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Facilitating midwifery clinical skill development online: A case study

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Abstract

The 2020 Year of the Nurse and Midwife has presented many challenges following the World Health Organisation declaring a world pandemic due to COVID-19 on 11th March 2020. One of these challenges relates to the preparation of undergraduate nurses and midwives for a largely clinically based profession within a tertiary setting. Comprehensive educational preparation of midwives for registration and practice is at the core of quality midwifery care leading to optimisation of outcomes for women and their babies. To ensure graduate midwives are clinically competent, extensive professional placement is complimented by immersive simulation sessions focussing on; midwifery practice, skill, and clinical decision-making development in laboratory sessions. Due to social distancing restrictions imposed by the Australian Government all face-to-face sessions within a Queensland university were moved online between late March and July 2020. This presented opportunities to redesign teaching practices and implement innovations to continue to provide a high quality, award winning Bachelor of Midwifery Program. This paper will present a case study of an innovative strategy utilised within a Blackboard environment to facilitate skills development of two core critical midwifery skills, management of shoulder dystocia and estimation of postpartum blood loss.

I   INTRODUCTION

The 2020 International Year of the Nurse and Midwife was initiated by the World Health Organisation (WHO) to celebrate the work of nurses and midwives, highlighting their significant contribution often under challenging circumstances, advocating for greater investment in these professions (WHO, 2020). Celebrations planned for 2020 to mark this occasion were thwarted by the COVID-19 unexpected global pandemic declared by WHO on 11th March 2020. The pandemic has further highlighted the vital role nurses and midwives play in society and the need to continue preparing these professionals to meet future workforce and community health needs.

The future nursing and midwifery workforce beyond the COVID-19 crisis relies on continuation of student clinical placement to sustain the pipeline of new graduates into the workforce (Bogossian et al., 2020). Comprehensive educational preparation of midwives for registration and clinical practice is at the core of quality midwifery care, leading to optimisation of outcomes for women and their babies. In recognition of the critical nature of midwifery clinical skill development and competence, accreditation requirements for Bachelor of Midwifery programs in Australia stipulate that fifty percent of the degree is comprised of clinical practice components (ANMAC, 2014). Just as continuation of clinical placements for midwifery students are vital, maintenance of clinical skills development through theoretical and simulated learning is also essential. Much of this learning is facilitated within a simulation laboratory setting focussing on real-time hands-on skills development, presenting significant challenges due to the response of the tertiary sector to the pandemic.

In response to the emerging COVID-19 pandemic and threat of community transmission tertiary institutions in Australia restricted or cancelled face to face teaching sessions and moved to remote online learning (Bogossian et al, 2020). Presenting learning and teaching material online is not new and is a common strategy to enhance flexibility for students. However, due to the COVID-19 threat the speed at which this transition occurred for many tertiary programs was unparalleled. This urgent shift of teaching methodology due to crisis circumstances is termed 'emergency remote teaching' (ERT) and contrasts with planned conversions to online learning that traditionally take many months of educational design and planning (Hodges et al., 2020). The core purpose of ERT is to provide a temporary solution in a crisis to ensure students still have access to learning materials and engagement (Hodges et al., 2020). Facilitating sessions that involve hands-on kinaesthetic learning such as those traditionally taught in clinical laboratories requires a sound understanding of educational principles and the use of innovative, flexible and highly engaging teaching and learning strategies.

II   CONTEXT

The Bachelor of Midwifery Program at Griffith University Queensland is a three-year undergraduate degree accredited with Australian Nursing and Midwifery Accreditation Council. The program reflects innovation, flexibility, and quality in curricula, learning and teaching within a. social emancipatory transformative education framework. The curriculum focuses on facilitating deep transformative learning based on the principles of heutagogy. The heutagogical approach aims to develop learners who are creative, reflexive, think critically, collaborate and develop self-efficacy and capability (Blaschke & Hase, 2016). The blended learning design combines face to face teaching called Midwifery Immersve Learning Experiences (MILE), active online learning modules and activities, including synchronous and non-synchronous sessions and extensive supervised professional practice. A core component of MILE sessions involves immersive simulation sessions, where skills and scenarios are practiced within a laboratory setting focussing on practice and development of clinical competency and clinical decision making.

