**Digitising Experience: the creation and application of immersive simulations in social work training**

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**Abstract:**

Detailed and elaborate spatial simulations are commonly used in the education and training of healthcare professionals. Learners benefit from replica operating theatres and clinical skills environments that enable them to gain insight from the hands-on aspect of authentic scenarios that permit them to apply there what they have learned in context. However, these physical recreations are expensive to build extremely rare in the context of social work training.

Digital learning spaces are typically two dimensional. Virtual learning environments (VLEs) consist of pages that can be scrolled through and content such as text, images and video, which can be embedded to provide learners with input material and tasks. In this paper we will explore the creation and deployment of three-dimensional digital spaces that afford social work students the opportunity to explore and interact within simulations of authentic real-world environments.

We will also examine how digital inscription—the addition of information such as questions, prompts and interactive media—can be used to support students in the development of observation skills and critical thinking.

Our objective is to improve the learning experience for social work students and explore the feasibility of using digital simulations to train real world skills.

Within all UK social work training programmes there is an expectation that students will practise skills in a suitable environment prior to service-user contact. For this reason we decided to investigate the practicalities of creating and the impact of using immersive digital media to explore real world scenarios that would otherwise be extremely challenging to access at this point in their training. For instance, a service user’s home and a psychiatric facility.

This is an ongoing project and so far the results have tended to indicate that students engaging with the 360-degree video exercises have been able to grasp threshold concepts that would otherwise been difficult to teach. In addition to this, there is also accumulating evidence that the use of this technology has produced higher levels of engagement and an overall improvement in module evaluation.

**Keywords:** immersion; social work; skills; service user; virtual reality

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**Introduction**

Since the 1992 Further and Higher Education Act, universities have been involved in entrepreneurial pedagogy to produce graduates with skills for the work force, to serve their local community (McGettigan, 2013). Social work training appears to be increasingly embodying this marketization of higher education (Cleary, 2018), as it is tasked with ensuring that social work graduates meet the needs of a knowledge based economy (Blackmore, 2002). In particular there is now focus on teaching social work students skills for practice that are directly transferrable into the graduate work place for social workers –those skills including but not limited to understanding the role of the social worker, person centred safeguarding practice, effective assessments, critical reflection (Knowledge and Skills Statement Adult Services, DoH, 2015), listening and observation (Trevithick, 2012). Large-scale government reports into social work education (Croisdale-Appleby, 2014; Narey, 2014) highlight concerns about the quality of skills-based training in Universities (Narey, 2014.)

Standards of education, including skill development for social work students prior to contact with service users, are now an expectation of the regulatory body; the Health and Care Professions Council. The planned migration of the regulation of social workers in the UK to a new body, Social Work England may set new expectations. A consultation process is currently underway for a revised set of regulatory standards, with the potential for a new framework through which to assess the efficacy of the use of technology in social work education. As it stands, currently in the United Kingdom social work education must encompass a “programme [that] culminates in a formally-assessed skills exercise at the end of the year, which students need to pass, together with all their other modules, in order to progress to the second year and their assessed practice learning opportunities” (Moss et al, 2007, p.710). In the host institution this module is called Assessed Readiness for Direct Practice (ARDP), and is closely aligned to the Professional Capabilities Framework, or PCF (BASW, 2019). The use of the PCF is designed to support social work students to develop their ‘practice beyond the limited standard of competence’ (Higham, 2013. p138). The use of a graded approach to the acquisition of skills as outlined in the PCF eschews the traditional binary concept of competence attainment (Eraut, 1994) where students are assessed as competent by learning to do *something new*. The PCF allows students to reconceptualise competence acquisition as ‘learning to do something better’ (Eraut, 1994. p118). Using this as a theoretical framework, consideration turned to how to immerse social work students in environments that, mediated through virtual reality, could be designed to encourage active, exploratory learning and promote the reflective reframing of social context.

The process of developing these concepts led the authors to pilot new ways to enrich student social work learning, using immersive VR scenarios that students could navigate and explore. Two specific learning packages were created constructively aligned with the curriculum (Biggs and Tang, 2011). The first learning package was created in a section 136 suite (s.136), which is a designated ‘place of safety’, specified in the Mental Health Act 2007, as a place where someone who has been arrested can be taken in order to be assessed under the Act. A social work student would have limited access to such an environment, and the learning package encouraged students to virtually experience an environment in which specialist social work intervention is delivered without having to be physically present. The second learning package was created within a home environment, and was designed to stretch the students further in terms of their intellectual curiosity and analysis.

