

New Directions for Student Engagement in Authentic Healthcare Assessment

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Introduction

In seeking to align learning and teaching with industry expectations, ‘authenticity’ has been identified as a key characteristic of assessment design promoting opportunities for students to acquire relevant skills and knowledge, as well as demonstrating their professional, vocational, and academic achievement (Villarroel et al., 2018). This entails designing assessment practices to foster individual engagement in learning activities that replicate the tasks and performance standards typically found in the world of work. It also involves the development of assessment practices whereby students learn via participation and the development of identity (Sambell, Brown, and Race, 2019). The onset of the pandemic compelled universities to rethink how the significant resources devoted to assessment might be reconfigured (even reimaged) to support student learning amid the switch to online modes of study. Upholding commitments to authentic assessment practices in such an uncertain learning context, particularly for those programmes with a professional practice focus, has demanded significant pedagogic flexibility and creativity in ensuring the assessment of student learning remains a positive and productive process, which adds value to the student experience and has inherent authentic value.

This article draws upon a comparative qualitative case study analysis based on the practice narratives of module leaders for three different Healthcare programmes capturing practice innovations that have aimed to design and implement alternative authentic assessment arrangements. The paper shares key insights into how Peer Enhanced E-Learning Placements have allowed for the provision of alternative (digital) placement experiences (MSci Chiropractor); how computer simulation has been successfully used remotely to demystify practice-based research (BSc Radiography); and how mobile-technology applications have effectively supported the remote teaching and assessment of applied “laboratory” skills (BSc Sport and Exercise Science). Through comparative analysis, drawing on the views of faculty and students, the paper explores the extent to which deploying these digital learning strategies has been a vector for change in healthcare assessment practice. Key findings reveal how resources can be effectively utilised to enhance the student learning experience through better access to assessment information, a broader range of tasks, automated or speedier feedback, student-student and student-staff dialogue around assessment, and support for peer and group assessment. Evidence for new, student-centred, forms of authentic representation and engagement in healthcare assessment is presented. Assessment activity in this relational frame provides scope for new forms of authentic assessment work across a range of healthcare courses, requiring sustainable approaches and designs that are sensitive to the learning needs and circumstances of students, whatever their mode of study.

Making authentic assessment arrangements: the challenges for student engagement

Assessment is an integral component of the education process, supporting learning by providing learners with opportunities to demonstrate acquired skills and knowledge, as well as determining their professional, vocational, and academic achievement (Ashford-Rowe, Herrington, and Brown 2014). In seeking to align learning and teaching outcomes with industry expectations, 'authenticity' has been identified as a key characteristic of assessment design which promotes learning (Sambell, et al. 2013) where competence is perceived not in terms of skill mastery, but as situational and personal. Such forms of assessment aims to replicate the tasks and performance standards typically found in the world of work and has been found to have a positive impact on student learning, autonomy, motivation, self-regulation, and meta-cognition. Such abilities are highly related to graduate employability for becoming a good professional, it is not only necessary to master the knowledge and technical skills of the discipline (Guzzomi, Male, & Miller, 2015). Other competencies are also required, such as critical thinking and problem solving, decision-making, communication, collaboration, and coping with uncertainty. Jackson (2016) notes that to improve non-technical employability characteristics in graduates, the learning context should involve 'authentic activities', 'learning whole tasks rather than component skills in isolation', 'performance feedback', 'setting learning goals and objectives', and 'collaborative learning, scrutinising, and building on the learning of others'.

Vallerroel et al. (2018) usefully distinguish three dimensions of authenticity in assessment design: realism, cognitive challenge, and evaluative judgement. The assessment context is 'realistic' when information about the described situation-problem comes from real and/or professional life, involving pertinent and relevant questions to solve, applicable to realistic situations. A second way to create realism is through performance-based tasks, where students produce work or demonstrate knowledge, understanding and skills in activities that demand a true representation of performance in that field of employment. Authentic assessment aims to generate processes of problem solving, application of knowledge and decision-making which correspond to the incremental development of 'cognitive and metacognitive skills'. Being able to reproduce knowledge in a decontextualised examination does not guarantee that knowledge can be used in a real-life environment. Students need to be challenged to practice these applications and knowledge transfer skills to solve real problems. Authentic assessment also asks students to develop an understanding of criteria and standards about what a good performance means, in order that they can judge their own performance and regulate their own learning. Students need to build a precise judgement about the quality of their work and calibrate these judgements in the light of evidence. Thus, students can identify areas that need improvement and see changes over time, developing a growing understanding of acceptable standards of performance.

