



## Review

# The digital age: A scoping review of nursing students' perceptions of the use of online discussion boards



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## 1. Introduction

In response to the ongoing challenges of managing large student enrolments, and an increasing demand from students for innovative, online learning platforms, virtual learning and teaching strategies are increasingly common in tertiary education. This is focused in undergraduate courses, including in professional areas of study such as nursing. These can be used both as engagement and assessment tools, and these platforms can include online interactive components such as discussion boards. There is a growing body of research evidence that supports the value of online discussion boards to meet key pedagogical aims (Campbell et al., 2008; Hudson, 2014; Osborne et al., 2018).

There are two main types of online discussion boards, asynchronous (AOD), which allows participants to contribute at any time, and synchronous (SOD), where users must be online simultaneously (Campbell et al., 2008). The use of discussion boards as a platform for learning in specific areas such as nursing is quite common (Feng et al., 2013). Through AOD specifically, students can communicate their ideas and create thoughtful and composed dialogue that unfolds over time. This allows for individual reflection and exploratory learning, as well as the development of literacy skills (Abell and Williams, 2014; Campbell et al., 2008; Kala et al., 2010). Such processes support the constructivist approach to teaching and learning that frames such innovations; promoting active and deep learning. Concurrently, discussion boards promote social interaction to scaffold students' learning and knowledge development (Kala et al., 2010; McGarry et al., 2015).

Today's changing health care environment also requires nurses who can respond to the challenges of a complex system (Thompson and Clark, 2012). Therefore, nurse graduates must not only develop a solid knowledge base related to nursing theory and clinical skills, but they also must learn how to critically think and problem solve. Electronic discussion boards can be a highly effective means of engaging students remotely to share learning experiences and develop collaborative problem-solving which are pivotal in developing the critical thinking skills

that are essential for effective clinical workplaces (Baker et al., 2005; Hampton et al., 2017; Osborne et al., 2018). The discussion board platform also encourages adult learners to effectively convey ideas to a group in a professional and respectful manner, thus facilitating effective communication skills.

As with many forms of electronic student engagement, the discussion board can offer flexibility for students and staff, enhancing student access and increasing user satisfaction (Casotti et al., 2013; Glaser, 2006). They have been used in many health areas (Hudson, 2014; Linjawi et al., 2012; Moore-Davis et al., 2015). However, to date no study has synthesised and critiqued the literature to identify how undergraduate nursing students perceive discussion boards in relation to their learning. Without this understanding it is difficult to develop best practice guidelines, identify and evaluative strategies, and define clear outcomes related to student learning and engagement. Acknowledging this gap in knowledge and understanding, we sought to use a scoping review methodology to critically explore and investigate literature reporting on the use of nursing students' perceptions of online discussion boards in undergraduate nursing education, both as learning platforms and as part of undergraduate assessment.

## 2. Methodology

A scoping review of the current literature was undertaken using the Arksey and O'Malley's methodological framework (Arksey and O'Malley, 2005). In a scoping review, studies with a diverse range of methodologies are included and analysed with the aim of collating the current knowledge base to develop best practice processes and identify knowledge gaps. Scoping reviews are useful for a broad analysis of literature when exploring an under examined area of research (Arksey and O'Malley, 2005). Thus, a scoping review was identified as the most appropriate methodological approach to use in this review. Using this structured framework ensured transparency in the methodological and analytical decisions undertaken throughout the review. The framework

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includes 6 steps, namely: identifying a question, identifying relevant studies, study selection, data charting and collating, summarizing, and reporting the results.

### 2.1. Stage one: identifying the research question

Broad questions including appropriate key terms are essential in framing a scoping review (Arksey and O'Malley, 2005). Our aim was to generate a 'breadth of coverage' (Arksey and O'Malley, 2005), so we developed the following broad research aim:

To explore, synthesise and evaluate undergraduate nursing students' perceptions of online discussion boards.

