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Published

2018

Journal Title

Nurse Education Today

Version

Accepted Manuscript (AM)

DOI

[10.1016/j.nedt.2018.02.032](https://doi.org/10.1016/j.nedt.2018.02.032)

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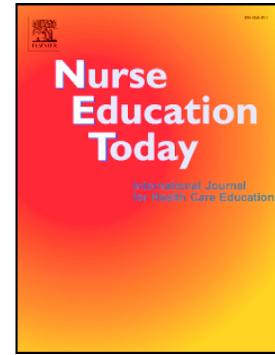
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Accepted Manuscript

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PII: S0260-6917(18)30104-7
DOI: doi:[10.1016/j.nedt.2018.02.032](https://doi.org/10.1016/j.nedt.2018.02.032)
Reference: YNEDT 3786

To appear in:

Received date: 2 August 2017
Revised date: 9 February 2018
Accepted date: 26 February 2018

Please cite this article as: Lisa Beccaria, Megan Y.C.A. Kek, Henk Huijser , Exploring nursing educators' use of theory and methods in search for evidence based credibility in nursing education. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Ynedt(2018), doi:[10.1016/j.nedt.2018.02.032](https://doi.org/10.1016/j.nedt.2018.02.032)

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Title Page

EXPLORING NURSING EDUCATORS' USE OF THEORY AND METHODS IN
SEARCH FOR EVIDENCE BASED CREDIBILITY IN NURSING EDUCATION

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Word Count:

Manuscript (including abstract and references): 4525

Abstract: 152 words

Total: **4677**

ACCEPTED MANUSCRIPT

ABSTRACT

Objectives: In this paper, a review of nursing education literature is employed to ascertain the extent to which nursing educators apply theory to their research, as well as the types of theory they employ. In addition, the use of research methodologies in the nursing education literature is explored.

Design: An integrative review

Methods: A systematic search was conducted for English-language, peer reviewed publications of any research design via Academic Search Complete, Science Direct, CINAHL, and Health Source: Nursing/Academic Edition databases from 2001 to 2016, of which 140 were reviewed.

Findings: The findings suggest that within current nursing education literature the scholarship of discovery, and the exploration of epistemologies other than nursing, in particular as they relate to teaching and learning, shows significant potential for expansion and diversification.

Conclusions: The analysis highlights opportunities for nursing educators to incorporate broader theoretical, pedagogical, methodological and philosophical perspectives within teaching and the scholarship of teaching.

Keywords: nursing education; theory; research

INTRODUCTION

Ensuring future nurses' responsiveness to current and anticipated needs of health care environments, keeping abreast of emerging health needs and research, can be challenging for nursing educators teaching in universities. Maintaining contemporary discipline knowledge, combined with remaining clinically active and trying to meet teaching and research standards,

requires a set of complex skills. In a higher education context, nursing educators are sometimes caught in a teaching-research nexus, which often privileges teaching or practice over research (Carr, 2007; Logan, 2015). This is in contrast to many other disciplines where research is privileged over teaching (Nunn and Pillay, 2014).

Moreover, in the Australian context the pursuit of scholarship by academic staff is also a regulatory requirement. The Australian Higher Education Standards Framework 2015 states that for providers to be eligible for the 'University' category they must demonstrate "sustained scholarship that informs teaching and learning in all fields in which courses of study are offered" (Australian Government Department of Education and Training, 2015, p. 17).

Challenges for nursing educators

The more frequent use of online educational technology and competitiveness for student places mean that nurse educators must be engaged in innovation in order to ensure that educational approaches meet industry needs, while achieving teaching and learning excellence with diverse cohorts of students (Bradley et al., 2008, Damewood, 2016).

Teaching excellence requires not only solid foundational knowledge of the theories and practice unique to the nursing discipline but also the incorporation of substantive knowledge and theories from other disciplines such as education, and learning and teaching in higher education. Therefore, the ability to inform and structure curricula and learning experiences based upon sound pedagogical knowledge is necessary to achieve better learning outcomes and student engagement and performance (Booth et al., 2016; Leibowitz et al., 2017).

Tailoring learning experiences for undergraduate nurses is operationalised within cognitive, affective and psychomotor knowledge domains. A multitude of approaches is needed to enhance the development of knowledge, attitudes and skills that are required for students to become safe and competent practitioners as well as critical thinkers who are

reflective, socially aware and responsive (Hayes, 2016; Mgbekem et al., 2016; McKie and Naysmith, 2014). Furthermore, such approaches are needed to facilitate learning as a way-of-being that allows students to become productive citizens who do not fear uncertainties upon graduation (Kek and Huijser, 2017). Approaches should be underpinned by the most influential theories of learning such as behaviourist theories, cognitive psychology, social constructivism, experiential learning, and situated learning theory, amongst others (United Nations Educational Scientific and Cultural Organization, 2017).

Positioned at the nexus of teaching and research, the scholarship of learning and teaching is considered to be integral to providing quality higher education (Leibowitz et al., 2017). With teaching as a core function, nursing educators are often required to engage in the process of scholarship. Thus, they are encouraged to reflect on clinical and teaching practices to examine the effectiveness of approaches to student learning, and to communicate their findings with other nursing educators. This advances the body of nursing education using systematic rigorous inquiry (Oermann, 2014; World Health Organization, 2016). Such scholarship should be based upon evidence-based practices incorporating adult learning theories and principles (Kalb et al., 2015; United Nations Educational Scientific and Cultural Organization, 2017).

