LOOKING TO THE FUTURE: DEVELOPING A DIGITAL EDUCATION AND INNOVATION STRATEGY WHICH PREPARES AND EQUIPS THE NEXT GENERATION OF HEALTHCARE PRACTITIONERS

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Abstract

The School of Health Sciences at the University of Liverpool, United Kingdom (UK) delivers pre-registration healthcare education for nurses and five allied health professions. These future registrants must meet the proficiency standards for their respective healthcare regulatory bodies and be equipped with the knowledge, skills, and behaviours to work within an increasingly complex, uncertain, and ambiguous UK healthcare system (1). This requires a different approach to healthcare education delivery; as technology advances at an unprecedented pace, fuelled by the recent COVID-19 pandemic (2) and the associated shift to digital learning, healthcare education institutions (HEIs) are incorporating innovative digital tools and platforms to enhance learning experiences, whilst adapting to the changing needs of students, and the clinical arenas that they will be working within. Alongside this, the incorporation of clinical simulation delivery utilising high-fidelity technology means that healthcare HEIs must develop a meaningful digital education and innovation approach, which aligns with the needs of external stakeholders, professional and regulatory body requirements, the changing needs of this generation of students and the future healthcare workforce (3), whilst recognising the quality assurance requirements of the higher education sector.

This paper will outline the development and implementation of a comprehensive multi-professional, healthcare, digital education and innovation strategy for the School of Health Sciences in 2023, with the overarching ambition of meeting the needs of current and future students. The project adopted a qualitative design, incorporating an in-depth literature review and gathering data from key stakeholders via face-to-face meetings. Findings were then reflected through the Strengths/Weaknesses/ Opportunities/Barriers (SWOB) tool, an analytical framework for matching an organisation's capabilities and capacities to the environment in which it operates (4). The SWOB summary was circulated across stakeholders for further comment and editing. This process of checking and refining meant that key personnel were engaged throughout the development. The final agreed document articulated the establishment of short, medium, and long-term objectives with a defined delivery timeline. Analysis and evaluation of the strategy implementation will also be discussed, including lessons learned and adaptations required for future students from Generation Alpha and beyond.

Keywords: Digital education, innovation, strategy.

1 INTRODUCTION

The School of Health Sciences (SHS) at the University of Liverpool is a member of the prestigious Russell Group of universities, which offer high-impact research, outstanding teaching and learning provision, and well-established links with industry (5). The school provides education and training to people at all stages of their careers in diagnostic radiography, nursing, occupational therapy, orthoptics, physiotherapy, therapeutic radiography and oncology, and advanced clinical practice. Currently, the school delivers undergraduate and postgraduate pre-registration clinical programmes, which must meet the stringent requirements of their associated regulatory and professional bodies to be approved for delivery.

Over recent years, there has been a drive from the UK Government to implement sustainable number growth in the Nursing and the Allied Health Professions (AHP) workforce in order to deliver the ambitions identified in the UK Government's *NHS Long Term Plan* (6) and the *NHS Long Term Workforce Plan* (7); the latter identifying an explicit workforce expansion plan for the next decade. Since 2020, SHS has responded to this call, increasing student numbers in alignment with clinical placement capacity and availability; currently, there are 1700 students, including undergraduates and postgraduate learners. Consequently, effective delivery of teaching and learning for these future healthcare professionals must be up-to-date and flexible, meeting the needs of the individual learner, their patients and a constantly evolving healthcare system. For this higher education provider, emphasis has been placed on the expansion of student numbers whilst also ensuring high-quality learning and teaching delivery.

Alongside this, education providers must be mindful of changes to care delivery models across the clinical interface, which have markedly changed over recent years with the increasing use of digital technology. Technological advances, including bioinformatics, digital platforms, virtual clinics, machine learning, and artificial intelligence, have transformed how patient data is gathered, evaluated, and informed care delivery (8). Consequently, clinical curricula must include teaching and learning, which equip students with the knowledge and skills to assess, monitor, and manage patient care remotely, if required. Additionally, it is imperative that students' baseline digital competency is developed throughout their academic journey to have the requisite digital skills to 'future-proof' their ability to work in an increasingly developing and changing digital landscape.

