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Rebecca Rausch
Winona State University, rauschre@nicc.edu

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Rebecca L. Rausch

Winona State University

Author Note

Rebecca L. Rausch, Fort Atkinson, Iowa.

Correspondence concerning this article should be addressed to Rebecca Rausch, 1061 Co

Rd W14, Fort Atkinson, IA 52144. Email: rrausch15@winona.edu

Winona State University

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         Professor and Acting Director, Graduate Programs in Nursing

FROM: Rebecca Rausch

RE: FACULTY ENDORSEMENT and FINAL REVIEW COMMITTEE

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                          Diane Forsyth, PhD, RN

Member Signature: *Mieca Valen*
                          Mieca Valen, DNP, APRN, CNP, FNP-BC

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Abstract

The purpose of this literature review is to evaluate and compare debriefing models used during simulation experiences and to make recommendations for nurse educators and researchers about debriefing. Learning does not occur during a simulated experience alone, but occurs as a result of the experience and the purposeful reflection and analysis following the experience. This purposeful guided reflection and analysis is known as debriefing. The method used in this scholarly inquiry paper is a literature review.

Five debriefing frameworks were reviewed and summarized in detail. The goal was to identify best practices for simulation debriefing to foster undergraduate nursing students' improved critical thinking and clinical judgment. The frameworks were then compared to the International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice. The INACSL Standards of Best Practice were used as a framework to systematically review each of the frameworks. Kolb's Experiential Learning Theory aligns with all five debriefing models and could serve as the theoretical framework for debriefing.

The literature reinforces that debriefing is of value in helping learners improve future practice. Unfortunately, there are few studies testing the validity of debriefing frameworks, and the level of evidence of the articles found is low. There is a need for high level research studies, evaluating each method of debriefing, to determine if each model is effective in improving critical thinking or clinical judgment of learners. There is minimal evidence to suggest the superiority of one debriefing model over the others, so high level research studies are needed to compare them. Additional research will contribute to the growing body of knowledge relating to debriefing in nursing education and perhaps improve clinical judgment of nurses entering practice.

The healthcare industry is constantly evolving. Associate and baccalaureate degree nursing programs have evolved and will continue to evolve. Simulation based learning is used to help nursing students develop specific clinical skills and gain exposure to specifically designed scenarios without being in the practice setting (Moule, 2011). According to Sanko (2017), simulation is a technique to provide realistic environments to practice for the purpose of learning and training in a safe educational setting where no harm can come to clients. According to the International Nursing Association for Clinical Simulation and Learning (INACSL) Standards Committee (2016), learning is dependent on the combination of the experience and reflection, known as debriefing. Although simulation is used widely in nursing programs, there is little evidence suggesting which debriefing framework leads to the best learner outcomes.

Simulation Background

Simulation, as a teaching strategy in nursing, dates back over a century and a half to Florence Nightingale and the use of a "jointed skeleton" and models (Sanko, 2017). The first full-body mannequin was introduced in 1910, became increasingly popular in the 1950s, and has evolved and changed ever since (Moule, 2011; Sanko, 2017). Simulation labs at nursing schools emerged in the 1930s; mannequins were used in these labs for the purpose of teaching skills to students (Sanko, 2017). The healthcare industry is not alone in simulation use. The aviation industry spearheaded the development of modern simulation techniques following World War I; since then, the aviation, transportation, space exploration, computer science, and nuclear power industries routinely use full-scale training simulators to create a virtual reality that closely aligns with real-world experiences (McNeal, 2010; Palaganas, Epps, & Raemer, 2014).

