

Theoretical perspectives in medical education: past experience and future possibilities

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CONTEXT Pedagogical practices reflect theoretical perspectives and beliefs that people hold about learning. Perspectives on learning are important because they influence almost all decisions about curriculum, teaching and assessment. Since Flexner's 1910 report on medical education, significant changes in perspective have been evident. Yet calls for major reform of medical education may require a broader conceptualisation of the educational process.

PAST AND CURRENT PERSPECTIVES

Medical education has emerged as a complex transformative process of socialisation into the culture and profession of medicine. Theory and research, in medical education and other fields, have contributed important understanding. Learning theories arising from behaviourist, cognitivist, humanist and social learning traditions have guided improvements in curriculum design and instruction, understanding of memory, expertise and clinical decision making, and self-directed learning approaches. Although these remain useful, additional perspectives which recognise the complexity of education that effectively fosters the develop-

ment of knowledge, skills and professional identity are needed.

FUTURE PERSPECTIVES Socio-cultural learning theories, particularly situated learning, and communities of practice offer a useful theoretical perspective. They view learning as intimately tied to context and occurring through participation and active engagement in the activities of the community. Legitimate peripheral participation describes learners' entry into the community. As learners gain skill, they assume more responsibility and move more centrally. The community, and the people and artefacts within it, are all resources for learning. Learning is both collective and individual. Social cognitive theory offers a complementary perspective on individual learning. Situated learning allows the incorporation of other learning perspectives and includes workplace learning and experiential learning. Viewing medical education through the lens of situated learning suggests teaching and learning approaches that maximise participation and build on community processes to enhance both collective and individual learning.

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 INTRODUCTION

We have perspectives on learning which determine the choices we make among pedagogic approaches in medical education. These perspectives in turn, both implicitly and explicitly, embody the theories and beliefs we hold about learning. As Wenger¹ notes: ‘our perspectives on learning matter: what we think about learning influences where we recognise learning, as well as what we do when we decide to do something about it – as individuals, communities and organisations.’

Flexner’s recommendations² laid the foundation for a pedagogy that reflected both the structure of medical education and the perspectives embedded in that structure. The organisation of medical education into the pre-clinical years, in which students were taught the science that would be applied in their clinical learning, and the clinical years, in which they learned to apply their knowledge to the care of patients, both reflected and established certain assumptions about learning and teaching in medicine. Science became the pre-eminently valued basis of medical practice; it was assumed that knowledge must be taught prior to its application and that learning to be a doctor involved apprenticeship in both the art and science of medicine. Teachers’ responsibility as experts was to transmit their knowledge to learners; students’ responsibility was to learn and master it.

In the 100 years since Flexner’s landmark report,² medical education has undergone significant shifts in its approaches to teaching and learning. Yet, with renewed calls for educational reform, both new and re-examined theoretical perspectives will be needed to facilitate an effective response. In this paper, I will explore some changes in how learning and teaching are understood, and in how medical education is conceptualised; I will offer some promising theoretical considerations and their implications for practice.

Changes in our ways of knowing

Theories of learning reflect underlying beliefs about knowledge and knowing. The history of medicine and science is strongly rooted in positivism, which places high value on understanding the world through objective study and on the development of knowledge that is value- and context-free. One of the most important shifts since Flexner relates to the emergence of constructivism. In the constructivist view, the focus is not on an objective external reality, but,

rather, on how it is constructed by the knower. This perspective views the learner as an active constructor of knowledge based on previous experience, perceptions and knowledge. The constructivist view underlies many of the theoretical and perspective shifts which may provide guidance in the future.³

More recently, post-structuralist understandings offer an approach to knowing that acknowledges complexity, supports the plurality of meaning, and encourages innovative ways of knowing.⁴ The post-structuralist approach examines the politics of the construction of social meaning, the relationships between knowledge and power and the importance of language in making meaning of one’s world.

