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Journal article

**Online learning and teaching approaches used in midwifery programs : A scoping review**

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## **Title: Online learning and teaching approaches used in midwifery programs: a scoping review**

### **Highlights**

- A diverse range of online learning modes exist for midwifery students
- Students find online teaching and learning socially isolating
- Training and support for academic staff and students is essential

### **Abstract**

**Objective:** The objective of this scoping review was to map and identify existing literature that described online learning and teaching approaches used in midwifery education.

**Design:** An extensive search of multiple databases and grey literature was undertaken following the JBI standards, using predefined selection criteria and following the PRISMA guidelines.

**Methods:** This scoping review included studies published in English between 2010 and 2020 that explored the online approaches to learning and teaching for undergraduate midwifery students. The articles were reviewed by three reviewers and content analysis was undertaken.

**Results:** Twenty-seven articles were included in the review. Results suggest that student engagement is one of the main components of effective teaching in online midwifery education. Online learning resources need to engage the student and promote two-way communication that facilitates and motivates learning.

**Conclusions:** Adequate training and support for academic staff and students is essential for the online delivery of midwifery education.

**Keywords:** Blended learning, midwifery education, online learning, e-learning, ePortfolio, literature review

## **1. Introduction/Background**

To conform with social distancing regulations during COVID-19, many universities have had to rapidly adjust the way they manage teaching to accommodate online learners. Blended learning (BL) is the merging of traditional face-to-face teaching with technologies

that enable learning and teaching (TELT), an approach used by many tertiary institutions across the world. Blended learning provides diverse and innovative teaching and learning approaches that can support the delivery of midwifery education online, maintaining student safety as well as high quality learning. Currently, most midwifery education is delivered via distance education as online, digital, electronic learning (eLearning), mobile learning (mLearning), electronic portfolios (ePortfolios) or via a blended approach, in addition to a traditional face-to-face teaching approach.

Distance education is not a new concept, prior to the development of the internet, distance learning resources were posted by mail. Currently, distance education has been transformed into digital education; delivered directly to students through eLearning or mLearning platforms. More recently, the term mLearning has become popular, although used interchangeably with eLearning; mLearning refers to learning material that can be viewed on mobile devices (Moore, 2011). Digital learning terminology related to online learning is diverse. In one literature review that spanned 30 years Singh and Thurman (2019) identified 46 definitions to describe online learning, many of which are used interchangeably; for instance they cite; “When used interchangeably, online education/ eLearning has been generally defined as the bridging of the space between the teacher and the student through the use of web-based technologies” (Singh & Thurman, 2019, p.293).

In their study exploring students’ experiences of digital technologies, Henderson et al. (2017) reported that students identified a number of benefits of online learning. These included; the ability to replay video resources, to revise or catch up on teaching materials, the flexibility in location and time of learning, and ease of organizing, managing and researching for assessment tasks. However, critics of online learning claim much of the online component is supporting students learning rather than engaging in rich discussion to achieve deeper levels of learning. It has subsequently been recommended that further research is required to examine the design principles associated with blended and face-to-face education (Means et al. 2013; Pavalakou & Sharpe, 2014).

To date, a review of the approaches to teaching and learning specifically related to midwifery education has not been published.

The aim of this scoping review is to report on the literature regarding what is known about online and BL approaches to learning and teaching in midwifery education. This scoping review will summarise the literature to report the benefits and challenges of online education in a BL context. This is particularly relevant now with higher education rapidly evolving and delivering online education due to the COVID-19 pandemic and an unknown future.

## **Review question**

What online learning and teaching options exist for delivery of undergraduate curriculum to midwifery students?

## **2. Methods**

This scoping review used the Joanna Briggs Institute (JBI) methodology (Peters, 2020). The JBI approach follows a series of three steps to gather, analyse and report the findings.

