

Contemporary Issues

Time for TIGER to ROAR! Technology Informatics Guiding Education Reform

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Abstract

Information Technology (IT) continues to evolve and develop with electronic devices and systems becoming integral to healthcare in every country. This has led to an urgent need for all professions working in healthcare to be knowledgeable and skilled in informatics. The Technology Informatics Guiding Education Reform (TIGER) Initiative was established in 2006 in the United States to develop key areas of informatics in nursing. One of these was to integrate informatics competencies into nursing curricula and life-long learning. In 2009, TIGER developed an informatics competency framework which outlines numerous IT competencies required for professional practice and this work helped increase the emphasis of informatics in nursing education standards in the United States. In 2012, TIGER expanded to the international community to help synthesise informatics competencies for nurses and pool educational resources in health IT. This transition led to a new interprofessional, interdisciplinary approach, as health informatics education needs to expand to other clinical fields and beyond.

In tandem, a European Union (EU) - United States (US) Collaboration on eHealth began a strand of work which focuses on developing the IT skills of the health workforce to ensure technology can be adopted and applied in healthcare. One initiative within this is the EU*US eHealth Work Project, which started in 2016 and is mapping the current structure and gaps in health IT skills and training needs globally. It aims to increase educational opportunities by developing a model for open and scalable access to eHealth training programmes. With this

renewed initiative to incorporate informatics into the education and training of nurses and other health professionals globally, it is time for educators, researchers, practitioners and policy makers to join in and ROAR with TIGER.

1. Introduction

As the information technology (IT) revolution continues and electronic devices and systems become integral to how healthcare is delivered in every country, there is an urgent need for health professionals to have adequate knowledge and skills to enable them to utilise informatics in all settings. Health IT encompasses a huge range of technologies that are now more sophisticated and interconnected than ever before and can deliver numerous benefits such as improving the quality of patient health information, supporting clinical decision making and facilitating the coordination of care across multidisciplinary teams of health and social care professionals in acute and primary care settings, among others (Ball et al., 2011). Therefore, many national governments are prioritising eHealth as a way to improve health service delivery and patient outcomes (United States Congress, 2009). However, some clinical staff may resist the implementation of technology due to their limited technical knowledge and capability (Devlin et al., 2016), as health professionals are often not given adequate training and lack good digital literacy skills to enable the proficient use of technology that enables care (Booth, 2006).

Technology is also becoming more common as a way to deliver education to students with diverse learning needs in academic and clinical settings, as it offers a flexible means to deliver teaching and assessment that is convenient, interactive and engaging for learners (Button et al., 2014; O'Connor and Andrews, 2015). Furthermore, IT is also widely leveraged to collect, analyse and manage biomedical and clinical research data that helps evaluate interventions in

healthcare and underpins evidence-based practice (Embi and Payne, 2009). Additionally, as the fields of education and research have historically kept their core focus on theory instead of innovations, as a result some educators and researchers have been slower to develop technological knowledge and abilities, which means they cannot make the best use of electronic tools and applications in their respective roles (Barnard and Nash, 2005; Fetter, 2009). This has knock-on negative implications for patients, clinicians and students in every area of healthcare (Pravikoff et al., 2005; Mashlach Eizenberg, 2011). As technology underpins all three legs of the proverbial stool i.e. education, research and practice, it is critical that nurses are adequately trained in informatics.

2. Technology Informatics Guiding Education Reform (TIGER)

The global shortage of skilled health IT professionals is most pronounced in nursing, as nurses comprise the largest group of healthcare practitioners in the majority of countries (Carr-Hill and Currie, 2013; Bollinger et al., 2013). Nursing informatics has been defined as, ‘the use of technology and/or a computer system to ... process ... and communicate timely data and information in and across health care facilities that administer nursing services and resources, manage the delivery of patient and nursing care, link research resources and findings to nursing practice and apply educational resources to nursing education’ (Saba and McCormick, 2001, pg 226). The lack of informatics expertise in nursing has long been discussed in academic circles, with the first published papers on the topic going back to the 1980's (Scholes et al., 1983; Grobe, 1989). Nurses in the United States have been pioneering technology for many years and working to develop informatics as a specialist area in nursing (Staggers et al., 2001), which is a trend that has spread to other countries (Smedley, 2005; Bond and Procter, 2009; Jetté et al., 2010). However, it was recognised that a national group was needed to coordinate efforts to educate nurses about informatics and to bring together nursing

stakeholders to develop a shared vision, strategies and specific actions to improve nursing education, research and practice through the use of health IT.

