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Integrated Learning in Simulation:  
Theoretic Foundations Based on Carper's Patterns of Knowing

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### Abstract

Nursing education is a lifelong process. It is dynamic. Nurse educators strive to develop student-centered collaborative teaching strategies. Simulation serves as strategy to teach clinical reasoning skills and prepare students to provide safe, effective patient care. Increasing patient acuity and lack of clinical sites make simulation an essential and integral part of nursing education. This paper demonstrates the value of using Carper's (1978) fundamental patterns of knowing in nursing as a theoretical foundation for the integration of simulation-based learning experiences in nursing education.

[Key words: nursing theory, patterns of knowing, simulation, debriefing, experiential learning]

Nursing education is dynamic and empowering. Nurse educators seek innovative strategies that teach clinical reasoning skills and prepare students to provide safe, effective patient care. However, the increased acuity in patient care settings and lack of clinical sites has made it crucial for educators to incorporate a variety of teaching strategies and create significant learning experiences that accurately represent today's health care. Nurse educators use theories to develop and incorporate teaching strategies and guide practice. According to Smith and Parker (2015), theories are frameworks of reflections, observations, projections, and conclusions that help create meaning. Theories are part of the knowledge structure of the discipline of nursing and further understanding and development of nursing practice (Smith & Parker, 2015).

Using a theoretical framework can help nurse educators create, facilitate, and evaluate significant learning experiences. As the healthcare environment quickly changes, so does nursing education. Traditional didactic and clinical teaching methods can be oppressive. According to Benner, Sutphen, Leonard, and Day (2010), "Standardized lecture focuses on information transfer rather than helping students learn what is salient in particular professional practice situations" (p. 69). The challenge of lecture is to create a space for learning that encourages curiosity and exploration and connects with nursing practice. When classroom and clinical learning experiences are disconnected, the quality of student learning is compromised (Benner et al., 2010). Simulation-based education with debriefing is a compelling teaching

approach that integrates both didactic and clinical teaching methods. It is a contextualized, learner-centered, collaborative approach that allows students to move from knowledge acquisition to application in practice.

This paper focuses on the value of simulation-based learning experiences with debriefing in nursing education and how these learning experiences facilitate integrated learning consistent with Carper's (1978) four fundamental patterns of knowing. Following the definitions of terms used in this paper, simulation-based learning experiences will be related to Carper's (1978) four patterns of knowing in nursing; Kolb's (1984) experiential learning theory; the knowledge, skills, and attitudes targets for pre-licensure competencies identified by the Quality and Safety Education for Nurses (QSEN Initiative, 2014); and the apprenticeships for nursing education described by Benner, Sutphen, Leonard-Kahn, and Day (2008; 2010). Recent position statements and recommendations from national studies supporting the integration of simulated learning experiences in nursing education are highlighted to support the use of simulation in nursing education. Finally, this paper considers the importance of using a holistic approach in curriculum design that facilitates learning in all domains. Fink's (2013) description of significant learning supports the value of using simulation as an active learning strategy which incorporates accessing information and ideas, experiential learning, and reflective dialogue by using a taxonomy of interactive kinds of significant learning.

### **Definitions of Terms**

For the purpose of this paper, the terms used to describe the theoretic foundations for simulated learning are defined. These terms include: simulation, debriefing, patterns of

knowing in nursing, experiential learning theory, quality and safety competencies, apprenticeships, and significant learning.

### **Simulation**

Simulation is defined as a simulated-based learning experience that allows for students to integrate knowledge, skills, and attitudes and analyze and respond to realistic situations in a simulated environment (Meakim et al., 2013). According to the International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice: Simulation (Meakim et al., 2013), simulation includes simulated-based learning experiences that use a variety of structured activities representing actual or potential practice situations. These learning experiences allow participants to develop or enhance knowledge and skill or analyze and respond to realistic situations in a simulated environment. Therefore, simulation is a teaching method used to build competence and confidence in nursing students.

