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CONCEPT ANALYSIS

The clinical learning environment in nursing education: a concept analysis

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Abstract

Aim. The aim of this study was to report an analysis of the clinical learning environment concept.

Background. Nursing students are evaluated in clinical learning environments where skills and knowledge are applied to patient care. These environments affect achievement of learning outcomes, and have an impact on preparation for practice and student satisfaction with the nursing profession. Providing clarity of this concept for nursing education will assist in identifying antecedents, attributes and consequences affecting student transition to practice.

Design. The clinical learning environment was investigated using Walker and Avant's concept analysis method.

Data sources. A literature search was conducted using WorldCat, MEDLINE and CINAHL databases using the keywords clinical learning environment, clinical environment and clinical education. Articles reviewed were written in English and published in peer-reviewed journals between 1995–2014.

Methods. All data were analysed for recurring themes and terms to determine possible antecedents, attributes and consequences of this concept.

Results. The clinical learning environment contains four attribute characteristics affecting student learning experiences. These include: (1) the physical space; (2) psychosocial and interaction factors; (3) the organizational culture and (4) teaching and learning components. These attributes often determine achievement of learning outcomes and student self-confidence.

Conclusion. With better understanding of attributes comprising the clinical learning environment, nursing education programmes and healthcare agencies can collaborate to create meaningful clinical experiences and enhance student preparation for the professional nurse role.

Keywords: clinical environment, clinical learning environment, concept analysis, nursing, nursing education

Why is this research or review needed?

- With no prior concept analysis completed, clarifying and synthesizing research concerned with the clinical learning environment will assist nursing education programmes in providing meaningful student clinical experiences.
- Negative clinical experiences have an impact on nursing student self-confidence and preparedness for practice. Clarifying this concept can assist instructors in strengthening specific clinical education areas to maximize student learning.
- Determining attributes will ensure healthcare facilities and nursing education programmes are providing students opportunities to be successful in future nursing practice.

What are the key findings?

- The clinical learning environment includes four attribute characteristics including: (1) the physical space; (2) psychosocial and interaction factors; (3) organizational culture and (4) teaching and learning components.
- Antecedents, including foundational nursing knowledge, have an impact on clinical learning environment experiences, indicating nursing education programmes must ensure student preparedness when arranging clinical learning opportunities.
- Consequences include student self-confidence and preparedness for practice. Negative experiences can have an impact on satisfaction with the nursing profession, affecting retention and having an impact on the global nursing shortage.

How should the findings be used to influence policy/practice/research/education?

- Nursing faculty and healthcare organizations should identify opportunities for promoting positive environments and maximizing achievement of student learning outcomes with knowledge of attributes that have an impact on student learning.
- Future research opportunities include determining if certain attributes have an impact on clinical experiences more than others, assisting in promotion of meaningful learning opportunities
- Other learning environments are emerging, including interprofessional opportunities and dedicated education units. Future research can determine similarities and differences about these environments to this concept analysis.

Introduction

Nursing education programmes must ensure students graduate with skills and knowledge necessary to provide safe patient care. For students to achieve learning outcomes, nursing programmes use outside agencies to provide patient care experiences. These settings, termed clinical learning environments (CLE), are vital to nursing education, with students spending approximately three times the amount of hours in clinical environments vs. the classroom (Moscaritolo 2009, Newton *et al.* 2009). CLE settings include hospitals, clinics and simulation laboratories, which allow students to care for simulated patients, or high-fidelity mannequins, as alternatives to direct patient care. With simulation, students have multiple practice opportunities, repetition of clinical scenarios and can immediately engage in reflection about decision-making (Kirkman 2013, Park *et al.* 2013).

Due to its importance, the CLE must include meaningful learning opportunities. Research conducted in multiple countries indicates negative CLE experiences interfere with achievement of learning outcomes, aggravating an international nursing shortage (Levett-Jones & Lathlean 2009, Moscaritolo 2009, Sand-Jecklin 2009, Welding 2011, Babenko-Mould & Laschinger 2014). The purpose of this study includes developing a definition for the CLE and determining antecedents, attributes and consequences to assist nursing education programme leaders and instructors in evaluating clinical sites and ensuring meaningful experiences to enhance student preparation for practice.

Background

Typically, nursing students obtain foundational knowledge in the classroom and apply theory in the clinical setting where patient care and critical thinking are evaluated. When both aspects are achieved satisfactorily, graduates are prepared for practice; however, researchers are discovering nursing graduates are unprepared when entering the profession as many lack critical thinking and leadership skills. New graduates struggle with anticipating interventions and recognizing symptoms indicating deterioration in health status, leading to negative patient outcomes (Lasater & Nielsen 2009, Fero *et al.* 2010, Athlin *et al.* 2012, Perkins & Kisiel 2013). Unprepared nurse graduates often leave the field within 1 year of practice due to stress and burnout, worsening a global nursing shortage (Welding 2011, Babenko-Mould & Laschinger 2014). Nursing programme and healthcare facility leaders must evaluate the CLE, ensuring learning objectives can be met, to better prepare students for practice. The CLE should promote learning, allow application of theory to practice and assist students in becoming competent providers (Dunn & Burnett 1995, Bloomfield & Subramaniam 2008, Sand-Jecklin 2009).