### **2.1 Search strategy**

Ten databases were searched: MEDLINE (PubMed), CINAHL, Scopus, Web of Science, Informit, EMCARE (Ovid), Health Source (EBSCO), Maternity and Infant Care Database (MIDIRS), Health and Medicine (ProQuest), and the Joanna Briggs Institute EBP Database (Ovid). The grey literature was searched using Google Scholar. Hand searching of reference lists was also undertaken. Specific search terms were used, with the full search strategy conducted in April 2020 and presented in Appendix 1.

**Insert Appendix 1: Search strategy here**

### **2.2 Inclusion/Exclusion criteria**

All articles were peer-reviewed, written in English with full-text available and published within the last ten years. This review considered studies that included students undertaking midwifery education leading to initial registration as a midwife. It was decided to only include entry to practice courses as the initial foundational midwifery knowledge and skills are comparable. This included students who directly entered the Bachelor of Midwifery, dual degree students studying both nursing and midwifery and post-graduate registered nurses undertaking further study to become midwives. Articles not in English or where a full text version was unavailable were excluded.

### **2.3 Search outcome**

The initial database search revealed 536 citations and a further 19 were identified through additional searches. After duplicates were removed, 319 remained. Three researchers reviewed titles and abstracts and excluded 158 papers initially. A further 134 paper were excluded after reading the full text. A total of 27 papers remained for inclusion in the scoping review (see Figure 1 below). Findings were plotted in a table (see Appendix II below), which included specific details about the population, aims, methods and key findings relevant to the review question and teaching approaches.

**Insert Figure 1: PRISMA Flowchart here**

## **2.4 Content Analysis**

Content analysis (Krippendorff, 2013) was used to analyse and report the findings. Content analysis is a recognised method that enables a systematic approach to categorise the text and making inferences through the process of analysis (White & Marsh, 2006). In this instance text was categorised into strengths and challenges of online learning approaches (see Table 1). Consensus was reached between all authors.

**Insert Table 1: Strengths and challenges of online approaches here**

## **3. Findings**

Mapping of the 27 studies reviewed can be found in Appendix II. Geographically the majority of the literature came from Australia (13) with a broad range of studies from around the world; United Kingdom (4), New Zealand (4), Iran (2) India (1), Denmark/ Ireland (1) France (1), USA (1). Analysis of the 27 papers identified six different types of online learning approaches: mLearning, virtual reality, videos, blended learning, ePortfolios and videos. mLearning was delivered via two main platforms, the smartphone, and the tablet. Two different types of mobile apps were used on these platforms to deliver learning content, which these included social media apps and chatroom apps. Three types of virtual reality platforms were identified; virtual classrooms, virtual antenatal clinic, and online virtual role play. Three studies have evaluated the use of videos for learning and teaching. Ten research studies have evaluated the use of a BL approach. Finally, two papers report on the

use of ePortfolios as learning platforms, and one study on the use of storytelling. The following results report the strengths of each approach and any reported challenges.

**Insert Appendix II: Data extraction table here.**

### **3.1 mLearning**

Four papers discussed mLearning, which is the provision of education via mobile devices, for example phones, tablets and laptops. This enables education to be delivered anywhere, enabling learners to access education, via distance, at a time and place convenient to them (Yeap et al., 2016). Due to their relatively low cost, mobile devices are owned by most students. mLearning is becoming an increasingly popular way for education providers to deliver online education and supports several unique types of learning experiences. The main types of mobile devices that are used are Smartphones and tablet devices. Mobile apps are commonly used on these devices as a platform for the delivery of content.

#### *3.1.1 Smartphones*

Studies demonstrated that the use of smartphones had enabled students' ease of access to reliable clinical resources whilst on clinical placement (DeLeo & Geraghty, 2018). This allowed students to instantly seek answers to clinical questions as they arose (situated learning) which also assisted with self-directed learning and increased their confidence levels. The students however had concerns around what their colleagues and the women thought about them using their smartphones, and challenges arose in cases where the use of mobile phones was prohibited, or where students did not own a smartphone.