The value underpinning the 360 degree learning packages was to promote understanding through experiential learning, by placing yourself in the shoes of the person to experience what Max Weber termed *verstehen* (Gomm, 2009, p.386). The design of the learning packages can also be understood through Kolb’s (1984) experiential learning model, where the participant moves through a cycle that encompasses an active element (interacting with the learning packages), discussing the feelings related to the experience, reflecting and thinking (Kolb, 1984, in Rutter and Brown, 2015) The VR packages were designed to encourage and support students to develop the essential skills of empathy through the use of new and innovative technology.

At this embryonic stage of the work the theoretical context was informed by alignment (Biggs and Tang, 2011), not only to the learning objectives set within the university, but also national aims – as a response to the recommendations in Narey’s 2014 report, where it is recommended that the curriculum is examined, and new ways of assessment explored (Narey, 2014. p43). The theoretical framework can also be understood through the context of Bourdieu’s ‘habitus’ within the ‘field’ (cited in Gray and Webb, 2009, p. 35), in that the authors sought to understand how students engage with and interpret their learning in the constructed ‘field’ that is the VR scenario. In recognising that the use of technology positions the tutor as ‘more of a facilitator than a distributor of knowledge’ (Domingo and Bradley, 2018, p.30) we aimed to bring the ‘field’ to the student in the classroom. According to Bourdieu a ‘field’ can encompass an area of land, a battlefield or a field of knowledge, and these are contextually interchangeable (Thompson, 2014). This is to say that the ‘field’ can be a physical space or conceptual space, dependent on the context and the people involved, and in its simplest terms ‘habitus’ can be understood as the examining of one’s ‘positionality’ in any given experience. This examination encourages reflection from the student (or ‘knower’) on what they have gained from the learning packages (or ‘the knowledge’) in the context of their own ‘beliefs, assumptions and practices’ (Taylor and Cranton, 2012. p187)

**Why Use Virtual Reality?**

There is an increasingly prominent use of virtual reality (VR) in educational settings, especially in the Higher Education sector. Its use is now well established across the fields of science, engineering and medicine. Barriers to entry, such as the prohibitively high cost of the technology, are diminishing and VR is becoming a viable tool to support teaching and learning (Walshe and Driver, 2018), (Walshe, Driver, Jakes and Winstanley, 2019).

However, the effectiveness of VR is still being studied. Unlike more passive forms of ‘lean-back’ media, it can be used to create realistic, interactive simulations that provide users with a high degree of choice and agency. Whether students are using just their heads to look around and explore a setting or their whole bodies to navigate through a digitally simulated environment, their movements and choices affect what’s happening on the screen. In contrast to similar emerging technologies such as augmented and mixed reality, VR *isolates* the user within the simulation by more fully appropriating their visual, auditory and spatial perception. This sensory appropriation, combined with the first-person view that VR provides, facilitates a feeling of presence. This can help to engage students by creating a powerful feeling of immersion that can assist in memory encoding and recall (Krokos et al, 2018) and train affective skills (Zinzow et al., 2018, Botella et al, 2015). Indeed, the powerful levels of presence and immersion facilitated through VR have led to its use as a valuable tool for exposure therapy (Powers and Emmelkamp, 2008).

However, virtual reality is not a single, easy-to-define technology. It exists on a spectrum. At the more practical but technologically less sophisticated end we have 360-degree images and video. These are, essentially, two-dimensional media projected onto a digital sphere. When the viewer is placed at the centre of this sphere, by wearing a VR head-mounted display (HMD), this gives the impression that the user is *inside* the simulated environment. While this may be a relatively basic form of VR, the level of realism and authenticity that can be achieved by using real images and video, as opposed to computer-generated imagery (CGI), can make it an extremely practical, but powerful tool for creating immersive, interactive, learning content. 360-degree video is also significantly cheaper and faster to produce, as it typically draws upon pre-existing real-world places and people to construct the environments.

Moving your head to look around and explore an image or scene, as you might do if you were really there, is a very natural way of interacting with the digital space and it helps to provide a strong sense of ‘being there’. This really distinguishes VR from other media forms. Furthermore, an additional layer of digital ‘hotspots’ can be overlaid within the user’s field of view to augment the environment with information that would not normally be visible. These hotspots can be used to guide students, highlight objects in the environment, pose questions at key points and promote active, exploratory learning.

Typically, the learning content students encounter is predominantly in the form of texts. These are sometimes accompanied by images or video clips and delivered in a linear fashion via a virtual learning environment (VLE) such as Moodle or Canvas. In contrast, immersive VR scenarios are more complex and typically non-linear. Their authentic settings are filled with rich, incidental detail that helps to build context. The environmental setting becomes part of the learning experience in a way that cannot easily be paralleled in other forms of media. In addition, users are empowered to choose their path through the simulation and engage with didactic content in a less linear and more contextualised manner than they would typically be exposed to either online or within the classroom.