### 2.2. Stage two: identifying the relevant studies

Key search terms were identified, and the following Boolean search string was developed: discussion boards\* AND (student\* OR nurs\*) AND (educat\* OR learning\* OR guideline\* AND undergraduate\*). The use of truncated words and wild cards (in this instance \*) allowed a broadening of the search to include all terms with the same root word. An academic librarian was consulted and advised on the most appropriate Medical Subject heading terms for the search, and how to develop a search strategy that can be applied similarly to the different databases used. Based on this exploratory phase, the search strings for each database were finalized and the search was run. The following databases were used to search the literature, CINAHL (Ebsco host), EMBASE, Pubmed, ERIC ProQuest. Reference chaining (review of links found through the electronic search) was undertaken to ensure that all possibly relevant articles could be included in the scoping review. Thus, the scoping review included published peer-reviewed papers that were retrieved from the following electronic databases: PubMed, CINAHL, Embase and Medline, the Cochrane library and the Psychological database PsycINFO (see Fig. 1 for schematic representation).

### 2.3. Stage 3: study selection

The third stage of the Arksey and O'Malley's framework aims to identify studies that will be included in the scoping review (Arksey and O'Malley, 2005). We consolidated the results of the searches from different databases and excluded duplicates. Although a scoping review is designed to cover a broad spectrum of literature, inclusion and exclusion criteria guided the search and helped filter literature (Peters et al., 2015). The following eligibility criteria were applied: literature written in English and published in peer-reviewed sources and addressed the research question (including focusing on undergraduate student nurses and online discussion boards). We excluded data that included conference abstracts, commentaries, books and book reviews, editorial articles and non-peer reviewed grey literature, including education policy and discussion papers. Wherever possible, the literature used to inform these excluded sources was accessed for inclusion. Two authors (DM, AJ) then independently screened the titles and abstracts of the articles to exclude those that did not meet the eligibility criteria identified in the second stage of the protocol. Disagreements about study eligibility were discussed with a third author (DO) until consensus was reached. Again, the process of study selection is depicted schematically in Fig. 1.

### 2.4. Stage 4: charting the data

Based on the preliminary scoping phase, a data extraction table was developed (Table 1). The final concept map included eight categories that were used to extract data from the included literature to answer the study aim. The framework was pilot tested by two authors (DM, AJ) on a sample of the included studies (i.e. 2/7 of the complete list of retrieved studies) to ensure that the coding framework was consistently applied.

### 2.5. Stage 5: collating, summarizing and reporting the results

Narrative synthesis was used to identify and present the findings. A narrative synthesis involves the use of a formal analytical process of evidence synthesis to produce innovative knowledge and insights with the aim of being both systematic and transparent (Mays et al., 2005). This allows for a variety of study designs, both qualitative and quantitative, to be utilized, minimizing bias and producing a more holistic exploration of the topic. Analysis and narrative synthesis of the data collected using the data extraction framework provided information on the body of research undertaken around use of discussion boards in undergraduate nursing curriculums. While there is some discussion in the literature about the value of appraising the quality of studies included in a scoping review, the methodological qualities of eligible studies were evaluated using the mixed-methods assessment tool MMAT (Colquhoun et al., 2014; Pace et al., 2012). Assessment of qualitative, quantitative and mixed-methods research studies is possible with the MMAT. The MMAT was used concomitantly to evaluate the quality of the studies and establish their comparative reliability and validity. Studies were assigned quality scores by two independent reviewers, scores ranged from 0% representing no criteria met, through to 100% representing all criteria met. Where there was not agreement a third reviewer was recruited.

## 3. Findings

Seven publications met the inclusion criteria and comprised seven primary research studies (Table 1); three were quantitative, two qualitative and two used a mixed-methods design. Four publications were American, two were from continental Europe and one was from Pakistan. Quality appraisal using the MMAT showed low to medium quality for the studies (Table 1).

Two key domains pertaining to undergraduate nurses' perceptions of discussion boards were identified: (A) Discussion boards can promote learner engagement and (B) discussion boards can promote learner disengagement. The first domain, discussions boards promote learner engagement, encapsulated two themes: (1) enhancing learning, and (2) enhancing interactions.