As a cautionary note, digital technology developments require academics to adapt learning and teaching methods regularly to leverage digital tools' full potential effectively. Published findings suggest that some staff resist change (9), so it is important to harness the energy of those staff keen to implement new methods and tools. Likewise, this is something that senior education leaders need to carefully consider when developing any digital education and innovation strategy, recognising the value of those staff able to serve as 'agents of change' (10).

Traditionally, the development of competent and adaptable healthcare practitioners was facilitated through a social constructivist (11) and student-centred (12) paradigm whilst simultaneously considering the demands of the practice arena. Emphasis is placed upon the development of reflective practitioners equipped with the ability to develop their lifelong practice of critical reflection as part of their continuing professional development, in alignment with the seminal works of Schon (13) and Boud et al. (14). Alongside this is the requirement to establish a robust 'community of learners' who can learn with and from their peers. It has been suggested that learning communities provide a foundation for sharing knowledge development and acquisition, and it is premised that students can learn by observing and interacting with others, which facilitates a more efficient means of acquiring complex knowledge, skills, and behaviours (15). Regarding the context of this paper, the establishment of a virtual learning community during the height of the global pandemic, when significant volumes of learning were delivered online, led to many challenges, including issues regarding privacy, the utility of certain online technologies, and the ability to access speedy Wifi support. All of these become significant barriers to students' ability to interact with their peers, aligning with previous research in this area (16).

The rapid adoption of digital technology, reinforced by the recent global pandemic (2), and a requirement to deliver learning through different means, including digital solutions (as identified in the NHS Long Term Workforce Plan), has forced higher education providers to reconsider their digital education learning offer more immediately. Consequently, interactive digital technologies have become an increasingly important tool within higher education (17). Extensive discussion has occurred surrounding the potential to utilise emergent digital innovation technology to support students with different backgrounds, attributes, and skill sets, particularly with the changing profile of this generation of learners referred to as Generation Z and the generation of learners to come in the future, Generation Alpha.

Generation Z comprises individuals born after 1995, digital natives who are fast decision-makers and comfortable within a highly connected digital community (18). They are the first generation born into a globally connected world. In higher education, there is evidence that Generation Z students rely on PC recordings instead of note-taking, will more frequently raise questions online, require immediate responses to queries, and request additional information (18). All of this infers that a different approach to learning and teaching is required, particularly regarding the use of educational approaches and specific tools. More importantly, it is imperative that any digital education and innovation strategy development also considers the requirements of Generation Alpha, those individuals born from 2010 onwards who have grown up in a fully digital world, described as being hyperconnected, able to make their own decisions about their use of digital technologies and who are experts in their use. Recent research has identified some key learning for higher education providers as they plan for this future generation of learners, specifically about Generation Alpha's ability to utilise social media, their network of social connections, and their capacity to readily interpret digital information (19).

In 2020, SHS, whilst responding to the need to deliver material differently because of the global pandemic and the changing profile of learners, was also experiencing a more immediate challenge, in that the University's virtual learning environment was undergoing wholescale change with a move from the Blackboard interface to CANVAS. This transition meant that staff and students had an immediate training need to prevent interruptions in learning delivery, particularly during a challenging global period.

To summarise, it is more important than ever that higher education providers adapt to rapid changes in digital education to meet learners' demands and attract increasing numbers of students. Alongside this

are the contemporaneous changes in the use of digital innovation tools across clinical environments and an emergent generation of learners with different learning needs. The challenge for the School of Health Sciences was to produce a digital education and innovation strategy for SHS, meaningfully meeting multiple stakeholders' needs, including students, academic staff, clinical staff, the patients they care for, and the associated professional and regulatory bodies.