The process outlined by Walker and Avant (2010) was used for this analysis and includes eight steps: determining a concept to analyse, stating the purpose, describing uses of the concept, determining attributes, identifying model cases, determining antecedents and consequences and defining empirical referents.

Data sources

A literature search was conducted using WorldCat, MEDLINE and The Cumulative Index of Nursing and Allied Health (CINAHL) databases using the keywords clinical learning environment, clinical environment and clinical education. Articles included in the analysis were those written in English and published in peer-reviewed journals between 1995–2014. All sources reflected research-based or theoretical work and were reviewed for recurring themes across all healthcare disciplines and then narrowed to the nursing education context.

Results

Following Walker and Avant's (2010) method, uses of the concept were reviewed. Determined attributes, antecedents and consequences are then discussed followed by cases clarifying the CLE concept.

Uses of the concept

Walker and Avant (2010) suggest identifying concept descriptions and definitions by investigating 'dictionaries, thesauruses, colleagues and available literature', including those outside the field of interest (p. 161). Standard dictionaries were reviewed for a definition of the 'clinical learning environment' with none found; however, the word 'clinical' in the Merriam-Webster (2015) dictionary was found and defined as:

> relating to or based on work done with real patients; of or relating to the medical treatment that is given to patients in hospitals, clinics, etc.; requiring treatment as a medical problem; of or relating to a place where medical treatment is given. (Merriam-Webster 2015)

No standard dictionary defined the term 'learning environment'; however, after reviewing the literature, researchers defining the CLE referenced an environment where students in healthcare education fields apply knowledge and skills while caring for patients, preparing students for professional practice which correlates with the dictionary definition of 'clinical' (Bloomfield & Subramaniam 2008, Brown *et al.* 2013, Kossioni *et al.* 2014, Merriam-Webster 2015).

Literature definitions were then reviewed for attributes, antecedents and consequences (Walker & Avant 2010). The majority of definitions were formed by researchers developing tools evaluating the CLE (Dunn & Burnett 1995, Chan 2002, Sand-Jecklin 2009). All definitions were similar and represented multiple countries with healthcare education programmes showing CLE elements are not only global in nature but reach across disciplines (Bloomfield & Subramaniam 2008, Brown *et al.* 2013, Kossioni *et al.* 2014). Most researchers emphasized the CLE as composed of multiple entities having an impact on student learning and highlighting student achievement of outcomes is not guaranteed after having CLE experiences (Dunn & Burnett 1995, Levett-Jones & Lathlean 2009, Sand-Jecklin 2009, Newton *et al.* 2010).

One of the most cited definitions and tools established by Dunn and Burnett (1995) describes the CLE as containing 'those forces and elements in the clinical setting that impinge on and influence the student's learning outcomes. These forces may include elements of structure, organization and attitudes' (p. 1170). Another definition states, 'the clinical learning environment is a multidimensional entity that directly affects the outcomes of students' clinical placement' (Chan 2002, p. 70).

Differences about CLE definitions include conceptual and theoretical frameworks influencing definition development and elements included in evaluation tools. For example the Clinical Learning Environment Inventory (CLEI) tool is rooted in psychosocial educational frameworks based on classroom research (Chan 2002), The Clinical Learning Environment Diagnostic Inventory (CLEDI) is influenced by Kolb's (1984) experiential learning theory (Hosoda 2006) and the Clinical Learning Environment Scale (CLES) is rooted in 'organizational' and 'educational theory', along with Benner's (1982) skill acquisition theory (Dunn & Burnett 1995, p. 1168). A formal concept analysis evaluating all sources with various theoretical and conceptual backgrounds can determine common attributes having an impact on student learning. Table 1 highlights common definitions, corresponding frameworks and resultant attributes, antecedents and consequences of the CLE.

Attributes

Attributes are, 'characteristics of the concept that appear over and over again', when reviewing definitions, clarifying uniqueness of the concept (Walker & Avant 2010, p. 162). Both definitions and tools were examined to determine defining characteristics. It was decided to include elements of CLE tools when clarifying attributes as all tools

Table 1 Identified antecedents, attributes and consequences derived from definitions and tools with corresponding conceptual/theoretical frameworks.