Changes in the discourse of medical education

The discourse of a discipline provides a language for representing its work; as such it both describes and creates the way in which the world is viewed and understood.⁵ Bleakley⁶ describes discourse as ‘humans engaging in socially, culturally and historically situated activities of conversation and practice – to decide on what is legitimate activity in any field’. Perspectives on learning are embedded in that discourse. There have been changes in the discourse of medical education that suggest major philosophical and theoretical shifts. Describing the processes associated with *learners* and *learning* conveys that learners are not passive recipients of information; rather, they are active knowledge builders. Speaking of *facilitating learning* as an important purpose of teaching shifts the balance of agency towards the learner and highlights the teacher–learner relationship. Lastly, at the curricular and institutional levels, espousing activities and curricula that are *learner-centred* implies that education is driven by learner needs.

Changes in our view of medical education

Medical education is that broad and complex set of events, processes and influences, both deliberate and unplanned, with which the aspiring doctor is surrounded from the day of entry into medical studies until the end of practice lifetime. Significant changes have occurred in our understanding of the fundamental aspects of medical education, of what constitutes effective learning and of the professional attributes required of doctors. Firstly, to educators, medical education today is understood as more than the acquisition of knowledge, skills and attitudes; it is, at heart, the construction of a professional identity, the transformation of the entering individual from

lay person to professional, a transformation which may be more intense at the level of undergraduate and postgraduate medical education, but which does not stop there. Transformation and learning are lifelong.

Secondly, an understanding that learning to think, make decisions and frame and solve problems involves the integration and assimilation of developing knowledge, rather than a straightforward application of theoretical knowledge to the problems encountered, has also developed.⁷ Expertise involves the capacity to develop new solutions for new problems.⁸ Habits of mind that enable effective integration of learning are required. Developing these abilities has implications for curriculum, pedagogy and assessment.⁷

Thirdly, and perhaps most importantly, the desired attributes of the professional have evolved significantly, bringing concomitant change in the goals and expectations of the medical education enterprise. Medical educators today are preparing learners for the professional roles they will enact tomorrow and are seeking to develop professionals who are competent, self-aware, able to self-monitor and self-assess their performance and to continue learning throughout their practice lifetimes. Acceptance of these goals has focused our gaze on helping learners develop competency in 'how to learn', as well as in 'what to learn'.

Changing expectations and emerging understandings have not come only from our collective experience. They have been informed by decades of inquiry and research in medical education and in other fields. Research in medical education has experienced significant development over the past 50 years,⁹ growing in rigour and breadth of methodology, conceptual strength and relevance to practice. Evidence on which to thoughtfully base approaches to medical education is gradually accruing; its translation has been enabled through the scholarly synthesis of existing literature and, notably, through such systematic attempts to inform our work as the Best Evidence Medical Education initiative (<http://www2.warwick.ac.uk/fac/med/beme>¹⁰).

Learning from others

Medical education has also been enriched by perspectives and knowledge developed in other fields. Educational psychology, cognitive psychology and other theories of and perspectives on learning have all contributed to improving the design of

instruction, to understanding cognitive processes and how teaching and learning can facilitate their development, and to understanding the influence of the educational environment. In turn, the application of theories to medical education practice has contributed knowledge to other fields.

More recently, medical educators have begun to understand their work through the lenses of sociology and anthropology. This has enabled a view of learning as not solely an individual process, but as a social and collective process which includes all the influences and interactions that transpire in the learning environment and occurs through learners' active engagement.^{1,11}

However, despite the broad range of learning theories available to medical educators, relatively few have been privileged in medical education scholarship and practice.¹²

THEORETICAL PERSPECTIVES TO DATE

Several important theoretical perspectives have influenced the pedagogy of medical education significantly over its history. These have been broadly characterised by their general orientation as behaviourist, cognitivist, humanist, social and constructivist theories of learning.¹³ Perhaps best known are the behaviourist theories, which view the environment as the major influence on learning and behaviour. Stimuli to learn and the consequences of learning (e.g. rewards and reinforcement) originate in the environment. Shaping behaviour through reward and both positive and negative reinforcement is common practice in medical education and has become part of its taken-for-granted culture. The provision of feedback, one of the most influential factors in learning, originates in behaviourism and remains a central aspect of learning at all levels.^{14,15}