Globally there is an acknowledged need for consistent standards in higher education to advance the science of nursing education. Recently, the World Health Organisation (2016) developed a set of nursing education competencies, which identify a need for the application of educational theories to curriculum development, evaluation, research and teaching. Domain 1 (*Theories and Principles of Adult Learning*) in particular relates to the importance of applying this knowledge to guide curriculum development (World Health Organization, 2016).

Evidence-based and theory-driven nursing education

Just as it is important for nurses to utilise evidence-based practices to improve patient outcomes, so too should nursing educators use evidence-based teaching approaches to improve student learning outcomes. However, gaps exist between the theory and the practice of nursing, which is often referred to as the ‘theory-practice gap’, and also in the utilisation of nursing evidence in clinical practice (International Council of Nurses, 2012; Saunders and Vahviläinen-Julkunen, 2016).

Concerns about rigour in nursing education have been raised that refers to a lack of theory-driven scholarship (Mgbekem et al., 2016; Oermann, 2015) and in literature in which the methodological quality of nursing education research is questioned (Carter et al., 2016; Kanta, 2014). The identified problems of quality relate to three main areas: firstly small-scale projects contextualised to one content area, secondly the use of largely self-report and/or non-validated measures (Patterson and Klein, 2012; Schneider et al., 2013; Yucha et al., 2011), and thirdly reliance on author-generated questionnaires (Yonge et al., 2005).

The most recent systematic review of nursing education research addressed the period between 1991 and 2000. It extensively evaluated the quality and nature of nursing education research, research methods used, and whether the research had attracted funding (Yonge et al., 2005). It found that 61% of the research conducted was quantitative in nature, and that 80% was unfunded and used relatively small samples (Yonge et al., 2005). The top five focus areas related to continuing education, patient education, preceptorship, community health nursing, and teaching and learning. Although useful, the review did not provide any insight into whether research was driven by adult learning theories and principles.

Questions that are addressed in this paper include (1) Is the type of scholarship in nursing education concentrated within particular theories and/or method(s)? If so, (2) what are they, (3) how effective are they, and (4) what are the implications for nursing teaching practices, quality of nursing education, and student outcomes?

CONCEPTUAL FRAMEWORK

Boyer's (1990) conceptualisation of scholarship was used as the guiding framework in this paper as his original motivation for reconceptualising academic work was the perceived divide between teaching and research. Furthermore, it helps to break down an often-perceived wall between teaching and research. Underlying his four types of scholarships (discovery, integration, application, and teaching) is knowledge that must flow seamlessly between and within those four types of scholarship. None of them can do without the others nor without the essential ingredient 'knowledge'. Therefore, it is a coherent and holistic framework for thinking about the different types of scholarship in contemporary academic work, in this case with a specific focus on academic nursing educators.

As noted, Boyer (1990) conceptualised academic work as being made up of four kinds of scholarship – the scholarship of discovery, integration, application, and teaching respectively. Scholarship of discovery and integration reflect investigative and synthesising academic traditions. Scholarship of application is about engaging with knowledge in the community, for example by using it to solve problems. Lastly, the scholarship of teaching is the scholarly act of educating.

The scholarship of discovery (or 'research') is perhaps the most familiar to academics and includes original and fundamental research resulting in the advancement of knowledge. The scholarship of integration is about making serious attempts at connecting across disciplines. It requires academics "to seek to interpret, draw together, and bring new insight to bear on original research" (Boyer, 1990, p. 19). Research must be done first at the boundaries where different fields converge. Then the academic connects the intellectual data or findings situated at those boundaries through interpretation, synthesising one's own research and others'.

The scholarship of application involves assembling knowledge to address significant problems. For Boyer, the intention is not to suggest that knowledge must come first before being applied, rather in enacting application “theory and practice would interact, and one renew the other” (Boyer, 1990, p. 23).

Finally, the scholarship of teaching refers to both teaching students and educating teachers themselves. Teaching is framed as a scholarly enterprise, therefore, those who teach must be well informed and have good knowledge of their own field (as well as other fields that interplay and intersect), enabling them to engage, extend and build on existing knowledge.

In the review of nursing education papers in this study, Boyer’s four kinds of scholarship were used to analyse the use of theories and methods in the papers in the sample. Application of adult learning theories and principles were subsequently interpreted according to those four kinds of scholarship. This then shed light on the key question of whether the type of scholarship in nursing education is concentrated within particular theories and/or method(s) and consequently what the implications are.

METHODOLOGY

As noted, an integrative literature review was deployed to examine the research questions. Published journal articles covering a 15-year period from 2001 until 2016 were compared and analysed according to Boyer’s four kinds of scholarship. A two-by-two design was developed to initially cluster and categorise the final papers. Published articles that focused on undergraduate nursing education were reviewed first. Next, articles were grouped according to the extent to which theory had been applied to nursing education. The four quadrants were broadly categorised as follows: Theory/Research, Theory/No Research, No Theory/Research, No Theory/No Research. While not all papers fit perfectly into each

quadrant, this categorization was useful as a broad measure of the extent to which theory underpinned nursing education literature in terms of scholarship and research.

