Toward a collective understanding of medical education research: The DIMER dialogue instrument

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Abstract

Medical education research embraces theoretical and methodological diversities. Researchers are motivated by the quest for deepening knowledge as well as attracting funding for new educational initiatives and technologies. However, it remains a daunting endeavour to locate and aggregate findings into consistent themes [1]. Reasons are at least twofold. The discourse of a discipline provides the language for representing its work and crossing between disciplines is challenging. Secondly, medical education is understood as an idiosyncratic collection of concepts appropriated from other educational field and the medical education community is unsure about whether to construe medical education as a medical or a social science [2, 3]. To overcome these challenges, we propose a dialogue instrument that draws together cross cutting research perspectives, stakeholders & learning domains to build bridges within medical curriculum, methods, assessment and experiences research. Consequently, this dialogue instrument advocates a nuance understanding of medical education research as a means for building collective knowledge for impacting education and health outcomes.

Key words: interdisciplinary research; dialogue instrument; collective knowledge building; medical education
Current medical education research landscape

Medical education research community is maturing in theoretical sophistication and methodological rigour. Theories arising from behaviourist, humanist, and social learning communities [4] currently frame the process of medical education [5]. The community is also stepping away from focusing on the techniques used for data collection and analysis [6] to making explicit research methodology and related epistemological and ontological perspectives [7, 8]. Medical education research has indeed moved from its traditionally isolated, small-scale approach to embrace a more eclectic, theoretically robust and collaborative endeavour to improve the quality of its research base [5]. Importantly, conversations are turning towards interdisciplinary collaborations impacting on education policy and practice, enabling reach and significance locally, nationally and internationally [9-11].

Medical education research is also motivated by the quest to attract funding for new educational initiatives and technologies to drive medical learning experience. As a result, technology has created new possibilities and made inroads in enhancing quality of medical teaching and learning. Simulations, online learning platforms, use of mobile devices by learners to access information in real time offers responsive support for learners’ development knowledge and skills [12]. These innovations have also changed the face of assessment to allow for and recognition of evidence of learning as a progression over time and series of learning activities [13]. These innovations have twisted tradition classroom didactic teaching in its head to incorporate team-based learning, video based studies, 3D anatomy practical sessions and flipped classroom learning practices into medical education. Curriculum previously understood as a discipline [14] is now understood as an experience that encompasses everything that is happening to the student as well as staff who are significant and very influential stakeholders in the institution or organisation [15].

Medical education research is characterised by its complex environment. It is daunting to locate medical education research as a coherent programmatic whole despite major developments in the area of medical curriculum and teaching, structure of professionalism, characteristics and evaluation of medical learners and practitioners [16]. Medical education is constantly evolving for which events occur with or without research to direct and evaluate activities. This is not helped when much of medical education research is conducted within an applied, practical setting where people involved do not have educational research as their first priority[17]. Certainly, it is also more comfortable for researchers to adopt a discipline-specific view of the world where the discourse of a discipline offers a language for representing its work[18].

Work has begun to frame medical education research as a collaborative process [19]. Yet, barriers exist. First, medical education researchers are trapped in variants of the quantitative and qualitative debate [1]. This is not helped when researchers continue to hail randomized trials methods as the gold standard for medical education research [20,
This obscures our understanding of humanistic experiences in the context of medical education[22]. Second, for being theory-rich research at scale, the lack of sophistication through collaborations is constantly dodging advancement of medical education research [23]. Third, there is tension between those who see the need for educational research as theory building and those who see the research as addressing practical needs [24].

Within this debate, experiences of stakeholders (patients, students, medical professionals) are widely studied in medical education research, further debate should focus on how to improve experiences by focusing on activities found to be associated with experiences and outcomes and to develop robust measurement approaches [25]. Constant fixation on causation research only serves to narrow the scope of understanding. Similarly, assessment review reveal curriculum has gone the way of integration [26]. We need to be flexible to accommodate micro analysis of curriculum design as well as cross boundary study such as impact of assessment on student learning experiences. With varied forms of research methods in use for medical education research, researchers need to rise above the dichotomy of qualitative and quantitative research to ask questions that matters to medical education and subsequently draw upon their theoretical underpinnings to guide research design.

To rise above these issues, calls for interdisciplinary collaborative work with researchers from other disciplines have begun. Rees et al argues for greater literacy in education to sustain collaborations between education researchers across health professional schools and schools of education [23]. Importantly, medical education settings are unique microcosms that offers constantly evolving context for medical education research [17]. We need collaboration with colleagues from different perspectives to study a broader array of outcomes to link medical education with health outcomes. In doing so, medical education research needs to be situated within a general framework and asking questions to push the field towards new knowledge.

