Rethinking scholarship in medical education during the era of the COVID-19 pandemic [version 1]

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Abstract
This article was migrated. The article was marked as recommended.

The COVID-19 pandemic has significantly disrupted society and communities across the world requiring new and innovative approaches for healthcare, work, education and leisure. Similar changes have been precipitated in medical education, producing a rapid and major impact on students, educators and institutions. However, institutions still require educators to engage with scholarship in medical education, including providing evidence for promotion and tenure. We propose that resolving this tension between the demands of delivering a high quality curriculum and maintaining scholarship in medical education during the era of the COVID-19 pandemic requires urgent consideration of a transformational change in the scholarship in medical education. Key aspects of this change are a focus on rapid cycles of research to inform teaching, with local and wider dissemination using newer rapid approaches to publication and social media, and acceptability of these changes by institutions.

Keywords
Scholarship in medical education, action research, educational design research, transformational change, COVID-19

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Introduction
The COVID-19 pandemic has triggered an immense and extraordinary change to society and communities across the
world requiring new and innovative approaches for healthcare, work, education and leisure. A major aspect of this change
has been the rapid, and potentially permanent, shift in the use of technology to ensure that healthcare, work, education and
leisure activities can be maintained.

Medical education has been no exception to these changes, with a similar rapid shift in the use of technology for delivery
of all aspects of the curriculum, from teaching to virtual clinical training to assessments, and across the continuum of
medical education. Educators, learners and institutions have had to adjust to these changes and manage the various
increased demands related to workload, new practices and external regulatory authorities. However, at the same time,
educators are expected to continue their active engagement with scholarship in medical education, including providing
evidence for promotion and tenure.

In this Personal View, we propose that a transformational change in how we consider scholarship in medical education
during the era of the COVID-19 pandemic is urgently required. We consider that this change can help to reduce the
tension between the demands of rapidly responding to the demands of maintaining the delivery of a high quality
curriculum and the need to continue with scholarship in medical education.

Scholarship in medical education
Our understanding of scholarship in medical education has been informed by several authors, with each providing
different key components. Boyer (1990) described four categories of scholarship: discovery and creation, integration,
application and teaching. Several criteria of how scholarship can be assessed were proposed by Glassick (2000),
including clear goals, adequate preparation, appropriate methods, significant results, clear presentation, and reflective
critique. Additional features were presented by Hutchings and Shulman (1999), including wider dissemination in a form
suitable for review and evaluation, which is accessible for exchange with other members of education community.
Institutions have widely adopted these different components of scholarship and there is an expectation that medical
educators engage in the entire process and provide appropriate evidence of this process.

Scholarship in medical education is often an iterative cycle, with the experience of teaching identifying problems which
leads to a research phase of discovery for the creation of new knowledge and understanding about the problem. These
findings can lead to the innovation of new approaches for teaching through the process of integration with a variety of
sources of knowledge, including colleagues and a review of the literature. Following application of the new approach to
teaching, the cycle can be repeated (see Figure 1). Throughout the iterative cycle, there are opportunities to evidence
scholarship through scholarly outputs, such as producing and disseminating an article that describes the intervention and
findings.

The challenge of scholarship in the era of the COVID-19 pandemic
The rapidity of the evolving disruption and response evoked by the COVID-19 pandemic on medical education requires
educators, and also institutions, to constantly monitor and make changes to ensure that the delivery of the curriculum is
appropriate and achieving its vision, aims and intended outcomes. The process of monitoring progress identifies
problems that are key to initiating the scholarship cycle. However, over time, these problems are likely to move from
being simple to complex. Alternative methods for research, such as action research and educational design research,
which use rapid cycles of investigation and implementation, will be required to answer these problems, but these methods
are less familiar to institutions and also to the editors and peer reviewers of many journals. In addition, the dissemination
required for evidence of scholarship through publications in high impact journals can be a lengthy process, even in those
journals with early pre-publication, and these journals also usually do not have open access.

Research for scholarship
The COVID-19 pandemic has required increased use of online methods to deliver the curriculum and Satya Nadella,
Microsoft’s Chief Executive Officer, has observed “two years worth of digital transformation in two months” (Spataro,
2020). A curriculum can be considered as a syllabus of content and the variety of methods to achieve predefined learning
outcomes. However, a curriculum is also an expression of the core values of the institution, such as equity for the learners
and social accountability.

Several categories of problems are recognised but an important distinction can be made between simple and complex
(Snowdon, 1999). Simple problems identified through online delivery of the curriculum will have simple research
questions, such as what is the impact of student learning outcomes by the use of videos created from PowerPoint
presentations. A single iterative research cycle can help to answer the question but also inform further development of the
use of videos. However, complex problems identified through online delivery will be more difficult to research, such as how can equity for learners be maintained when there are multiple -inter-related factors contributing to equity (such as gender, socio-economic circumstances and cultural background). Effective online delivery of the curriculum also has multiple inter-related factors that have to be aligned in the design and implementation phase of the intervention, including the learner, the educator, the intended educational outcomes, the content, the available technology, the instructional design and the organisational context (Sandars et al., 2020). For complex problems, iterative research methods over several cycles are essential to increasingly modify the educational intervention to ensure that it is effective (Hanington and Martin, 2019). An essential aspect of this iterative approach is the use of design thinking to produce and innovate creative potential solutions (Badwan et al., 2018). Because of the rapidly evolving impact of the COVID-19 pandemic on medical education, these iterative cycles also have to rapidly conducted.