Studies indicate that active student engagement with authentic assessment forms has an impact on the quality and depth of learning achieved by the student and the development of higher-order cognitive skills (Ashford-Rowe, Herrington, and Brown,

2014). Moreover, it has been shown to improve learner autonomy, commitment and motivation for learning, self-regulation capacity, metacognition, and self-reflection. As shapers of the educational context, educators need to foster educationally purposeful student engagement with authentic assessment to support and enable students to learn in constructive and meaningful ways. Emerging student-centred learning and assessment design in higher education emphasise students as ‘partners’, as ‘producers’, as well as independent enquirers, creative thinkers, team workers, self-managers, and reflective learners (Deeley et al., 2017). In order to achieve these goals, students are expected to be presented with learning experiences that allow them to work with increasing independence, applying their competence and creativity to different types of authentic learning activity. Such developments have been driven by a rhetoric of openness and change regarding the ideas of pedagogy and assessment and what they mean for student engagement, repositioning students and staff to situate both within the context of a dynamic learning encounter. It is now well established that assessment shapes what students study, when they study, how much work they do and the approach they take to their learning (Price et al., 2012). Consequently, assessment design is influential in determining the quality and amount of learning achieved by students. It follows, then, that if we wish to enhance student engagement, improving assessment by embedding the principles of authenticity outlined above is a worthwhile starting point.

A feature of modern modular course structures is that the majority of assignments have a summative function (assessment of learning), which may lead to students taking a strategic approach to their studies, potentially limiting their broader learning and independent thinking. Summative assessment has important purposes in selection, certification, and institutional accountability, but its dominance has distorted the potential of assessment to promote learning (assessment for learning) (Sambell et al., 2013). The imperatives of summative assessment necessarily limit the use of assessment methods that have demonstrable value for learning, such as feedback on drafts, group assessment, peer learning and work-based assessment (Price et al. 2012). Indeed, the need to provide a reliable, verifiable mark for each individual for each assignment can either limit the methods we use or create justifiable concerns about consistency and fairness in marking (Medland, 2016). Research evidence suggests that if the nature of the learning context is changed, and assessment is the most influential element of that context, there is a likelihood that the nature of student engagement will change with associated benefits for high quality learning. The change that has the greatest potential to improve student learning is a shift in the balance of summative and formative assessment (Boud, 2000; Irons and Elkington, 2021).

Practically speaking, formative assessment is how we shift the focus from teaching to learning. This shift is not always easy to make as there are a number of factors that can inhibit formative practices (Brookhart, 2013). Firstly, assessment practices and processes might explicitly or implicitly give more attention to grading and assess student work according to certain predetermined standards, rather than providing information about how the work could be improved. Secondly, teachers might lack an appropriate awareness of students’ specific learning needs. Thirdly, the programme assessment strategies are structured according to a high-stakes attitude, privileging summative assessment practices. A chief component of developing any authentic assessment strategy is the use of integrated formative assessment. Students need to

be exposed to a variety of tasks with diverse performance requirements and have the experience of learning about judging quality work and seeking and receiving feedback. Recent developments in feedback research stress its potential to nurture students' capacity for independent judgement as well as problem-solving, self-appraisal and reflection (see Winstone and Carless, 2019). Studies increasingly emphasise the use of feedback dialogues to engage students with disciplinary problems and to develop their self-regulation (Carless and Boud, 2018). When formative assessment is incorporated into the assessment process, it adds to the authenticity by, firstly, helping students understand and work with the concept of 'quality' and what it means for a task to be 'of excellence' (Sadler, 2016), and, secondly, developing the lifelong capability to assess and regulate their learning and performance. The intention is that students gradually become able to make judgements about their own performance, a crucial element of professional work. Crucially for our purposes here, such work also characterises a view of student engagement that recognises the central role of student effort, persistence, and concentration, as well as emotional responses such as interest, happiness, boredom, and anxiety in shaping student learning outcomes. This view connects with the work of Bowden et al. (2017) that repositions student engagement as multi-dimensional, consisting of four distinct yet interrelated dimensions that jointly motivate a student's willingness to engage with different aspects of their study, namely: behavioural engagement, affective engagement, cognitive engagement, and social engagement.

Bowden et al.(2017)'s four dimensions of student engagement provide a useful framework with which to think about the authenticity of the assessment context(s) and tasks created and how together they might come to frame and enable desired learning outcomes. Each dimension is considered in more detail below as they are related to assessment design.