Nurse educators develop simulation scenarios that resemble real-life situations. These scenarios allow students to learn in a risk-free environment. A well-designed, evidence-based simulated learning experience provides a setting that mimics an actual patient situation to promote student learning (Waxman, 2010). Simulation creates a place for students learn, practice, and gain experience that is readily transferred into clinical nursing practice.

### **Debriefing**

Debriefing is a facilitator-led activity conducted after a simulation experience that provides time for students to reflect and receive feedback regarding their performance (Meakim et al., 2013). According to Meakim et al., "Participants are encouraged to explore

emotions and question, reflect, and provide feedback to one another. The purpose of debriefing is to move toward assimilation and accommodation to transfer learning to future situations” (p. S5). Debriefing is an essential component of simulation and considered the most critical element in a simulated-based learning experience.

### **Patterns of Knowing in Nursing**

According to Carper (1978), the four fundamental patterns of knowing in nursing include empirics, esthetics, personal knowing, and ethics. Empirics is the science of nursing. It is the pattern of knowing that is driven by description, classification, and explanation. Esthetics is the art of nursing. It is the knowledge behind the performance of practice. Esthetics is the pattern that looks deeper into a situation and helps nurses develop creative solutions. Personal knowing is self-awareness and guides the interpersonal process between nurse and patient. It is the reflective practice of nursing. This pattern focuses on the therapeutic use of self that creates a caring relationship between nurse and patient. Ethics is the moral knowledge of nursing and guides decision making. It is about justice, integrity, and caring (Carper, 1978).

### **Experiential Learning Theory**

Kolb’s experiential learning theory (1984) is based on the premise that learning is a process. Kolb’s (1984) model includes four phases that learners move through in the process of learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation.

### **Quality and Safety Competencies**

The Quality and Safety Education for Nurses (QSEN) project was initiated to prepare future nurses who have the knowledge, skills, and attitudes (KSAs) needed to improve the quality and safety of health care (QSEN Institute, 2014). QSEN (2014) describes six quality and safety competencies for nursing, including: patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. For each competency, QSEN also specifies targets for KSAs to be developed in nursing programs.

### **Apprenticeships**

Benner et al. (2008; 2010) described three apprenticeships for professional education that must be integrated in nursing curriculum to better prepare students for professional practice: cognitive knowledge, practice know-how, and ethical comportment and formation. Consistent with the six key shifts in nursing education recommended by the Carnegie Foundation National Study of Nursing Education, Benner et al. (2008) emphasize the need to integrate these apprenticeships in nursing programs to promote clinical reasoning and multiple ways of thinking, unite classroom and clinical teaching, and develop ethical comportment using formative learning experiences.

### **Significant Learning**

According to Fink (2013), significant learning involves a process that is engaging and energizing with outcomes that result in lasting change and have value for life (p. 8). Significant learning experiences are learner-centered and require active learning that includes three components: getting information and ideas, rich learning experiences, and reflective dialogue. In addition, Fink developed an interactive and non-hierarchical taxonomy based on six kinds of



significant learning: foundational knowledge, application, integration, human dimensions, caring, and learning how to learn (p. 37).

### **Patterns of Knowing in Nursing and Simulation**

As previously stated, this paper demonstrates how Carper's (1978) four fundamental patterns of knowing in nursing provide a theoretic foundation for integrating simulated-based learning experiences as a holistic approach to teaching. Fawcett, Watson, Neuman, Walker, and Fitzpatrick (2001) urge a holistic approach to evidence-based practice guided by empirical, esthetic, personal knowing, and ethical theories. Fawcett et al. (2001) describe each pattern of knowing as an individual theory, asserting that these diverse theories based on the patterns of knowing in nursing generate different kinds of evidence which are all needed for evidence-based nursing practice. Because nursing education and practice are guided by theory; designing and integrating simulated learning experiences in nursing curriculum must also be theory-guided, evidence based, and holistic. In the following paragraphs, each of Carper's (1978) four fundamental patterns of knowing are addressed to demonstrate the theoretic, evidence-based, and holistic foundations of simulation in nursing education.