Dissemination for scholarship
Dissemination of scholarly outputs, which are essential for the demonstration of scholarship in medical education, has relied mainly on journals and conferences but the frequency and time required for publication has become increasingly inappropriate to inform the wider community of medical educators who need timely new knowledge to inform their responsibilities for delivery of the curriculum. In addition, many journals and conference presentations are not open access and this limits the reach of global dissemination, especially for low and middle income countries.

Responding to the challenge of scholarship in the era of the COVID-19 pandemic
Our recommendations for responding to the challenge can be considered within three major themes: research for scholarship, dissemination for scholarship and the institution.

Research for scholarship
The highly iterative nature of action research and educational design research will likely add to, and accelerate, the scholarship of discovery and creation (Coghlan and Brannick, 2019; McKenney and Reeves, 2018). Many of the criticisms about action research and educational design research, especially about their appropriateness for scholarship, are about the rigor of the data collection and analysis but this can be easily rectified by careful attention to detail, such as following standard guidance on performing qualitative and quantitative research.

Action research and educational design research have the intention to simultaneously implement an educational intervention (action) and to understand the various factors that contribute to the educational impact of the intervention (research). Through iterative cycles, the intervention is evaluated and modified to achieve its intended impact and each cycle of planning, implementation and evaluation informs the next cycle (see Figure 2).

The research component, which is the creation of new knowledge and understanding though the evaluations, can directly inform the development of teaching but also the findings can be more widely disseminated to inform the work of other medical educators.

Figure 1. The iterative scholarship cycle
Dissemination for scholarship

Providing evidence of scholarship through scholarly outputs in medical education is a high priority for most institutions and subsequently for most educators. The use of technology to support educational scholarship has been called digital scholarship (Goh and Sandars, 2019). There are several online approaches for rapid publishing and dissemination, especially open access publication and social media. Opportunities for rapid open access publishing has become increasingly available, with some offering pre-publication peer review and others offering post-publication peer-review. Similarly, there has been increasing opportunities using a variety of social media, such as Facebook and Twitter. There are well established metrics to inform digital scholarship and educators can create portfolios to curate these metrics as evidence (Cabrera et al., 2017).

An important aspect of the dissemination of scholarly works is to ensure that it supports decision-making about their teaching and delivery of the curriculum, such as ensuring that scholarly outputs will focus on examining what works and what does not work from their experience of the interventions. More explicit reporting of this information, including helping and hindering factors, can be facilitated by the use of templates, such as SQUIRE-EDU (Standards for QUality Improvement Reporting Excellence in Education) (Ogrinc et al., 2019) or TIDieR (Template for Intervention Description and Replication) (Cotterill et al., 2019).

The institution

There are important challenges for institutions in the implementation of our proposed transformational change for scholarship in medical education. The main challenges are likely to be greater acceptance of the action research or design research paradigm and also recognition of the evidence and metrics of scholarship which are produced from dissemination in open access publications and social media. Acceptance of these challenges is essential for taking full advantage of the rapid cycle iterative investigation and evaluation cycles that underpin the action research and design research paradigm. This evolution will need training and time to fully adopt, for senior faculty and academic administrators.

Educators will also need to have sufficient time to continue their scholarly activities. In an environment with multiple demands, including healthcare, teaching, academic and family, it is essential that opportunities for research and dissemination are both relevant to the urgent need to deliver the curriculum but can also satisfy the demands of the institution to evidence scholarship in medical education. An important opportunity of combining teaching with research are learning communities of educators, with demonstrable impact on the academic achievement of learners (Vescio et al., 2008).

Conclusion

The COVID-19 pandemic has significantly disrupted medical education, producing a rapid and major impact on students, educators and institutions. However, institutions still require educators to engage with scholarship in medical education, including providing evidence for promotion and tenure. We propose that resolving this tension between the demands of delivering a high quality curriculum and maintaining scholarship in medical education during the era of the COVID-19 pandemic requires urgent consideration of a transformational change in the scholarship in medical education. Key aspects of this change are a focus on rapid cycles of research to inform teaching, with local and wider dissemination using newer rapid approaches to publication and social media. There are important challenges for institutions in the implementation of our proposed transformational change. Resolving these challenges has important implications for both the scholarship of medical education during the COVID-19 pandemic but also there are likely to be long term permanent changes in how both educators and their institutions conceptualise and engage in scholarship.
Take Home Messages

- The COVID-19 pandemic has produced rapid and evolving changes in the delivery of the curriculum
- We propose that scholarship in medical education, with the need to engage with research and produce evidence, requires a transformational change
- Rapid iterative cycles of research by action research and education design research are more appropriate
- Dissemination of scholarly work in rapidly changing environments requires fast and open access publication
- There are important challenges for institutions in the implementation of our proposed transformational change

Notes On Contributors

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Declarations

The author has declared that there are no conflicts of interest.