Source	Dunn and Burnett (1995)	Chan (2002)	Newton *et al.* (2010)	Hosoda (2006)	Sand-Jecklin (2009)	Saarikoski and Leino-Kilpi (2002)
Definition	"encompasses those forces and elements in the clinical setting that impinge on and influence the *student's* **learning outcomes.** These forces may include elements of structure, organization, and attitudes" (p. 1170)	"the clinical learning environment is a multidimensional entity that directly affects the **outcomes** of *students'* clinical placement" (p. 70)	"the clinical learning environment is a complex sociocultural entity that offers a variety of opportunities to **engage or disengage in learning**" (p. 1371)	"a setting for experiential learning in nursing practice that can promote the **development of *students'* problem-solving abilities**" (p. 482)	"*student* **learning** is impacted by faculty instruction methods, degree of clinical competence, type of interactions/relationships with students, and feedback and/or evaluation methods" (p. 233)	"The clinical learning environment consists of the ward culture (e.g. the atmosphere produced by the learning team), a context of nursing care and the basic ideas and principles of teaching and **learning** on the ward" (p. 260)
Tools	Clinical Learning Environment Scale (CLES) measured following components of the CLE: - Staff-*student* relationships - Nurse manager commitment - Interpersonal relationships - Patient relationships - **Student satisfaction**	Clinical Learning Environment Inventory (CLEI) measured following components of the CLE: - Individualization - Innovation - **Satisfaction** - Involvement - Personalization - Task Orientation	Factor analysis of CLEI included measurement of following components of the CLE: - Student centredness - Affordances and engagement - Individualization - Fostering workplace learning - Valuing nurses' work - Innovative and adaptive culture	The Clinical Learning Environment Diagnostic Inventory (CLEDI) measured following components of the CLE: - Affective–learning activities in practice - Behavioural–principles of action in clinical practice - Symbolic–organization of concepts for analytical work - Reflective–reflection on practice - Perceptual–observation of nursing practices	The Student Evaluation of Clinical Education Environment (SECEE) measured following components of the CLE: - Instructor facilitation of learning - Preceptor facilitation of learning - Learning opportunities	Clinical Learning Environment and Supervision Instrument (CLES) measured the following components of the CLE: - Atmosphere - Leadership style of ward manager - **Premises of learning on the ward** - Premises of nursing care on the ward - Supervisory relationship
Framework	"Organizational and educational theory" (Dunn & Burnett 1995, p. 1168) Benner's theory of clinical competence (1982)	Social climate; psychosocial educational framework (Chan 2002, p. 69)	Based on Chan's prior work and tool development (2002); psychosocial educational framework	Kolb's experiential learning theory (Kolb 1984)	Cognitive apprenticeship (Brown *et al.* 1989)	Based on literature review of prior research and tools with components as influential with student learning including: atmosphere, leadership of manager, and supervisory relationships

Bold words indicate Consequences of concept; Underlined words indicate Attributes of concept.

measured the CLE influence on student learning. Multiple research methods determined tool elements, ranging from Likert-type surveys gathering student input about CLE factors influencing learning (Dunn & Burnett 1995) to literature reviews (Chan 2002). After analysing all sources, four attribute characteristics were determined to comprise the CLE, including the physical space, psychosocial and interaction factors, organizational culture and teaching and learning components. As exact terms and phrases in the multiple definitions and tools varied, grouping characteristics allowed for a more comprehensive inclusion of attributes while retaining the meaning of reviewed terms.

Physical space

Developed tools either evaluated the physical environment or included student comments describing its impact on learning (Dunn & Burnett 1995, Sand-Jecklin 2009, Skaalvik *et al.* 2011, Chuan & Barnett 2012). For example The Student Evaluation of Clinical Education Environment (SECEE) tool assesses if, 'Needed resources were available at the site', as equipment is required when students provide patient care (Sand-Jecklin 2009, p. 240) and Dunn and Burnett (1995) refer to the CLE structure in their definition.

Psychosocial and interaction factors

All researchers evaluating the CLE stated communication, attitudes and behaviours displayed by staff nurses, other healthcare staff and instructors, have an impact on student learning (Palmer *et al.* 2005, Levett-Jones & Lathlean 2009, Sand-Jecklin 2009, Newton *et al.* 2010, Chuan & Barnett 2012, Bisholt *et al.* 2014). Communication and interactions occur frequently in healthcare settings and are required for safe patient care. Student experiences about type, quality and amount of interactions depended on individual staff nurses and instructors, often determining whether students felt welcomed or anxious and stressed, shutting down the learning process (Chan 2002, Henderson *et al.* 2009, Levett-Jones & Lathlean 2009, Moscaritolo 2009). Some examples referencing this attribute include Sand-Jecklin's (2009) definition, which states the: 'type of interactions/relationships with students,' (p. 233) has an impact on student learning. Also, tools created by Dunn and Burnett (1995) and Hosoda (2006) measure satisfaction of staff-student relationships in the CLE.

Organizational culture

Organizational culture was often influenced by managers' perceptions of nursing education, affecting healthcare staff behaviour (Dunn & Burnett 1995, Saarikoski & Leino-Kilpi 2002, Newton *et al.* 2010). Culture had an impact on the entire social climate of the CLE, resulting in either a positive environment or one that undervalued nursing education, leading to negative experiences (Dunn & Hansford 1997, Saarikoski & Leino-Kilpi 2002, Papastavrou *et al.* 2009). Similarities are noted between this characteristic and the previous characteristic describing psychosocial and interaction factors; however, organizational culture about nursing education had an impact on the majority of healthcare staff attitudes towards students vs. individualized interactions accounted for in the prior characteristic. Saarikoski and Leino-Kilpi's tool (2002), the CLES, focuses on organizational culture, describing that the ward manager's leadership style has an impact on the CLE and student learning experiences.