Cognitive psychology has contributed significantly to the theoretical underpinnings of medical education. It has explained processes such as how knowledge is organised and stored, how memory functions, and how individuals make meaning of their experience.¹³ Cognitive psychology has also illuminated the development of expertise⁸ and the processes of clinical reasoning¹⁶ and decision making.¹⁷ The theoretical foundations of problem-based learning (PBL) curricula are congruent with the cognitive orientation.¹⁸

The humanist orientation views learning as a means to self-actualisation and ongoing personal development

so that individuals may achieve their maximal level of function. Within this orientation are theories of motivation,¹⁹ self-regulation and self-directed lifelong learning.²⁰ Self-direction has featured prominently in several current approaches to medical education, notably PBL, and remains a widely espoused goal of medical education. Their importance notwithstanding, self-direction and self-regulation remain problematic concepts. The lack of shared understanding of meanings and wide variances in the implementation and evaluation of educational approaches have been difficult to resolve.²¹ Moreover, self-direction and self-regulation are sometimes regarded as inherent attributes of effective adult learners. Although adult learning principles may be helpful in guiding educational programme development, they are infrequently critically examined and lack a coherent theoretical explanation.²²

Social cognitive theory (SCT),²³ within the social learning theory orientation, incorporates the behavioural, cognitivist and humanist perspectives. It views the learner as an active agent in learning, and considers learning as influenced by the learner's goals, attitudes, values, knowledge and experience. Learners are seen to have agency²⁴ and as able to set goals and monitor their progress towards them. Social cognitive theory also recognises the effect of the environment and posits a triadic reciprocal dynamic relationship between the learner, the environment and the behaviour itself. Learning through observation is fundamental to SCT, which illuminates the influence of role models in medical education.²⁵ Similarly, the influence of the learning environment is increasingly discussed.

The brief presentation of these theoretical approaches risks conveying a simplistic view of them. Further, although they are presented as distinct approaches to understanding learning, several aspects of learning are found in more than one orientation. For example, reflective learning, self-regulation and experiential learning are addressed in each of the cognitive, humanist and social learning orientations.

The theories described above are characterised by their focus on learning as an individual activity. The individual interacts dynamically with the environment, and learners learn with and from others in the environment; however, learning is seen as occurring ultimately at the individual level.

It is interesting to consider why these theoretical perspectives have been dominant in medical

education. Theories, and their enactment in medical curricula, also reflect values. Theories that emphasise individual learning are congruent with the values of medicine, which has traditionally viewed the doctor as autonomous and self-reliant. Moreover, as Bleakley⁶ notes, these theories tend to reinforce existing structures, including the relative power of each of the professions, among which medicine has long been dominant. In addition, although the discourse of medical education has changed, it seems that practice is more resistant to change. Teaching practice reflects practical theories of teaching and learning.²⁶ These, in turn, reflect knowledge, experience, attitudes and values. Whether or not educators are aware of them, they exert strong influence on practice. Samuel Bloom's description of reform without change may still pertain today.²⁷

SHIFTS IN PERSPECTIVE: SOME FUTURE POSSIBILITIES

As we stand at the beginning of the 21st century, which theoretical and educational perspectives hold promise? How can they further medical education and thus the practice of medicine?

Historically, medical education has evolved in response to both new understandings and calls for reform. One such impetus may be the publication of the Carnegie Foundation for Teaching and Learning's call for reform of medical education.⁷ Four major recommendations for the reform of medical education are proposed:

- 1 teaching and learning to promote integration;
- 2 promoting habits of inquiry and improvement;
- 3 individualising learning, yet standardising assessments, and
- 4 supporting the progressive development of professional identity.