**Our hypothesis**

If we remain at the thematic understanding of medical education research, collective knowledge for advancing practices will remain elusive. We need to build bridges to link key research areas on medical education. These bridges include voices of stakeholders, differing research perspectives and learning domains of medical education researchers.

*A dialogue instrument for collective understanding of medical education research*

We present an agile social-cultural model of scholarship & research that frees itself from the typical dichotomy of qualitative versus quantitative research in at least two ways. Firstly, learning domains in this ecosystem is understood across a continuum of perspective from cognitive psychology (focus on part of individual) to Neo-Vygotskian theories (focus on practice in a society and culture). Secondly, a cross cutting perspective as the initial step turns typical medical research organized by listing research projects at its head by foregrounding research as along a continuum of collaborative research on one end and monodisciplinary practices on the other end which can be equally productive [27]. In this way, medical education researchers can focus on solving the problem rather than be limited by an individual disciplinary basis that quickly becomes the limiting...
factor of a research process. This instrument (Figure 1) draws together stakeholders to understand the intricate links between people, practices, values and technologies sustaining medical education research.

Figure 1: Dialogue instrument for collective understanding of medical education research (DIMER)

Cross cutting perspectives allows a rich diversity of approaches to medical education research. Underlying these perspectives are assumptions and worldviews of researchers and participants that can lead to variations in the ways research are designed and implemented. This instrument gives reason for students, professionals and patients to participate in medical education research as key stakeholders empowered and supported to make decisions at all stages of research.

Supporting research within and between the overlaps of these domains are research philosophies that guide medical education research design. While the history of medicine and science is strongly rooted in positivism which places high value on understanding the world through objective study, more recently, medical education research has also expanded ways of knowing to include post-structuralist understandings that supports plurality of meanings and knowledge. As a result, our dialogue instrument’s demand for perspectives such as behaviourist, cognitivist, humanist, social and constructivist theories of learning [28] can enrich medical education research.

The typology of experience, assessment, curriculum and methods in medical education are drawn closer to overlap in research conversation by this dialogue instrument. As individual modes, curriculum is associated with classical models of learning objectives and aims. Assessment encompasses both formative and summative approaches often
framed in frameworks such as Millers’ pyramid. Methods of medical education are varied though underpinned by Flexner’s 2+3 model. Experience in medical education is student-centred with investigations focusing on learning experience. Yet, a continuous focus on individual modes is not going to reflect the web of mutual interdependency of these modes. The proportions of curriculum, experience, assessment are not decided in advance but worked out during the design and development of each project. For medical education outcomes to move forward, the walls separating the individual modes of research context needs to break down and modes need to coalesce through permeable boundaries. This instrument aims to do just that.

This is not action research that seeks to bring together action, reflection, theory and practice in participation with others in the pursuit of practical solutions [29]. In the context of medical education research, this dialogue instrument is about working towards interdisciplinary medical education research. Experimental design and randomized controlled trials have an important place in medical research and have a privileged position in the ladder of evidence synthesis. These are most appropriate in well controlled situations. Medical education implies often complex situations where it is not possible to control many variables. Measuring complex social change may not be the best way forward. Rising above measurements, this dialogue instrument is an opportunity for large scale collaborative research to test and further refine guidelines that inform choices about quality and rigour of programmes in medical education, medical research as well as healthcare services.

Constant communal reflection regarding our choices of research topics to address and our success in addressing them is needed in order to integrate research in coherent programmatic waves. The purpose of this dialogue instrument is not to impose a set of themes for medical education research that should be considered comprehensive, prescriptive, or definitive. Rather, we hope to create a knowledge-building community where collective knowledge is a result of scholars working towards a shared goal. It is only when we work more collaboratively to build mutual understanding that we can acquire collective knowledge of the enterprise of medical education.

Conclusion
A fundamental goal of medical education is to educate trainees to provide high quality patient care [30]. Yet much of medical education research has focused on assessment of trainees’ performance with the implicit assumption that satisfactory trainee performance will translate into quality patient care. Undoubtedly, many difficulties arise in assessing patient outcomes to gain insights into the quality of care which graduates provide. It is unquestionably an arduous process of exploring strengths and weaknesses of the educational programme from the perspective of actual outcomes in the field. Establishing a link between patient outcomes, provider performance and medical education is challenging. However, this dialogue instrument facilitates a future direction for medical education research which may provide collective insight into the strengths and weaknesses of our medical educational systems and processes. It also needs reminding that this instrument is neither a diagnostic tool nor a result of meta-analysis of medical education research literature. Importantly, this tool aims to offer a research space for
drawing people who are concerned with advancing medical education research for enriching health outcomes. Unless we pay attention to social priorities, highlight inefficient and ineffective education practices and encourage attention to care systems, the ultimate intent of medical education to improve the health of patient is not going to happen.

References