

Developing and piloting a simulated placement experience for students

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Simulation is a component of healthcare education and can be used successfully for collaboration between professions to develop interprofessional skills (Costello, 2017). Alongside online simulation sits virtual simulation, which can be defined as ‘not physically existing but made to appear [so] by software’ (Lioce et al, 2020). Virtual simulation builds on the foundations of online simulation and incorporates individual resources into a coherent set of experiences based around a collective group of learning objectives. An example of this is the use of 360° field-of-view (FOV) cameras to produce interactive images, which enable students to explore a virtual clinical setting and immerse themselves in a placement experience. Previous use of virtual simulation in nursing education has shown there is a positive correlation between its use and enhanced knowledge retention and student satisfaction (Padilha et al, 2019).

Simulated clinical experience engagement with and between students can be synchronous, which occurs in real time, or asynchronous, where the material is available and can be accessed by students at a time that suits them. Wong (2013) showed that students engage better with material that is available asynchronously and they spend varying amounts of time using the resource, allowing for a more adaptable student learning experience across a range of engagement styles. Analysing a previous event allows better retention, deeper learning and a greater likelihood of knowledge transfer (INACSL, 2016). This can be done online and, to maximise its effectiveness, should be carried out one-to-one or in small groups (Gordon, 2017).

Clinical placement

The option of increasing clinical placement hours is unsustainable in a climate of controlled budgets, limited placement availability and rising learner numbers given the education provider’s finite capacity. Consequently, many educators are considering the potential of alternative clinical placement, such as a virtual simulation environment (Quail et al, 2016).

There is contradictory evidence on the value of clinical placements for undergraduate learners in the health professions. It can be argued that these students require the theory they learn to be put into context via an extended placement in actual physical clinical environments, although a growing body of evidence is suggesting that a simulated environment can better equip these learners (Mills et al, 2016; Akselbo et al, 2019; Bogossian et al, 2019). Skills in empathy domains have been shown to increase more as part of a simulated encounter than from actual environments (Quail et al, 2016). The findings of a study by Watson et al (2012) showed that a number of health professionals achieved the same and even better competence in some domains during simulation placement than with the face-to-face clinical placements that are embedded in UK health curricula. This has been seen in a number of professions, including physiotherapy (Blackstock et al, 2013) and osteopathy (Fitzgerald et al, 2017).

Although the project discussed in this article involved students in the allied health profession of dietetics, there is some evidence that the use of simulation as placement can be effective in nursing curricula. For example, no difference was found in the confidence of nursing students in a comparison of clinical placement and simulation placements (Baillie and Curzio, 2009), which means that potentially the two approaches are equally effective.

Simulation as placement

The framework of virtual placement in the project presented in this article, although used for undergraduate dietetic development, can be and has been developed for a wide range of healthcare placements. These include nursing, physiotherapy, occupational therapy and public health, with plans to adapt it to midwifery, paramedicine and other fields. The framework is used for single disciplines, as well as cross- and multidisciplinary virtual placements. It is not specific to any particular healthcare discipline—the pedagogical and technological principles are transferable.

The 3-year undergraduate programme in the case study presented includes three periods of practice placement: 2 weeks in the first year (placement A), 15 weeks in the second year (placement B) and 12 weeks in the final year (placement C). The course leads to eligibility to register with the Health and Care Professions Council (HCPC) as a registered dietitian.

The British Dietetic Association's (BDA) curriculum framework for the preregistration education and training of dietitians (BDA, 2013) states that:

- Students will usually be expected to undertake not less than 1000 hours of practice learning. It is understood that the majority of this will take place outside the higher education institution (HEI) in practice placements
- Placement activity undertaken in the HEI environment may include pre-practice preparation and simulated training. Placements A, B and C have traditionally taken place in a an NHS hospital or community workplace setting.

Because of COVID-19, practice educators raised concerns regarding capacity and the safety of having healthcare students in these settings, because of the risk of viral transmission between learners, clinicians and patients. Students were also, understandably, concerned about going into a clinical setting during a pandemic and would predictably need to self-isolate both before and after these placements.

To avoid delays in the development of the future dietetic workforce and to prioritise the return of final-year students to clinical practice settings when these became available and safe, the 2-week A placement was initially redesigned as an online, virtual simulated placement. It is important to note that the BDA reinforces the flexibility of the curriculum in response to COVID-19 in the following statement: 'Education providers are encouraged to utilise and exercise creativity within the spirit of the framework (for example, the use of simulated practice-based learning)' (BDA, 2020).

There is some literature to support this innovative approach. In a systematic review by O'Shea et al (2020) on simulation- based learning experiences in dietetics programmes, it was suggested that university programmes including counselling skills, which are as crucial to dietetics as to all healthcare professions, should focus on knowledge acquisition at the expense of practical skills (Cant and Aroni, 2008).