#### *3.1.2 Tablets and iPads*

Tablets were considered straightforward to use at the point of care, and because they provided access to resources, they ensured clinical decision making used an evidence-based approach (Brown & McCrorie, 2015). Issues arose relating to technical challenges and user confidence; however, it was found that student engagement, efficiency and time management were improved, as was the student's ability to provide education to patients. When undertaking self-assessment, iPads provided the students with immediate feedback

and opportunities to further develop their clinical skills. The use of iPads for contemporary curricula has also been recommended to increase learner engagement (Brown & McCrorie, 2015).

### **3.2 Mobile Apps**

Mobile software applications, commonly known as 'apps' are used as platforms for learning and are downloaded directly onto mLearning devices such as mobile phones and tablet devices. Two papers discussed the use of social media and chatroom apps including their role in delivering midwifery education (O'Connor, 2018; Daly, Rasmussen & Dalsgaard, 2019).

#### *3.2.1 Social Media Apps*

The use of social media is supported by the literature as it helps students acquire and develop new knowledge and skills and allows sharing and discussion of new information and ideas instantly (O'Connor, 2018). Students reported that social media benefited them by enabling them to feel well supported and fostered ease of collaboration with their peers and experienced midwives. Social media helps facilitate deep and memorable learning from listening and telling stories from practice which has been reported to lead to transformative learning (Western, 2018). However, concerns have been raised about the quality of materials available on social media, particularly the credibility of information shared online (DeLeo & Geraghty, 2018).

#### *3.2.2 Chatroom Apps*

Chatroom apps have been found to be beneficial for midwifery students. Daly, Rasmussen and Dalsgaard (2019) found that chatrooms provided a new way to learn, which enabled students to connect with midwives internationally to learn about midwifery practice in other countries. Online interactions enabled students to ask questions and discuss clinical experiences. This led to self-reported increased confidence. The authors recommended appointing an additional person to the teachers, their role would be to oversee the questions and chat room discussions. This would eliminate the issues identified in delivering the learning material while simultaneously attempting to follow and reply to students' discussions.

### 3.3 Virtual reality online platforms

Seven papers explored the use of virtual reality platforms and how they facilitate learning. Two papers reported on the use of virtual classrooms and five on virtual role play.

Three distinct types of virtual classrooms were discussed; unfolding case studies, online demonstrations of skills, and a virtual antenatal clinic (Arbour et al., 2015; Phillips 2013).

The virtual classrooms were found to enhance students' learning experiences and improve their clinical and creative thinking skills. Despite the reported technical challenges encountered at times, the students valued the virtual classroom as a learning resource. An online Virtual Maternity Clinic (VMC) was used to help develop clinical skills (Philips, 2013). The VMC aimed to provide midwifery students with the 'real life experience' of being in the clinic by enabling them to observe the practice of the midwife, learn interview techniques, and undertake physical assessments. Findings demonstrated students were content with the VMC as a resource for learning. The use of virtual reality platforms also provides opportunity for rural and remote students to complete midwifery education online.

Five studies reported the use of virtual online roleplay as a learning and teaching approach (Baghdari et al., 2017; Scammel & Hanley 2017; Smith et al., 2012; Warland & Smith 2012a; Warland et al., 2012b).

Virtual roleplay has been used to develop the skills of delivering bad news (Baghdari et al., 2017), and scrutinize personal preconceived ideas and prejudices (Scammel & Hanley, 2017). Baghdari et al. (2017) evaluated a multimedia distance learning activity and compared it to traditional face-to-face education using role playing. Findings suggested that both face-to-face roleplay and online multimedia role play are suitable for improving skills required for giving bad news.

Three studies in this review were written by the same authors. In the first publication by this research team Warland et al. (2012) reported on the design and implementation of an e-role play for a class of 414 undergraduate midwifery students. Significant challenges for students and staff were identified. The challenges related to initially choosing a Learning Management System where students postings would be able to remain anonymous. Additional challenges were reported that included designing an appropriate learning activity which would be suitable for a diverse group of nursing and midwifery students, then aligning the content with the course learning objectives. Debriefing was identified as an important step in the simulated role play, the authors identified that sufficient time is needed to complete debriefing especially with a large number of students online.