### 3.1. Discussion boards promote learning engagement

#### 3.1.1. Enhancing learning

The flexibility of discussion boards enhanced learning (Abell and Williams, 2014; Asif et al., 2016; Hudson, 2014). Nursing students were identified in most of the studies as being non-traditional students who valued the capacity to access course materials in their own time. Students identified that the opportunity to engage with learning material from anywhere and at any time significantly improved their engagement (Abell and Williams, 2014; Lyons and Evans, 2013; Pucer et al., 2014). Students found the discussion board content fun and credible and both factors enhanced learning and promoted learner engagement (Lyons and Evans, 2013; Pucer et al., 2014). Students also identified that relevant content in the discussion board significantly enhanced their learning (Hudson, 2014).

#### 3.1.2. Enhancing interactions

The discussion board was found to enhance interactions between faculty staff and other students, and these interactions improved learner engagement (Asif et al., 2016; Hudson, 2014; Jensen, 2016; Lyons and Evans, 2013). Learning from other students by interaction and review of posts was identified by Lyons and Evans (2013) as an important adjunct to learner engagement. Students' posts encouraged other students to learn more and delve deeper into the content. The importance of faculty led engagement and interactions between faculty staff and students via discussion board posts was also identified as pivotal in motivating learning (Jensen, 2016). It seems that across this literature,

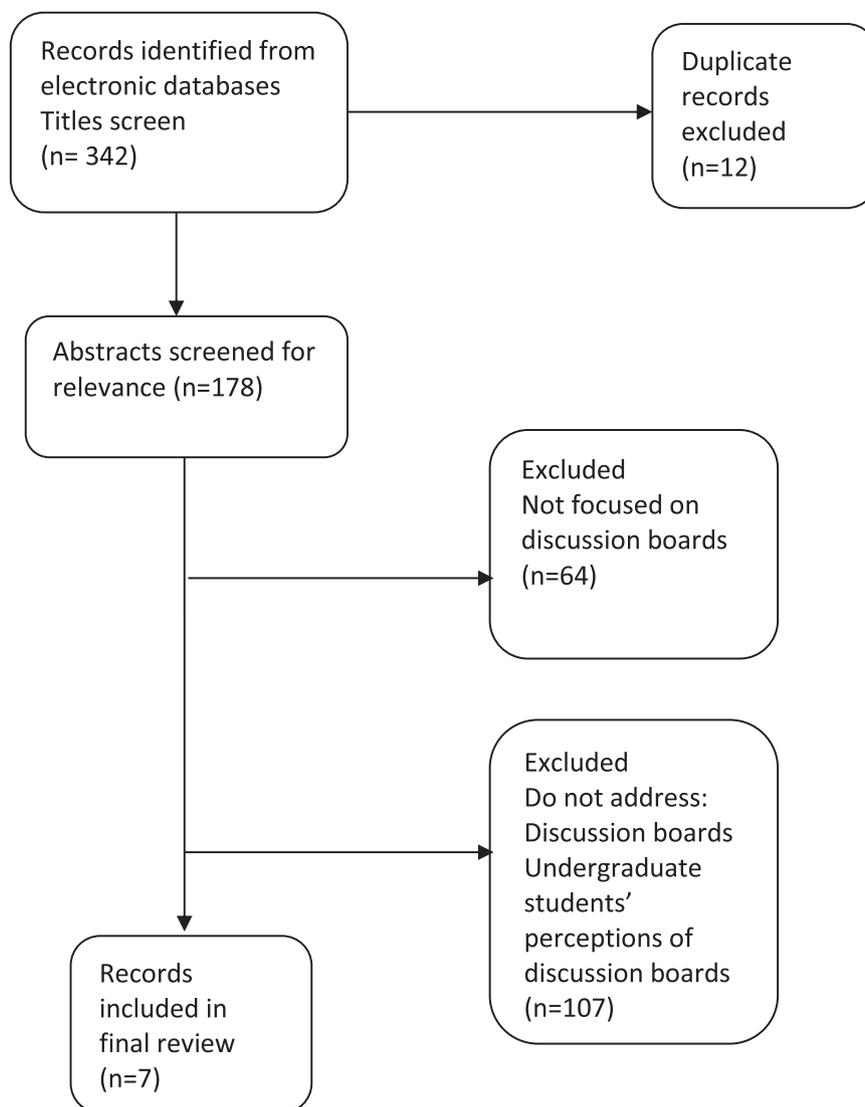


Fig. 1. Flowchart depicting the literature selection process.