‘Theory/Research’ in this context meant that theory was used and applied to original research. ‘Theory/No Research’ refers to conceptual or theoretical papers that use theory but do not involve the collection and interpretation of original research data. ‘No Theory/Research’ indicates papers that report on the collection and analysis of primary research data but do not use a discernible theoretical framework to do so. Finally, ‘No Theory/No Research’ means no primary research was conducted and/or it was a largely descriptive article.

The systematic approach to the collection, review and analysis of nursing education papers included:

- collation of a broad range of refereed articles on nursing education;
- identification and examination of adult learning theories and methods used;
- a comparison between theory driven and non-theory driven scholarship evident in the literature (along Boyer’s (1990) continuum of discovery, integration, application, and teaching);
- an analysis of the application of theory to nursing education (similarly using Boyer’s (1990) framework); and
- an analysis of the methods used to investigate problems, questions or phenomena.

Initially, the authors carefully discussed as a group the four quadrants to ensure consensus about the meaning of each category as summarised above. Each author then independently viewed all articles and categorised them using the four-quadrant design, ensuring that each author’s interpretation and judgment was not impacted by the others. Individual interpretations of the papers were consequently mapped onto the four quadrants, resulting in three separately analysed and interpreted “findings-maps”. After each author’s

findings-map was completed, they were grouped together to analyse the overall findings. They were then put together into one holistic findings-map to assess similarities and differences. This iterative process aided reliability and credibility (Boyer, 1990).

Due to the relatively large sample of papers, analysing specific data within the papers was not the primary focus. The focus was rather on the extent to which theories and methods were identified within the papers as well as the types of theories utilised to underpin nursing education scholarship and methods. Thus, these types of theories were necessarily broadly categorised into five general theoretical streams or knowledge domains: behaviourist, cognitivist, constructivist, humanist, and social constructivist. It was beyond the scope of this study to also discuss the theories applied in each of the sample papers in depth instead, the focus was on broad trends.

Review Process

The first review phase included the identification and collation of articles on the basis of specific agreed-upon inclusion and exclusion criteria as outlined above. The next major phase was the analysis and synthesis of the papers based on theoretical underpinnings and nursing education research methods.

Inclusion and Exclusion Criteria

Four educational databases were selected that were most likely to yield papers relevant to nursing education within a higher education context within our target countries, i.e. English-speaking with significant similarities in undergraduate programs. This excluded large academic language communities that operate in for example German, French or Spanish, but they tend to have significant differences in their undergraduate programs. The US was excluded for the same reason despite being mostly English speaking. The following databases were accessed:

- Academic Search Complete
- Science Direct
- Cinahl
- Health Source: Nursing/Academic Edition

The key word search, using a Boolean strategy, was used to sweep the four databases for publications from January 2001 to January 2016. They were nurs* AND educat* AND theor* AND undergraduate? AND (university OR tertiary). Figure 1 illustrates the search strategy and consequential results of the search.

<Insert Figure 1>

After removal of duplicates across the databases, the final analysis was based on a total of 140 papers. An overview of the articles included for analysis and synthesis appears in Appendix A. The selected date range for the articles was based on an initial scan. Peer-reviewed journal publications were chosen as a proxy for research quality, as this would increase the likelihood of research with a stronger theoretical and methodological focus. Choices were guided by selecting countries that appeared to share the greatest similarities and Commonwealth English-speaking countries were therefore part of the search strategy.

Analysis Procedure

Each article was analysed and mapped by each researcher. The articles were mapped according to: 1) explicit theory underpinning the nursing scholarship, and 2) research methods to systematically and rigorously contribute to the scholarship of nursing education. Research methods were also analysed to identify a systematic process for research, or whether the research had used qualitative, quantitative or mixed methods approaches. The result of the initial blind mapping process can be seen in Table 1.

<Insert Table 1>

After the first layer of analysis, similarities and differences in the categorisation of papers were identified. The results of this blind process revealed significant similarities in between researchers. This was partly due to the consensus reached about the categories prior to individual analyses. Any papers that were not similarly categorised by all researchers were discussed and re-categorised. Where two reviewers agreed on one category, this category was adopted as the consensus. Based on the re-categorisation process, 140 papers were categorised across the three reviewers. Next, the data were synthesised to provide a second layer of analysis to illuminate the most commonly identified theories and research methods used in the articles.

FINDINGS

Theories in nursing

Most papers (58%) were categorised as having no explicit theory underpinning the primary research undertaken. The next most common category was papers considered to have a theoretical basis to the primary research (22%). This was followed by papers that used no theory, did not conduct any primary research (16%) and were largely descriptive. Finally, some papers used theory but did not include primary research (4%).

Knowledge Domain Theories

Some theories were discussed only as background. Their inclusion was used to describe the broader context of the problem, approach or phenomenon of interest but they were not applied throughout the paper. Papers that explicitly used and integrated theory to guide the research were marked accordingly in the Table 2. As noted, theories were organised into five broad domains: behaviourist, humanist, cognitivist, social cognitivist, and constructivist orientations (Nilsen, 2015). Table 2 reflects the categories of 'Theory and Research', and 'Theory and No Research' considered from Table 1. With regards to usage levels, the behaviourist perspective

was featured more heavily in the form of self-efficacy, social cognitive and social learning theories. This was followed by cognitivist, constructivist, humanist and social constructivist theories in order of frequency. Each of these broad theoretical streams were sub-divided according to the specific theories identified in the sample of papers in this study (see Table 3). The category of ‘Theory and Research’ in particular aligns closely with Boyer’s scholarship of discovery.