#### **Empirics Pattern**

Carper (1978) describes empirics as the pattern of knowing in nursing that is driven by classification and explanation. The empirics pattern is experimental, factual, and observational. It is well defined and exemplary (Carper, 1978). Empirics is the science of nursing organized by laws and theories in order to explain and predict patterns (Carper, 1978). Carper's (1978) empirics pattern is related to identifying behavioral responses based on research. The pre-

briefing in simulation is the knowledge gained before the simulation experience. Students take what they have learned in the classroom and assigned readings and apply this knowledge to the skills portion of the simulation experience. The empirics pattern is also related to Kolb's (1984) abstract conceptualization phase, the targets for knowledge described in the QSEN competencies (QSEN Initiative, 2014), and the apprenticeship of cognitive knowledge described by Benner et al. (2008; 2010).

**Relationship to Kolb.** Kolb's (1984) abstract conceptualization phase in the learning cycle shows that learners use logic and ideas to understand situations and problems. During this phase learners build on theory. It involves a scientific approach opposed to an artistic approach (Kolb, 1984). As Zigmont, Kappus, and Sudikoff (2011) state, simulation-based experiences assist learners to bridge what students learned during the simulation experience to future experiences. Empirical knowing also involves bridging information and describing and explaining of a situation in order to predict future scenarios (Carper, 1978).

**Relationship to QSEN.** Several QSEN (2014) targets for KSAs resemble Carper's (1978) empirics pattern of knowing. Examples of these targets include (a) explaining the of evidence in determining best practice, (b) demonstrating knowledge of basic scientific methods and processes, and (c) describing evidence-based practice to include the components of research evidence, clinical expertise and patient/family values (QSEN Institute, 2014). Nursing education involves theoretical explanations and using research to predict behavioral responses. Simulation, when used to improve nursing practice, can allow the learner to move from comprehension to application, analysis, and synthesis (Zigmont et al., 2011).

**Relationship to Benner et al.** The first apprenticeship described by Benner et al. (2008; 2010) is the cognitive knowledge apprenticeship of nursing knowledge and science: the theoretical knowledge base required for nursing practice typically taught in the classroom setting. This apprenticeship is comprised of nursing knowledge and the sciences, social sciences, and humanities.

### **Esthetics Pattern**

Carper's (1978) esthetics pattern of knowing involves creativity and providing nursing care that is effective. It is the knowledge gained by subjective acquaintance, observing and transforming it into practice (Carper, 1978). Carper (1978) describes esthetics as the art behind the skill. Simulation provides excellent opportunities for students to practice skills and try out and develop new skills. The esthetics pattern is consistent with Kolb's (1984) active experimentation phase, the QSEN (QSEN Initiative, 2014) targets for skills, and the apprenticeship of practice or skilled know-how described by Benner et al. (2008; 2010).

**Relationship to Kolb.** Kolb's (1984) active experimentation phase is all about doing. Zigmont et al. (2011) describe simulation as an excellent opportunity for active experimentation by allowing the learners to try out new skills. Educators in simulation can motivate adult learners by creating a hands-on learning experience that increases competency. Active experimentation, similar to the esthetic pattern of knowing, involves the therapeutic actions and skills of nursing.

**Relationship to QSEN.** Examples of targets for KSAs described by QSEN (2014) that represent Carper's (1978) esthetics pattern of knowing include (a) functioning competently

within own scope of practice as a member of the health care team, (b) participating effectively in appropriate data collection and other research activities, and (c) demonstrating effective use of technology and standardized practices that support quality and safety (QSEN Institute, 2014).

**Relationship to Benner et al.** The second apprenticeship of skilled know-how and clinical reasoning is related to the esthetic pattern of knowing. This apprenticeship is “the practical: the skilled know-how required for competent clinical practice” (Benner et al., 2008, p. 474).

