Amplifying the immersion: the use of background clinical audio within a simulated learning environment.

Abstract.

Clinical simulation is embedded in undergraduate nurse education but it does not always reflect real-life situations. As clinical environments are rarely silent, a team of lecturers decided to find out whether background clinical noise could increase authenticity. This article describes how audio recordings were obtained from a variety of settings. Feedback was gathered on the benefits and barriers to widespread implementation.

Key Points

- Cost effective immersive simulation within a University setting
- Use of background clinical audio
- Collaboration with practice partners in pilot development
- Enhancing the simulation laboratory environment and student experience
- Transferring learning into clinical practice.

Background:

The use clinical simulation as a teaching and learning approach has become embedded across undergraduate nursing and other healthcare programmes within the United Kingdom. Students have become increasingly exposed to realistic, interactive strategies and technical resources since the advent of medium and high-fidelity patient simulators (Solnik & Weiss 2007). Immersive simulation is often associated with high fidelity simulation that includes the use of, although not always at the same time, interactive manikins, and virtual reality experiences, such as simulation domes and user headsets. This use of specialist equipment is normally associated with high costs (Alinier et al 2014). Experiencing an immersive simulation learning opportunity is a strong motivator to learn and to apply into clinical practice (Botma 2014). This detailed pilot project of the use of background clinical audio within an existing simulated ward area demonstrates that effective immersive simulation does not necessarily need specialist equipment or require high level of investment in order to provide an enhanced realism to an environment.

Simulation is seen as a safe environment for students to be exposed to real life scenarios in a controlled environment where they can make mistakes without fear of harming the patient. (Al-Elq 2010) The Department of Health (DOH) (2011) also recommend that clinical skills should be learnt in a simulated environment before being undertaken in supervised clinical practice. The University of Derby has an established track record embedding simulation into

the student nurses programme. Simulated activities are preceded by theoretical preparation that encourages further investigation in a safe simulated environment (Brown and Collins 2015)

It could be argued that despite the advancements in the range of equipment the simulation suite can often feel unnatural and is seen as artificial by the students from the realities and distractions in a real clinical area. This lack of realism can potentially lead to limited student engagement within the total simulation experience proving a challenge for lecturers to facilitate effective engagement.

The aim of the pilot was to create a more realistic environment in the simulation laboratory, which the students would find more engaging and therefore enhance the learning environment. It is acknowledged that few hospital ward environments are quiet, normally they are busy, noisy and stressful with many distractions (Dean 2014, Richardson et al 2009).

Journey of development:

A small team of lecturers with an interest in simulated practice decided that they wished to enhance the level of realism of the student experience when undertaking scenarios within the simulation laboratories. The focus of this specific enhancement was to be around the level of immersion in the form of background clinical audio noise levels. The intention was to collate a library of audio recordings related to different clinical settings and scenarios that could then be played in the background on a loop system when the students were tasked with a specific simulation exercise.

As complete novices to audio recording application this proved to be a learning experience for the lectures involved in this development. A review of existing commercial and free internet download sound recordings identified that there was a lack of either cost effective or quality resources available. It was therefore determined that the team would undertake the development of a series of new audio recordings.

Following initial discussions and sound piloting within the skills laboratories, it was thought that in order to enhance the clinical realism of the recordings, then they would need to be captured initially across diverse clinical settings that aligned to the intended simulation settings and scenarios.

Local hospital educational and governance departments were approached to clarify the purposes and intention of the proposed recordings and the anticipated application of these recordings in order to enhance the student learning experience. Following receipt of the necessary organisation approvals, two hospitals expressed an interest in participating.

During the actual recording days the team of lecturers quickly amassed new skills in the practicalities of audio recording within a clinical environment. Inclusive of the briefing of clinical staff, the setting up and positioning of equipment that whilst not impeding clinical

care, but whilst still able to capture the sounds associated with these varied clinical environments. Across the organisations a range of recordings were completed inclusive of: general wards, an emergency care department, and an intensive therapy unit.

The team then moved on to the review and editing of the recordings, the use of editing software (Audition by Adobe) was again a new experience, although the team quickly became proficient in being able to change the recordings in order to remove any material that was deemed either sensitive or deemed potentially to breach confidentiality.