Devising authentic assessment contexts

A key step in designing authentic assessment is to consider the fidelity of the environment within which the assessment is to occur and the use of any tools and strategies that would be considered appropriate to this environment. As educators our pedagogical decisions regarding the assessment process need to reflect the challenges that professionals of a discipline face in work. This can be captured in three decision areas: (a) decisions about the conditions in which the assessment is taken (for example, should it be individual or group-based? Do all students have access to the necessary tools and resources? Is the planned work realistic in the time available?); (b) decisions about the assessment formats (for example, is it primarily online, blended or classroom-based? Does the task require the development of disciplinary knowledge or deployment of professional performance?); (c) decisions about the kind of problem to which students will apply knowledge (for example, will it be derived from employers, former students or students' experience in professional placements?). These decisions shape the nature and direction of student involvement in the assessment context which has been shown to drive behavioural engagement (Price et al., 2012; Sambell et al., 2013), as students' involvement in enriching authentic educational experiences motivates their citizenship behaviours, strengthening their active participation. This also motivates the social dimension of

engagement, as increased involvement enhances feelings of connection, belonging, and relatedness between students and their tutors and peers (Nicol, 2010).

Designing worthwhile tasks

In creating a challenging scenario or problem situation, the student is placed in a real context that encourages them to make decisions about what they need to do to complete a task, as is the case, for instance, in the OSCI examination. In this way, it is not a matter of the student reproducing course content but of discriminating what aspects of their learning are needed to solve the problem, encouraging cognitive engagement through the use of higher order thinking skills related to using, modifying, or rebuilding knowledge into something new. When designing authentic assessment tasks, it is important that steps are taken to ensure that the methods we choose are not restricted to conventional academic formats and have value beyond a singular activity or task. One way of achieving this is to encourage the participation of third parties in the design of authentic assessment tasks in the form of clients, employers, and/or colleagues from different professions, who might also then go on to review and evaluate the performance of the students. Such strategies activate the affective dimension of engagement, providing a real-life purpose to student learning, making it worthwhile and meaningful.

The rapid drive to digitise student assessment during the pandemic has raised significant challenges for educators in embedding greater flexibility in assessment and devising curriculum responses consistent with it. This has, in turn, required 'blended' approaches revolving around the combination of teacher and student perspectives, as well as the range of learning opportunities and approaches offered. The requirement to provide timely and authentic assessment tasks that are designed to facilitate student learning and autonomy has provided wider examination of the role of assessment in HE and more flexible and pragmatic ways of designing learning, teaching, and assessment activities. This has, in turn, required 'blended' approaches revolving around the combination of teacher and student perspectives, as well as the range of learning opportunities and approaches offered through technology-mediated learning designs. 'Flexibility' in assessment, from this perspective, is about responding to students' individual learning needs as well as the needs of the curriculum. Adopting enabling approaches that go beyond traditional forms and practical limitations of many established practices to build assessment that is relevant to contemporary needs and circumstances and reflective of the learning process, requires that educators make use of innovative assessment methods and strategies too impractical to deliver without digital tools (Crisp, 2012)

Methods

The authors conducted a comparative qualitative case study analysis based on the practice narratives of module leaders for three different Healthcare programmes (BSc Sports Exercise, BSc Radiography, and MSc Chiropractor). Narrative accounts were

crafted by Module Leaders around a common structure capturing detail relating to (1) specific contextual challenges and issues for each programme, (2) the development and deployment of alternative authentic assessment solutions, and (3) key insights derived from module evaluations, drawing on the views and experiences of students. Student input was sought at strategic points across the modules, through anonymous online mix-method surveys and informal feedback opportunities with non-module related staff, providing a safe environment for open dialogue and feedback. As a primary data collection method, qualitative surveys seek to harness the potential qualitative data offer for nuanced, in-depth, and sometimes new understandings of social issues (Terry et al., 2017) – in the case of this research study, students' experiences with alternative assessment arrangements in their studies. In a context where surveys are typically used in large-scale (quantitative) research, they can at first encounter appear poorly suited to the small-scale and situated samples qualitative social research typically centres on. There is, however, plenty of evidence demonstrating the utility of qualitative surveys as a means of generating richness and depth when viewed in their entirety, even if individual responses might themselves be brief (Braun et al., 2021). For the purposes of this study, surveys were self-administered online by providing students with a link to a Microsoft Forms within the lecture setting. Questions were presented in a fixed and standard order to all participants who responded by typing responses in their own words, rather than selecting from pre-determined response options. Participant responses were kept completely anonymous. Utilised in this way fully qualitative online surveys can provide an accessible and non-onerous method that can produce rich and complex accounts of the type of sense-making typically of interest to qualitative researchers – such as participants' subjective experiences, narratives, practices, positionings, and discourses (Braun and Clarke, 2013). This diversity can also 'give a voice' to individuals who might choose to abstain from face-to-face discussion or questioning due to the nature of the topic or might not otherwise be able to participate in qualitative research (Hewson, 2016).