< Insert Table 2 Here >

The words ‘theory’ and ‘framework’ or ‘model’ were often used interchangeably in the papers in this study, which is common across the social sciences. Moreover, some authors had classified their papers as ‘research’ but they were not actually research-oriented. In this case a number of other implicit theories or frameworks were identified. A larger portion of the theories or frameworks were positioned with a nursing disciplinary lens and related to topics concerned with nursing skills that are deemed critical in the nursing profession and practice. A smaller portion of the papers used a more general educational or pedagogical lens, which mostly related to various teaching and learning approaches and practices (see Table 3). Again, the objective was not focus on specific theories within specific papers but rather to identify broad trends across a relatively large sample of papers. Table 3 represents the top 5 most commonly cited theories or framework per category.

<Insert Table 3 Here >

Methods in Educational Research

Overall, 112 papers were identified as involving primary research and their research methods were categorised as: qualitative (46%, $n = 51$), quantitative (32%, $n = 36$) or mixed methods (22%, $n = 25$). A majority of the papers categorised as qualitative were somewhat limited with many using small samples from interviews or focus groups. Some deployed more complex qualitative inquiry methods such as phenomenology and ethnography with larger data sets.

Across the 140 papers content areas were heavily focused on nursing students' clinical experiences followed by papers related to the preceptorship and facilitation of students during their placements. A summary of the top 10 content areas appears in Table 4.

< **Insert Table 4 Here** >

DISCUSSION

The findings suggest that the scholarship of discovery in nursing education is relatively rigid or bounded by limitations in application of theories, methods and analysis approaches. This rigid boundary also seems to reflect an identity issue faced by academic nursing educators. With regards to identity, Bernstein (2000) has identified how social relationships influence language and how the structure of language can shape people's consciousness and identity. This can assist in making sense of the current state of nursing education research and its impact on teaching, student learning and consequential learning. Boyer's (1990) four types of scholarships are not insular, independent academic tasks or activities. Rather, they are interrelated and each one informs, and is informed by, the other types of scholarship. The findings in this study show that Boyer's scholarship types are often applied in isolation, rather than applied in an integrated manner.

Within the scholarship of discovery in the sampled papers the methods and theories used tend to be limited and narrow suggesting relatively rigid boundaries (Bernstein, 2000). Bernstein (2000) refers to a degree of insulation between knowledge domains, separated as boundaries. The issue is epistemological and related to how knowledge is acquired and produced (Bernstein and Solomon 1999; Bernstein, 2000) and how this process can be rigidified over time within particular disciplines such as nursing education in this case. Thus, nursing educators' scholarship of discovery appears to be insular to some degree focusing on relatively few knowledge domains.

Certainly, the increasing pressures to develop industry/ work-ready graduates, accrediting body demands, professional accountability, and public expectations all drive the emphasis to produce clinically relevant and safe practitioners (Young, 2008). This may make scholarship produced by nursing educators more practice-based and clinically focused. Most of the content areas of scholarship were related to clinical experiences and facilitation. In combination with a resulting lack of focus on more theoretically-based research and scholarship this may create an unnecessarily limited scope and potentially missed opportunities to take nursing education into new directions as part of the scholarship of discovery. In terms of the future of nurse educator research, there may be a number of opportunities. Firstly, given the extensive scholarship around clinical placements and experiences, a systematic review of this evidence could be conducted. Secondly, more research could be conducted using sound educational theory, recognising other means of student learning and experiences. For example, interprofessional education during classroom experiences could be an area in which to focus.

Interrelated with a strict boundary and 'rigidification' is a dual identity issue of nursing educators having had a clinical background before being academics, thus identifying both as practitioners and educators (Logan et al., 2015). Bernstein argues that where identities are most stable within boundaries there is strong maintenance protecting the space between groups or discourses, which then fosters 'rigidification' (Missen et al., 2015; ten Hoeve et al., 2014). The analysis of the papers in this study suggests that nursing educators seem to be legitimising their boundary as a nursing professional community by engaging discourses related to nursing practices only. They are thus shutting themselves off from potentially productive interdisciplinary synergies or new theoretical and conceptual insights in ways that Boyer's conceptualisation of scholarship would allow for.

Nursing education in the higher education context is still considered to be relatively 'young' and the profession itself is also considered to be more practice-based. The discourses in the reviewed papers are consistent with previous reviews of nursing education scholarship in this respect. In fact, the academic identity of nursing educators is further strengthened by their engagement and practice in research, which as these findings suggest, is characterised by limited use of educational theory, a rather narrow focus on the specific knowledge domain, and the use of limited qualitative methods and analysis that are traditionally perceived as 'less rigorous' or 'soft'. The latter particularly applies when relatively small data sets are being used or applied within a single course scenario. This may reflect an ongoing tension for academic nursing educators who might be more teaching or practice based rather than research focused yet feel pressure to produce research outcomes.

The analysis highlights opportunities for academic nursing educators to incorporate broader theoretical, pedagogical, methodological and philosophical perspectives, and enfold them not only in discovery but also in the scholarship of integration, application, and teaching in the holistic way that Boyer's conceptualisation would allow for. This would then provide an opportunity to enhance and advance knowledge within a practice-based discipline such as nursing.

CONCLUSION

This study identified evidence of more rigorous scholarship being carried out by academic nursing educators. The overall findings suggest, however, that credibility in performing the scholarship of discovery, exploring epistemologies other than nursing-related ones - particularly as they relate to teaching and learning and education more broadly - and by extension a confident nursing educator academic identity, can be significantly improved and shows considerable potential for expansion and diversification.