Other bodies have made similar statements about the processes and goals of medical education, including, most recently, the Association of Faculties of Medicine of Canada.²⁸ Such recommendations call for fundamental changes in the kind of learning environments and opportunities that are developed, and in the goals of learning to be achieved. What are the learning and teaching approaches that will prepare doctors effectively for practice?

Refining current teaching and learning approaches alone will not achieve the changes recommended.

Theoretical perspectives which broaden and reframe the process of medical education are required.

Metaphors for learning may be helpful in reframing. Sfard²⁹ describes two metaphors: 'acquisition' and 'participation'. In the 'acquisition' metaphor, learning is seen as the acquisition of knowledge, skills, attributes, values and competencies, in the sense that one acquires 'goods'. Acquisition reinforces learning as an individual process. As Sfard notes, this metaphor is so deeply embedded in our thinking that we scarcely noticed it until other metaphors began to emerge. The second metaphor is that of 'participation'. It views learning not as something to be acquired or achieved. Instead, participation *is* learning and, as participation is ongoing, learning is viewed as a continuous process. Whereas acquisition implies that knowledge can be transferred across situations, participation sees learning as inextricably tied to its context and embedded in the social processes there. Sfard²⁹ cautions that it is probably not in learners' interest to adopt just one metaphor. Instead, pedagogical approaches which support the appropriate use of both are needed.

Several perspectives can inform the work of creating learning experiences that recognise both individual and social aspects of learning and promote the development of knowledge and reasoning skills, clinical competence and desirable professional attributes. The following paragraphs present selected perspectives, including those of: situated learning and communities of practice,^{1,11} which originate from socio-cultural theory; social cognitive theory;²³ work-based learning,^{30–33} and experiential learning and reflection.³⁴ A full explanation of their complexity and of their problematic aspects is not possible here. All have been proposed and their use reported in medical education; however, a critical examination of these theories seems timely if their potential is to be realised.

Situated learning and communities of practice

Situated learning belongs to those socio-cultural learning perspectives that assert that learning is always inextricably tied to its context and to the social relations and practices there; it is a transformative process that occurs through participation in the activities of a community. Vygotsky,³⁵ an early exponent, described learning as occurring through activity, mediated both by others and by cultural artefacts. Lave and Wenger¹¹ use the term 'communities of practice' to describe the activities of a group of people who come together in pursuit of a shared

enterprise. They describe the role of the newcomer to the community as one of 'legitimate peripheral participation'. In this process, newcomers or novices begin at the periphery of a community by observing and performing basic tasks. As they become more skilled, they move more centrally in the community. Through participation, active engagement and assuming increasing responsibility, the individual assumes and acquires the roles, skills, norms and values of the culture and community. Further, as learners are transformed through participation in the community, their participation, in turn, transforms the community.

The profession of medicine is a culture into which medical learners are being socialised as they learn. This socialisation is a transformative process, that of lay person to professional, and is a transformation that continues to evolve through the individual's life. Situated learning and communities of practice frame this as the process by which learners become full participants in the community of practice that is medicine.

Situated learning extends understanding of the clinical education process beyond the traditional view of apprenticeship,¹¹ which focused on observation and imitation as the means through which learners acquired the knowledge and skills of the profession. Situated learning views the learner as more than an observer or imitator, as an active participant, learning from and with all community members.³⁶ Lave and Wenger³⁷ also helpfully distinguish between a *teaching* curriculum and a *learning* curriculum. A learning curriculum consists of situated opportunities for development, whereby the community becomes the learning resource and learning occurs in many ways. A teaching curriculum, by contrast, is constructed for the instruction of newcomers and thereby structures, and may limit, opportunities for learning and what is recognised as learning.

Communities of practice and situated learning have particular relevance for medical education in considering the development of professional identity and attributes. Attempts to operationalise the complex concept of professional identity have identified multiple elements within the roles of the doctor.³⁸ Clearly, those separations are artificial and may be at odds with the widespread adoption of roles and competencies, as well as with the very identity development that is sought.