Given the qualitative approach undertaken, a thematic analysis was conducted across all three final narrative accounts. According to Braun and Clarke (2006), thematic analysis is a method used for 'identifying, analysing, and reporting patterns (themes) within the data' (2006, p.79). By adopting a thematic analysis approach the authors were able to systematically 'describe, compare, and relate' (Braun and Clarke (2006) emergent themes through identification of their prevalence and significance in the extent to which they linked to form a coordinated picture across the three Healthcare programmes in focus.

Table 1 captures the four key themes to emerge from the thematic analysis. These themes are mapped to how each theme is captured (the descriptive incidences) within each practice narrative.

Table 1: Key themes mapped to evidence in practice narratives.

Theme	How theme is evidenced in practice narratives
1. Embedding process-focused approaches	<ul style="list-style-type: none"> • Authentic methods of delivery and assessment should begin from week1/semester1/year1 (Sport Science, 2). • Student engaged with online placement development including consultation (Chiropractor 1) – this included a series of self-reflection pieces and considering the wider context. I.E What do employers want/need; what journey do I need to take to be clinically ready? • Development of assessment literacy through detailed involvement of students to develop what a portfolio looked like for them (personalisation) (Chiropractor, 2 and 3) • The scaffolded deconstruction of a research article in a group appeared to be most enlightening for students, who are often tasked with this in solitary study time (Radiography, 2).
2. Shifting emphasis onto formative activities	<ul style="list-style-type: none"> • Assessment should move away from a series of tests at the end of module content. The flexible delivery also allowed flexible assessment strategies (e.g., individualised portfolios instead of essays), development of competence documents instead (Sport Science, 5) (Chiropractor, 2). • The portfolio approach allows a sense of development and aligning clinical and academic competence throughout the module. A reflection of a student’s journey through the module and not an assessment of knowledge at a particular point in time (Chiropractor, 3) • Students gained formative feedback within the activity via peer and tutor. The experimental data was collaboratively reviewed, sense-checked, and any mistakes were identified and rectified. A team approach was engendered. The facilitator shared their screen but was not ‘presenting’ in the traditional sense; rather these visual aids helped guide questioning and discussion (Radiography, 4).
3. A focus on inclusive task design and settings	<ul style="list-style-type: none"> • The flexibility of different methods of experiences (i.e., online sessions with service users – actually makes the experience more inclusive) For example, service users with limited transport can share their experience with students. Doesn’t rely on them coming onto campus (Sport Science, 3). • The inclusive nature of an online placement with reflection portfolio-based assessment (Pass/Fail) was constructed alongside students – first year of course, with pandemic able to mould to the assessment to meet expectations, learning and development needs (Chiropractor, 4)

	<ul style="list-style-type: none"> • The activity gained momentum by having the explicit stages each building from the last. The students were peer supporting each other, sharing out tasks (Radiography, 3).
<p>4. Active simulation of real-world application of knowledge and ability</p>	<ul style="list-style-type: none"> • Students reported that repeating in simulation the research papers central experiment and replicating their results demystified the research process for them. It enabled them to walk in the researchers' footsteps and situated them as knowledge generators, rather than consumers (Radiography, 5). • The learning strategy, in terms of online placements brought to life a real-world authentic experience which would have been potentially limiting/different for each student. This standardisation of placement experience allowed in-depth reflection/discussion etc on common experiences (Chiropractor, 5)

Healthcare Assessment in Context

This section considers the similarities and differences between the 'Contextual Issues and Challenges' revealed across practice narratives for the Sports Science, Radiography, and Chiropractor programmes.

The backbone of healthcare education is firmly placed within a practice-based learning environment where competencies and professional identities are formed (Dornan *et al.*, 2015; Gill, Whitehead and Wondimagegn, 2020). An authentic learning experience within this context has included the exposure of students to clinical knowledge through a practical pedagogy. To facilitate the transition into employability, physiotherapy students have recently highlighted the importance of placement opportunities and practical hands-on classroom experiences (Chesterton, Chesterton and Alexanders, 2021). The COVID-19 pandemic presented challenges to maintain such an authentic learning experience which aims to support students to bridge the gap between theoretical education and the world of work. This produced the need for an 'emergency' learning and teaching response. Largely courses within the UK were transitioned online or to a hybrid delivery. Effective online learning is a by-product of cautious design and planning, neither of which were possible in a pandemic where rapid transformation to online learning was required (Branch and Dousay, 2015). Subsequently, some have referred to contemporary online learning and assessment as 'emergency remote teaching' (Bozkurt & Sharma, 2020; Hodges *et al.*, 2020). The course teams faced such challenges whilst maintaining an authentic student learning and assessment experience. They had to rely on the existing university provision, and in this case had certain advantages as the university had recently undergone a 'future facing learning' initiative that had provided every student with a tablet computer and tuition in a suite of software including virtual meeting solutions. Additionally, the radiography team had pre-existing experience and research reputation in simulation education (Hedges *et al.*, 2020)