Due to decreasing traditional clinical learning opportunities and increasingly complex needs of the clients, nursing programs began to widely use simulation as an effective teaching

modality in the 1990s (Sanko, 2017). Palaganas et al. (2014) report that prior to the use of

training simulators, the healthcare professions educated students in their desired domain,

expecting them to possess the skills, knowledge, and attitudes to safely practice in the clinical

setting with the healthcare team. This training practice has contributed to a culture of ineffective

collaboration, client care errors, near-misses, poor communication, compromised teamwork, and

new graduates entering the profession without the skills, knowledge, and attitudes to effectively

and safely practice (Palaganas et al., 2014). Use of healthcare simulation has evolved from these

client safety gaps to improve skills, teamwork, and client safety (Palaganas et al., 2014). The

appeal of simulation use is not only client safety and teamwork, but in what the learners can gain

prior to caring for clients in the clinical setting: real-time feedback from facilitators, other

students, and the simulator; critical thinking; decision making; problem-solving; confidence; and

competence (Moule, 2011).

The Council for the Accreditation of Healthcare Simulation Programs (CAHSP) (2013)

defines healthcare simulation as "a technique that uses a situation or environment created to

allow persons to experience a representation of a real healthcare event for the purpose of

practice, learning, evaluation, testing or to gain understanding of systems or human actions" (p.

46). A simulator is any representation that behaves or operates like a given system and responds

to the user's actions (CAHSP, 2013). Modern day nursing simulation encompasses a variety of

simulators including low-fidelity basic simulators, high-fidelity interactive mannequins, role

play, case studies, virtual online environments, and standardized clients (Moule, 2011; Sanko,

2017). The technology used during healthcare simulation has evolved to the point that the high-

fidelity mannequins are anatomically correct, have voice-over, and can be programmed to

simulate physiological changes, such as pupil dilation, weakening pulses, blood pressure fluctuations, cardiac dysrhythmias, and giving birth (McNeal, 2010).

Healthcare simulation has a prominent position in the future of nursing education. A study conducted by the National Council of State Boards of Nursing (NCSBN), suggests that high quality simulation can safely replace up to 50 percent of clinical hours across the prelicensure curriculum without negative implications on student learning outcomes (Greenawalt, 2014). To effectively use simulation in place of hours in the clinical setting an appropriate environment, administrative support, and faculty preparation are required (Alexander et al., 2015).

Debriefing in Simulation

According to the INACSL Standards Committee (2016), learning is dependent on both the experience and reflection. According to the National League for Nursing (NLN, 2015), debriefing is described as a critical conversation assisting participants to reframe the context of a situation in order to clarify their perspectives and assumptions. Debriefing is a period of reflective discussion to bridge the gap between experiencing an event and making sense of it (Fey & Jenkins, 2015).

Debriefing offers reflection on the meaning and implications of actions taken to help participants reframe information (INACSL Standards Committee, 2016). Further, debriefing is the forum for learners to reflect on their experiences and learn from mistakes and correct actions to enhance their clinical reasoning and judgment skills (Dufrene & Young, 2014; Mariani, Cantrell, Meakim, Prieto & Dreifuerst, 2013). Verkuyl et al. (2017) identify participant reflection, development of understanding, analyzing, and synthesizing about what the learners felt, thought, and did during the simulation as a key objective of debriefing. Debriefing is

connected with the development of critical thinking and judgement to improve future

performance (Dreifuerst, 2015; Dufrene & Young, 2014; INACSL Standards Committee, 2016;

Verkuyl et al., 2017). Utilizing debriefing in simulation enhances learning and self-awareness so

participants can transfer knowledge and skills to other scenarios (INACSL Standards Committee,

2016).

       According to the INACSL Board of Directors (2011), debriefing should contain feedback

and reflection with the goal of improving future practice. The INACSL Standards Committee

(2016), identified five criteria that establish best practice for debriefing in simulation: the debrief

(a) is facilitated by an individual(s) who is competent in debriefing, (b) takes place in a setting

conducive to learning and facilitates confidentiality, trust, openness, self-reflection, and

feedback, (c) is facilitated by an individual(s) who can concentrate attention during the

simulation to effectively lead the debrief, (d) is guided by a theoretical framework, and (e)

correlates with the objectives and outcomes for the experience. By ensuring these five criteria

are met during the debriefing, the likelihood of the learners having a positive and transferable

learning experience is increased. The INACSL Board of Directors (2011) state that development

of clinical judgment via decision making, critical thinking, and clinical reasoning are important

for undergraduate nursing students so they can provide safe client care upon entering practice.