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Appendix A: Articles for analysis and synthesis.

Article	Author/Year	Name of Journal
1.	Aled (2007)	<i>Journal of Clinical Nursing</i>
2.	Andrew (2012)	<i>Nurse Education Today</i>
3.	Andrews & Ford (2013)	<i>Nurse Education in Practice</i>
4.	Astin, McKenna, Newton & Moore-Coulson (2005)	<i>Contemporary Nurse</i>
5.	Badger, Daly & Clifford (2012)	<i>Nurse Education Today</i>
6.	Bailey & Tuohy (2009)	<i>Nurse Education Today</i>
7.	Bennett, Jones, Brown & Barlow (2013)	<i>Nurse Education Today</i>
8.	Ben-Sefer (2009)	<i>Nurse Education in Practice</i>
9.	Berragan (2014)	<i>Nurse Education Today</i>
10.	Betony & Yarwood (2013)	<i>Nurse Education Today</i>
11.	Binding, Morck & Moules (2010)	<i>Nurse Education Today</i>
12.	Blenkinsop (2003)	<i>Nurse Education Today</i>
13.	Bornais, Raiger, Krahn, & El-Masri (2012)	<i>Journal of Professional Nursing</i>
14.	Bowers (2006)	<i>Nurse Education Today</i>
15.	Braine & Parnell (2011)	<i>Nurse Education Today</i>
16.	Brodie, Andrews, Andrews, Thomas, Wong & Rixon (2004)	<i>International Journal of Nursing Studies</i>
17.	Brooks (2011)	<i>Nurse Education Today</i>
18.	Brown, Bowmar, White, & Power (2016)	<i>Collegian</i>
19.	Brown, Wakeling, Peck, Naiker, Hill & Naidu (2015)	<i>Collegian</i>
20.	Byrne & Smyth (2008)	<i>Nurse Education in Practice</i>
21.	Caldwell, Henshaw & Taylor (2011)	<i>Nurse Education Today</i>
22.	Callaghan (2011)	<i>Journal of Advanced Nursing</i>
23.	Callaghan, Lea, Mutton & Whittlesea (2011)	<i>Nurse Education in Practice</i>
24.	Charleston & Happell (2005)	<i>Nurse Education in Practice</i>
25.	Charleston & Happell (2006)	<i>Australian Journal of Advanced Nursing</i>
26.	Chesser-Smyth (2005)	<i>Nurse Education in Practice</i>
27.	Chu, Perkins & Marks-Maran (2012)	<i>Nurse Education in Practice</i>
28.	Ciliska (2005)	<i>Journal of Professional Nursing</i>
29.	Clark, McCann, Rowe & Lazenbatt (2004)	<i>Journal of Advanced Nursing</i>
30.	Cleary & Happell (2005)	<i>Nurse Education in Practice</i>
31.	Cooper, Spencer-Dawe & McLean (2005)	<i>Journal of Interprofessional Care</i>
32.	Cooper, Courtney-Pratt & Fitzgerald (2015)	<i>Nurse Education Today</i>
33.	Coster, Norman, Murrells, Kitchen, Meerabeau, Sooboodoo & d'Avray (2008)	<i>International Journal of Nursing Studies</i>
34.	Courtney-Pratt, Ford & Marlow (2015)	<i>Nurse Education in Practice</i>

35.	Cox, Simpson, Letts & Cavanagh (2014)	<i>Contemporary Nurse</i>
36.	D'Amore, James & Mitchell (2012)	<i>Nurse Education Today</i>
37.	Doucette, Brandys, Canapi, Davis, DiNardo & Imamedjian (2011)	<i>Dynamics</i>
38.	Drury, Francis & Chapman (2008)	<i>Australian Journal of Advanced Nursing</i>
39.	Edgecombe & Bowden (2009)	<i>Nurse Education in Practice</i>
40.	Foran (2016)	<i>Nurse Education in Practice</i>
41.	Fortugno, Chandra, Espin & Gucciardi (2013)	<i>Journal of Interprofessional Care</i>
42.	Frotjold, Hardy & Butler (2007)	<i>Nursing Monograph</i>
43.	Gale, Ooms, Sharples & Marks-Maran (2016)	<i>Nurse Education in Practice</i>
44.	Gillan, Parmenter, van der Riet & Jeong (2013)	<i>Nurse Education in Practice</i>
45.	Goddard, Mackey & Davidson (2010)	<i>Nurse Education Today</i>
46.	Gopee & Deane (2013)	<i>Nurse Education Today</i>
47.	Grealish & Ranse (2009)	<i>Contemporary Nurse</i>
48.	Grealish & Trevitt (2005)	<i>Contemporary Nurse</i>
49.	Halcomb & Peters (2009)	<i>Contemporary Nurse</i>
50.	Halkett & McLafferty (2006)	<i>Nurse Education Today</i>
51.	Hands, Millar, Walker, Copeman & Henderson (2006)	<i>Nurse Education in Practice</i>
52.	Happell, Robins & Gough (2008)	<i>Journal of Psychiatric & Mental Health Nursing</i>
53.	Happell, Robins, & Gough (2008)	<i>Journal of Psychiatric & Mental Health Nursing</i>
54.	Happell, Wynaden, Tohotoa, Platania-Phung, Byrne, Martin & Harris (2015)	<i>Nurse Education Today</i>
55.	Harrison & Laforest (2011)	<i>Journal of Pediatric Nursing</i>
56.	Hayes, Power, Davidson, Daly & Jackson (2015)	<i>Nurse Education Today</i>
57.	Henderson, Beattie, Boyde, Storr & Lloyd (2006)	<i>Nurse Education in Practice</i>
58.	Henderson, Winch & Heel (2006)	<i>Nurse Education Today</i>
59.	Hickey, Sumsion & Harrison (2013)	<i>Journal of Advanced Nursing</i>
60.	Hinsliff-Smith, Gates & Leducq (2012)	<i>Nurse Education Today</i>
61.	Holland, Smith, McCrossan, Adamson, Watt & Penny (2013)	<i>Nurse Education Today</i>
62.	Honey & Lim (2008)	<i>Contemporary Nurse</i>
63.	Howlin, Halligan & O'Toole (2014)	<i>Nurse Education in Practice</i>
64.	Hunter, Watt-Watson, J., McGillion, M., Raman-Wilms, Cockburn, Lax, Salter (2008)	<i>Pain</i>
65.	Jackson, Hutchinson, Everett, Mannix, Peters, Weaver & Salamonsen (2011)	<i>Nursing Inquiry</i>
66.	Jacob, McKenna & D'Amore (2014)	<i>Nurse Education in Practice</i>
67.	James, Beattie, Shepherd, Armstrong & Wilkinson (2016)	<i>Nurse Education in Practice</i>