Recently Chesterton and colleagues (2021) proposed course providers reflect on the delivery of core skills taught to mitigate against the challenges of postgraduate employment. In this article, MSci (Hons) Chiropractic, BSc (Hons) Sports Science and BSc (Hons) Radiography present examples of healthcare courses which were affected by the COVID pandemic, with on-campus teaching either cancelled or restriction and studies continuing remotely (Kachra and Brown, 2020). These three courses each have a practical focus throughout all taught modules. This authentic approach aims to develop more than a theoretical and superficial understanding of the profession but reach a deeper appreciation of the inter-professional and personal skills required upon graduation. Across levels of study, exposure to clinical scenarios supports students to transfer and apply classroom-based learning into the clinical environment. The practical nature of these learning tasks develops a true understanding of core competencies.

Whilst the BSc (Hons) Sports Science is the only course not aligned to clinical registration, practical competences are still placed at the heart of student development and innovation. The course itself mirrors the MSci (Hons) Chiropractic and BSc (Hons)

Radiography in terms of its practical focus on both learning, teaching and assessment. Whilst all methods of assessment have strengths and intrinsic flaws, student competence should be assessed through an integrated, coherent, and longitudinal strategy which is authentic and sustainable (Epstein, 2007).

Flexible assessment arrangements

This section unpacks the key considerations captured in the 'Solutions' sections of practice narratives, drawing out the steps taken in devising flexible and authentic assessment arrangements.

Whilst challenging the pandemic offered an opportunity for course teams to reflect upon students' learning needs and develop complementary digital-based strategies. First-year MSci (Hons) Chiropractic students were unable to experience external clinical placements. An alternative placement experience was co-developed with students based on the growing concept of PEEP's (Peer Enhanced E-Learning Placement). Stakeholders, including university teaching teams, students and external clinical partners developed multi-day programmes exploring pertinent aspects of clinical placement linked to graduate skills and governing body standards. Authentic experiences allowed students to study ethical practice, patient anxiety, peer support and personal well-being. The curricula were supported by multidisciplinary professionals and service users, offering a unique insight whilst enhancing students' understanding of service users. Structured with guest speakers, reflective sessions, and student-led competence-based portfolios, an individualised reflective evidence-based record was generated. Presentations, discussions, and recorded interviews were followed by focused and staff-led reflective sessions, and students designed their novel reflective competence-based portfolio (pass/fail). Feed-forward action points were developed for each individual whilst discussing development points in group environments. The sharing of learning experience enriched the experience and allowed reflection to drive the narrative for future modules and learning as students progressed through the course. Formal and informal module evaluations highlighted the success of the PEEP's approach. Anonymous online surveys reflected the student partnership in developing the approach, with all students reporting opportunities to engage with the assessment design which is translatable to the workplace. Informal student feedback acknowledged the engagement across the digital platforms which had enhanced a creative learning environment providing opportunities 'beyond the classroom'.

The BSc Sports Science course developed similar practical flexible solutions to its learning, teaching and assessment strategy. In preparation for assessments, students received practical sports science online delivery, including the dissemination of home testing kits enabling physiological and biomechanical data to be collected. Nutrition delivery included 'live' cooking for students to participate within, athlete movement assessment integrated real-time evaluation of performance to ensure essential skill

sets were established. Data collected throughout the module duration fed into assessments, where students could incorporate the data collected. Students recorded and stored their competence and achievements via online methods, meeting module assessment criteria whilst producing employer facing records/reflections of their journey through skill development (personally and professionally). Such an approach provided students with a clear assessment literacy pathway throughout the module content promoting active student engagement throughout. Module feedback, generated through online surveys, reflected overall high satisfaction with 95% of students (n=36) 'Strongly agreeing' the subject was delivery in a stimulating, organised and intellectually challenging way.