Purpose

       With the advancements and widespread use of simulation, additional information is

needed related to best practice for simulation objectives, design, facilitation, and debriefing.

According to Waznonis (2014), research on debriefing practices is limited and has weak

methodological designs. According to the INACSL Standards Committee (2016) and the

INACSL Board of Directors (2011), learning occurs when experience and reflection are

integrated so that future performance may improve. Various techniques and methods to guide

debriefing have been developed based on the level of the learner, the setting, allotted time,

equipment, and the physical environment (Phrampus & O'Donnell, 2013). Many debriefing

practices in nursing education are not based on evidence (Waznonis, 2014). Yet, debriefing is

important for the development of critical thinking and judgment (Dreifuerst, 2015; Dufrene &

Young, 2014; INACSL Standards Committee, 2016; Verkuyl et al., 2017).

In undergraduate nursing education, this author has observed several simulation

debriefings, facilitated by multiple nursing faculty members, with great variation in approaches

to facilitating simulation debriefing and in learner outcomes. How debriefing is conducted is

inconsistent among educators; best practice needs to be identified (Eppich & Cheng, 2015). The

purpose of this literature review is to evaluate and compare debriefing models used during

simulation experiences and to provide recommendations to nurse educators and researchers with

regard to debriefing. The focus is on the importance of debriefing, as all simulation-based

experiences should include a planned reflection session, and the essential skills required to

facilitate high-quality debriefing, so participants get maximum benefit from the session

(INACSL Standards Committee, 2016).

Question

To guide this literature review, the following question was developed. What are best

practices for facilitating simulation debriefing to foster undergraduate nursing students'

enhanced critical thinking and clinical judgment?

Method of Inquiry

A literature review was conducted to identify what is already known about debriefing

frameworks and to identify knowledge gaps that remain (Grove, Burns, & Gray, 2013). A

database search was conducted of the following databases: PubMed, Cumulative Index to

Nursing and Allied Health Literature (CINAHL), Medline, ProQuest, Google Scholar, Science

Direct, and EBSCOhost. Search terms used included simulation, nursing education, nursing

simulation, simulation facilitation, simulation debriefing, debriefing, debriefing skills, debriefing

facilitation, debriefing best practice, standardized debriefing, nursing debriefing, debriefing in

healthcare, history of debriefing, history of nursing simulation, Debriefing with Good Judgment,

PEARLS, Debriefing for Meaningful Learning, Structured and Supported Debriefing, and 3D

Model of Debriefing. The search was limited to English-language, scholarly or peer-reviewed

articles published since 2000. Table 1 contains a full list of databases searched and data

abstraction.

High-level evidence, such as systematic reviews, randomized controlled trials, or well-

designed controlled trials, was desired. Very little high-level evidence was found, so the search

was expanded to include qualitative studies, cohort studies, literature reviews, and expert opinion

or committee evidence. Many of the articles used in this literature review were expert opinion or

literature reviews; those were representative of the majority of the articles found and reviewed.

Selected articles were reviewed to clarify what has been published about best practice for

debriefing; this information was then organized and summarized. Additional information was

gathered from the following organizations: INACSL, NCSBN, NLN, and CAHSP).

Literature Review

The INACSL Standards Committee (2016) identified one of the five criteria for best

practice in debriefing as the use a of theoretical framework to facilitate debriefing in a structured,

purposeful and meaningful way. While researching the topic of debriefing frameworks, it was

found that multiple frameworks have been developed and used as a guide for debriefing in

simulation. According to the INACSL Standards Committee (2016) and NLN (2015), current

frameworks available include the following:

- Debriefing with Good Judgment,

- Promoting Excellence and Reflective Learning in Simulation (PEARLS),

- Debriefing for Meaningful Learning (DML),

- Structured and Supported Debriefing, and

- The 3D Model of Debriefing.