Organizational leader emphasis on providing quality patient care also has an impact on learning, influencing whether students observe behaviours modelling appropriate execution of skills and proper communication techniques (Hosoda 2006, Levett-Jones & Lathlean 2009, Papastavrou *et al.* 2009, Bisholt *et al.* 2014). Sand-Jecklin's (2009) definition refers to, 'a context of nursing care', describing the quality of care provided and Levett-Jones and Lathlean (2009) state, 'environments with perceived poor standards of care have a negative impact on students' placement experience' (p. 2874).

Finally, organizational policies have an impact on student learning (Dunn & Hansford 1997, Bisholt *et al.* 2014). Dunn and Burnett (1995) describe that policies often dictate specific tasks students can perform (Palmer *et al.* 2005). Students actively participating in care apply theory to practice and often have higher satisfaction in the CLE vs. students only allowed observation activities (Sand-Jecklin 2009, Chuan & Barnett 2012).

Teaching and learning components

This characteristic was cited in every source (Dunn & Burnett 1995, Chan 2002, Saarikoski & Leino-Kilpi 2002, Hosoda 2006, Levett-Jones & Lathlean 2009, Newton *et al.* 2010). Students were either instructed by faculty from educational institutions or staff nurses determined by programmes or facilities as competent to teach, supervise and evaluate students. For researchers identifying staff nurses as instructors, variations in preparation and education were noted about this role. One study indicated staff nurses desiring to provide student instruction had 5 years of nursing experience along with attendance at seminars (Hosoda 2006), whereas another did not specify any requirements, only stating the majority of supervision was provided by staff nurses (Saarikoski & Leino-Kilpi 2002).

Definitions and tools stated effectiveness in facilitating learning had an impact on outcome achievement. The instructor's role involves guiding students in applying theory to practice, being a positive role model, evaluating for safe patient care and providing constructive feedback for development (Henderson *et al.* 2009, Skaalvik *et al.* 2011, Chuan & Barnett 2012). Approachability was important as students avoided instructors considered difficult to communicate with, leading to unasked questions and potentially having an impact on patient safety (Sand-Jecklin 2009, O'Mara *et al.* 2014). Examples of this attribute found in the literature includes the SECEE tool (Sand-Jecklin 2009) which focuses on effective facilitation of learning and Saarikoski and Leino-Kilpi's (2002) definition which states the CLE consists of 'basic ideas and principles of teaching and learning on the ward' (p. 260). The amount of varied patient opportunities also had an impact on learning, supported by Sand-Jecklin's (2009) tool which evaluates learning opportunities provided to students, as placements offering various experiences presented more chances to practice skills and apply theory to practice (Sand-Jecklin 2009, Chuan & Barnett 2012, Bisholt *et al.* 2014). A final element of this attribute involves student engagement in the learning process. This was reflected in tools including the CLEI (Chan 2002) which contains an Involvement section measuring student participation and attentiveness and the CLEDI (Hosoda 2006) which measures if students were active learners in the CLE. Attributes with supporting sources are summarized in Table 2.

Constructed cases

Walker and Avant (2010) promote development of cases to clarify concepts. A model case presents the CLE concept with all attributes followed by a borderline case almost representing the concept but lacking some attributes. Finally, a contrary case is presented, describing what the CLE does not represent.

Model case

DH, a nursing student, is in her last semester of nursing school before graduating. She started a new clinical rotation and the instructor familiarized students to the hospital setting and equipment. Next, students were given patient assignments ensuring learning opportunities matched educational level and prior experiences.

DH arrived the following day, prepared to perform well. The instructor facilitated learning by role modelling professional behaviours and encouraging application of theory, guiding DH when performing a foley catheter insertion and providing constructive feedback after completion. DH encountered positive communication when discussing her

Table 2 Attributes of the CLE and supporting sources.