There is significant evidence to suggest that the process of encoding new memories is highly contextual (Conway 2001, for example). This form of ‘episodic’ memory helps us recall the information during closely related events and is closely intertwined with the environment in which the events are experienced. This seems to remain true regardless of whether the environment exists in the real world or within in a digital simulation. This study served as a means of exploring this hypothesis.

**Scenario Creation**

As a pilot study, costs were kept to a minimum through the use of a consumer-level technology as opposed to professional equipment. For both the initial VR scenario, a simulated visit to a service-user’s home, and the later S.136 suite, a consumer-level 360-degree camera was used. Importantly, this camera also streams the image viewed through these lenses directly to a mobile device, allowing the photographer to control the camera from another room, thus avoiding the issue of appearing in shot. After being granted permission to access each location, we proceeded to move through each room, taking multiple spherical images in each space until we had captured the entire environment.

In addition, we took dozens of close-up shots with a traditional camera for later use in the creation of information hotspots, prompts and questions. Interviews were also filmed using a traditional non-360 camera. These were later embedded into the digitally recreated environments.

In post-production, the 360-degree images were connected together and navigation hotspots were added to enable students to navigate between them, simulating movement both within a room, and from room to room. This enabled, for example, a student to move from the sofa to the bookcase within the same room, in order to more fully explore the details in the environment. Photoshop was used to remove uniquely identifying items within each scene and additional software was applied to correct the horizon line in the spherical images and to map text to fit the perspective of the viewer.

Finally, the completed 360-degree immersive scenarios were embedded into the institutional virtual learning environment, Canvas, and developed into full learning packages through the addition of

further learning content around each scenario to contextualise and constructively align them with the learning outcomes of the course module. These scenarios were viewable using VR headsets for a fully immersive experience, but also remained functional and accessible within the dedicated Canvas app and via the use of a standard desktop or mobile browser.

**Specific Course and Stage of Learning**

These VR packages were primarily created with first year student social workers as the main student group. The aim was to focus the student social workers’ attention to what it would be like to assess someone in their own home, and what additional things one can learn from being in the environment of another. For instance, students were encouraged to observe objects in the house and think about how considering these objects could help them in relationship building with service users. Approaching the VR learning package in this way had a dual role: enhancing the student learning experience in general and the specific development of social work skills of relationship building and empathy.

The packages were inserted into the skills-based module ARDP, with the first learning package as explored in class and the second as a ‘self-directed’ day. This is to say that, following the class-based activity, students did not need to come onto the campus and take part in classroom-based learning for the second activity. Rather, they could navigate the material at a location of their choosing and take as much time and repetition as required. This was designed with the tenets of autonomous learning at heart: “… students are at the centre of the learning process, take responsibility for their own learning and work at their own place and in their own place. It is about ownership and autonomy” (Wheeler, 1999 cited in Talbot, 2016. p17).

The delivery of the VR packages was designed to correlate to the complexity of each stage of the students’ learning. The first learning package to be explored in the ARDP module was the s.136 environment, where the tutor can facilitate not only the theoretical element to learning but also the logistical – how to interact with the technology. The second learning package was designed around the navigation of a house of a potential service user, and was set as a self-directed day. In this second, far more detailed learning package, students were encouraged to apply the practical skills they had learned in class to navigate the home and interact with the technology on their own. Embedded quizzes, questions and pointers were designed to promote the skills and qualities of curiosity, problem solving, analysis, emotional intelligence and observation (Scourfield, 2018).

**An examination of the limitations and ethical considerations**

Whilst the learning packages brought an invigorating experience to the students and tutors they did not, and nor were they intended to, address the full spectrum of issues that face social work students in today’s higher education climate. The large scale reports into the education of social work students (Croisdale-Appleby, 2014; Narey, 2014) highlighted a range of issues and resultant recommendations of which only a fraction are addressed with the use of technology for social work education. Further to this, the impending move from one regulatory body (HCPC) to another (Social Work England) has rendered the social work learning environment into a protracted state of limbo, where an ongoing consultation process is likely to produce a new set of standards of proficiency to which social work programmes must align. This in turn will affect all areas of social work education, including the use of technological innovations, as they will need to be mapped against a new standard.

The use of technology to support the education of social work students may introduce further, fundamental concerns about its appropriateness in a human-relationship-based role, as set out by Heidegger in 1946 – that ‘technology… surrendered all of human life to calculations of efficiency’ (Helms and Dobson, 2016), and through this process of ‘dehumanisation’ the essence of truth, or understanding a human context as meaningful is jeopardized (Helms and Dobson, 2016). Comparably, the medical profession is reflecting on the use of technology to train medical students, asking itself simply just because we can (use technology in this way) does that mean that we should? (Newman, 2018). The ethical issues explored by Newman (2018) traverse the mundane and statistical (the cost of a cadaver in comparison to technology that can be used again and again) to the more profound (the body was once a person). Whilst some differences are clear, the acknowledgement of similarities, such as the ethical dilemmas of using someone as a means to an end must also be confronted.