III   ONLINE LEARNING ENVIRONMENT

Due to the programs' blended learning design both staff and students were familiar with online learning environments, using both synchronous and asynchronous virtual teaching strategies.

Previously, only theoretical content had been facilitated online, with clinical skill development being taught laboratories. The imposed university directives in response to government restrictions on large gatherings, meant a pre-planned laboratory session for students enrolled in second-year clinical course with significant learning concepts that included management of acute maternity emergencies needed to be moved online in less than 12 hours. Considering the short timeframe needed to pivot the planned session to an online environment, a deep understanding and knowledge of successful online student engagement strategies was needed. Student engagement is a vital component of teaching with an enhanced impact on learning outcomes and meaningful student learning experiences but can be particularly challenging in online learning environments (Khan et al., 2017). In conjunction with the principles of heutagogy to ensure curriculum alignment, the six-step best practices for online engagement framework developed by Poll et al., (2014) was utilised to plan the online session. This framework includes 1) building an Ecommunity, 2) clarifying expectations and learning outcomes, 3) choosing the most appropriate online tools that promote interaction, 4) facilitation of the exchange of ideas and information, 5) providing timely and relevant feedback, and 6) creating an environment that is student centred.

IV   MATERNITY EMERGENCY SIMULATION

Opportunity to practice skills and simulate critical decision making in the management of maternity emergencies should be a core component of any undergraduate midwifery program. These types of immersive simulations provide students opportunities to experience managing a complex scenario they may not encounter on clinical placement, allowing them to practise skills, make mistakes and develop competence and confidence in a safe environment (Chitongo & Suthers, 2019). Simulation of maternity emergencies not only develops student's confidence but also facilitates sound decision-making skills in high-risk situations, while building students' autonomy, communication and social skills (Chitongo & Suthers, 2019). The associated learning outcomes of the planned simulation laboratory session related to two areas of maternity emergencies, management of shoulder dystocia and estimation of postpartum blood loss. Postpartum haemorrhage is recognised as a leading cause of preventable maternal death worldwide, with approximately 25% of all maternal deaths caused by haemorrhage (Ruysen et al., 2021). Evaluation and accurate estimation of postpartum blood loss is a core strategy to reduce maternal mortality and morbidity related to post-partum haemorrhage (Natrella et al., 2017). Gross inaccuracies of visual blood loss estimations by clinicians are reported resulting in underestimation of loss and misdiagnosis of post-partum haemorrhage (Parayre et al., 2015; Pranal et al., 2018). Targeted education sessions and simulation improves skills of maternity carers in real-time estimation of postpartum blood loss (Natrella et al., 2017). Shoulder dystocia is associated with significant maternal and perinatal morbidity and mortality with an estimated 12.2% of neonates and 14.7% of mothers and experiencing substantial injury (Mendez-Figueroa et al., 2021). When birth is complicated by shoulder dystocia the most common damage is brachial plexus for neonates and third- or fourth-degree laceration for women, both of which have significant long-term impacts on physical and psychological health (Mendez-Figueroa et al., 2021). RCOG (2012) recommend that all birth attendants develop competence in methods and manoeuvres required to facilitate birth during shoulder dystocia. Simulation of this emergency has been demonstrated to significantly improve management of shoulder dystocia (Hart et al., 2017). The challenge presented was to facilitate the planned simulation on these emergency topics in an online environment that engaged and stimulated students whilst building skills capacity and self-efficacy.