68.	Johnson, Peat, Boyd, Warren, Eastwood & Smith (2016)	<i>Nurse Education Today</i>
69.	Kendal, Kerr, Rogers, Kelly & Walton (2015)	<i>Nurse Education Today</i>
70.	Lamont, Brunero & Woods (2015)	<i>Collegian</i>
71.	Landeen, Jewiss, Vajoczki & Vine (2013)	<i>Nurse Education in Practice</i>
72.	Lechasseur, Lazure & Guilbert (2011)	<i>Journal of Advanced Nursing</i>
73.	Lim, Downie & Nathan (2004)	<i>Nurse Education Today</i>
74.	Malik, McKenna & Griffiths (2016)	<i>Nurse Education Today</i>
75.	Mather, McKay & Allen (2015)	<i>Nurse Education Today</i>
76.	McCarthy (2006)	<i>Journal of Clinical Nursing</i>
77.	McGaughey (2009)	<i>Nursing in Critical Care</i>
78.	McLaughlin, Moutray & Moore (2010)	<i>Journal of Advanced Nursing</i>
79.	McNamara (2010)	<i>Journal of Professional Nursing</i>
80.	Meechan, Mason & Catling (2011)	<i>Nurse Education Today</i>
81.	Meskell, Murphy & Shaw (2009)	<i>Nurse Education Today</i>
82.	Mills, Carter, Rudd, Claxton & O'Brien (2016)	<i>Nurse Education Today</i>
83.	Milton-Willey, Kenny, Parmenter & Hall (2014)	<i>Nurse Education Today</i>
84.	Morgan (2012)	<i>Nurse Education Today</i>
85.	Nash, Lemcke & Sacre (2009)	<i>Nurse Education Today</i>
86.	Newton, Billett, Jolly & Ockerby (2009)	<i>Learning in Health & Social Care</i>
87.	Newton, Jolly, Ockerby & Cross (2010)	<i>Journal of Advanced Nursing</i>
88.	Newton, Jolly, Ockerby & Cross (2012)	<i>Journal of Advanced Nursing</i>
89.	O'Driscoll, Smith & Magnusson (2009)	<i>Nurse Education Today</i>
90.	O'May, Gill, McWhirter, Kantartzis, Rees & Murray (2016)	<i>Nurse Education in Practice</i>
91.	Ogston-Tuck, Baume, Clarke & Heng (2016)	<i>Nurse Education Today</i>
92.	O'Meara, Munro, Williams, Cooper, Bogossian, Ross, McClounan (2015)	<i>International Emergency Nursing</i>
93.	Page & McDonnell (2015)	<i>British Journal of Nursing</i>
94.	Page, Hamilton, Hall, Fitzgerald, Warner, Nattabi & Thompson (2016)	<i>Australian Journal of Rural Health</i>
95.	Parker (2009)	<i>Nurse Education in Practice</i>
96.	Peters, Halcomb & McInnes (2013)	<i>Nurse Education in Practice</i>
97.	Phillips, Kenny, Esterman & Smith (2014)	<i>Nurse Education Today</i>
98.	Pitt, Powis, Levett-Jones & Hunter (2015)	<i>Nurse Education Today</i>
99.	Por, Barriball, Fitzpatrick & Roberts (2011)	<i>Nurse Education Today</i>
100.	Priesack & Alcock (2015)	<i>Nurse Education Today</i>
101.	Ramjan, Costa, Hickman, Kearns & Phillips (2010)	<i>Collegian</i>