With these ethical consideration comes the respect for the learning experience of the student utilising the learning packages. One can consider the concept of dignity as central to the ethical considerations for all involved (Moss, 2007 in Thompson 2016). For this reason students are prepared before each ARDP session, to acknowledge any difficult content and to reaffirm boundaries for safety. For instance, it is made clear that students can leave the room for a period if the teaching content has adversely affected them, and all are invited to discuss any concerns with their subject or personal tutor. Staff are made aware of the content prior to delivery, but more can be carried out in this area to ensure staff are fully prepared for the content of the learning packages. Improvements in accessibility can also be made to the learning packages, as the design benefits some learning styles, but it may not complement others.

**Student experience**

Feedback was obtained from students subsequent to their experience of using the VR learning packages via their reflections. It is a requirement of ARDP for students to submit a reflection on the day’s learning onto an online forum, which the rest of their class has access. This model was designed to foster a learning environment and to develop the students’ reflective skills. This design provided teaching staff with clear feedback as to the efficacy of the day and evidence as to the impact of the VR learning packages. What follows is a series of anonymised comments, with a brief comment as to what the reflection demonstrated.

*“During this interactive self directed session it was useful to navigate around the service user’s home to* ***notice*** *the mobility aids that were present in the different rooms”*

*“There was also a book shelf with books which might be that the service user is interested in reading. It is where* ***you begin to engage the service user to know more about her interest****. It shows the service user that you care, you value and respect her”*

*“For example when meeting our service users it is important to have* ***good open body language****, eye contact, being a strong active listener and to develop adequate note taking skills”*

*“If not sure about something in the house,* ***it is good practice to ask than to assume****”.*

*“Not only has this expressed the importance of meeting a service user but it has* ***highlighted the skills*** *needed by a social worker when meeting a service user”*

Here we focussed on the comments that demonstrated that the student considered the skills they would need for practice. The VR learning package was designed to immerse students in an experience that encouraged critical reflection on person centred practice and direct work (DoH, 2015).

*“Having seen the number of mobility aids in the house I think I was surprised upon meeting the service user that she described herself as 90% independent so maybe* ***I need to be more careful about making judgements*** *before meeting somebody”*

*“I enjoyed doing this task and it* ***encouraged me to look at the bigger picture rather than focusing on single objects and making judgements****”*

The ability to take in a variety of information sources during assessment is supported by the reflective questions suggested by Taylor (2013, cited in Sicora, 2017. p56), for example “am I giving due weight to various sources of information?” This thoughtful consideration of available evidence, especially which a student social worker could gather from a home visit is precisely what was in mind when designing the VR degree package.

*“It was interesting to consider* ***how noticing items around the home*** *can be used as a discussion point to* ***help build a rapport****. It is essential to build a relationship with the service user to support the assessment process and taking notice of and showing interest in what is important to them can be a great starting point as it* ***demonstrates respect*** *for them as an individual”*

*“Looking around an individual's home provides lots of prompts which can be used to speak about different topics, allowing a social worker to* ***build rapport*** *and find out more information about that person.* ***An example in the service user’s home was the fridge magnets****, as a social worker noting these can then ask the service user if she had visited all of these places herself and enjoys travelling”*

*“The visual tour of the service user’s house suggested many of the aspects of life that are important and matter to the service user as well as telling us about some of the difficulties* ***that the service user has to overcome”.***

The design of the VR learning package specifically highlighted various items in the person’s home to reveal information about the person who lives there. The ethical and value framework that informed this design was that of relationship-based practice, and specifically learning to observe and ‘learning to be’, which leads to more fully informed assessments (Ruch, 2013). The quotes above demonstrate the efficacy of the VR learning package when encouraging students to consider the service user as a whole person.

In follow-up studies we are exploring ways of effectively measuring the impact of embedding immersive active learning scenarios in the context of social work training. Through the analysis of student feedback, together with the wealth of interaction data produced as students travel through each scenario, activating hotspot content, we hope to build a more complete picture of learning gain, skills development and engagement. Other planned studies will focus on the introduction of decision-making trees, the addition of live-action video and the use of spatial audio to match the immersive visual environment with a three-dimensional soundscape. In addition to social work, we are trialing the use of immersive active learning scenarios for the training of mental health nurses, paramedics, midwives and a variety of other relationship-based professions.

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