Ethics Statement

This is a Personal Opinion piece and does not require Ethics Approval.

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Figure 1. Source: the author, Poh-Sun Goh.

Figure 2. Source: the author, John Sandars.

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Hui Meng Er
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This review has been migrated. The reviewer awarded 5 stars out of 5

This is an excellent paper that gives new perspectives to scholarship in medical education. As health professional educators worldwide are facing enormous stress in having to adapt quickly to the changes in education delivery brought about by the COVID-19 pandemic, they are expected to continue scholarship in medical education while coping with the increased workload in teaching and healthcare delivery. A redefinition of scholarship in medical education is timely. The iterative scholarship cycle appropriately describes the approaches taken by many institutions in the implementation of online learning in a large scale within a short period of time. It is crucial that these evidences and the lessons learnt can be shared through rapid publication approaches for the benefits of various communities of educators, particularly those who are facing resource constraints. As highlighted by the authors, such research should adhere to the standard guidance on conduct of research. This will increase its acceptance among those who may initially resist this transformational change.

**Competing Interests:** No conflicts of interest were disclosed.

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Yingzi Huang
The First Affiliated Hospital, Sun Yat-sen University

This review has been migrated. The reviewer awarded 5 stars out of 5

I like this informative and insightful article, which leads to the reflection of what really matters for medical education. What really matter is not research per se but to make a difference in the real world through acting on the findings of research, especially for marginalized people under the global crisis of Covid-19 pandemic. As there are always opportunities lying within crisis, I see hope through this article that medical education will change fundamentally, achieving '2 years' worth of digital transformation in 2 months'. Again many thanks for such an inspiring article, reminding and empowering all of us to take actions apart from coping with and fighting against Covid-19.

**Competing Interests:** No conflicts of interest were disclosed.

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Sateesh Babu Arja
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This review has been migrated. The reviewer awarded 4 stars out of 5

A very interesting piece of work and I thoroughly enjoyed reading this paper. This manuscript is very appropriate at an appropriate time when the whole world including medical educators are going through tough trying times. One of the most important suggestions proposed by authors is that institutions should be ready for supporting the educators and accepting the metrics of scholarship on open-access journals and social media. Authors also have explained with examples of simple and complex research problems. The iterative research cycle proposed by authors reminds me of LEAP Planning and Evaluation Cycle. However, the research cycle proposed by authors looks much simpler and evaluation and planning can be done at the same time in each cycle to inform the next cycle. Thank you.

**Competing Interests:** No conflicts of interest were disclosed.

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This review has been migrated. The reviewer awarded 5 stars out of 5

This is a very timely piece and offers a number of challenges to conventional scholarship not only in the field of medical education, but in general as well. The opportunities for reconceptualising research are important to focus on. I find the case well made for reviewing the ways in which research, scholarship and teaching interact in the light of COVID-19. I do wonder if, when developing this line of thought, the authors would consider the different audiences or interlocutors in play. For example, some of the issues raised here are long-established tensions (e.g. the lack of recognition for alternative research methods), whereas others are more localised and transient (e.g. the changes to on-line education, which will depend much on educator experience, available technology and student body). It seems to me that the interplay between the macro and micro issues will affect decision-making about teaching, and so the move to suggesting metrics for capturing this is a little too quick (for me). Likewise, a sense of whether this transformation would be a ground-up, top-down or hybrid approach might be worth a further discussion (similar to, say, Sanford Schram's work in social policy).

**Competing Interests:** No conflicts of interest were disclosed.

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I enjoyed reading this article. It is a timely reflection on the many types of scholarship that educators can pursue. The authors emphasize that research is not the only mode of scholarship. However, peer review and dissemination are essential to call an output scholarship. Boyer's definition of scholarship, types of scholarship should be reviewed by all teachers, educators and educationalists. Glassick's criteria for sound educational scholarship inform how to make an educational product count twice, yet be open for
peer review and reflective critique. This then leads to ongoing monitoring and revising of educational initiatives. I would add that all health professions educators should read the AMEE guide on "Research Compass", which emphasizes not confining oneself to the local educational context. Applying principles from all these models and frameworks would be of great value to guide the scholarship of teaching and learning. I agree that journals and editors should keep pace with the plethora of scholarly work that can be of use to the world of education and not stick to anachronistic traditions. The point of scholarship is sharing useful educational work and products with a global community of teachers and learners as well as educational scholars and leaders.

**Competing Interests:** No conflicts of interest were disclosed.