In 2006, the Technology Informatics Guiding Education Reform (TIGER) Initiative was established with support from over 70 organisations to progress this agenda in the United States. This national group set out an ambitious action plan, underpinned by seven pillars of a strategic vision, to develop key areas of informatics in nursing (Technology Informatics Guiding Education Reform (TIGER), 2009). One of these was a commitment to integrate informatics competencies into nursing curricula and lifelong learning, which included the development of nursing faculty. Competency based education typically comprises identified knowledge and skillsets, organised within a framework that specifies key learning outcomes required for professional practice (Chapman, 1999). The TIGER Informatics Competency Collaborative set about developing an informatics competency framework for all nurses, through an extensive literature review and surveys with nursing education, research and practice groups. They have published their final model that incorporates three parts: Basic Computer Competencies, Information Literacy, and Information Management, each of which outlines numerous IT competencies required for professional nursing practice (Technology Informatics Guiding Education Reform (TIGER), 2009). These were then mapped to existing education standards such as the American Library Association information literacy standards and the European Computer Driving License certification programme to further strengthen the competency framework. During this time, TIGER also established an online repository of educational material that is accessible via their Virtual Learning Environment (VLE) (Hebda and Calderone, 2010). This work has been influential in increasing the emphasis of informatics in nursing education standards in the United States (American Association of Colleges of Nursing (AACN), 2008). TIGER is now taking a more global focus to support other countries

to undertake similar processes and make long-lasting and positive changes to nursing education and practice worldwide, although the challenges of doing this are significant especially in developing countries that are resource limited (Hersh et al., 2010).

In 2012, TIGER expanded globally to help academic professionals, students, adult learners, and clinical educators with coordination and synthesis of informatics competencies, pool educational resources required to train nurses in informatics and to foster international community development. Currently, the TIGER International Committee comprises 32 members/liaisons from 23 countries who are actively involved in creating health IT competency frameworks and training programmes in their own regions, a small number of which are from developing nations such as Panama and Iran. Many countries such as Australia, Finland, Germany (inclusive of Austria and Switzerland), New Zealand, the Philippines and Portugal have already contributed their efforts to the synthesis project (Hübner et al., 2016). The country specific case studies are freely accessible via TIGER's main page on the Healthcare Information and Management Systems Society (HIMSS) website (Healthcare Information and Management Systems Society, 2017), as the TIGER Initiative has been adopted into this global health IT organisation. With this transition, came a shift to a new interprofessional, interdisciplinary approach as it was recognised that education in health informatics needs to expand to other clinical fields and beyond. Therefore, the TIGER International Competency Synthesis Project was launched in 2015 and is using a comprehensive survey to identify and prioritise core global informatics competencies, from which a harmonization matrix will be created that outlines key competencies that can guide future education standards in nursing and other disciplines. It is through these endeavours that many nurse educators, researchers, practitioners and policy makers are now more aware of the IT skills gap that exists in nursing and health more widely and the importance of international

collaboration to share best practice, assess lessons learned and find solutions that can be tailored to individual countries and regions.