Prior to the use of the recordings the final resources were shared with the hospital organisations for their review and approval prior to their application within the simulation laboratories. Subsequently one of the organisations requested that all audio related to voices, regardless of whether inaudible and without identification being possible, should be deleted from the recordings undertaken within this hospital. To undertake this removal of background clinical chatter was determined unsatisfactory by the team of lecturers, and was disappointing following detailed prior briefing and initial organisational approval to participate in this project. Regrettably it was determined that these specific recordings could not be used as further editing would result in them no longer being fit for the purposes intended and therefore they were destroyed. Interestingly the other hospital organisation had a different interpretation and they valued the realism that voice audio provided to complete clinical background audio. They recognised that careful editing had enabled the team to produce a resource that had maintained the anonymity of clinical staff and patients, but remained credible a replication of the noises found within a clinical environment.

Outcomes:

Student action significantly altered with the introduction of the audio recordings within specific simulation sessions as they appeared to become more engaged with scenarios. Displaying greater awareness of not only the audio background activity, but other hazards and distractions within the simulated environment, thus potentially demonstrating heightened levels of situational awareness. Subsequent feedback highlighted that they felt that the whole experience had become more realistic and challenging to undertake.

What the students said:

Following this small pilot study, six third year pre-registration nursing students were interviewed to ascertain their views. All the students agreed that the introduction of background audio had added realism to this learning experience; they all highlighted that whilst there can be a variation in noise activity levels that most clinical environments are rarely as audibly sterile and quiet as is found within a typical simulation laboratory. One student pointed out that the background audio had effectively created a ward like environment and this had helped him engage with the simulation as he usually felt

"uncomfortable and silly" when asked to participate in other simulated learning activities. Another student added that it helped to focus her mind on the care to be delivered, as there were distractions around her it made effective concentration even more imperative, and being able to filter these external distractions, a developing key skill she felt was transferable to any clinical setting. Another student asserted that the use of the audio background had helped make the experience more 'rounded and holistic' as their personal engagement in simulation had moved away from solely specific tasks performance but rather to ensuring they utilised and their 'full range' of nursing competence. It was concluded by all the students interviewed that the audio helped them to be become more immersed in the simulation experience with the requirement for greater focus and prioritisation of their demonstrated nursing knowledge and skills.

It is evident from the students' responses that they felt that the use of clinical audio background sound does indeed amplify the immersion of the total learning experience. The students' demonstrated an awareness of the importance of an effectively conducted simulation in a learning environment that closely mirrored clinical practice. Citing the enhanced realism within a safe place away from the normal clinical placement setting. The accompaniment of clinical audio assisted their commitment to the environment and the total learning experience, where they could rehearse and refine their nursing competence, demonstrating personal and collective development, as well as the opportunity to make potential clinical errors within a safe environment. It is therefore suggested that the use of clinical audio background within a simulation setting does indeed help engage students in this type of educational environment and subsequent transfer of learning into their own clinical practice.

The tutor's views:

All tutors that have utilised the audio backgrounds have commented upon the enhanced realism of the learning experience. Tutors felt that students visibly engaged more not only with the simulation manikins and the wider simulation laboratory environment, and were clearly immersed in the activities they were performing. It helped to create a holistic patient focussed scenario rather than a task orientated learning experience within the simulation suite.

Disseminating the experience:

An abstract was successfully submitted to the Association of Simulated Practice in Healthcare annual conference (2015), and it was presented as a technological innovation. At the conference the audience were asked for their comments after viewing a short video clip of the skills laboratory in silence and filtering the audio soundtrack in half way through. The reaction from the audience was overwhelmingly positive in their feedback. It was felt by the conference audience that the resource's value lay in its simplicity; not requiring a high amount

of technical ability to implement; being portable, it can be used anywhere where audio equipment is present; and it is cost effective as it uses primarily existing equipment.

Pilot limitations:

In terms of limitations with the pilot project, few were identified – from a hospital point of view it was important that the team were mindful of confidentiality breaches after the clinical recordings, hence removal of all identifiers during the edit. Currently there are limited recordings so repetition is inevitable, however plans are in place to produce more audio. Arguably some clinical areas are quiet, and don't always have lots of noise. It is however important to exercise care and be mindful not to over saturate with too much audio so that it loses the clinical realism.

The next steps:

Following the successful pilot a proposal is being developed to formally assess the student experience by conducting a mixed methodology evaluation to ascertain if it does add value to their experience and enhance learning. There are plans to further develop the recordings to represent other clinical areas for example patients' own home and community settings. It is anticipated that the use of the audio background noise will be rolled out across all the curriculum simulated activity and that other areas outside the simulation laboratory, such as external organisations simulation for example mandatory training activities such as basic life support in private care providers settings. The audio recordings could be used within a purpose built immersive environment but the strength of this resource is that it enables flexibility to be used in a large simulation laboratory or a standard classroom equipped with audio speakers.

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