2 METHODOLOGY

For this work, digital education and innovation refers to using digital technologies and tools to facilitate and support learning, teaching, and associated educational activities. This includes online learning, blended learning, virtual classrooms, specialist educational software and tools, interactive multimedia resources, interactive simulations, and virtual reality experiences that engage students in a progressive and dynamic learning environment (20).

Stage One of this work incorporated a comprehensive literature review using key databases. to discover existing literature and identify gaps within the evidence base (21). Methods included a search of databases including Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus), Scopus, Allied and Complementary Medicine Database (AMED), Ovid Medline (Medical Literature Online) and American Psychological Association (APA). Ethical approval was not required as the literature review utilised published research and does not consist of primary research that contains private or sensitive individual information (Suri, 2019). In addition, relevant UK Government healthcare and education documents were accessed to contextualise the next stage of data gathering.

Stage Two involved gathering data from key stakeholders across the academic/practice interface via face-to-face meetings, online meetings, and reference to minutes from Curriculum Board meetings and Staff Fora. Findings were then reflected through the Strengths/Weaknesses/Opportunities/Barriers (SWOB) tool, an analytical framework for matching an organisation's capabilities and capacities to the environment in which it operates (Chartered Institute of Personnel and Development (CIPD), 2023). This baseline analysis was then shared with stakeholders for further comment and refinement, resulting in a final version from which short-term (0 to 12 months), medium (1-3 years) and long-term ambitions (3 years+) were identified and agreed upon in April 2023. This document was widely disseminated and is an essential element of SHS's strategic approach to educational delivery. Progress against the strategic ambitions will be reviewed annually, commencing in May 2024. Modifications and amendments to the strategy will be made as required.

Elements for review will include the following:

- ***Track staff and student engagement*** data using the existing digital infrastructure and analytics tools. This data is readily available through CANVAS, and descriptive statistics will be used to analyse it.
- ***Focus Groups*** with staff and students 12 months after implementing the SHS Digital Education & Innovation Plan (May 2024). The focus groups aim to assess the impact and effectiveness of this work and to acknowledge any barriers and enablers during this time. The focus groups will be facilitated by a facilitator not involved in developing the digital education and innovation strategy. Emergent themes will be captured, and recommendations will be made.
- ***Monitor the use of emergent technologies*** over the review period and assess their impact. A baseline audit already exists of existing digital tools utilised across SHS. Therefore, meaningful comparisons can be made regarding usage and utility.
- ***Learner numbers*** progressing to professional registration with the professional and regulatory bodies will be used to indicate their preparedness for professional practice.
- ***Learner comments*** will be captured in the UK's National Student Survey's open comments section. These comments are reviewed annually so that these qualitative comments can be reviewed and compared against those received in previous academic years.
- ***Staff progression*** will be monitored through the achievement of teaching qualifications, confirmation in appointment gateways, and promotion.

3 RESULTS & CONCLUSIONS

As the review period for this strategy only commences in May 2024, it is impossible to assess the impact or effectiveness of this document at this juncture. However, some lessons were learned during the strategy development phase, and benefits were identified. A key learning point has been the value of clear communication through multiple formats; stakeholder engagement in the development process was critical to the emergence of a document in which everyone invested. Initially, this engagement was slow, but persistent and supportive messaging ensured that, eventually, everyone could see the value of the document. Part of this involved the development of a shared understanding of what is meant by the terms digital education, digital innovation, and digital education tools. This difficulty was not anticipated at the outset of this work, but reinforced the value of explicit and 'user-friendly' language.

The emergence of academic and clinical staff, who were keen to pioneer digital technology within their working field, also became evident during the strategy development phase. The value of 'change agents' was referred to in an earlier section of this work, but in light of some of the low-level resistance experienced, these individuals made a significant difference in adoption of the strategy in their areas.

Generally, the digital education and innovation strategy has been well received, and it is an embedded component of the school's strategic approach. As a 'live' document, it will be amended according to feedback and evaluation over the upcoming years. Perhaps more importantly, it reinforces the value and utility of digital educational approaches and the need to seek innovation across our different disciplines.

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