the interim, they had to make an abrupt social transition. Their sense of vocation was a source of positive emotions; the abruptness of the transition a source of both positive and negative ones. A more gradual entry to the clinical environment, students suggested, would achieve a better balance of positives and negatives. Staff, who can provide positive or negative role models and be more or less sensitive to students’ needs, showed little awareness of the social dimension. Such an ill defined, composite educational process and outcome as “professional socialisation” could easily be squeezed out by the modern pressure to frame curriculums as explicit, measurable, and short term outcomes and methods. We contend that it should not be forgotten. Flexner was able to put his emphasis on science because he could entrust professional socialisation to the apprenticeship education of his day.

Strengths and limitations of the study

The qualitative nature of the study is both a strength and a limitation. A strength, because theoretically oriented, rigorously performed, qualitative research that uses an appropriate sampling strategy can generate valid theories. A limitation, because it cannot test hypotheses or claim generalisability beyond the study conditions. Our respondents were numerous and varied, which allowed us to draw out differences in student and staff experiences. We do not know if our findings apply to non-problem based curriculums. We cannot say what experiences individual medical schools should choose, but box 3 offers a definition of “experience” arising from this study that may guide them.

Relation to other publications

Publications on early experience can be categorised into opinion statements, empirical research, and theories. Consonance with opinion statements about both early experience⁷ and professionalism^{2,4} supports the validity of our findings. Our cognitive, social, and affective reasons for experience correspond well to Hamilton’s call for medical education to have wide, long, and deep outcomes.¹⁵ We are systematically reviewing empirical research on the impact of early experience. **Our [? to A: Authors is S L Littlewood: what is your involvement?]** preliminary analysis of 104 publications between 1992 and 2001, showed the evidence base to be poorly grounded in theory, methodologically weak, and more often at the level of opinion rather than learning outcomes.¹⁶ However, it supports our respondents’ view that awareness of professional roles, preparedness for clerkships, and early detection of students with difficulties are probable benefits of early experience. Students and staff in the vertically integrated Linköping curriculum are very satisfied with a cognitive approach that fits the principles articulated by our respondents.^{8,17} Two recent qualitative studies have, like ours, characterised medical education as developing a professional identity.^{18,19} One described how meeting patients built students’ confidence to interact with clinicians.¹⁸ The other described how transition into the clinical environment and unfeeling behaviour on the

Box 3: A definition of “experience” arising from this study

Authentic (real as opposed to simulated) human contact in a social or clinical context that enhances learning of health, illness and disease, and the role of the health professional.”

part of teachers could pose an emotional threat to professional socialisation.¹⁹

The blend of cognitive, social, and affective learning fits well with social cognitive theory, a widely accepted explanatory framework for human behaviour and its development (see, for example, Bandura²⁰). Our students' wish to build up mental images of patients fits both with Bandura's concept of "symbolisation" and another theory, according to which "illness scripts" are foundations of clinical expertise.²¹ Our respondents' wish for role modelling fits with Bandura's "vicarious learning"; anticipation of future professional roles with "forethought"; awareness of future goals with "self regulation"; and self awareness with "self reflection." Our results also fit well with new conceptualisations of apprenticeship, according to which an important part of professional learning is developing a sense of identity within a community of practice.¹⁰

Future research

Ten Cate et al have developed a model of medical education that could translate our results into educational practice,²² and Kachur has suggested an approach that makes fieldwork more active, fits it to the theoretical framework of the curriculum, and supports learning through reflection.⁹ Medical education is too complex and the pace of change too fast, we think, for those approaches to be subjected to controlled experiment. The challenge is for educators to base their interventions on theory and evaluate them rigorously enough to advance knowledge through implementation.²³

We thank our many colleagues who gave freely of their time to participate. Contributors: TD conceived of the study, conducted it, analysed the data, and wrote the paper. CB co-facilitated many of the groups, participated throughout the data analysis, and commented on all drafts of the paper. John Humpherson helped conceive the study, co-facilitated most of the groups and helped the early stages of data analysis. TD is guarantor.

Funding: The University of Manchester Faculty of Medicine, Dentistry, Nursing and Pharmacy Academic Standards Committee funded the Manchester workshop. The international workshop took place under the auspices of the Association for Medical Education in Europe. Other expenses were met from TD's endowment funds.

Competing interests: None declared.

Ethical approval: Two ethics review committees considered this programme of investigation not to need approval; an NHS ethics committee because the research did not involve patients, and a university ethics committee because its primary purpose was curriculum development.

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What is already known on this topic

Traditionally, the foundation years of medical education have grounded students in biomedical sciences but offered little, if any, clinical exposure

Worldwide, curriculums are moving towards becoming more "vertically integrated"

This move is parallel to and loosely tied with an increasing emphasis on personal and professional development in medical curriculums

There is, however, a paucity of empirical evidence or even arguments that are soundly grounded in theory to support early experience

What this study adds

"Experience" can be defined as authentic human contact in a social or clinical context that enhances learning of health, illness or disease, and the role of the health professional

A lack of early experience can demotivate students and leave them vulnerable to negative emotions when they finally enter the clinical environment

An inventory of likely benefits of early experience includes greater motivation and confidence, greater social and self awareness, and more rounded and practically relevant theoretical understanding

Viewing medical education as a process of socialisation—into the population that the future doctors will serve, and the profession they will join—helps redefine the task of medical education in the 21st century

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(Accepted 29 April 2004)

bmj.com 2004;329:834

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