V   OUTLINE OF SESSION AND STUDENT ENGAGEMENT

Using a Microsoft Teams platform for communication, students were notified the planned laboratory simulation session would be online. Students were requested to collect several household items to bring to the session including an empty cereal box, doll or toy, sanitary pad, and cordial (preferably red). Photographs of examples of items were posted on Teams page by the lecturer. Students were encouraged to contribute to the forum and post photographic images

of the household items they had accessed. Students were also encouraged to comment on each other's images prior to the planned session as a strategy to enhance a sense of Ecommunity and student engagement. This aligns with the first step in Poll et al.'s (2014) framework of building an Ecommunity. Establishing an Ecommunity fosters student's sense of belonging, contributing to the development of learner confidence and success (Sidebotham et al., 2015). This particularly relevant within online learning which can be potentially alienating (Poll et al., 2014; Peacock et al., 2020). A sense of student connection was especially important for this session as students had been expecting to connect in person and were now not able to physically engage with their peers. These types of online asynchronous interactions are usually student driven and foster active learning and student agency (Poll et al., 2014). This online information sharing also enhanced students understanding of expectations for the session.

A session plan including learning outcomes was also posted on Microsoft Teams platform facilitating student confidence that although the learning environment had changed, learning outcomes remained as planned. Clear guidance around active participation during the online session also aided in student's preparation, promoting self-efficacy. These strategies align with step 2 of Poll et al.'s (2014) framework of clarifying learning expectations and outcomes to engage students in required learning and provides opportunities for student questions on functioning and content of the session beforehand.

A variety of online tools were chosen for use prior to, and during the session which promoted interaction between students and lecturers using the same pedagogy and practices that were planned for the face-to-face session. Microsoft Teams platform was chosen to communicate with students prior to the session due to students' familiarity with its' use and function and the ability to reach students quickly with maximum engagement. This platform is used across all courses in the Bachelor of Midwifery program as a rapid communication medium. Students can access communication via their smart phone, receiving notifications of new posts enabling continual building of Ecommunity within a short time frame (Poll et al., 2014). The online session was facilitated using Collaborate Ultra within Blackboard's learning management system. Collaborate Ultra was chosen due to the variety of tools available and student's familiarity with the system. Initially, the lecturer engaged students through visual demonstration of creating and constructing their low fidelity simulation tool of a 'cardboard box pelvis' (see image 1). This was followed by an explanation of critical elements of shoulder dystocia. The interactive whiteboard function enabled a platform for group notetaking while emphasising shoulder dystocia manoeuvres. Students were encouraged to pose questions or comments via the whiteboard, chat function or audio capacity. Giving students choice in how they engaged with the session increased student agency and allowed students to customise their online learning experience to match their preferred learning style (Blaschke & Hase, 2016; Poll et al., 2014).

Image 1

Students were then allocated to breakout rooms with a midwifery lecturer in each room. A simulated shoulder dystocia scenario video was shown, with facilitated discussion on core elements. While watching the video students were encouraged to practise internal manoeuvres using their own cardboard box pelvis and dolls (see image 2). Large group discussion sessions following small group activities allows synthesis of student perspectives whilst ensuring academic input and facilitation in traversing and understanding core concepts (Poll et al., 2014). Students then videoed themselves practising shoulder dystocia manoeuvres, posting their videos on Microsoft Teams and receiving feedback from their peers. This activity fostered student interaction and relationships and also replicated activities planned for the original laboratory simulation where students would engage in peer feedback whilst performing manoeuvres on a birthing simulator. Facilitating peer to peer learning through provision of constructive feedback has capacity to deepen student learning through comparing individual experiences and judgements with those of their peers while promoting reflexivity, an important heutagogical principle (Lal,2020; Blaschke & Hase, 2016). This 3rd step within Poll et al.'s (2014) framework of identifying and employing the best online tools for interaction was an important step in the session's success. Using a variety of innovative online techniques positively impacts student learning through development of creative and critical thinking while fostering clinical skill development and a sense of connection with the cohort (Arbour et al., 2015). This sense of connection and belonging is important for online learners especially during times of COVID-19. This is evident by student comments such as:

> "During a challenging time navigating our learning during a pandemic, this collaborate session brought our group closer and was a memorable learning experience".