Attribute	Supporting sources
Physical space - necessary and functioning equipment	Berragan (2011), Burke and Mancuso (2012), Chuan and Barnett (2012), Dunn and Burnett (1995), Ganley and Linnard-Palmer (2012), Levett-Jones and Lathlean (2009), Sand-Jecklin (2009), Skaalvik *et al.* (2011)
Psychosocial and interaction factors - communication and interaction among everyone in the CLE, including students, instructors, and staff nurses	Bisholt *et al.* (2014), Burke and Mancuso (2012), Chan (2002), Chuan and Barnett (2012), Dunn and Burnett (1995), Ganley and Linnard-Palmer (2012), Henderson *et al.* (2009), Hosoda (2006), Levett-Jones and Lathlean (2009), Newton *et al.* (2010), Palmer *et al.* (2005), Sand-Jecklin (2009), Sundler *et al.* (2014)
Organizational culture - manager and organization's view on importance of nursing education - organizational policies determining scope of practice for nursing students - emphasis on providing quality patient care	Bisholt *et al.* (2014), Chan (2002), Dunn and Burnett (1995), Dunn and Hansford (1997), Hosoda (2006), Levett-Jones and Lathlean (2009), Newton *et al.* (2010), Palmer *et al.* (2005), Papastavrou *et al.* (2009), Saarikoski and Leino-Kilpi (2002)
Teaching and learning components - effectiveness of instruction provided by designated instructor - variation in patient care opportunities provided - Student engagement in the learning process	Chan (2002), Chuan and Barnett (2012), Dunn & Burnett 1995), Hosoda (2006), Newton *et al.* (2010), Sand-Jecklin (2009), Saarikoski and Leino-Kilpi (2002), Sundler *et al.* (2014)

patient's status with staff nurses. Recently, hospital leaders began collaborating with nursing education programmes to enhance student learning and received an award for providing high-quality patient care. DH met outlined learning objectives, gained confidence and described satisfaction with pursuing a nursing career. This model case highlights all attributes of the CLE. DH felt comfortable with physical surroundings, experienced positive interactions, a positive organizational culture and her learning was enhanced by an effective instructor.

Borderline case

HM is a nursing student invited to observe patient surgeries in the operating room during her clinical experience. HM arrives and observes two surgical procedures, asking the physician some questions and after four hours, fulfils her required time, completing her clinical course requirement. In this case, HM is a student in a clinical environment, interacting with healthcare staff; however, as an observation experience, HM can still meet learning outcomes even with interference from other attributes, including organizational culture, as this is strictly an observation experience.

Contrary case

MB, a nursing student, arrives at a hospital unit for a clinical experience. On arrival, the staff states no prior students have completed clinical experiences on the unit and no one discussed with the healthcare staff that students would be present for clinical experiences that day. The instructor was also ill and not present which was not communicated to students or staff. As this was the students' first day, the physical setting was unfamiliar. Confused, MB and the other students sat at various locations in the unit observing nurses and staff entering and leaving patient rooms with no interactions taking place. Subsequently, students left with no learning experiences occurring. This is a contrary case because no attributes are present. With no familiarity to the physical structure, no learning experiences provided, no communication taking place and no established culture about nursing education, this would not be considered a CLE.

Antecedents

Antecedents include components or situations occurring before the concept can exist (Walker & Avant 2010). Based on identified attributes, antecedents needed for a CLE include a patient, or simulated patient, a nursing student enrolled in a nursing education programme with specified learning outcomes, healthcare facility representatives allowing students to perform patient care and presence of a qualified instructor. Also, a foundational knowledge base and demonstration of necessary skills are antecedents needed to ensure patient safety.

A patient or simulated patient is required as the CLE is where students acquire skills and knowledge while caring for patients (Henderson *et al.* 2009, Papastavrou *et al.* 2009). A student must be present for a CLE to exist as reviewed definitions refer to student learning and all tools evaluate student experiences in the CLE (Dunn & Burnett 1995, Chan 2002, Hosoda 2006, Henderson *et al.* 2009, Newton *et al.* 2010, Chuan & Barnett 2012, Bisholt *et al.* 2014). A related antecedent involves student enrolment in a nursing education programme with specified learning outcomes. The CLE was discussed in multiple research studies as a component of nursing programme curricula, supporting this antecedent (Dunn & Burnett 1995, Chan 2002, Hosoda 2006, Sand-Jecklin 2009).

In addition, healthcare facility representatives allowing students to participate in patient care is needed. CLE experiences are often arranged between academic programmes and healthcare facilities, ensuring students acquire clinical time, skills and experiences necessary for practice (Dunn & Hansford 1997, Palmer *et al.* 2005). As the CLE involves transferring theory to practice, another antecedent involves foundational knowledge students need to care for patients, including information about disease processes and medications (Dunn & Hansford 1997, Newton *et al.* 2009, O'Mara *et al.* 2014). After obtaining foundational knowledge, critical thinking development is emphasized by having students apply knowledge to CLE experiences. Nursing students should start understanding content connections, including identifying symptoms indicating deterioration in a patient's status and rationale for medications used in disease processes (Lasater & Nielsen 2009, Fero *et al.* 2010, Perkins & Kisiel 2013). Researchers also emphasize practicing skills in a controlled environment, including medication administration, as an antecedent, ensuring students properly execute basic skills before starting patient care (Newton *et al.* 2009, Berragan 2011, Kirkman 2013). These antecedents are reflected in the CLEDI tool which measures whether students can, 'utilize previously learned knowledge and skills', indicating both should be present before performing patient care (Hosoda 2006, p. 485).