discussion boards can be viewed as social communities that promote diverse perspectives on learning.

### 3.2. Discussion boards promote learner disengagement

The second domain, discussion boards promote learner disengagement, includes two themes (1) uncertainty about the discussion board, (2) unfamiliarity with discussion boards.

#### 3.2.1. Uncertainty about the discussion board

Undergraduate nursing students were identified as being uncertain about how to use and how to engage with discussion boards (Jensen, 2016; Lyons and Evans, 2013). Students were unsure about how to use the discussion board, how and what to post and its purpose as a teaching and learning strategy. These uncertainties led to “comment anxiety” (Jensen, 2016) and led students to withdraw and disengage from the discussion board. Students in Jensen's (2016) study also discussed how they were nervous about posting in the discussion board because they were afraid that other students might think what they wrote was irrelevant or boring. Uncertainty about the security of the discussion boards, including perceived risks about power outages leading to lost posts also promoted learners to disengage (Asif et al., 2016).

#### 3.2.2. Unfamiliarity with the discussion board

Students identified that, despite some clear advantages of the online modes, the discussion board was not their preferred teaching and learning strategy (Abell and Williams, 2014; Hampton et al., 2017; Hudson, 2014). Instead more traditional pedagogical strategies like lectures, PowerPoints and face-to-face interactions were preferred. Qualitative data suggested that this was often associated with a lack of familiarity with this mode of personal interaction (older students, less tech-savvy). Technical aspects, or a lack of familiarity with the discussion board was also cited as a learner disengagement factor in three papers (Abell and Williams, 2014; Asif et al., 2016; Jensen, 2016). Tagging peers, visible versus private messages and feedback, and fears about privacy around notification of feedback from faculty were also identified as restricting the flexibility and adaptability of the discussion boards, and concerns around these worried students.

## 4. Discussion

In this scoping review, we identified, described and analysed undergraduate nurses' perceptions of discussion boards. Through our strategy of identification, evaluation, summary, and thematic grouping of the seven studies, we were able to identify two key themes: (1) discussion boards can promote learner engagement and, (2) discussion