Professional identity development is both a personal and social process and is not separable from the

knowledge and skills that are acquired. It emerges through participating in the ‘talk of the community’, and through both learning *to* talk and learning *from* talk.³⁹ Participating in the community discourse enables the understanding of norms and values, and the ways in which the community frames and solves problems and structures its view of the world.

Some empirical evidence supports the usefulness of situated learning and participation to frame pedagogical practices. Dornan *et al.*⁴⁰ studied how undergraduate medical students learned from their clinical experience and the factors that enabled and hindered their learning. A model of experience-based-learning emerged from the study in which participation – in meaningful activities that contributed to patient care and with others in the setting – was central to both learning and personal and professional development as a doctor. Teunissen *et al.*⁴¹ studied how residents learned in the workplace. For these postgraduate learners, participation was also critical to their learning. A proposed model of ‘learning by doing’ emerged.⁴²

Social cognitive theory

Situated learning emphasises collective learning in communities; however, as Sfard²⁹ notes, individual learners must acquire the knowledge and skills required. A return to Bandura’s SCT is helpful here as it may continue to be useful.²³ Despite their differing emphases on collective, social and individual learning, these two perspectives may usefully complement each other. In SCT, the individual learner brings his or her personal knowledge, skills, attributes and previous experience, and learns and interacts dynamically with all others in the setting, including teachers, patients, peers and colleagues, and with other contextual influences. Through experience and through observing the actions of others, the individual acquires skills and knowledge and develops a sense of self-efficacy or perception of agency and ability to perform specific tasks and achieve certain goals.⁴³ Feedback on performance is essential to support the learner’s ability to set goals and to monitor progress towards them. Practice and feedback are also fundamental to acquiring competence.

Workplace-based learning theories

Workplace-based learning theories broaden understanding of how and where learning occurs. They illuminate the workplace as a community of practice. Theories and models of learning at work also include

constructs of participation and learning at both individual and collective levels. Billett^{30,31} describes learning and participation as inseparable. He sees learning at work as a co-construction, arising from the interactions between the learning opportunities afforded by the workplace and how individuals actively choose to engage with those opportunities. The workplace offers both human partners and other artefacts to interact with; these interactions between individuals in the social context contribute to the individual’s capacity to perform and to individual knowledge. Billett highlights the learner’s active role in participation. Workplaces can affect learning by their readiness to engage learners and their support for learners’ participation.

Eraut’s^{32,33} model of learning at work also includes both social and individual aspects. He describes informal learning at work that occurs through experience and interaction with colleagues. Eraut³² also describes implicit or tacit learning which may occur in the absence of overt teaching and in which the individual has no awareness of having learned. He describes tacit knowledge as knowledge of contexts and organisations, acquired through a process of socialisation, observation, induction and participation. He too views knowledge as contextually situated in a set of activities and the social relations within which the activities are embedded. Eraut also sees socio-cultural and individual theories of learning as complementary rather than as competing, and knowledge creation as both a social and an individual process.

Eraut’s concept of tacit knowledge and tacit learning has particular salience for medical education. It may occur when learners observe or encounter situations that challenge their values. The resolution of these challenges can lead to the conflation of values, entitlement and a non-reflective professionalism, in which people are unaware of the gap that exists between their espoused values and the behaviours they enact.⁴⁴

Informal learning may also occur through the ‘hidden curriculum’, a set of influences that operate systematically at the level of the institution and communicate the institution’s values. Learning in the hidden curriculum is complex and may both support and undermine the intended curriculum.⁴⁵ Within the communities of practice model, these influences exist as part of the culture in which learners actively construct their identity over the course of their education. Through participation, learners may tacitly assume the values of the hidden curriculum; however, participation also allows learners to engage

with other community members to reflect critically on activities, norms, values and shared understandings.