The pandemic disallowed the small group setting in the x-ray room and the handling of equipment normally required during the second year of the BSc (Hons) Radiography students. An alternative approach was needed. Experiments were instead carried out remotely using TU's distributed simulation (Virtual Radiography™ v5.2, Shaderware limited). The theoretical content presented in lectures and readings was explored by manipulation of exposure settings on the virtual x-ray machine. This allowed students to collect the results of their experiments at home, in the form of radiation dose data and radiographic images generated by the simulation. The experiments were set in the context of the literature; students were working over a number of weeks to replicate a paper they had read and deconstructed. The end result being a poster presentation of their own data testing the paper's hypothesis. This conclusion was then applied to clinical practice, where students could now make informed choices for optimal settings for a given patient, leading to the lowest possible radiation dose while maintaining diagnostic image quality. The group work element allowed students to question the fundamental concepts, develop their own theories of practice, and own the results

New directions in healthcare assessment

In this section we outline and discuss the key insights generated through the comparative analysis of module assessment practices from across the Sports Science, Radiography, and Chiropractor courses. We then draw out the key evidence of impact, as well as the enduring issues and challenges for effective authentic assessment practice in online environments.

Embedding process-focused approaches

A key feature shared by all three healthcare programmes was that each considered the balance of assessment arrangements whilst considering the broader, holistic, process-focus needs of the students. This included the distribution and sequencing of assessment activities across modules such that all students are supported and enabled to progressively master required skills, learn from feedback and demonstrate all intended learning outcomes. Assessment is 'process-focused' when it is designed to actively involve students in assessment processes in ways which develop their

ability to self-monitor, regulate their own learning behaviour, and when feedback is appropriately engaging and can be acted upon in timely and meaningful ways. For instance, the introduction of PEEP's for Chiropractic students enabled them to explore and experience different aspects of clinical placements distributed over a series of multi-day programmes of activity. These activities were supported through timely interactions with professional and service users, as well as planned student-tutor and student-peer dialogue, and positioned to inform incremental, student-led, competence-based reflections throughout the module that were then carried forward into their summative assessments that were submitted online.

It is widely recognised and documented that such a 'process-view' is integral to assessment which promotes learning and is most effective when designed into courses and modules as part of a wider framework of guidance and support for student learning development (Sambell et al. 2013). Having students engage with PEEP's not only helped to model students' behavioural engagement in terms of certain forms of participatory action, but it also provided a proactive and pragmatic means of monitoring student involvement and contribution in shared tasks and activities, enabling tutors to reinforce positive behavioural engagement (Bowden et al., 2017) by encouraging students to adopt more active, participative, and dialogic roles throughout the assessment process.

'This was the first time in an educational setting where I have been included and consulted regarding teaching and assessment processes. This empowerment allows you feel like you belong and matter' (MSci Chiropractic student)

Where multiple summative assessments were included in a single module, each of the Healthcare programmes took steps to ensure individual tasks were intentionally designed to be connected or 'phased' as parts in an integrated assessment experience, with careful thought given to combinations of low and medium-stakes tasks and the role they play in student learning. For students on the Chiropractic programme, this took the form of a mix of synchronous presentations, online class and group discussions, and recorded interviews, punctuated by guided, tutor-led, reflective exercises. Radiography students were tasked with completing an online simulated experiment across several weeks; replicating the structure, protocols, and procedures set out in a paper they had previously examined. This work was framed and supported by a sequence of staff and learner-led exercises designed to encourage students to consider a variety of theoretical content, collect, and share data, and present and discuss working hypotheses based on their findings.

"This module has been the most useful one this year. It has been interesting being able to get an understanding of why we do what we do in practice..."
(Radiography Student)

Offering opportunities for student dialogue around common shared activities and forums, or other forms of peer-to-peer dialogue and learning can be helpful in

promoting positive and enduring engagement and support in and through assessment processes (Wimshurst and Manning, 2013).

Shifting emphasis onto formative activities

How we prepare students for assessment becomes increasingly important in blended and hybrid learning environments. Another feature common to all three Healthcare programmes was the intentional consideration given to introducing easily actionable 'formative' opportunities for students to trial new practices and build confidence in using learning tools and technologies. For example, the use of online tools such as reflective blogs and portfolios enabled Sports Science students to easily document their development throughout the module in an accessible format that could then be shared with professional bodies and organisations. Set up in this way, blogs offered a responsive, formative, mechanism for supporting students in development of professional competences and confidence that was valued by students.

'We were all worried that the transition to a hybrid teaching model, mainly online, would affect our learning and importantly understanding of the subject. The additional support actually developed our learning and encouraged and challenged us to deep dive into theory to apply in a practical environment'
(BSc Sports Science student)

As a formative tool, reflective blogs permit immediate and targeted feedback on contributions, either from tutors or peers (when shared), and owing to their chronological nature they can facilitate timely reflection and the identification of student learning development over time. Effective feedback is more important than ever in instances where there is need to accommodate flexible study patterns, playing a key role in mitigating against the risk of isolation and alienation. For the Sport Science programme, folding in regular formative feedback through the use of reflective blogs and digital portfolio tools not only provided way of checking for individual understanding. It also supported students' affective engagement, giving them an indication of where they are in relation to achieving learning outcomes or standards, where they need to progress to, how they feel, and how they will be able to reach the expected level.