Image 2
Course Convenor demonstrating shoulder dystocia manoeuvres (permission granted)
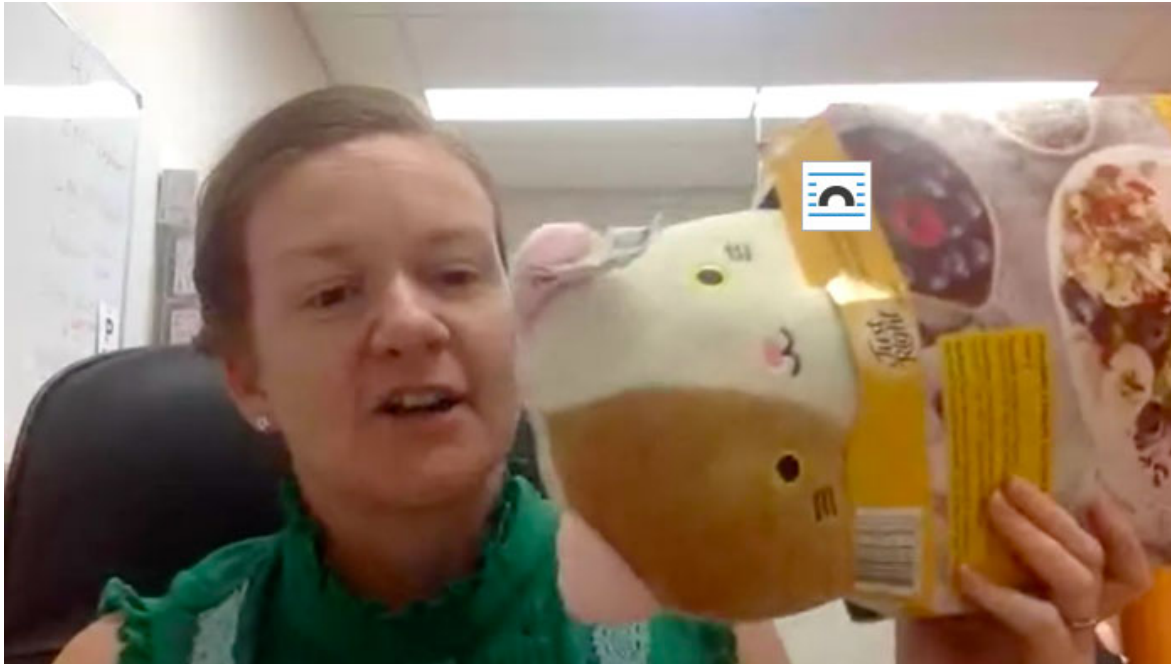
The second component of the session commenced with students viewing a presentation in the main room on visual blood loss estimation. Parameters for expected and abnormal postpartum blood loss were discussed and group notes recorded using the whiteboard function. Students then moved into breakout rooms in small groups and individually used their items of cordial and a sanitary pad to simulate blood loss. Using their webcam and microphones students displayed their 'blood loss' to student peers who then voiced their estimations. All students returned to the main room where each group shared a short reflection of their experience and reported on the accuracy of estimations. This of type peer to peer learning encourages collaboration, an important aspect of a heutagogical approach through continual exchange of ideas and information between students is the 4th step in Poll et al.'s, (2014) framework. Collaborative and community-based learning of this nature promotes rich interaction and student engagement which optimises learning (Peacock et al., 2020). When the lecturer extends critical questioning focusing on applying, evaluating, analysing and creating at a higher level they begin to engage students in transformative learning (Melrose et al., 2014). Online instructional techniques that promote transformational learning include case studies, role play, metaphorical thinking, group activities, classroom dialogue and critical questioning (Melrose et al., 2014), all which were used in this session. These activities not only align with the best practice online framework suggested by Poll et al, (2014) but also with social emancipatory transformational educational framework that underpins the program.

The session continued in the main room using photos and videos that simulated different volumes of blood, with students posting their estimates within comments section for each slide. This enabled the lecturer to give timely feedback to students on accuracy of their estimates and link examples to a clinical setting scenario. Immediate feedback of the estimation provided timely and relevant feedback as recommended in step 5 of the Poll et al., (2014) framework. Parallels between provision of lecturer online feedback and student motivation, engagement, enhancement of student – lecturer relationship and social interaction has been found (Pan & Shao, 2020).