A second study by Warland and Smith (2012) discussed the design and implementation of online role play for a small group of midwifery students (n=19). This paper included students' evaluation of the experience. Student responses were almost unanimous (91%) in that the overall experience was beneficial and helped them to develop and use effective communication skills (92%).

The third paper by the same authors examined the level of clinical reasoning skills through online role play (Smith, Warland & Smith, 2012). Despite online role play offering a positive and authentic educational experience, which helped to develop skills in clinical reasoning, there were limitations in the evaluation of quality and frequency of contact by academics which was not well evaluated.

### **3.4 Blended Learning (BL)**

Ten papers located in this scoping review evaluated or investigated the use of BL (Balasubramaniam et al., 2018; Sidebotham, Jomeen & Gamble, 2014; Geraghty & Goodwin, 2016; O'Flaherty & Timms, 2015; Patterson, et al., 2015; Kensington, 2017; Zolfaghari, Negarandeh & Eybpoosh, 2013; Di Marco, Venot, & Gillois, 2017; Milne et al, 2016; Geraghty, et al. 2019). BL incorporates a combination of learning and teaching activities together, often combining face-to-face with online learning activities. Studies in this scoping review report on the evaluation of BL overall as a collective approach but also report on the use of different aspects of BL activities.

Most evaluations report BL as a positive learning approach with high rates of student satisfaction (O'Flaherty & Timms, 2015; Geraghty & Goodwin, 2016). Geraghty and Goodwin (2016) found students preferred having the responsibility to study online and enjoyed working at their own pace. Midwifery students rated their online experience highly, reporting that online learning provided benefits in that it was 'easy to access' and 'enjoyable'. The flexibility of BL has been found to increase student's grade point average, in addition participation and engagement with learning material is reported as significantly higher in online BL, compared to face-to-face methods (Zolfaghari, Negarandeh & Eybpoosh, 2013; Geraghty & Goodwin, 2016). For instance, the effectiveness of a BL curriculum design and midwifery students' opinion of how the approach reinforced their learning and readiness for clinical practice was evaluated by Patterson (2015). Most students agreed or strongly agreed that intensive block courses, BL approaches and face-to-face tutorials, had all contributed positively to their learning experience. However, traditional lectures delivered by video conference were found to be challenging by the lecturers using this model (Patterson, 2015).

When exploring the gap between theory and clinical practice, Kensington (2017) described how developing a community of inquiry was pivotal. Small face-to-face group

tutorials were found to be useful when helping midwifery students to manage the competing demands of work, life and study and feelings of isolation. Kensington (2017) strongly advocates for face-to-face contact as a vital part of BL. This approach was supported by Sidebotham et al. (2018) who used workshops to teach research and evidence-based practice to midwifery students using a BL approach. During a face-to-face workshop, students worked flexibly with the lecturer and their peers, applying principles to real life scenarios prior to completing further online study. Positive student evaluations and outcomes demonstrated that students can be effectively engaged in research courses when acceptable teaching and learning strategies are combined in BL.

Balasubramaniam et al. (2018) reported the findings of a pre/post study evaluating the effectiveness of an online BL approach using virtual training. The findings reported higher examination scores in the intervention group, with students scoring over 32 points more than the non-intervention group. However, other studies have highlighted the difficulties of online BL approaches (Milne, 2004; Geraghty et al., 2019; Di Marco et al., 2017).

The level of engagement of first and second-year midwifery students learning through face-to-face video conferencing, and online activities was investigated by Milne et al. (2014). The study identified that participation was higher when learning involved face-to-face learning activities, rather than online video conferencing. This study highlighted that despite other studies showing that BL enhances learning, for these students their preference was for face-to-face small tutorials groups. Similarly, Geraghty et al. (2019) examined students' experiences of completing online theory courses. They found that students identified a preference for face-to-face learning, which may be because it provided an opportunity to ask questions, raise issues and seek confirmation of thoughts. Milne et al. (2014) recommended that education in the use of technology is needed to orientate students adequately for their online learning (Milne et al., 2014). Geraghty et al. (2019) also suggested increased support in the online environment. An online hybrid (BL) model was researched by Di Marco, Venot and Gillois (2017) to test their hypothesis that acceptance of this model would affect students' way of learning. The findings indicated that students' results demonstrated an increase in deeper learning approaches; however, students complained that they were easily distracted during distance learning using the flipped class approach and preferred face-to-face learning.