### **Pattern of Personal Knowing**

Carper’s (1978) pattern of personal knowing is about self-awareness and relates to the therapeutic use of self. This pattern is not only concerned with actualizing of the individual self, but also understanding one’s relationship with other human beings (Carper, 1978). Self-awareness allows a nurse to see a patient as more than an object and be in a personal relationship with that patient (Carper, 1978). Simulation with debriefing can provide opportunities for students to reflect on their own performance and identify gaps in their knowledge and skills. The pattern of personal knowing is related to Kolb’s (1984) phase of reflective observation, the targets about attitudes included in the QSEN competencies (QSEN Institute, 2014), and all three apprenticeships described by Benner et al. (2008; 2010).

**Relationship to Kolb.** Kolb’s (1984) reflective observation phase is about being interested in others and feeling oriented. Reflective observation involves listening to others and reflecting on those thoughts (Kolb, 1984). As Zigmont et al. (2011) describe, reflective observation during debriefing allows time for learners to reflect on the simulation and their

own performance and well as the performance of the learners as a team. Reflective observation, similar to the personal pattern of knowing, involves self-awareness.

**Relationship to QSEN.** The QSEN Institute (2014) lists several targets with similar concerns consistent with personal knowing and reflective observation. Examples include (a) acknowledging own potential to contribute to effective team functioning, (b) acknowledging own limitations in knowledge and clinical expertise before determining when to deviate from evidence-based best practices, and (c) examining nursing roles in assuring coordination, integration, and continuity of care (QSEN Institute, 2014).

**Relationship to Benner et al.** As Benner et al. (2008; 2010) assert, nursing education must move to an integration of all three apprenticeships for professional education: cognitive knowledge, practice know-how, and ethical comportment formation. This integration relates to the pattern of personal knowing with its focus on self-awareness and the understanding of the relationship of other human beings (Carper, 1978).

### **Ethics Pattern**

The ethics pattern of knowing is the moral component that guides ethical conduct (Carper, 1978). The ethics pattern of knowing is focused on justifying and judging action and deciding what should or should not be done (Carper, 1978). Simulation with debriefing can provide opportunities to discuss ethical component of nursing including patient advocacy, meeting the patient as a person, preserving dignity, and how to respond to substandard practice. The pattern of ethics is consistent with Kolb's (1984) concrete experience, all the

targets for the KSAs identified for the QSEN competencies (QSEN Initiative, 2014), and the apprenticeship of ethical comportment and formation described by Benner et al. (2008).

**Relationship to Kolb.** Kolb's (1984) concrete experience phase focuses on being involved in experiences and dealing with human situations in a personal way. This phase provides the basis for learning and depends on open-mindedness. After simulation, learners debrief in meaningful reflection about what went well or what did not go well during the simulated learning experience (Zigmont et al., 2011).

**Relationship to QSEN.** The ethics pattern not only addresses what is morally right and wrong, but also how nurses assist patients to assume responsibility for their health and wellness (Carper, 1978). Examples of the targets for KSAs related to ethics include (a) exploring ethical and legal implications of patient-centered care; (b) acting with integrity, consistency, and respect for differing views; and (c) valuing the need for ethical conduct of research and quality improvement.

**Relationship to Benner et al.** The ethics pattern described by Carper (1978) is consistent with the apprenticeship of ethical comportment and formation. According to Benner et al. (2008), "the third apprenticeship is the ethical: the instantiation of the responsibilities, concerns, and commitments of the profession that show up in what we call the professional's formation of a nursing practice identity, character, skilled know-how, and knowledge, as well as everyday ethical component as a professional nurse" (p. 474). Benner et al. (2008) assert that this apprenticeship should not be taught separately, but fully integrated into nursing education. According to Benner et al. (2008), this process of formation in nursing

is facilitated by bringing everyday ethical concerns and the practice of ethics to the center of teaching.