**Table 1**  
Synthesis of data exploring undergraduate nursing students' perceptions of online discussion boards.

Author, year, country	Aim	Design	Sample	Rigor, reliability, validity, limitations	Analysis	Findings	Conclusions/recommendations	MMAT score
Abell and Williams (2014), USA	Explore RN-to-BSN students' attitudes regarding different teaching/learning strategies incorporated in courses offered utilizing the online delivery format	Descriptive survey. A semantic differential scale was used to measure attitudes about the use of wikis, podcasts, video capture, talking PowerPoint, and discussion boards.	Two convenience samples of RN-to-BSN students During the fall semester, 17 participated. In the second semester survey, 18 participated.	Researcher developed questionnaire not validated. Recruitment not identified. One organisation Teaching and learning strategies not clearly defined. Participant self-selection and thus risk of participant bias Largely 'non-traditional' (more mature) students Requires consideration of faculty comfort and expertise with online delivery as it seems to affect student's perceptions	Descriptive analysis and paired <i>t</i> -tests	Students most favoured lectures as a teaching strategy. This was followed by talking PowerPoint lectures and discussion board. There was a significant difference between these teaching and learning strategies across the two groups.	Primarily positive; evaluation is critical in online courses; more evaluation of staff engagement with and promotion of new technologies and approaches is required	25%
Asif et al. (2016), Pakistan	Explore students' interactions and cognitive engagement (CE) in Online Discussion Forums (ODFs). To evaluate the effectiveness of the online discussion approach and to understand the cognitive engagement in the absence of facilitator	Qualitative discourse analysis of online posts and focus group discussion	24 students consented to participated	Individual researcher analysis and comparison of the analysis of the data to develop consensus for the final report. Retrospective data collection limited Hawthorne effect. Participant self-selection and thus risk of participant bias	Survey to collect demographic data. Discourse analysis, informed by Zhu and Bienaymé, (2006) framework of cognitive engagement, was used to determine the patterns of interaction and the levels of CE of the learners, along with linguistic markers.	Students identified that they did not know how to use discussion boards. Access to computers also hindered use of the discussion board. Students identified they needed access to resources and training. Students preferred face to face teaching and learning strategies. Students identified faculty facilitation as important in promoting discussion board engagement.	Primarily negative; low level of engagement primarily due to students' technical limitations	25%
Hampton et al. (2017), USA	Understand student teaching/learning preferences in on-line courses.	Descriptive online survey using software (SurveyMonkey®) that included Likert-type scale, open-ended, and forced choice items	Participants were recruited from 2 accredited, private school nursing. 217/944 (23%) students completed an on-line survey.	To establish face validity of the instrument, an expert group of on-line Faculty who have taught on-line for several years reviewed the instrument and made suggestions for the addition and deletion of teaching methodology items. Limitations included that over half of the students had no experience using some of the teaching methodologies Participant self-selection and thus risk of participant bias	Descriptive statistics. Chi-square tests were calculated to explore differences in student opinions about teaching/learning methodologies between programs and generations, followed by a post hoc analysis to determine which generations and programs had significant differences in opinions related to student teaching/learning methodologies.	The preferred teaching/learning methods for students were videos or narrated PowerPoint presentations, followed by synchronous Adobe Connect education sessions	Mixed; mostly negative. Evidence of unique student and generational preferences. Faculty need to incorporate both synchronous and asynchronous activities and interactive and passive methodologies in on-line courses	75%
Hudson (2014), USA	Assess if an online discussion board—which was designed to improve	Descriptive online survey Using software (SurveyMonkey®) that	Undergraduate student nurses. 54 (85.7%) of 63 students used the DB. Of	Limitations in generalizing the findings due to the small sample size,	Simple descriptive	Student responded positively to the discussion board. Engagement in the	Primarily positive; with positive potential for successful course.	25%

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Table 1 (continued)

Author, year, country	Aim	Design	Sample	Rigor, reliability, validity, limitations	Analysis	Findings	Conclusions/recommendations	MMAT score
Lyons and Evans (2013), USA	the learning engagement of beginning nursing students enrolled in their first face-to-face nursing course.	included Likert-type scale, and open-ended items	those 54 students, 21 (38.9%) achieved the required 75% participation	participant self-selection and thus risk of participant bias		discussion board improved overall satisfaction, 82.1% 92.8% believed that the DB added to their learning of course content; 89.3% reported that the instructor facilitated the DB to their needs and expectations; 75% reported the DB encouraged their engagement and participation in this type of learning activity; and 89.3% believed that the learning activity should become a permanent part of the course.	Outcomes adding enticing incentives or a grading component associated with discussion board use may improve participation for at-risk students	50%
Pucer et al. (2014), Slovenia	Investigate if using of discussion boards enhanced the student learning experience.	Mixed method case study including pre and post course survey	Undergraduate nursing students. Small convenience sample of twenty students in the first semester and 26 in the second semester (100% participation)	Limitations included the very short course (six-weeks), the use of required participation in the first semester, and the small, self-selected sample	Qualitative content analysis including measures such as frequency and quality of participation future study. During the project students experience with the with weekly questionnaires and a post-study survey were measured.	Asynchronous online discussions increased student satisfaction in introductory nursing research course work. The majority of students in the course agreed or strongly agreed that there is value in adding asynchronous online discussions Staff identified that students learned from each other as well as instructors.	Primarily positive; students were confident about the value of the discussion board in this course.	25%
Jensen (2016), Norway	Explore if asynchronous discussions enhance supervision quality of	Qualitative analysis of the discussion board and focus questions (phase 4).	Two focus group interviews, each with 3 student participants	Retrospective data collection limited Hawthorne effect.	Analysis informed by Grounded Theory, content	Qualitative analysis of the discussion boards showed a significant ( $p < 0.001$ ) improvement in the percentage of posts (1.2.2%) for which the opinions and conclusions of the participants were justified with valid arguments. The survey results indicated that participants perceived the e-contents based on the presented approach as useful, and that they improved their critical thinking skills. Students reported positive elements; Credibility, Attractiveness, usefulness and negative elements including confusing. Three themes:	Primarily positive; data suggests that the presented approach is a valuable tool to develop nursing students' critical thinking skills and is positively received by students	75%