Each framework was explored via an extensive review of the literature with the goal of

identifying debriefing frameworks that lead to enhanced critical thinking and clinical judgement

for the participants. While high level evidence was desired, limited evidence is available relating

to debriefing frameworks. Because of the limited high level evidence, literature reviews, studies,

and expert opinions comprise this literature review. A summary of articles used is displayed in

Table 2.

Each of the five debriefing frameworks is summarized. Following the summary of each

framework, the method is compared to the INACSL Standards of Best Practice for simulation

debriefing. Each required element of each of the INACSL Standards of Best Practice is

evaluated. Each of these five Standards of Best Practice are comprised of between two and

twelve required elements. All required elements are listed on Table 3 along with the data for

each debriefing model. Additionally, narrative is included in each section for areas that are

either unknown or not met.

Debriefing with Good Judgment

Maestre and Rudolph (2014) identify that debriefing facilitators often struggle to express

their critical judgments of the learners' performance without hurting the learners' feelings or

making them defensive. Therefore, facilitators may fail to verbalize their thoughts and feelings

in an attempt to avoid confrontation or provoking negative emotions from the learners. The

Debriefing with Good Judgment method was developed as an attempt to combat this avoidance

of crucial discussion (Maestre & Rudolph, 2014). To promote client safety, a method was

needed to openly discuss mistakes made in simulation and to prevent them from occurring in

future client care. The Debriefing with Good Judgment approach is based on the sharing of

opinions and views of the facilitator and learners to reveal the underlying thinking processes as

reasons for taking certain actions (Maestre & Rudolph, 2014). The Debriefing with Good

Judgment method is based on a 35-year research program focused on improving effectiveness in

the business world by using reflective practice and is designed to promote reflection and clinical

judgment development (Rudolph, Simon, Dufresne, & Raemer, 2006; Waznonis, 2014).

A facilitator using Debriefing with Good Judgment uses advocacy and inquiry to reveal

the learners' frames, or underlying mental models, that led them to take certain actions (Rudolph,

Simon, Rivard, Dufresne, & Raemer, 2007). According to Waznonis (2014), frames determine

observable actions. Debriefing with Good Judgment is focused on identifying old frames and

creating new, more accurate frames to enhance clinical judgment. Advocacy is described as an

assertion, observation, or statement and is combined with an inquiry, which is a question

(Rudolph et al., 2007). Advocacy includes "an objective observation about and subjective

judgment of the learner's actions" (Rudolph et al., 2006, p. 49). Inquiry is the genuine curiosity

in the form of a question, to illuminate the learners thought processes in relation to an action

described in the advocacy (Rudolph et al., 2006). The advocacy and inquiry approach helps to

reveal the learners' underlying thought processes or mental model, while at the same time

improving mutuality by respecting the learners enough to elicit the learners' frames and, in turn, improve the learning (Rudolph et al., 2007).

The Debriefing with Good Judgment technique is useful in helping facilitators reduce tension that can result from providing critical judgments of the learners and to maintain a trusting relationship with the learners (Rudolph et al., 2006). No studies were found that tested the validity of this method or provided evidence that it is useful in improving the critical thinking or clinical judgment of the learners. All articles reviewed relating to Debriefing with Good Judgment were written by at least one member who developed the model and are expert opinion articles.

The INACSL Standards of Best Practice, as seen in Table 3, were used to evaluate the Debriefing with Good Judgment framework. Criteria one, the debrief is conducted by an individual competent in debriefing, is partially met. Debriefing with Good Judgment meets the INACSL required elements of reflective discussion, active engagement in simulation, and the use of an established instrument to lead the debrief (Maestre & Rudolph, 2014). In the literature reviewed, no information was found regarding initial training or ongoing education of the facilitator or seeking feedback from participants and peers. For criteria two, the debrief is conducted in an environment conducive to learning, all required elements are met. Criteria three, the facilitator is able to devote enough attention during the simulation to effectively lead the debriefing, is partially met. Evidence was not found in the literature reviewed to support that this model enhances critical thinking or clinical judgment or that the facilitator is only observing the scenario and not functioning in multiple roles. Criteria four, debriefing is based on a theoretical framework, is met. Criteria five, the debrief is congruent with objectives and outcomes is met.