### **Implications for Nursing Education**

The patterns of knowing in nursing (Carper, 1978) with Kolb's (1984) experiential learning theory, the KSAs targets identified in the QSEN competencies (QSEN Initiative, 2014), and the apprenticeships described by Benner et al. (2008; 2010), provide a theoretic foundation for the integration of simulation-based learning experiences in nursing education. The need for this integration of simulation is supported by the Carnegie Foundation National Study of Nursing Education (Benner et al., 2010), reports published by the Institute of Medicine (IOM, 2010; 2015), findings of research conducted by the National Council of State Boards of Nursing (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014), and position statements from the National League for Nursing (NLN, 2015a; 2015b).

**Carnegie Foundation National Study.** The key findings of the Carnegie Foundation National Study of Nursing Education are described by Benner et al. (2010) who affirm that the need for change in nursing education is now. The shortage of nurses and educators, fewer clinical sites, and the need to change teaching approaches to better prepare students for the complexities of nursing practice in diverse healthcare environments are just a few of the driving forces behind the need for change (Benner et al., 2010).

Benner et al. (2010) identified three major findings of the Carnegie Foundation National Study of Nursing Education:

1. Nursing programs are effective in developing professional identity.

2. Clinical practice assignments provide excellent learning experiences.
3. Nursing programs are not consistently effective in teaching the sciences, technology, and humanities.

In response to these study findings, Benner et al. (2010) recommended integrating the three apprenticeships of professional education in nursing programs: (a) knowledge and science, (b) skilled (practice) know-how, and (c) ethical comportment and formation. In professional practice, nurses integrate knowledge, skill, and current patient care needs. Therefore, the ability to reason through patients' conditions and situation is an important skill for nurses (Benner et al., 2010). Simulation provides students with opportunities to use knowledge, practice skills, and develop, implement, and evaluate plans for nursing care while simulated patient cases unfold in a simulated-based learning experience.

**Institute of Medicine.** In 2010, the Institute of Medicine (IOM) released a landmark report addressing the crucial role of nurses in health care, *The Future of Nursing: Leading Change, Advancing Health*. According to the IOM (2010), "simulations employing technology can allow students to practice skills, learn professional behavior, and demonstrate clinical reasoning in a safe environment" (p. 20). Simulation also engages students and provides them with higher-level learning opportunities they have not had before, such as clinical decision making, prioritization, and delegation skills.

Simulations can be incorporated across theory, laboratory, and clinical learning experiences. When designed and implemented effectively, simulations provide a learner-centered approach that immerses students in situations where they have to solve problems and



think critically as members of a team. The most critical component of a simulation is the debriefing which is conducted afterward; this process of guided reflection is where students learn the most (IOM, 2010, p. 20). Reflective debriefing allows time for students to bridge past learning experiences with new knowledge while attaching meaning to information.

More recently, the IOM (2015) released a report of the progress and changes in the current healthcare culture. One of the recommendations identified by the IOM (2015) is the need to transform nursing education to address the increasing importance of interprofessional collaboration and need for improved healthcare delivery. This involves preparing nurses to meet increasingly complex patient needs and promoting interprofessional and lifelong learning (IOM, 2015). Simulations provide a rich learning opportunity for nursing students to learn collaboratively with students from other health professions to address the complexity of today's healthcare environment and practice the necessary communication skills needed to provide safe patient care in healthcare teams.

**National Council of State Boards of Nursing.** Reporting the findings of the National Council of State Boards of Nursing (NCSBN) multi-site, longitudinal, national simulation study, Hayden et al. (2014) proposed that simulation can be substituted for up to 50% of traditional clinical experiences in prelicensure nursing programs. In order to implement high-quality simulation, Hayden et al. also recommended the incorporation of best practices into simulation programs and the exploration of other aspects of simulation. Hayden et al. concluded that simulation provides students with opportunities to be active participants throughout the learning experience because it integrates previous knowledge and skills with the application of

new information and development of new skills. Simulation challenges students to think along a continuum to attach meaning to information and improve their clinical reasoning skills.