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Table 1 (continued)

Author, year, country	Aim	Design	Sample	Rigor, reliability, validity, limitations	Analysis	Findings	Conclusions/recommendations	MMAT score
	nursing students in clinical placements?	group interviews with participating students		Participant self-selection and thus risk of participant bias	analysis and thematic analysis	<ol style="list-style-type: none"> <li>1. Students experiences of own participation.</li> <li>2. Students experiences of supervisor's participation role and function</li> <li>3. Students experience of organisation and technology.</li> </ol>	also reported that that face-to-face meetings could strengthen the online interaction between the students.	

boards can promote learner *disengagement*. We recommend academics and faculties carefully consider the findings identified in this scoping review to promote learner engagement when using discussion boards.

This is the first scoping review to report on undergraduate nurses' perceptions of discussion boards and thus makes an important and unique contribution to this increasingly pertinent topic. The use of discussion boards to promote, and also to assess learning has been reported by other researchers (Weed et al., 2014). Previously, researchers have evaluated using discussion boards in postgraduate nursing (Campbell et al., 2008; Osborne et al., 2018), allied health (Dunfee et al., 2008; Gao, 2014) and medicine (Peng et al., 2018; Schofield, 2012). Yet, as highlighted in this scoping review there is limited literature on the use of discussion boards in undergraduate nursing. It is difficult to understand the reasons for the lack of research in this space, given the emphasis on using blended learning strategies in the undergraduate nursing curriculum (McGarry et al., 2015). Perhaps learner diversity (Jeong et al., 2011), large cohorts (Jackson and Daly, 2004) and faculty unfamiliarity with discussion boards (Smith et al., 2009) are all factors contributing to a lack of knowledge and understanding about the use of discussion boards as an adjunct to learning. Without this familiarity with, and appreciation of discussion boards, it is difficult to develop best practice guidelines, evaluate their impact on student learning, and support students and faculty to develop and use them effectively.

Discussion boards can promote undergraduate students' engagement in learning through interactions between students and/or between students and faculty. Faculty presence in the discussion board is pivotal in creating an online community and engaging learners, enhancing participation and helping to ensure good quality postings (Weed et al., 2014). Creating an online student community is important when using discussion boards because it enables the undergraduate student to develop professional and supportive networks that promote a sense of belonging (Osborne et al., 2018; Rolls et al., 2016). However, with limited information and understanding around discussion board use in the undergraduate nursing curriculum, it remains problematic to educate and inform faculty of the most effective and appropriate ways of using discussion boards as a sound pedagogical strategy.

Unfamiliarity and uncertainty with discussion boards promoted learner and faculty disengagement. There needs to be more emphasis on the value and role of discussion boards in the undergraduate nursing curriculum for students, by staff and other students. Currently, discussion boards tend to be considered as part of suite of blended learning strategies (Lyons and Evans, 2013; McGarry et al., 2015). We argue that if learners are to actively engage in discussion boards, their pedagogical value in the curriculum needs to be transparent and evidence based, and the role, scope, terms of reference and evaluation of discussion boards needs to be clearly articulated in the undergraduate nursing curriculum. This becomes more relevant when reviewing evidence from undergraduate and postgraduate courses that suggest interaction with discussion boards can improve student assessment outcomes (Campbell et al., 2008; Hudson, 2014). Basic training, even in the form of online videos, should be provided to ensure all students possess the technical skills to properly engage with the discussion board. A more in-depth explanation could be offered around what/how to post, to enhance familiarity with these platforms and expectations associated with these, to enhancing engagement.