Promoting Excellence and Reflective Learning in Simulation

Promoting Excellence and Reflective Learning in Simulation (PEARLS) was developed

to allow the facilitator flexibility in how debriefing is conducted (Eppich & Cheng, 2015). It was

recognized that much variation existed in how debriefings were conducted so a framework was

developed to allow for that flexibility depending on three variables- (a) why there was a

performance gap, (b) the amount of time available, and (c) whether the performance represents a

cognitive, technical, or behavioral domain (Eppich & Cheng, 2015). The PEARLS framework

was developed over three years and was based on a literature review of strategies used during

debriefing, a review of existing debriefing scripts, development and training of faculty, and two

years of pilot testing (Eppich & Cheng, 2015). The PEARLS Framework consists of four

distinct phases: reactions, description, analysis, and summary (Eppich & Cheng, 2015).

The first phase, reactions, is immediately following the simulation. During this phase an

open-ended question is asked to allow the participants to share their thoughts and feelings about

the simulation; all participants should contribute and share their initial reactions (Eppich &

Cheng, 2015). Eppich and Cheng (2015) advise the facilitator to pay attention to the responses

to identify the areas that hold importance for the participants, as these areas will need to be

further discussed in the analysis phase.

The second phase of the PEARLS framework is the description. Eppich and Cheng

(2015) suggest asking a participant to summarize their perspective of the key events or problems

during the simulation. The description phase is important as it determines if all learners and the

facilitator have a shared perspective or whether there is variation, which can serve as the

transition to the analysis phase (Eppich & Cheng, 2015). As a strategy to save time, Eppich and

Cheng (2015) suggest focusing the description on the main issues and not recounting every detail

of the simulation. The facilitator should pay attention to the participant concerns, as these areas

should be addressed as the debriefing progresses (Eppich & Cheng, 2015).

With the PEARLS framework, the bulk of the time is spent during the analysis phase.

With respect to specific learner performance gaps, time allotted, and the domain of performance

(cognitive, technical, or behavioral), the debriefing strategy can be varied for each objective

during the analysis phase (Eppich & Cheng, 2015). The three strategies that might be used are

self-assessment, focused facilitation, or providing information (Eppich & Cheng, 2015). Self-

assessment strategies are best used when time is limited or if participants were hesitant to share

their reactions; participants reflect on what went well, what they would change, and why (Eppich

& Cheng, 2015). The focused facilitation strategy is used to facilitate in-depth discussion

(Eppich & Cheng, 2015). Advocacy and inquiry might be used by the facilitator to gain

understanding of the learners' underlying rationale or to explore alternatives and their pros and

cons (Eppich & Cheng, 2015). The final option, according to Eppich and Cheng (2015), is to

give direct feedback and teach, which is an educator driven approach to provide information,

tips, or solutions so the learners might perform the action correctly in the future. This process of

selecting a strategy is done for every objective until all important topics are covered.

The final phase of the PEARLS model is summary. According to Eppich and Cheng

(2015), the summary phase can be conducted in one of two ways, either the learners can state the

main take-home message(s) and identify potential barriers to implementing change or the

facilitator can provide a succinct review of the main points. While the PEARLS model is widely

used in nursing education, no studies were found testing learner outcomes with this model.

The PEARLS framework was evaluated using the Standards of Best Practice established

by INACSL, as seen in Table 3. Criteria one, the debrief is conducted by an individual

competent in debriefing, is partially met. In the literature reviewed, no information was found

regarding initial training or ongoing education of the facilitator or seeking feedback from

participants and peers with the PEARLS framework. Criteria two, the debrief is conducted in an

environment conducive to learning, is met. Criteria three, the facilitator is able to devote enough

attention during the simulation to effectively lead the debriefing, is partially met. Evidence was

not found in the literature reviewed to support that this model enhances learner critical thinking

or clinical judgment or that the facilitator is only observing the scenario and not functioning in

multiple roles. Criteria four, debriefing is based on a theoretical framework, is met. Criteria

five, the debrief is congruent with objectives and outcomes is met.

