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## **Is there a need for a specific educational scholarship for using e-learning in medical education?**

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There is increasing interest in developing the scholarship of medical educators and in this Personal View article we propose the need for a specific educational scholarship when using e-learning in medical education. We appreciate that there are some general principles for educational scholarship, especially reflection on teaching practice and the learning of students, along with communication and dissemination of these aspects of practice to a wider audience. However, we feel that e-learning adds additional factors for consideration, and requires specific critical attention to these, as well as general principles of educational scholarship; the purpose of this medical education research being to stimulate reflection on current practice and generate as well as facilitate the implementation of new insights to inform future practice.

Our proposal is based on our preparation for, and recent discussions with several groups of medical educators during a preconference workshop and following main conference interactive symposium at the 13<sup>th</sup> APMEC (Asia Pacific Medical Education Conference), as well as comments on an associated blog prepared for both sessions (<http://telat13apmec.blogspot.sg/>). These discussions highlight a common frustration with the use of e-learning in medical education, especially the difficulties associated with a lack of expected student engagement and impact on learning, but also how to make sense of why these difficulties occurred and to ensure that future educational practice is effective. This focus on transformation of practice is at the heart of educational scholarship.

Many of us can easily recall a time when the use of e-learning has failed to deliver its expected benefits, and this is not surprising since e-learning is a “complex intervention”. The notion of complex interventions, which are made up of various interconnecting parts, has become widely appreciated in applied health services research but appears to be rarely considered by medical educators. Design of the intervention and its delivery are key components of any intervention research project, requiring careful attention to not only each of the component parts but also to how they interconnect; very similar to how an “academic chef” would pay close attention to each ingredient in a cooking recipe to be shared and published (including availability, composition and qualities of these ingredients), how best to combine and sequence these ingredients, the variability and availability of different cooking methods and utensils, different skill levels in potential chefs, and different consumer tastes.

Similarly an effective e-learning intervention requires the alignment of several interconnecting parts: the training and skill of the instructor, the characteristics and needs of the learner, the intended learning outcomes, and the educational approach to achieve the learning outcomes, as well as the choice of technology and the context within which the intervention is being used. Understanding how

each of these parts fit into an interconnected whole allowed the medical educators at the conference to make sense of why their chosen interventions were potentially not achieving their intended outcomes, whether this was for learning, behaviour or impact on practice. Without attention to these interactions, an e-learning intervention is often doomed to fail before it is put into action!

The group discussions began to move from a realisation of why their chosen e-learning intervention was not effective to a focus on how to design and deliver complex interventions using e-learning. There was increasing recognition of the need to be specific about the “theory of action”, with an emphasis on the rationale for how their intervention was expected to produce an outcome. For example, showing a high media quality clinical skill video may increase the learner’s knowledge about what is expected in their performance but is very unlikely to produce an actual change in the learner’s performance without an opportunity to practice the skill. The technology is satisfactory but the rationale for producing action is flawed and requires further careful attention to the educational approach.

Another important aspect of the design and delivery of an e-learning intervention that was highlighted in the group discussions was the lack of *iterative development*, with no initial pilot to inform the project. *Usability*, the ease to which a product can be used for its intended purpose, is also an essential component for the effective use of technology for teaching and learning, and most usability problems can be identified during a pilot study. However, usability was rarely discussed in the initial planning phase by the discussion groups.

A well designed e-learning intervention may still not realise its potential outcomes when used in other contexts, including within the same institution. The hindering factors include *applicability* (the extent to which the process of the intervention can be applied in another context) and *scalability* (the extent to which the intervention can be used with a larger number of users in another context). These factors were rarely part of the initial group discussions when design teams consider either adopting a previously used e-learning intervention for use in their own context or implementing their own designed intervention to a different context.

The increasing recognition of the complex nature of e-learning led the groups to discuss the need for a new approach to their current educational scholarship, especially through *action research* and *design based research*. The current scholarship approaches used by the medical educators tended to be one –off individual reflections on practice but the newer suggested approaches are not only collaborative but also participatory, involving the learners and teachers. Both action research and design based research have a focus on performing research in real-life situations so that there is both a progressively deeper understanding of the interconnection of the different factors that influence the delivery of the intervention, and is also iterative to allow the essential fine - tuning of the chosen intervention, as well as making transformational changes to

the context within which the intervention is being delivered. These approaches require a systematic process of enquiry that moves from a superficial “single-loop” perspective, in which simple changes are made to the design of the component factors, to a “double-loop “ perspective that makes major, and transformative, changes to the systems and culture of the context. The group discussions highlighted their experiences of how healthcare organisations significantly restricted any potential outcomes from the e-learning intervention, with lack of protected study time and a mismatch between the content of the e-learning and actual practice. This understanding led many of the groups to discuss how they could transform their healthcare organisations so that educational interventions could achieve their potential.

It could be argued that our proposed specific educational scholarship for using e-learning in medical education is also highly applicable to all medical educators, irrespective of whether they are using e-learning or not. We respect this point of view but with the pace of using technology in an attempt to enhance teaching and learning we feel that there is an urgency and need to have a more specific focus. For example over the last few years, there has been increasing use of social media for teaching and learning, from blending learning and use of flipped classrooms to self-directed continuing professional development, and this creates a variety of new dilemmas that need to be resolved if the intended educational benefits are to be realised. The group discussions highlighted concerns related to the quality of online resources, the potential for lapses of professionalism and the boundaries between social and education use, but there has been little previous discussion of how to respond to these dilemmas. Social media has the potential for effective e-learning, with the engagement of reluctant learners and online peer discussion groups, but this requires a new scholarship for medical educators so that effective learning experiences can be crafted and embedded in current teaching and learning provision.

We hope that readers will begin to develop their scholarship in using e-learning in medical education and also consider the implications for their wider scholarship as medical educators.