**National League for Nursing.** The National League for Nursing (NLN) enthusiastically supports simulation as a vital teaching method to prepare nurses for today's complex healthcare environment. According to the NLN, simulation promotes experiential learning experiences in nursing education and allows for exploration of diverse perspectives of providing effective patient care (NLN, 2015b). As the NLN (2015b) describes, simulation is an evidence-based teaching strategy that facilitates high-quality experiences in order to foster thinking and clinical reasoning skills among students.

The NLN (2015b) describes factors guiding the consistent use of simulation in nursing education that reinforce the necessity of simulation in nursing programs. First, simulation brings classroom and clinical teaching strategies together to promote student learning in a safe and risk-free learning environment. Second, simulation is an experiential learning approach. It involves active learning and moves teaching from highly structured to self-directed learning. Finally, the shortage of clinical experiences has also made educators turn to simulation as a teaching strategy to further develop students' clinical reasoning skills.

As these reports from national organizations and professional associations unanimously assert, simulation in nursing education is an effective teaching-learning method that responds to the need for educating nurses who are better prepared to address the acuity and complexity of patient care and the unique needs of today's healthcare environments. Therefore, it would be of value for nurse educators to design simulated-based learning experiences using a theory

that is applicable to simulation and fully integrates the science, art, ethics, and self-knowing in the practice and profession of nursing.

### **Recommendations**

Nurses must have evidence-based knowledge in order to practice effectively and safely in nursing (Benner et al., 2008; 2010). Evidence-based teaching is a dynamic, holistic approach that uses educational principles supported by evidence to support and promote a new level of knowledge for students (Cannon & Boswell, 2016). Simulation requires the integration of nursing knowledge, improves skill versatility, provides opportunities for students to better grasp the complexities of nursing care, and develops students' clinical judgment and clinical reasoning skills (Cannon & Boswell, 2016).

Simulation provides experiential and reflective learning in a risk-free environment. Simulation with debriefing provides students with an opportunity to reflect and connect their learning in academic and clinical settings. During a simulation scenario, students are communicating and collaborating while developing multiple ways of thinking. This evidence-based teaching strategy promotes active learning and clinical reasoning. As an integral part of simulation-based experiences, debriefing is often considered to be the most critical element used by educators to help students reflect on their experience, think like a nurse, and transfer learning from one experience to another (Dreifuerst, 2015).

The NLN (2015a) asserts that "integrating debriefing across the curriculum has the potential to transform nursing education" (p. 2). Debriefing promotes critical reflection and helps bridge previous learning with new information as a scaffold for new learning (NLN,

2015a). It promotes thinking along a continuum for “knowing what” to “knowing how and why.” Used across the curriculum and not only in simulated-based learning experiences, the NLN (2015a) believes that “debriefing holds great promise in educating nurses to be the reflective practitioners” needed to practice in today’s healthcare environment (p. 2).

Literature supports simulation as a teaching strategy that has a positive effect on learning. Using a theoretical framework can help educators further develop, facilitate, and evaluate significant learning experiences through simulation. As Carper (1978) defines, knowledge that serves as the rationale for nursing practice has patterns, forms, and structures that lead to expectations. An understanding of these patterns is important to the teaching and learning of nursing and makes possible an increased awareness of nursing knowledge and its complexity (Carper, 1978). Using Carper’s (1978) four patterns of knowing exemplifies characteristic ways of thinking like a nurse and provides a means to incorporate simulation as a holistic teaching strategy in nursing education. In addition, Kolb’s learning theory and the proposed targets for KSAs (QSEN Institute, 2014) demonstrate how Carper’s (1978) patterns can be used as a theory-based foundation for simulation-based education.

Nurse educators seek learner-centered teaching strategies that prepare students for professional practice. Simulation provides a learning environment that contextualizes the clinical setting while filling the gaps in students’ knowledge and experience (Leighton & Johnson-Russell, 2014). The overall purpose of integrating simulation is to provide students with learning experiences that not only assist in meeting course objectives, but promote safe patient care and effective nursing practice (Leighton & Johnson-Russell, 2014).

