
Technology Enhanced Learning with Limited Resources - Transforming Limitations into Advantages

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Medical education is rapidly changing, influenced by many factors including the changing healthcare environment, the changing role of the physician, altered societal expectations, rapidly changing medical science, and the diversity of pedagogical techniques. What would medicine be like in 20 years' time? Today's students will be practicing beyond the next 20 years and are expected and required to function effectively within ever-changing health systems. What are the future challenges for medical education and how can we prepare to effectively face them?

The principal challenges in medical education can be categorized as changes occurring in the healthcare environment, the information explosion related to medicine and healthcare, and changes in the learner profile. Changes in the healthcare environment are driven by advances in technology, increasing costs, diversity of providers and settings, changing expectations of patients and the public (including professionalism, ethics and communication) and commodification of healthcare (Schuwirth & van der Vleuten, 2006; Guze, 2015).

There is a global information explosion, which not only includes a rapid and exponential increase in published information but also the short- and long-term effects of this growth. The increasing quantum of knowledge in medicine no longer allows physicians to retain all knowledge that is necessary to provide quality patient care (Densen, 2011). Over 34000 references are added to MEDLINE each month from 4000 journals, and the doubling time of medical knowledge is estimated to be approximately 5 years. Knowledge is expanding faster than the ability to assimilate and apply it effectively; this is as true in education and patient care as it is in research.

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Clearly, the simple inclusion of more material and/or time to the medical curriculum will not be an effective coping strategy. Therefore, a fundamental change in the approach to medical education has become imperative.

It is important to note that changes in the learner profile lead to challenges as well. Present day medical students are more technologically advanced than ever, and it is important for faculty to identify the inherent advantages as well as disadvantages faced by the "digital natives" who make up the majority. These changes in the learner profile lead to different approaches to learning, presenting ongoing challenges to medical educators (Beetham & Sharpe, 2013).

These challenges will become even more pronounced for countries and institutions with limited by lack of financial, human and infrastructural resources. It is perceived that technological advances that have led to many changes in health systems and medical education are beyond the reach of countries with limited resources, especially in the South East Asian region, thus, the current situation will lead to and aggravate a vicious cycle.

Are we in South East Asia truly "low-resourced"? The South East Asian region has rich traditions in culture, healthcare and medical education. Availability of teaching materials such as patients and cadavers is much higher compared to other regions in the world. The high IT literacy, high accessibility to the internet, high connectivity due to widespread usage of mobile phones and social media is notable. Therefore, the term "*Differently Resourced*" may be more appropriate and positive in this context.

Can we use affordable and available technology to address and prepare for future challenges in medical education? There are many technologies currently being used in medical education including Simulation, E-learning/M-learning, Virtual Patients/Virtual communities, Virtual and Augmented Reality, Artificial Intelligence, and tools for sharing information and networking.