Using 'hands-on' student activities engendered student engagement (Lowe & El Hakim, 2020) and created a student-centred environment which aligns with Poll et al.'s (2014) 6th and final step. As this was the first time this session was facilitated online qualitative feedback was sort from students within the Microsoft Teams site. Due to the high level of engagement during the session students were very generous with supplying their feedback. Hodges et al., (2020) suggests when

ERT is implemented a different approach to evaluation is needed. A more student-centred evaluation is proposed focussing on achievement of learning outcomes in relation to knowledge skills and attitudes. Further, all students were requested to complete SEC (student evaluation of course) and SET (student evaluation of teaching) surveys at the end of the course as a standardised evaluation measure used routinely throughout the university. Within these surveys students specifically provided further feedback on this interactive online session.

The session was highly evaluated by students, they appreciated the opportunity to attend online and enjoyed developing their skills in the safety of their own home. Using of a variety of activities throughout this session fostered student engagement, complimented with 'hands-on' activities such as creating their own low fidelity simulation tools and practicing manoeuvres which were viewed as fun and engaging, as evident in this student comment:

'With face-to-face classes cancelled I was worried I would miss out on hands-on learning. The collaborate we did was a fun and effective way of using items from around home to practice essential skills and I've even reused some of the resources since to continue practising my skills'.

VI   LESSONS LEARNT

The unexpected transfer to online learning was used as an opportunity to begin scaffolding development of clinical skills associated with management of shoulder dystocia and estimation of blood loss. Simulation uses scaffolding through repetition of practise with ongoing feedback and dialogue with peers and academics further enhancing understanding and skill development (Akalin & Sahin, 2020). Reusing home-made simulation tools to further practise these skills described in the student quote above highlights unexpected scaffolding learning opportunities this type of learning provided.

Student comments related to their ability to apply knowledge in clinical environments and continue to scaffold their learning with their homemade resources indicates that learning outcomes were achieved.

'While learning a new skill is always difficult, we had the added challenge of a virtual classroom to practice these skills in. Our cardboard pelvises allowed me to gain a visual understanding of what a shoulder dystocia may look like and put the study I had done into practice. The day after learning this skill with our cardboard creations, I saw and took part in my first shoulder dystocia in practice. My primary role became documentation. Having practiced these skills the day before, I was able to effectively diagnose and recognise this condition, ask for assistance and then take on the role of documentation of the manoeuvres and the timing of the emergency'.

A further scaffolding opportunity was possible when students returned on campus and completed shoulder dystocia skills assessment. Feedback collected informally from assessors indicated students displayed increased confidence with demonstration of knowledge and performance of skills compared with previous cohorts.

Hodges et al., (2020) also suggests that as student interest, motivation and engagement are closely linked to learner success these used to guide evaluation foci for ERT. Student attendance at the session was high and all students in attendance actively engaged in at least two online active strategies. Student comments indicated high level of engagement and interest.

'The innovative and humorous way of utilising household items and toys to create a pelvis and simulate shoulder dystocia really grabbed my attention. Instead of death by PowerPoint I felt thoroughly engaged, eager to see how my peers tackled the challenge and the fact that it was so funny made it stick in my mind.'

Positive feedback from students and staff and observed enhanced skill development, has led to the implementation of regular online clinical skills sessions prior to attendance at laboratories. Whilst online clinical skill development will never replace face to face simulation, this experience of ERT has prompted action regarding opportunities to further scaffold these skills in the online environment prior to attending laboratory sessions, improving student's preparation and optimisation of learning.

VII CONCLUSION

This case study highlights teaching innovation implemented within a Bachelor of Midwifery Program to facilitate clinical skills development online during COVID-19 restrictions. A framework of online best practices utilising the program's transformational curriculum framework was implemented using a variety of novel strategies to enhance student engagement, interest, interaction and promote learner agency. Activities were planned to build scaffolding of clinical skills replicating those planned within a traditional face to face environment. The session was highly evaluated by students and staff. This unexpected need to implement ERT provided opportunity to further scaffold clinical skill development online and rethink current blended learning strategies utilised.

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