A final antecedent is presence of a qualified instructor (Henderson *et al.* 2009, Skaalvik *et al.* 2011, Chuan & Barnett 2012). Instructors are licensed registered nurses who facilitate learning, supervise and evaluate students, ensuring patient safety (Hosoda 2006, Sand-Jecklin 2009, Newton *et al.* 2010). Variations about educational

preparation of instructors were noted, with some being faculty and having graduate level education about pedagogy and learning theories and others being staff nurses with no description of educational preparation (Dunn & Burnett 1995, Chan 2002, Saarikoski & Leino-Kilpi 2002, Hosoda 2006, Newton *et al.* 2010).

Consequences

Consequences include outcomes occurring from the concept itself (Walker & Avant 2010). Concerning the CLE, consequences include student achievement of learning outcomes, resulting in the development of necessary skills, knowledge and behaviour required for practice, development of self-confidence and satisfaction with the nursing profession.

Student achievement of outcomes is accomplished in varying degrees depending, in part, on CLE attributes (Dunn & Burnett 1995, Levett-Jones & Lathlean 2009, Bisholt *et al.* 2014). Participating in a positive CLE providing appropriate physical space and equipment, instructor support, positive relationships and a variety of experiences, promotes skill and knowledge acquisition necessary for practice (Dunn & Hansford 1997, Chan 2002, Hosoda 2006, Henderson *et al.* 2009, Levett-Jones & Lathlean 2009). With recurrent negative CLE encounters, students may not graduate or graduate with insufficient learning experiences, leading to unprepared nurses (Levett-Jones & Lathlean 2009, Babenko-Mould & Laschinger 2014). Achievement of outcomes falls anywhere along this continuum depending on CLE attributes; however, the goal is to maximize learning and promote positive outcomes for all students (Levett-Jones & Lathlean 2009).

Chuan and Barnett (2012) describe satisfaction with the nursing profession, development of self-confidence and preparation for practice as other consequences. Without positive CLE experiences, students lack confidence, often questioning judgements and fearful to ask pertinent questions, having an impact on patient safety (Levett-Jones & Lathlean 2009, Babenko-Mould & Laschinger 2014). This influences satisfaction with the nursing profession, even determining whether students remain in nursing programmes (Moscaritolo 2009, Babenko-Mould & Laschinger 2014). Figure 1 provides a visual representation of antecedents, attributes and consequences comprising the CLE.

Based on these findings, the authors developed the following definition describing the CLE in the context of nursing education:

> The clinical learning environment involves any area where nursing students apply theory to practice by conducting actual or simulated patient care to gain experiential knowledge about skills, attitudes and decision-making abilities necessary to become a competent, entry-level nurse. This environment includes the physical space, psychosocial and interaction factors, teaching effectiveness of the instructor, student engagement and organizational culture, all of which have an impact on students' abilities to meet desired learning outcomes (Dunn & Burnett 1995, Chan 2002, Hosoda 2006, Sand-Jecklin 2009, Newton *et al.* 2010).

Empirical referents

Empirical referents are items measuring the concept itself (Walker & Avant 2010). As mentioned, multiple tools assess the CLE and its effectiveness in promoting learning. All

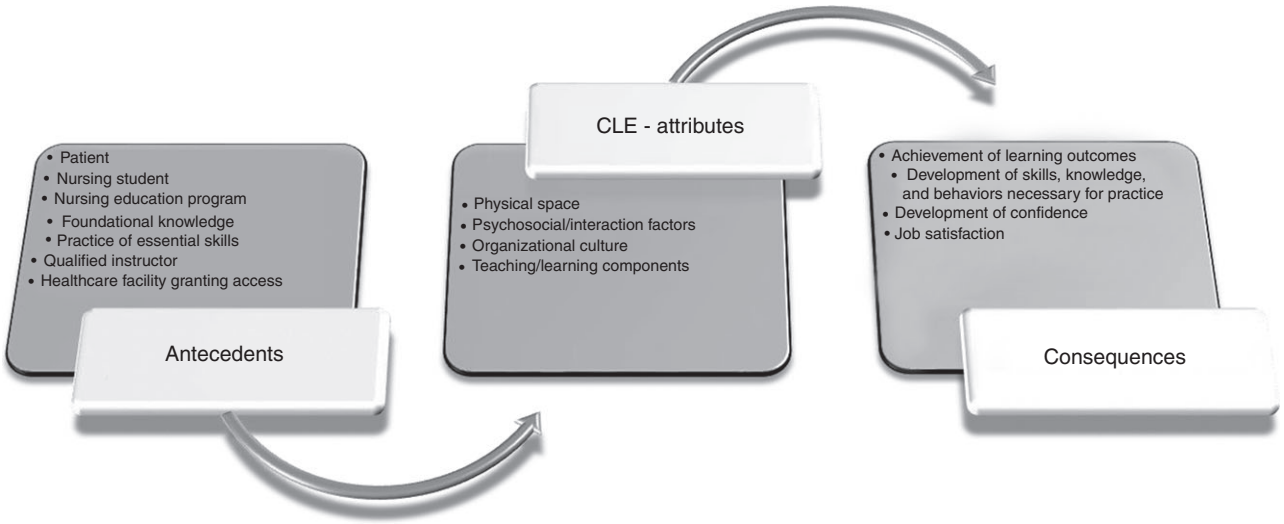

Figure 1 The CLE and its influence on student learning outcomes.