Although studies reported that most instructors were positive about the BL method the majority complained that designing BL courses is time-consuming. The researchers recommended that students and educators should improve their IT skills which will enable them to benefit fully from BL.

### **3.5 ePortfolios**

Two studies reported the use of ePortfolios to enable students to collate a repository of experiences as evidence of their academic and/or clinical development (Gray et al., 2019; Sidebotham et al., 2019).

Research by Gray et al. (2019) revealed that ePortfolios enabled students to complete online extensive reflective writing, while paper-based portfolios provided limited space to write reflective entries but enabled recording of a wider range of experiences due to how the portfolio was developed. Sidebotham et al. (2019) evaluated the effectiveness and acceptability of using an ePortfolio as a final assessment to facilitate third year students by demonstrating their readiness for clinical practice. Students reported that the ePortfolio assessment helped them to develop strategies to assist their transition to practice. ePortfolio assessments were found to increase students' critical thinking which help them develop knowledge and confidence as reflective practice is purported to be beneficial. Overall, both types of portfolio were time consuming as a learning activity but ePortfolios enabled students to articulate personal reflective practice and embed the principles of lifelong learning.

### **3.6 Videos**

Three studies were reviewed that focused specifically on the use of videos to assist in developing clinical skills during online midwifery education (McIntosh et al., 2018; Power & Cole, 2017; Raymond et al., 2013). In the UK, Power and Cole (2017) evaluated a new video-assisted technology software package used to modify the traditional face-to-face teaching to an active BL approach. Students reported that the software package offered high quality learning which enabled them unlimited access to the eLearning material for repeated viewing. The authors concluded that advances in technology meant academics could use videos as a BL approach to facilitate learning of clinical skills.

Studies described by Raymond et al., (2013) and McIntosh et al., (2018) found midwifery academics used video recordings to develop their students' skills. In the first study third year midwifery students performed peer review assessments together watching one another complete female catheterisation on a model (Raymond et al., 2013). The second study evaluated midwifery students' experience with two clinical skills; checking drugs or equipment (McIntosh et al., 2018). In both studies students were required to film themselves and then engage in personal and peer reviewed assessment of their role-played skills. Both studies reported that students benefited from reviewing one another's practice together and learned by listening watching and doing (Raymond et al., 2013). Researchers found an increase in students' confidence, knowledge and skills. One challenge of the study was that

students reported feeling anxious about the pressure to perform well while being filmed. To overcome this Raymond et al. (2013) recommended that students should be encouraged to design their own marking criteria which would require them to make decisions about quality and standards required for the assessment (Raymond et al., 2013).

## **4. Discussion**

This scoping review identified and mapped existing studies that described online, and blended learning and teaching approaches used in midwifery education. The contemporary literature reports that BL, online, distance, mLearning, ePortfolios and digital education are effective methods of teaching and learning when both students and academic engage in the process. This review has found benefits, advantages, challenges and disadvantages, which will be discussed below.

### *4.1 Benefits and advantages*

This scoping review found that one of the benefits of online learning strategies includes evidence of students deeply engaging in the learning activities. Results suggest that BL initiatives provide a positive, online learning experience which increases student performance in midwifery skills (O'Flaherty & Timms, 2015; Balasubramaniam et al., 2018). Several studies have found that distance learners experience anxiety and isolation when studying remotely, using an electronic environment appears to have alleviated these issues by offering BL options which combine face-to-face and online activities (Liu et al., 2016; Milne et al., 2014; Plowman et al., 2017; Raymond et al., 2016; Sidebotham et al., 2014). Access to education has improved with current advances in technology especially for students studying at a distance. The opportunity to provide diversity in learning approaches has enabled higher levels of in-depth understanding of complex concepts (O'Flaherty & Timms, 2015; Balasubramaniam et al., 2018). Furthermore, Balasubramaniam et al. (2018) demonstrate evidence of a statistical difference in examination scores, illustrating the effectiveness of online learning. Several studies confirm that students gain increased knowledge, but also satisfaction from a BL pedagogy, and demonstrated benefits of positive learning experiences (O'Flaherty & Timms, 2015; Sidebotham et al., 2014; Milne et al., 2014). Further literature has subsequently suggested this provides students with the opportunity to achieve their learning objectives (Abachi & Muhammad, 2014) as mLearning enables almost instantaneous sharing of learning materials, sharing of ideas and the receipt of prompt feedback.