102.	Reid-Searl, Moxham & Happel (2010)	<i>International Journal of Nursing Practice</i>
103.	Reid-Searl, Moxham, Walker & Happell (2009)	<i>Collegian</i>
104.	Reid-Searl, Moxham, Walker & Happell (2010)	<i>Journal of Clinical Nursing</i>
105.	Ribbons & Vance (2001)	<i>Computers in Nursing</i>
106.	Rochford, Connolly & Drennan (2009)	<i>Nurse Education Today</i>
107.	Sawatzky & Enns (2009)	<i>Journal of Professional Nursing</i>
108.	Scanlon & Watt (2010)	<i>Journal for Nurses in Staff Development</i>
109.	Scully (2011)	<i>Collegian</i>
110.	Secomb, McKenna & Smith (2012)	<i>Journal of Clinical Nursing</i>
111.	Sedgwick & Yonge (2008)	<i>Nurse Education Today</i>
112.	Seib, English & Barnard (2011)	<i>Journal of Nursing Education</i>
113.	Shuttleworth, Rudd, Smith, Combs & Wain (2008)	<i>Nurse Education Today</i>
114.	Simpson, Coombs & Avery (2005)	<i>Nurse Education in Practice</i>
115.	Sinclair, Papps & Marshall (2016)	<i>Nurse Education in Practice</i>
116.	Smith & Flint (2006)	<i>Nurse Education in Practice</i>
117.	Snelgrove (2004)	<i>Nurse Education Today</i>
118.	Snelling, Lipscomb, Lockyer, Yates & Young (2010)	<i>Nurse Education Today</i>
119.	Spence, Vallant, Roud & Aspinall (2012)	<i>Nursing Praxis in New Zealand</i>
120.	Stephens, Robinson & McGrath (2013)	<i>Nurse Education in Practice</i>
121.	Stickley, Stacey, Pollock, Smith, Betinis & Fairbank (2010)	<i>Nurse Education Today</i>
122.	Strickland, Gray & Hill (2012)	<i>Nurse Education in Practice</i>
123.	Thorpe & Loo (2003)	<i>Nurse Education Today</i>
124.	Timmins & Dunne (2009)	<i>Nurse Education Today</i>
125.	Tuckett & Crompton (2014)	<i>International Journal of Nursing Practice</i>
126.	Turner, Davies, Beattie, Vickerstaff & Wilkinson (2006)	<i>Collegian</i>
127.	Tutticci, Coyer, Lewis & Ryan (2016)	<i>Teaching and Learning in Nursing</i>
128.	Tutticci, Lewis & Coyer (2016)	<i>Nurse Education in Practice</i>
129.	van de Mortel (2009)	<i>Australian Journal of Advanced Nursing</i>
130.	van der Riet, Francis & Levett-Jones (2011)	<i>Nurse Education in Practice</i>
131.	Wakefield, Furber, Boggis, Sutton & Cooke (2003)	<i>Nurse Education in Practice</i>
132.	Watts (2011)	<i>Nurse Education Today</i>
133.	Watts & Davies (2014)	<i>Nurse Education Today</i>
134.	Watt-Watson, J., Hunter, J., Pennefather, P., Librach, Raman-Wilms, Schreiber, Salter (2004)	<i>Pain</i>
135.	Welford (2007)	<i>Nursing Older People</i>

136.	Williams, McKenna, French & Dousek (2013)	<i>Nurse Education Today</i>
137.	Willsher (2010)	<i>Nurse Education in Practice</i>
138.	Willsher (2013)	<i>Nurse Education Today</i>
139.	Xiao, Kelton & Paterson (2012)	<i>Nursing Inquiry</i>
140.	Zalon & Meehan (2005)	<i>Nurse Education in Practice</i>

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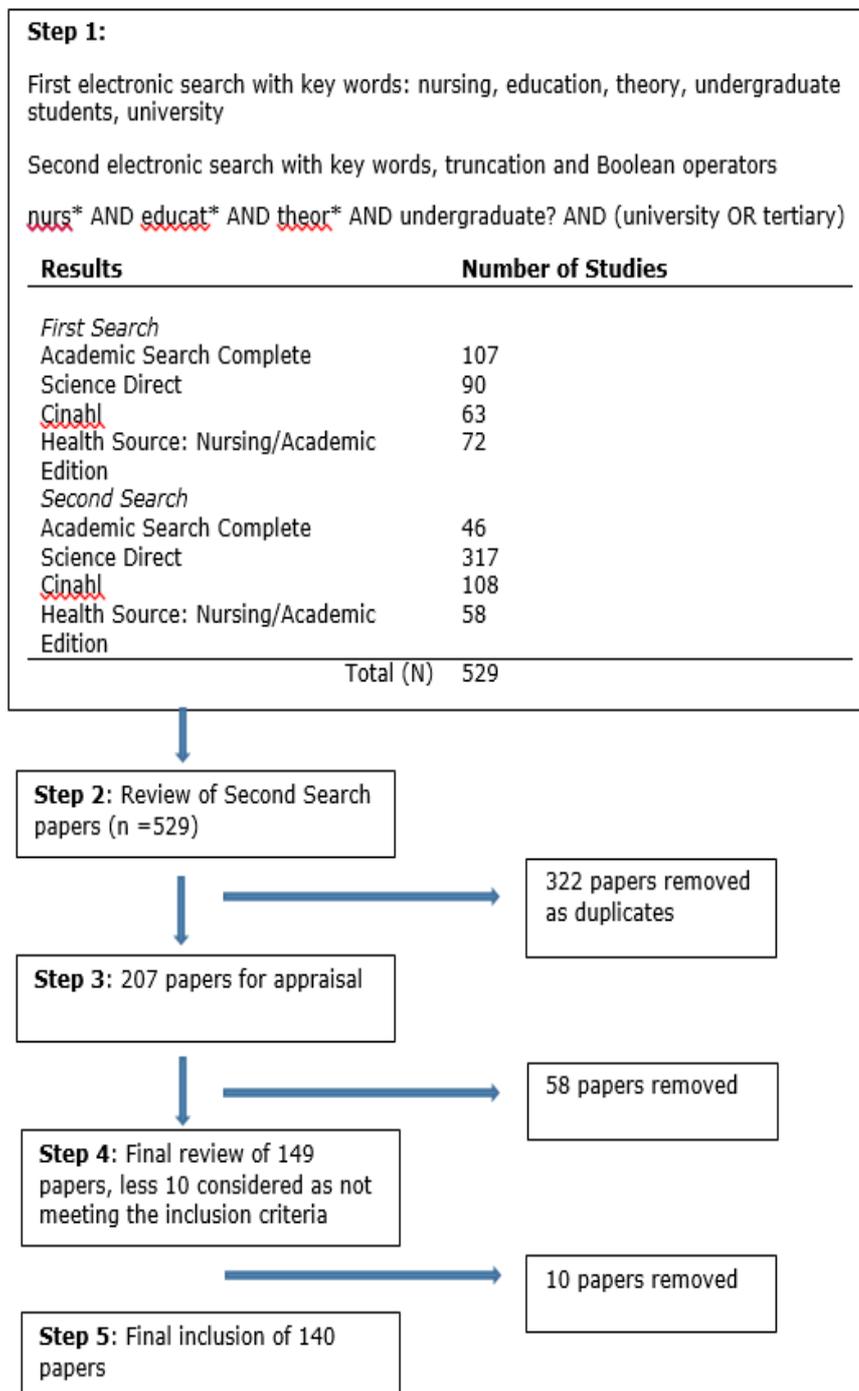