instruments reviewed were self-report surveys, including the CLES and CLEDI (Dunn & Burnett 1995, Hosoda 2006). Other healthcare fields, including radiology and dentistry, also have established tools, including The Diagnostic Radiology Clinical Learning Environment (DR-CLE) and the Dental Clinical Learning Environment Instrument (DECLEI) (Bloomfield & Subramaniam 2008, Kossioni *et al.* 2014). These tools, along with cited definitions, confirmed attributes of the CLE concept. As Walker and Avant (2010) stated, 'empirical referents relate directly to the defining attributes, not the entire concept itself' (p. 168). The attributes described in this concept analysis could assist in establishing a more representative tool for CLE assessment.

Discussion

The aim of this concept analysis was to develop a definition for the CLE concept and determine antecedents, attributes and consequences to assist nursing programmes and healthcare organizations in evaluating clinical sites and ensuring meaningful experiences to prepare students for practice. After evaluating definitions and tools, CLE attributes were determined to include the physical structure; psychosocial and interaction factors; the organizational culture; and teaching and learning components including effective instruction and student engagement. Antecedents include a patient, qualified instructor, student who is part of a nursing programme with specified learning outcomes and healthcare facility representatives allowing students to participate in patient care. The presence of foundational skills and knowledge to connect theory to practice are also necessary. The CLE consequently has an impact on achievement of learning outcomes, student preparation for practice, self-confidence and satisfaction with choosing the nursing profession.

Based on these findings, a correlation exists between attribute characteristics and the Ascent to Competence conceptual framework developed by Levett-Jones and Lathlean (2009), whose qualitative study about nursing student 'belongingness' revealed optimal learning only takes place when students feel, 'appreciated, recognized and respected' (p. 2873). Belongingness occurs when students are familiar with the environment, feel physically and emotionally safe and are recognized as part of the healthcare team. As stated in their article:

> Most students acquire some knowledge and skills in most clinical contexts and at most levels of the hierarchy, however, the goal of clinical education is to maximize student's learning in each clinical environment to prepare nurses who are competent, confident and fit for practice. (Levett-Jones & Lathlean 2009, p. 2876)

Providing conceptual clarity about the CLE has practice implications for healthcare organizations and nursing education programmes. Researchers agree students naturally exhibit stress and anxiety when arriving to a CLE, increasing to an unhealthy point with unfamiliar surroundings and when experiencing negative attitudes from others (Chan 2002, Henderson *et al.* 2009, Moscaritolo 2009, Sundler *et al.* 2014). Students are sometimes subjected to bullying behaviours, inhibiting learning, as, 'until students feel accepted by staff and are assured of a valid place in the team they remain preoccupied with fitting in and their progress is negatively impacted' (Levett-Jones & Lathlean 2009, p,. 2874). Ensuring student orientation to the CLE and providing education to staff nurses about their impact on student learning can assist in offering positive experiences (Levett-Jones & Lathlean 2009, Moscaritolo 2009, Skaalvik *et al.* 2011).

Healthcare organization leaders should promote a culture valuing future nurses and remember the professional obligation nurses have regarding formation of students. For example an expectation of the American Nurses Association is that, 'the registered nurse contributes to a work environment conducive to the education of healthcare professionals,' included in the organization's Standards of Practice document (American Nurses Association 2010, p. 56). This mindset must be displayed and communicated at all organizational levels, ensuring staff support this belief. If the organizational culture does not reflect the importance of nursing education, students are more likely to experience negative interactions and observe unprofessional behaviours. These experiences interfere with learning, leading to a lack of self-confidence and even prompting pursuance of other career options (Levett-Jones & Lathlean 2009, Skaalvik *et al.* 2011).

About instructors, approachability has an impact on student comfort level with communicating concerns (Sand-Jecklin 2009, O'Mara *et al.* 2014, Papathanasiou *et al.* 2014). Ensuring instructors provide constructive feedback assists in student self-confidence and improved communication. The instructor's role is to facilitate learning, evaluate performance and identify areas for improvement, assisting students in achieving outcomes while providing safe patient care (Henderson *et al.* 2009, Skaalvik *et al.* 2011, Chuan & Barnett 2012). Instructors should consider foundational knowledge level and review prior clinical experiences when making patient assignments for students. Without consideration of these factors, students may feel overwhelmed or under challenged. About the student, a lack of engagement, which may be affected by other attributes, will also have a negative impact on achievement of outcomes. Emphasizing

the importance of CLE experiences to students and evaluating the CLE with established tools can ensure optimal learning (Levett-Jones & Lathlean 2009, Chuan & Barnett 2012).