'The on-going developmental feedback allowed me to self-assess where I was on my own learning journey through the modules. This format provided more in-depth feedback and support compared to traditional on-campus teaching'
(BSc Sports Science student)

Emotionally engaged students are able to identify the purpose and meaning behind academic tasks and social interactions, thus adding to their authentic appeal and value (Bowden et al., 2017). In conventional assessment design, the imperatives of summative assessment can limit the use of assessment methods that have

demonstrable value for learning. A shift in the balance of assessment towards the formative provides the scope to use a more valid and effective range of ‘*assessment-for-learning*’ tools and strategies. To this end, digital portfolios are potentially powerful formative assessment tools because they encourage the integration of several tasks, facilitate the collection of evidence over time, and open up the possibility for peer feedback and reflective thinking. From this perspective, assessment-for-learning is both formative and diagnostic, providing information about student achievement to both teachers and learners, which allows teaching and learning activities to respond to the need of the learner and recognises the huge benefit that ongoing and dialogic feedback processes can have on learning (Sambell et al. 2013).

A focus on inclusive task design and settings

Connecting students through common activities and shared assessment experiences using different digital forums (i.e., online discussions and symposia) and tools was another common feature across the alternative assessment arrangements adopted by each of the Healthcare programmes. Flexible (synchronous and asynchronous), timely and accessible opportunities for learners to interact online in relation to topics relevant to assessment tasks encourages more relational forms of engagement with course material that can be more relevant and personally meaningful to students than teacher-mediated discussion around similar topics. For Chiropractic students this involved engaging in professional practice dialogue with guest speakers and practitioners combined with shared reflective and peer learning exercises to document and capture individual student progress.

‘Access to guest speakers was a real positive of online teaching model. We were given access to experts across the global which wouldn’t have been enabled with on campus teaching. Hopefully this blended approach continues throughout the course’ (MSci Chiropractic Student)

When such tasks and arrangements are situated in a social learning frame they can help to generate enhanced feelings of inclusivity, belonging, purpose, socialisation, and connection with professional contexts. In a further example of how social engagement can be folded into digital assessment processes, Sport Science students were encouraged to collect, share, and then interrogate physiological and biomechanical data they had generated themselves using home testing kits. Encouraging such positive social learning opportunities is underpinned by an understanding that students as individuals have qualities and skills that will be beneficial for their own learning (Bowden et al., 2017), as well as that of their peers, helping to strengthen the sense of achievement students gain from assessment tasks. For Radiography students, the inclusion of a group-based, cooperative, element to the process of them completing, documenting, and reporting on simulated (online) experiments helped to promote opportunities for peer learning, support, and feedback, and to share and discuss practical advice for ‘good practice’ and areas to avoid in the final assessment.

'[our results] showed how you can minimise [patient] dose, so it put in everything you've learnt, you know why it's important to minimise the dose.'
(BSc Radiography Student).

Despite the COVID crisis and a blanket extension being provided for students, 39 of 45 (87%) radiography students submitted their formal assessment on time in May 2020 and the marks for the module were comparable with, and slightly improved, on the previous year.

Whatever the mode of study, educators need to take steps to ensure that no learner is disadvantaged by the nature and pattern of assessment and has the opportunity to engage in diverse forms of assessment practice that maintain academic standards and recognize different backgrounds, learning needs, preferences, and motivations. Assessment tasks, and the digital tools and processes we adopt to support them, should, therefore, only be selected on the grounds that they can be accessed and assessed equitably.

Active simulation of real-world application of knowledge and ability

Devising authentically rich and engaging assessment tasks is a key catalyst for nurturing productive student learning (Villarroel et al., 2018). Authentic assessments help to frame and contextualise learning and can also simulate ways of thinking and practising in professional life. Simulation-based assessment is well-established in Healthcare education providing opportunities for theoretical knowledge to be applied in a safe environment and to develop such 'practice knowledge' contextually in settings that reflect real-world challenges and/or scenarios. Cosson and Lu (2020) argue that simulation for learning must be validated against real world performance, but once trustworthy, certain educational technology can enable simulation of authentic learning in ways that are representative of professional realism, encourage creativity, problem-solving, and active decision-making. In addition, when student engagement with criteria for learning is facilitated through activities such as peer review, self-evaluation, and timely reflection on their work, there is potential for positive effects on their learning, helping to develop their 'evaluative judgement'. Each of the Healthcare courses utilised available digital learning tools and technology to actively engage students with real-world models of thinking and working where skills, such as reflection and reflexivity are promoted alongside simulation of theoretical knowledge. This is evidenced in how Chiropractic students were supported in completing a reflective evidence-based record (in the form of regular blogs) capturing their reflexive progress at key action points in relation to key topic areas that then went on to form competence-based digital portfolios. In module anonymous feedback reported that all students valued the use of technology within sessions and this digital approach enhanced their subject level understanding.