3. European Union (EU) - United States (US) Collaboration on eHealth

The impact of TIGER can clearly be seen in the refreshed EU eHealth Action Plan, which runs from 2012 to 2020, as it sets out a series of goals to make the most of digital solutions in European health systems (European Commission, 2012). It followed the signing of a Memorandum of Understanding between the United States Department of Health and Human Services and the European Commission's DG CONNECT in 2010, which aimed to strengthen the cooperation and sharing of knowledge and resources by working together on a range of issues within the eHealth domain. Among the existing objectives in the action plan includes a commitment to develop the health workforce to ensure it is skilled and ready to adopt and apply technology. This facilitated the establishment of a 'Workforce Development Workgroup' in 2013, which includes a range of public and private health, IT, education and eHealth professionals, many of whom are active participants in the TIGER Initiative and continue to promote it today. This EU-US working group is undertaking a series of activities to bridge the informatics gap in health education and ensure all clinical, managerial, administrative and other staff have the competencies they need to apply technology effectively in healthcare (Värri et al., 2016).

The group focused initially on compiling and aggregating existing global informatics competencies and mapped these to professional roles in healthcare, from which they built the Health IT Competencies tool (HITComp, 2017). This is a web-based, open-access searchable database to assist people in compiling information on skills and competencies needed at different levels (Baseline, Basic, Intermediate, Advanced and Expert) in health IT across a

range of roles. The tool encompasses five domains of practice: 1) Direct Patient Care, 2) Administration, 3) Engineering or Information Systems, 4) Informatics, and 5) Research or Biomedical, to cover all possible professions who contribute to eHealth in different ways (Health Information Technology Competencies (HITComp), 2017). It is hoped that this online platform will facilitate workforce development by enabling core informatics competencies to be included in education standards and the design of training programmes for a wide variety of careers. Another important milestone was the creation of a special eHealth section of the MedEdPortal (American Association of Medical Colleges, 2017), which contains a collection of online, open access educational resources to contribute to the IT training needs of health professionals in Europe and the United States.

4. EU-US eHealth Work Project

Under the European Commission's Horizon 2020 programme, sponsored by DG CONNECT, members of the workforce development workgroup and others formed a new consortium and received a grant funding the EU*US eHealth Work Project, which will continue and expand on the progress made to date. This consortium consists of academic, healthcare provider and industry partners, as a wide membership ensures a rich wealth of experience and knowledge in health informatics education and training is brought to bear on its activities. The group is mapping the current structure and gaps in health IT skills and training needs globally, with the aim of increasing educational opportunities by developing a model for open and scalable access to eHealth training programmes (EU*US eHealth Work, 2017). The TIGER VLE will be leveraged to develop an interactive eHealth work platform reflective of health IT and informatics skills, along with a knowledge assessment and development framework that shows how to make the best use of these tools and resources. This new platform will be external to but connected to the TIGER VLE and the project results will help inform future policy

decisions on workforce development through the EU-US eHealth Roadmap. With this renewed initiative to incorporate informatics into the education and training of nurses and other health professionals globally, it is time for educators, researchers, practitioners and importantly policy makers to take heed of the work started by TIGER and continued through the current EU-US collaboration. What can be learned from these innovative approaches is that we all have informatics in common, whether we are front-line providers of care, help organise and manage the health service or support students to develop clinical and research expertise.

5. Conclusion

Although there is no single or unified ‘best’ approach to developing and implementing informatics competencies and education in nursing, which has been ongoing in several countries for many years (De Gagne et al., 2012), the best way to move forward is through mutual sharing of ideas and solutions. The TIGER Initiative can help guide the creation of tailored solutions for each country to suit the needs of the local health workforce and the population of people they care for. This must be prioritised to ensure future nursing education standards and training programmes at undergraduate, postgraduate and continuing professional development levels include the right health IT knowledge and skills to enable learning and the application of informatics in all areas of nursing. The new EU-US digital learning platform that is under development could further support and enable health educators to incorporate informatics into future training programmes.

It is surprising that at the dawn of the 21st century this issue has still not reached critical mass and many remain unaware of or unconvinced that nurses and other health professionals need to be educated in informatics. This paper is a call to arms to every professional, in every specialty, in every country to take up the baton, join the TIGER Initiative and champion

informatics education and training at all levels, so we can make the best use of technology to provide high quality patient care and ensure we are fully prepared for our digital future. The time for TIGER to ROAR in nursing and beyond is now.

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Conflict of Interest

No conflict of interest declared.

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