Although most tools evaluate traditional clinical settings where students are instructed in a healthcare facility, this concept analysis also applies to simulation laboratories. Providing simulation lab experiences for students is becoming more common in nursing education programmes as students can perform patient care on mannequins, eliminating the risk for patient harm and allowing for immediate feedback after completing scenarios (Kirkman 2013, Park *et al.* 2013). CLE attributes correlate with this setting, as researchers confirm orientation to simulation rooms and mannequins decreases anxiety, allowing for optimal learning (Berragan 2011, Burke & Mancuso 2012, Ganley & Linnard-Palmer 2012). Even though outside healthcare professionals are usually not present, negative communication and attitudes among students and instructors in simulation laboratories inhibit the learning experience (Burke & Mancuso 2012, Ganley & Linnard-Palmer 2012). Ganley and Linnard-Palmer (2012) assessed student learning in simulation, discovering, 'students may still face risks such as academic failure, negative judgment by their faculty and peers, loss of integrity, embarrassment and so forth' (p. 50). Researchers discovered students sometimes felt intimidated and unsupported by instructors during scenarios, especially when expectations were not explained. (Ganley & Linnard-Palmer 2012). This unnecessary stress was counterproductive to critical thinking development, aligning with attributes previously described.

Organizational culture can have an impact on integration of simulation into curricula. When nursing education leaders communicate benefits of simulation and connect this teaching strategy to mission and vision statements instructors are more inclined to view simulation in a positive manner and more likely to provide high-quality scenarios, maximizing learning experiences (Ganley & Linnard-Palmer 2012, Taplay *et al.* 2014). Student engagement also influences experiences, as students viewing simulation as beneficial often described positive learning experiences during scenarios (Berragan 2011, Burke & Mancuso 2012, Ganley & Linnard-Palmer 2012).

Based on the developed definition, a middle-range explanatory theory can be developed discussing that CLE attribute characteristics have an impact on achievement of outcomes, development of self-confidence and successful transition into the nursing profession. This theory could also apply to emerging models of clinical education, including dedicated education units (DEU) and interprofessional clinical learning units (IPCLU) (Sommerfeldt *et al.* 2011, Mulready-Shick *et al.* 2013, Anderson *et al.* 2014). Consistent exposure to positive or negative CLE experiences and effect on transition to practice needs investigation along with discovering attributes most determinant of success when shifting from the student to professional nurse role.

Limitations

The literature search was not specific to the CLE in nursing education. Student experiences in other healthcare education programmes may include different components having an impact on student learning; however, similar definitions and tools were noted when reviewing all research. History and selection were other limitations based on inclusion criteria, as the CLE has and will continue to, evolve over time. Sources from 1995–2014 were evaluated to decrease this limitation, but this concept will require reviewing as nursing education and healthcare practices evolve (Creswell 2009).

Conclusion

This CLE concept analysis identifies practice implications, including the necessity for nursing programmes and healthcare agencies to collaborate and ensure students are prepared for practice. Interventions including consistent orientation, providing education for managers and staff nurses about the importance of nursing education and determining student preparedness when entering the CLE can improve clinical experiences. As noted, there is wide variation about the preparation and education instructors undergo to prepare for the CLE teaching role, ranging from no education to completion of graduate degrees emphasizing nursing educational theories. The majority of instructors transition into the education field with knowledge of healthcare specialties but limited exposure and education about practices including proper assessment of student learning. Optimally, instructors should receive formalized education concerning effective learning strategies and appropriate evaluation techniques, ensuring preparedness when facilitating student learning. Research about variation in instructor education and its impact on student learning in the CLE is needed (Cangelosi *et al.* 2009, Lasater & Nielsen 2009, Perkins & Kisiel 2013, Schoening 2013).

Other research opportunities include assessing the impact student engagement has on CLE experiences and whether this concept analysis reflects emerging clinical environments, such as the DEU and IPCLU. CLE experiences should be assessed over time, determining impact on

student self-confidence and evaluating if experiences have an impact on length of nursing careers. Also, determining attributes most significantly impacting student learning needs investigation. For example researchers are discovering higher student satisfaction levels with DEU vs. traditional models when similar attributes appear in both settings (Mulready-Shick *et al.* 2013). The Ascent to Competence framework (Levett-Jones & Lathlean 2009) or Benner's novice to expert framework of skill acquisition (Benner 1982) could be used for this research.

Leaders in both nursing education programmes and healthcare facilities must work together to create meaningful clinical learning experiences. Without prepared nursing students entering the profession, nursing shortages will continue and patient care will suffer. As Tanner (2006) stated, 'clinical education has remained essentially unchanged for the past 40 years', even though major changes in healthcare have occurred, including caring for higher acuity patients, greater technological advances and emphasis on interprofessional care (p. 99). Knowledge of CLE antecedents, attributes and consequences can aid instructors, students and organizations in assessing and improving these environments, assisting students in becoming competent, professional nurses.

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Author contributions

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- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
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