Making clear the alignment between the task and the conditions under which it is assessed ensures that students understand this connection and perceive the assessment as valuable. In this way, the skills, knowledge, and attitude being assessed have meaning beyond the confines of a single content area or task (Boud and Soler, 2016). For Radiography students, the inclusion of group-based assessment

component helped to ensure their emerging theoretical knowledge was connected and grounded through a process of active (critical) reflection supporting their ability to learn from and reapply the acquired knowledge to clinical practice scenarios.

“I was able to see the benefit of the teaching in the Research Method module. I used this in doing the experiment and getting the results. You don’t see the relevance sometimes at the time. It helped me see the course as all being useful to my practice” (BSc Radiography Student)

From this perspective, learning is characterised as a learner-directed process of developing, extending, modifying, and reorganising existing knowledge with the aim of generating new knowledge forms accomplished through participation in authentic fields of practice. This includes sensitivity not only to different conceptual frameworks and professional interests but the ability to reflect on tensions between alternative sets of values and priorities, and to reconcile these influences into coherent responses.

Integrated authentic assessment design in Healthcare Education

Assessment needs to be adaptive enough to capture actual student learning that takes place in practice whatever their mode of learning (i.e., face-to-face, online, hybrid). Within this the ability of assessment tasks to integrate the testing of knowledge, skills, and personal qualities is regarded as an important component of integrated assessment (Crisp, 2012). This article has presented a range of practice examples of working with new and existing digital learning tools and technologies, that provide multiple opportunities to capture both performance and assessment data and analyse them to understand how students are progressing through deploying different forms of integrated activities as a way of scaffolding professional practice development for learners. The simplest of these scaffolds tend to provide information based on the performance of a learner on a specific learning task. When it comes to developing knowledge and skills in relatively complex and challenging professional practice domains remotely, issues relating to motivation and engagement emerge as important areas. This is certainly true for the Sport Science, Radiography, and Chiropractic courses that have formed the focus for this article, where learning is based on students appreciating and seeing practice, demonstrating skill in practice under direct supervision and then being able to share this knowledge with staff and peers by developing a shared conceptual language and discourse.

While the development of practice language is beneficial, such assessment designs also position students as both the focus of, as well as active participants in, the process of assessment. Through such practice arrangements, students experience a shared locus of control, but also need to validate their own agency and engagement in the space to develop their skills, knowledge, and begin to embody that practice. Furthermore, as future professionals, students will need to work in diverse teams and develop relationships in virtual, as well as physical settings. This communication mediated by technology is an emerging reality that has a technical skill requirement as well as shared community understandings of practice and behaviours.

As far as possible, educators must try to design assessments that foster the kinds of attitudes and dispositions, as well as the knowledge and skills, which learners will need for the variety of situations they will be confronted with throughout their lives. Articulating how learners might develop in this broader relational sense aids in making modules and associated assessment tasks more relevant and meaningful for learners. There is work to be done to ensure assessment of clinical and professional practice, beyond those hours spent in a professional setting or environment, is equally valued and prioritised. It is important for assessment of practice away from direct patient care to engender questioning, rehearsal, and reflection. This necessarily involves creating opportunities for rich learning experiences where students can gradually gain knowledge and competencies while engaging with their own learning objectives and reflexivity. The practice examples shared in this article illustrate how the adoption of various educational technology has allowed a shift in expectations, practices, and discourse around how professional practice learning is situated in space and time with these learning places affording the reconfiguration of different digital tools, activities, and interactions to make it possible to work with knowledge in new and engaging ways.

Concluding remarks

Set against the backdrop of unprecedented challenge and sector uncertainty in higher education, the alternative authentic assessment approaches and practice innovations outlined in this article provide a useful framework to guide discussion, planning, and design, as well as a starting point for dialogue, thinking and support surrounding the development and implementation of authentic formative and summative assessment processes. Our recent experiences have accelerated a pre-existing trend in adopting technology mediated engagement and assessment which have demonstrated potential. Student feedback both quantitative and qualitative embraced these approaches and indicated a desire for such strategies to continue as part of their future teaching delivery and assessment practices. It is recognised that the examples provided throughout this paper are emerging and contingent, that they are a part of the journey and that they will be experienced in differing ways depending on the influences of discipline specificity and on the interplay between other relevant contextual and socio-cultural factors.

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