Figure 1. Initial search strategy and results

Table 1. Initial blind mapping process between researchers

Reviewer 1	Total	Reviewer 2	Total	Reviewer 3	Total
Theory and Research	46	Theory and Research	27	Theory and Research	35
Theory and No Research	9	Theory and No Research	12	Theory and No Research	8
No Theory and Research	65	No Theory and Research	83	No Theory and Research	70
No Theory and No Research	20	No Theory and No Research	18	No Theory and No Research	27
	140		140		140

Table 2. Knowledge domains underpinning nursing education

1. Behaviourist	Self-Efficacy Theory (Bandura, 1977) Social Learning Theory (Bandura, 1977) Social Cognitive Theory (Bandura, 2001)
2. Cognitivist	Theory of Multiple Intelligence (Gardner,1983) Cognitive Load Theory (Sweller, 1994) Multimedia Principals of Learning (Mayer, 2001) Transformational Learning (Mezirow, 2000) Model of stress and performance (Driskell and Salas, 1996)
3. Constructivist	Theory of Cognitive Dissonance (Festinger,1957) Communities of Practice Theory (Wenger, 1998) Constructivist Learning Theory (Kirschner, Sweller, & Clark, 2006) Model of Social Interaction (Schlossberg,1981) Conversational Model (Laurillard, 1993)
4. Humanist	Maslow's Hierarchy of Needs (Maslow, 1971) Schema of Cognitive Constructivism (Perry, 1970) Contact Theory (Allport, 1954)
5. Social Constructivist	Social Identity Theory (Tajfel and Turner, 1979)

N.B. 1 = most commonly cited, 5 = least cited

Table 3. Implicit theories or frameworks identified

Nursing disciplinary lens	Becoming a nurse	Model of Vocational Choice (Holland, 1958) Nursing Career Development Framework, (Hickey et al. 2012) Framework of Othering (Canales, 2000) Nursing as Caring Theory (Boykin & Schoenhofer 2001) Caring (Snelson et al., 2002)
	Skills development	Model of Skill Acquisition (Dreyfus, 2004) Cognitive Apprenticeship Model (Collins, 1989) Novice to Expert (Benner, 1984) Model of Clinical Learning (Miller, 1990) Critical thinking (Watson & Glaser, 1964)
General educational lens	Learning and teaching practices	Model of Experiential Learning (Kolb, 1984) Situated Learning Theory (Lave & Wenger, 1991) Diffusion of Innovation (Rogers 1995) Campbell's Phased Approach and Complexity Theory (Campbell et al., 2000) Critical Theory (Habermas, 1972)

Table 4. Summary of content areas across scholarship papers

Content Areas (Top 10)	Number of Papers
1. Clinical experience	39 (28%)
2. Clinical facilitation / preceptorship	10 (7%)
3. Overall student experience (needs, transition, attributes, entry)	9 (6%)
4. Simulation	9 (6%)
5. Evidence based practice teaching	9 (6%)
6. Classroom strategies (experiential learning, problem based learning)	9 (6%)
7. Inter-professional education	7 (5%)
8. Curriculum content areas	6 (4%)
9. Academic skills development (writing, reflection, literacy)	5 (4%)
10a. Career Development	4 (3%)
10b. Nursing Academia	4 (3%)

Research Highlights

- Nursing education scholarship predominantly used behaviourist theories
- More than half of primary research papers had no explicit theoretical foundation
- Most research methods used were qualitative and used small scale projects
- Most nursing education scholarship related to students clinical experiences
- Limited application across a broad range of educational theories to the nursing education papers to advance understanding

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