As a learning and teaching approach online virtual reality worlds have significant potential for making midwifery education interesting for students as they offer a diversity of

settings and scenarios based on the program created (Arbour et al., 2015; Phillips, 2013; Baghdari, Rad & Sabzevari, 2017). The literature suggests that effective online teaching is enhanced through student engagement and that engagement is important for learning (Coates 2006; Barkley, 2010).

#### *4.2 Challenges and disadvantages*

Challenges identified with online learning included; isolation, technical issues, and a preference for face-to-face. Several studies identified that online and distance learning can be isolating (O'Flaherty & Timms, 2015; Geraghty, et al., 2019; Kensington, 2017). Studies have revealed that students would prefer additional contact with both lecturers and other students whilst studying as difficult to learn concepts can be hard to grasp without face-to-face discussion (Geraghty et al., 2019). This is particularly relevant in gaining midwifery clinical skills (Ebert et al., 2016; Gilkison et al., 2018; Mikkonen et al., 2016; Kensington, 2017).

Research studies that investigated students' interaction with course materials found that technical issues are a common occurrence (Phillips, 2013). This can result in disempowerment and lead to attrition (Martin et al., 2018). Some studies illustrated that despite the best intentions of the creators of learning materials, students, as the recipients of the resources, are not always prepared for online learning (Milne et al., 2014). Adequate orientation and education for students is required for them to use technology for their learning. Several studies have also shown that the educational technology tool used for ePortfolios requires adequate support from faculty experienced in its use to help students understand its educational value and assist academics when using new digital systems (Downer & Slade, 2019; Slade & Downer, 2020). Good quality learning is reliant upon the provision of well organised educational resources, and the ability of staff and students to be professional, motivated and confident when using the social media platforms and chatroom apps (DeLeo & Geraghty, 2018).

Pedagogically, lectures have been traditionally considered effective for teaching students helping them to synthesise information when complex issues are being taught (Lumpkin et al., 2015). However, there is limited evidence to support this as an online approach (Bradbury, 2016). Feedback from students in the studies reviewed suggest that lecturers should engage more with them via video chat or phone calls to enquire on their progress and reduce feelings of isolation. Smith et al. (2012) and Raymond et al. (2013) both recommend that academics should involve students in the design of assessments, to ensure that students understand the engagement expectations. However, using continuing professional development, training and support of both academics and students is required so that flexible delivery modes can be offered to their maximum potential.

## **5. Limitations**

Of the studies reviewed some research evidence stemmed from the same group of researchers thus the geographical location of studies and participants was similar. Furthermore, content analysis facilitated reporting of the findings from peer reviewed studies, but this review did not evaluate the quality of the evidence reported.

## **6. Conclusions and recommendations.**

This scoping review highlighted that some students prefer face-to-face learning, while others prefer the flexibility that online learning offers. However, there was no literature that explored the effects of teaching and learning when the main campus was not available for student use such as during COVID-19. Issues such as isolation and understanding of digital technology should not be underestimated. Exploring ways of engaging students in their studies is vital to maintain motivation such as using the suggestion of encouraging students to design their own marking criteria.

Support for both academics and students is essential to maximise the potential of online and BL teaching strategies that are flexible. Continuing professional development that includes BL techniques should be considered by academics. Further studies are needed that consider what support looks like to ensure effective use of BL pedagogy.

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## **Declaration of competing interest**

None to declare.

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