Nurse educators strive to meet the educational needs of students and improve patient care by incorporating a holistic view of active learning. Fink (2013) identifies getting information and ideas, rich learning experiences, and reflective dialogue as the three components of active learning. Simulation is a learning activity that promotes these components. Students are able to practice the doing of problem solving, reflect on what they are learning through debriefing, and incorporate what they have learned through diverse information sources and classroom lectures (Fink, 2013).

Simulation is a powerful educational strategy that provides a significant learning experience in a supportive, risk-free setting that also facilitates the six interactive categories of learning described in Fink's (2013) taxonomy of significant learning: foundational knowledge, application, integration, human dimensions, caring, and learning how to learn. The first category, foundational knowledge, involves the basic understanding and remembering that a learner builds on. The second category, application, is important for developing skills and learning how to manage complex projects. It incorporates skill and critical, creative, practical thinking. Integration is the third category and it involves connecting the ideas. This act of making connections empowers the student intellectually. The fourth category, human dimension, incorporates self-awareness and learning something about others. This knowledge of self and others enables the student to interact more effectively. The fifth category is caring. When students care about something, they have a desire to learn more about it and make it a part of their lives. In nursing education, the category of caring is not only a kind of significant learning, caring embodies and exemplifies what *is* significant about nursing; that is, caring.

Finally, the sixth category is learning how to learn. Students learn about the process of learning itself which enables them to continue to become better students and be self-directing and lifelong learners (Fink, 2013). The dynamic nature of this nonhierarchical and interactive taxonomy demonstrates how each category of learning is related to and synergistic with the other categories of learning (Fink, 2013).

### **Conclusion**

This paper demonstrates how the integration of Carper's (1978) fundamental patterns of knowing is beneficial to an increased awareness of the teaching and learning method of simulation in nursing. Furthermore, by relating Carper's patterns of knowing with Kolb's (1984) experiential learning theory, the knowledge, skills, and attitudes (KSAs) targets identified by the QSEN Initiative (2014) for graduates of prelicensure programs, and the apprenticeships identified by Benner et al. (2008; 2010), this paper proposes a theoretic foundation for integrating simulation with debriefing throughout the nursing curriculum. Based on the recommendations promulgated in reports published by the Carnegie Foundation National Study of Nursing Education (Benner et al., 2010), IOM (2010), NCSBN (2014), and NLN (2015a, 2015b), the integration of simulation is crucial to the transformation of nursing education. Simulation-based learning experiences prepare students to become safe, effective, and reflective practitioners of nursing. This learner-centered, collaborative approach brings value to nursing education by empowering students to move from knowledge acquisition to application in professional nursing practice.

### References

- Benner, P., Sutphen, M., Leonard-Kahn, V., & Day, L. (2008). Formation and everyday ethical comportment. *American Journal of Critical Care, 17*(5), 473-476.
- Benner, P., Sutphen, M., Leonard, V., & Day, L. (2010). *Educating nurses: A call for radical transformation*. San Francisco, CA: Jossey-Bass.
- Bowling, A. M. (2015). The effect of simulation on skill performance: A need for change in pediatric nursing education. *Journal of Pediatric Nursing, 30*, 439-446.  
doi:org/10.1016/j.j.pedn.2014.12.010
- Cannon, S., & Boswell, C. (2016). *Evidence-based teaching in nursing: A foundation for educators* (2<sup>nd</sup> ed.). Burlington, MA: Jones & Bartlett Learning.
- Carper, B. A. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science, 1*(1), 13-23.
- Dreifuerst, K. T. (2015). Getting started with debriefing for meaningful learning. *Clinical Simulation in Nursing, 11*, 268-275. doi:org/10.1016/j.ecns.2015.01.005
- Fawcett, J., Watson, J., Neuman, B., Hinton-Walker, P., & Fitzpatrick, J. J. (2001). On nursing theories and evidence. *Journal of Nursing Scholarship, 32*(2), 115-119.
- Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.
- Hayden, J. C., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. F. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing

- clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, 5(2), S1-S64. Retrieved from [https://www.ncsbn.org/JNR\\_Simulation\\_Supplement.pdf](https://www.ncsbn.org/JNR_Simulation_Supplement.pdf)[https://www.ncsbn.org/JNR\\_Simulation\\_Supplement.pdf](https://www.ncsbn.org/JNR_Simulation_Supplement.pdf)
- Institute of Medicine. (2010). *A Summary of the February 2010 Forum on the Future of Nursing Education*. Retrieved from <http://www.nap.edu/catalog/12894/a-summary-of-the-february-2010-forum-on-the-future-of-nursing>
- Institute of Medicine. (2015). Assessing the progress on the Institute of Medicine report: *The future of nursing*. Retrieved from [http://iom.nationalacademies.org/~media/Files/Report%20Files/2015/AssessingFON\\_releaseslides/Nursing-Report-in-brief.pdf](http://iom.nationalacademies.org/~media/Files/Report%20Files/2015/AssessingFON_releaseslides/Nursing-Report-in-brief.pdf)[http://iom.nationalacademies.org/~media/Files/ReportFiles/2015/AssessingFON\\_releaseslides/Nursing-Report-in-brief.pdf](http://iom.nationalacademies.org/~media/Files/ReportFiles/2015/AssessingFON_releaseslides/Nursing-Report-in-brief.pdf)
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Leighton, K., & Johnson-Russell, J. (2014). Innovations in facilitating learning using simulation. In M. J. Bradshaw & A. J. Lowenstein (Eds.), *Innovative teaching strategies in nursing* (6th ed., pp. 239-265). Burlington, MA: Jones & Bartlett Learning.
- Meakim, C., Boese, T., Decker, S., Franklin, A. E., Gloe, D., Lioce, L., Sando, C. R., & Borum, J. C. (2013). Standards of best practice: Simulation standard I: Terminology. *Clinical Simulation in Nursing*. Retrieved from <http://www.inacsl.org/files/journal/Complete%202013%20Standards.pdf>



National League for Nursing. (2015a). Debriefing across the curriculum [NLN Vision Series].

Retrieved from [http://www.nln.org/docs/default-source/about/nln-vision-series-\(position-statements\)/nln-vision-debriefing-across-the-curriculum.pdf?sfvrsn=0](http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/nln-vision-debriefing-across-the-curriculum.pdf?sfvrsn=0)

National League for Nursing. (2015b). A vision for teaching with simulation [NLN Vision Series].

Retrieved from [http://www.nln.org/docs/default-source/about/nln-vision-series-\(position-statements\)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2](http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2)

Parker, B., & Myrick, F. (2010). Transformative learning as a context for human patient simulation. *Journal of Nursing Education, 49*(6), 326-332. doi:10.3928/0484834-20100224-02

Poore, J. A., Cullen, D. L., & Schaar, G. L. (2014). Simulation-based interprofessional education guided by Kolb's experiential learning theory. *Clinical Simulation in Nursing, 10*(5), e241-e247. doi:org/10.1016/j.ecns.2014.01.004

QSEN Institute. (2014). Pre-licensure KSAs. Retrieved from <http://qsen.org/competencies/pre-licensure-ksas/>

Smith, M. C., & Parker, M. E. (2015). *Nursing theories and nursing practice* (4<sup>th</sup> ed.). Philadelphia, PA: F. A. Davis.

Waxman, K. T. (2010). The development of evidence-based clinical simulation scenarios: Guidelines for nurse educators. *Journal of Nursing Education, 49*(1), 29-35. doi:10.3928/01484834-2009091-07

Zigmont, J. J., Kappus, L. J., & Sudikoff, S. N. (2011). Theoretical foundation of learning through simulation. *Seminars in Perinatology*, 35, 47-51. doi:10.1053/j.semperi.2011.o1.002