Experiential learning and reflective practice

The notion of learning through experience⁴⁶ has been widely accepted in medical education. Experiential learning, as described by Boud *et al.*,³⁴ involves reflection on experience with the goal of transforming experience into learning. Experiential learning emphasises individual learning; reflection is intended to deepen understanding and to explore the broader context of experience. Situated learning can complement experiential learning by framing the exploration of experience within the community's norms, values and activities.

Reflective learning and reflective practice are integral to all learning perspectives. Reflection allows learning to be actively assimilated.⁴⁷ Reflection and reflective practice⁴⁸ are themselves complex concepts. Although the literature increasingly supports reflection as a critical path to understanding and assimilating new concepts, contextualising learning and enabling performance improvement, its incorporation is challenging.^{49–51} Reflective learning involves the critical analysis of experience to understand its broader context and integrate new learning that has resulted.^{46,47} For the individual, reflection is related to self-awareness, self-regulation, self-monitoring and continued learning. For the community, situated learning provides context and culture within which to integrate and make meaning of experience. When reflection is undertaken between and among individuals, and incorporates the context within which the experience occurred, opportunities for assimilating collective norms and values are significant.

IMPLICATIONS FOR TEACHING AND LEARNING

How might teaching and learning look different when viewed from these perspectives? Potentially, three facets of increasing the social dimensions of learning can be seen, involving approaches that maximise participation, that maximise learning from others and that build on natural community processes to ensure both individual and collective learning.

Maximising participation is founded upon the view that learners have a legitimate role in the community and that their learning and participation contribute to the community's and the institution's growth. It involves a deliberate approach; it requires actively inviting learners into the community, providing

affective and emotional support, pedagogical organisational support for their learning and minimising barriers to participation through organisational support.⁴⁰ Learners are actively engaged in meaningful tasks that contribute to patient care and activities are afforded to learners to reflect their increasing skills and responsibility.^{11,31} Learners experience the interactions, values, challenges and processes of the community.

Learning through participation promotes collective as well as individual learning; it also highlights the importance of learning from peers and from members at all levels of seniority and centrality in the community.

Involvement in a community allows longitudinal experience with teams and patients. It also allows for vertical integration by integrating learners at different levels. It allows learners to participate in both interdisciplinary and interprofessional teams and to understand the roles of different community members.

The focus on community also frames the kinds of learning and teaching strategies that are available. Many are in current use, but they can be strengthened. These include the use of reflection as a means of learning from and integrating experience, and the use of strategies to allow learners to develop self-monitoring, self-assessment, self-regulation and self-direction. To be effective, reflection must be valued as a means of collective as well as individual learning. Guiding, coaching, feedback and mentoring become the responsibility of senior community members.

Krupat *et al.*⁵² describe an example which embodies some of these approaches. Longitudinal clinical clerkships were created in which learners spend their entire clerkship in a single setting. A 'longitudinal pedagogy' was adopted to allow for long-term relationships with patients and families, sustained relationships with faculty members that promote mentorship and feedback, opportunities to work and learn in teams and to process experience through reflection, writing and group support, and opportunities to become meaningfully involved in the work of the community.

CONCLUSIONS

Pedagogical shifts occur as a result of the dynamic and vital relationship between theory and practice.

It is in the enactment of practice that theoretical perspectives may be developed, refined and understood. However, other societal and professional factors also influence these perspectives.

In the years since Flexner's landmark study,² almost all aspects of pedagogy have evolved: the roles of teacher and learner have shifted; the dynamic nature of teaching and learning, in terms of both its individual and collective aspects, has been made apparent, and the importance of the environment in supporting learning has become clear.

Medical educators have available new ways to think about themselves, their work and their relationships with learning and learners. Situated learning offers an integrative theoretical perspective within which to conceptualise learners and learning, develop and test new approaches, and realise our mutual goal of preparing learners effectively as members of the medical profession. Medical education can benefit from critically reflecting on its practices and incorporating these perspectives for the future.

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