In addition, simulation-based learning experiences allows students to practise without risk to patient safety (Weller et al, 2012; Milkins et al, 2014). It can promote students' development of professionalism and resilience (Rogers et al, 2017), make students more prepared for clinical placement (Gibson et al, 2016; Miles et al, 2016) and mean they are more confident once they are on clinical placement (Farahat, 2015; Ross et al, 2017).

The systematic review by O'Shea and colleagues also acknowledged that, to date, there is a lack of evidence on simulation for skill acquisition in dietetics education and that consistent, robust and evidence-based evaluation methods and tools are needed. This evidence would help ensure that simulation- based learning experiences in dietetics (and in all healthcare professional areas) are not just a novelty but are designed around evidence-based pedagogical approaches.

This type of simulation can then be incorporated justifiably into university dietetics curricula, designed using learning outcomes for activities and pedagogical principles of virtual placement. In other words, it is a framework to ensure effective simulation-based learning experiences relate to core competencies of the profession (MacDonald-Wicks and Levett-Jones, 2012).

The process

The design of this 2-week online simulated A placement ensured that the student dietitians were able to meet the placement capabilities (Table 1). These include four capabilities related to knowledge (K1–K4), two capabilities related to communication (C5–C6) and six capabilities related to professional practice (P7– P12).The overall aims of this initial A placement are as follows:

- Be introduced to the work of the dietitian
- Have opportunities to practise communication skills with service users and healthcare workers and demonstrate basic communication skills
- Be aware of the interaction between the dietitian and other health professionals
- Gain experience in an institutional food provision unit and demonstrate an awareness of the complementary roles of catering and dietetic services
- Be orientated to a bedded unit setting and demonstrate an awareness of routine and procedures therein
- Be introduced to IT systems that are used to support dietetic practice
- Demonstrate professionalism, in accordance with the HCPC *Guidance on Conduct and Ethics for Students* (2016).

The placement A capabilities (Table 1) and related tasks were used as the framework for developing the simulated placement.

The online simulated and virtual resources developed and used for this placement were varied and vast. They included statutory and mandatory training, the Diet-COMMS training package (Whitehead, 2015) and resources developed by the dietetics team such as a catering and food service package. In addition, a simulated patient journey was used, involving student dietitians outlining the routine on the ward from the patient's perspective, based on viewing simulated virtual wards and simulated mealtimes. Students also identified key sources of service user information available on the ward to complete a dietetic assessment using the model and process for nutrition and dietetic practice. Embedded, linked recordings of registered dietitians discussing their roles and responsibilities, as well as recordings of conversations between the dietetic teaching team and allied health professionals outlining their roles and responsibilities were also in the learning package.

Collaboration within the dietetics group was developed using virtual peer learning with second- and third-year dietetic students; in new iterations of virtual placements, the university's bespoke application COVCollaborate is embedded within all virtual placement environments. COVCollaborate generates a virtual group of patients, carers or users of services with whom students have to work to ensure health and wellbeing. They do this by engaging in a synchronous and asynchronous in-built chat facility and answering focused, relevant questions as a group.

COVCollaborate is part of the triad of virtual placement framework, which comprises: virtual environment; virtual placement; and virtual collaboration.

Simulated ward and mealtime

For the simulated ward setting and simulated mealtime, the following capabilities were used in the framework for design: K2, K3, K4, P8, P11 (Table 1).

A 360° FOV image of the ward setting was used for both resources; additional images such as red trays, water jugs, ward staff as well as key signage and documentation were added to the 360° FOV image to meet the requirements of the simulated activity and associated capabilities.

Interactive 'hot spots' were then added to these pictures on the 360° ward image to provide the students with further details about the person or object on the image and to assist their learning and ability to demonstrate the associated placement capabilities. These embedded hot spots are linked to sounds, video recordings, information, questions and interactive assessments. This gives learners a degree of interactivity as well as immersion to ensure a non-passive learning experience.

Recordings of registered dietitians discussing roles and responsibilities

For the video recordings of registered dietitians discussing their roles and responsibilities, the following capabilities were applied in the framework for design: K4, C5, P7, P8, P9, P11 and P12 (Table 1).

To enable the students to appreciate the breadth and nature of contemporary dietetic roles, dietitians working in both adult and paediatric fields created short videos (of 3-19 minutes duration) depicting 'a day in their life' as a dietitian. This included dietitians working in a specific areas of dietetics, such as weight management, diabetes, nutrition support, mental health, surgical, renal, oncology, haematology, dermatology, catering and food service, public health, freelance and charity-based dietitians.

Recordings of multidisciplinary team members discussing roles and responsibilities

For the video recordings of multidisciplinary team members, the practitioners discussed their individual roles, how they work collaboratively with dietitians for patient care, and common ward routines. The following capabilities were applied in the framework for design: K3, C5 and P11 (Table 1).