Perhaps more critically, several studies cited the use of course marks or credit associated with contribution to and engagement with discussion boards and yet none referred to evidence around increased student interaction (Casotti et al., 2013; Pucer et al., 2014). Moreover, none of the literature in nursing referred to marking criteria, rubrics, or any other process of objectively and effectively assessing the quality of discussion board contributions – nor whether this would enhance or detract from student interest in the content of the discussion board. Given the apparently widespread adoption of discussion boards in nursing courses, it is problematic that so little evidence is available

around the impact of discussion boards as an assessable course component.

Limitations of the reviewed studies include small sample sizes, single locations and minimal discussion of the reliability, validity or rigor of the study. Regardless of these limitations, inclusion of the studies in this scoping review was justified because of the limited research available on this topic. We identified that the quality of studies included in this review was low. There is an urgent need for more rigorous and high-quality studies in this important area. The strength of this scoping review lies in the robust application of a scoping review methodology (Colquhoun et al., 2014). The MMAT tool was useful for assessing the quality of studies and may be useful tool to use in other scoping reviews.

#### 4.1. Recommendations

While online discussions boards show great promise, there is clearly a need for a more in-depth examination of the impact of using discussion boards on student engagement in undergraduate nursing curricula. Of paramount importance is the need for a better understanding of the factors that enhance student engagement, compared to the factors that promote *disengagement*. One starting point could be to explore staff and student comfort and experience with online tech interventions, as familiarity with online platforms and comfort with technical aspects were identified as important individual components within the literature. Basic training and increased technological support may increase familiarity and comfort for both students and staff utilizing these platforms. Online videos or ‘how to’ tutorials may be one way to reduce discussion board uncertainty, while having a lower impact on budgets and course resources. This would encourage discussion board engagement and improve outcomes associated with these.

Two distinct benefits were identified, and these were enhancing learning and enhancing interactions. A deeper understanding of which elements promote which outcomes is also worthy of further investigation. For example, which elements or components keep the discussion board engaging, novel, ‘fun’ and interactive, balanced with elements and ways to ensure it is informative and relevant to the cohort. With a more comprehensive understanding of the key elements of discussion boards, this could allow for the development of a standardised checklist with specific criteria with recommended discussion board elements. In future, discussion boards could be more appropriately tailored to target different outcomes based on course needs. An understanding of which elements promote which outcomes would mean that online discussion boards could be specifically designed to, for example, develop critical thinking skills, or develop a social community network, depending on the desired outcomes and thus the included elements.

Recommendations that emerge from this study include that greater emphasis should be placed on explaining the purpose of the discussion board to students. This should be used to guide student expectations around contribution style, frequency, content and flow. With more clarity around core discussion board elements and expectations, there could be a concomitant reduction in student reports of ‘anxiety’ and enhanced outcomes in desired course learning objectives. With an increasing demand for online platforms and a shift away from full time, face-to-face presence at a university, it is crucial to explore embedding assessment items into online discussion boards, and in parallel with this, a process for effectively communicating assessment expectations and assessment marking criteria. Developing a best practice process would ensure an effective learning and teaching tool, which would be a benefit to students and faculty members.

#### 5. Conclusions

Online discussion boards are being increasingly used within undergraduate courses including in nursing. Their overall design and use are varied, and thus mixed student responses have been reported in the

literature. This scoping review has identified seven papers, which have offered insights into the use of discussion boards in undergraduate nursing programs. It has enabled the development of contrasted views around their utility, including cautionary elements that promote student *disengagement*. While the literature shows great promise for these online teaching platforms, future work needs to be done to explore best practice approaches and eliminate barriers to their use.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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