Short videos of health professionals (a junior doctor, a ward nurse, a nutrition nurse, a speech and language therapist and an occupational therapist) were developed to provide opportunities for the students to demonstrate these capabilities. A conversational format was used for some of the videos, using Microsoft Teams software, which enabled students to observe communication between a dietitian and other health professionals.

Peer learning for information gathering

Peer learning, support and feedback are important contributors to dietetic students' knowledge and skill acquisition during their placement experience (Roberts et al, 2009; Reidlinger et al, 2017) and were therefore included as elements of this virtual placement. The following capabilities were used in the framework for design of the peer learning element: K1, K2, K3, K4, C6, P10, P11 and P12 (Table 1).

Each first-year student was assigned a named student peer from year 2 or 3 of the dietetics course. The students met virtually

with their peer, using Microsoft Teams software, to complete structured activities designed to enable them to demonstrate these capabilities. These structured activities focused on developing the students' information gathering, dietary assessment, communication and reflective skills, as well as giving them an insight into their peer's experiences as a dietetic student in the practice setting. Student peers used a structured form to give first-year students formative feedback on their dietary assessment and communication skills.

Online workbook

With multiple activities, an online workbook was developed to provide clarity. It also allow educators to support learners, and gradual taper this support off as students self-direct their own learning. Coombs and Smith (1998) explains that such a controlled, reflective process gives personal voice to knowledge gained and creates links between past and present learning, thus increasing meaning and allowing a greater depth of personal relevance.

The workbook was an important tool that allowed the learners to demonstrate activities had been completed and what they had learnt. It was also used as an evidence portfolio that could be used to summatively assess the students' work relative to the placement capabilities and determine the outcome of the placement.

Student placement support tutors established whether they had successfully met the capabilities assessed by evaluating first-year dietetic students' placement workbooks. An end of the placement, a questionnaire for students was issued and a focus group for placement support tutors and students were conducted.

Engagement and experience

Forty first-year students studying dietetics at the university took part in the virtual placement and 93% of the cohort completed the placement; those who did not cited health reasons for their withdrawal.

Of the students who completed the virtual placement, 100% passed and achieved the learning outcomes and capabilities. When asked for feedback, students reported enjoying the use of 360° images and finding them informative. Students also felt the images allowed them to link to clinical settings and experience far more than was possible on a traditional placement.

The two 360° images were accessed a combined total of 1016 times. The asynchronous nature of these resources appears to have allowed learners to revisit the resource when required and on numerous occasions. Activities linked to the 360° images allowed a students to gain experience through a web browser at any time.

Conclusion

As outlined, this example of a virtual placement for dietetics is part of a bigger project to develop and study/evaluate the use of a virtual placement framework to allow learners a worthwhile placement experience in a range of professions. This concept of virtual placement has perhaps been brought forward by the COVID-19 crisis but was surely inevitable in the move to more technology-enhanced learning tools.

The case study discussed in this article shows that, albeit with some concerns and issues, virtual placement can be a useful, rich experience for the student. It allows students to focus on specific situations and scenarios that are crucial to development or are of limited availability in physical settings. There is the advantage of knowing all students have experienced a given situation, unlike traditional placements where workloads, variety and engagement vary greatly.

It does require academics, students, educationalists and this involved in the design, implementation and delivery of simulation activities to embrace, innovation and creativity; these traits define us as health professionals. With placement capacity and availability issues growing across multiple professions including nursing, specifically because of increasing student numbers (Health Education England, 2020) and current healthcare service pressures caused by the COVID-19 pandemic (Ford, 2020), it is the opportune time to undertake such an innovative approach.

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Table 1. Placement A capabilities	
Knowledge	
K1	Demonstrate an ability to record, estimate and interpret service users' energy, protein and fluid intake, using a ready-reckoner approach
K2	Demonstrate an understanding of the process of menu planning, meal selection, service and delivery within an institutional food provision unit, and the complementary roles of catering and dietetic services
K3	Demonstrate an understanding of daily routine/procedures encountered in bedded unit setting that impact on service users' nutritional intake
K4	Demonstrate an understanding of the major health and safety issues, including infection prevention, within the working environment
Communication	
C5	Demonstrate an understanding of the range of methods used by dietitians when communicating with health professionals, service users and the general public, including limitations of these methods and strategies to overcome any limitations
C6	Demonstrate an ability to converse with service users and health professionals
Professional practice	
P7	Demonstrate an understanding of how dietitians act in the best interests of service users
P8	Demonstrate an understanding of the need to maintain service user confidentiality
P9	Demonstrate an understanding of the need to respect the point of view of the service user and why it is important to avoid discrimination
P10	Demonstrate professional behaviour and appearance
P11	Demonstrate an ability to identify key sources of service user information with which to plan dietetic care, and also an awareness of IT applications that are used to support dietetic practice
P12	Demonstrate an interest in and a commitment to the work of dietitians