Debriefing for Meaningful Learning

Debriefing for meaningful learning (DML) uses guided reflection and Socratic

questioning as strategies to help learners develop clinical reasoning skills (Bradley & Dreifuerst,

2016). Socratic questioning is an approach where the facilitator does not answer the learners'

questions, but instead asks a series of questions so each learner is able to reach the answer or

become aware of his/her knowledge limitations (Dreifuerst, 2015). DML engages learners in

purposeful reflection based on six phases for debriefing to facilitate thinking; these phases are

engage, explore, explain, elaborate, evaluate, and extend (Bradley & Dreifuerst, 2016;

Dreifuerst, 2015). The DML method uses a standardized approach to debriefing to review

clinical care, challenge learner assumptions, elicit learner thinking, and develop clinical

reasoning skills using reflection-in-action, reflection-on-action, and reflection-beyond-action

(Dreifuerst, 2015).

According to Dreifuerst (2015), clinical reasoning is developed as the learners use

reflection-in-action, reflection-on-action, and reflection-beyond-action. Dreifuerst (2015)

describes reflection-in-action as reflection while events are occurring; it is in real time. This differs from reflection-on-action which is looking back on events and decision making that happened in the past (Dreifuerst, 2015). Reflection-beyond-action is the incorporation of what is known or previously experienced to anticipate what will occur in an unfamiliar situation (Dreifuerst, 2015). The ability to reflect-beyond-action is the ability to think like a nurse; this ability is often lacking as novice nurses enter practice. DML is a tool to help develop that ability in undergraduate nursing students (Dreifuerst, 2015).

  The debriefing session is structured using six phases to assist learners to reflect on and explain their thinking within the context of the situation to identify the reasoning behind their actions (Forneris et al., 2015). A set of worksheets was developed to guide the debriefing session (Dreifuerst, 2015). The first phase of the debrief is engage. During the engage phase, learners spend a few minutes working independently to write the name of the client, the first thoughts that come to mind about the experience, what went well, what did not go well, and the client's story (Dreifuerst, 2015). This phase allows the learners to make notes about the experience that they will use later in the discussion and to jot down their emotions so they will not interfere with learning (Dreifuerst, 2015).

  The second phase of DML is explore. This phase starts with learners recalling the client's story and identifying the issues to focus on (Dreifuerst, 2015). The facilitator leads the discussion using Socratic questioning to uncover learner thinking and to identify relationships between learner thoughts and decisions and actions made (Dreifuerst, 2015). Dreifuerst (2015) emphasizes that the facilitator should challenge taken-for-granted assumptions the learners have, whether correct or incorrect, to identify if the reasoning behind the actions was correct.

The third phase, explain, is an interactive process between the learners and the facilitator to discover the thinking behind the learners' actions (Dreifuerst, 2015). The review of thinking processes is done with an emphasis on developing the ability to think like a nurse. During the explain phase errors, incorrect assessments, interpretations, decisions, and actions are identified and corrected (Dreifuerst, 2015). Dreifuerst (2015) recommends the use of a linear or conceptual worksheet for the learners to review the experience. This allows learners to add details about the assessments, findings, decisions, actions and responses; to correct any errors; and to understand how the client's outcome(s) would have changed if correct actions were taken.

Elaborate is the fourth phase of DML and is when the facilitator emphasizes the nursing knowledge, skills, and attitudes that were evident or missing (Dreifuerst, 2015). Elaborating on specific ideas, concepts, knowledge, and behaviors in depth can help the learners develop enhanced thinking skills (Dreifuerst, 2015).

The fifth phase, evaluate, provides the opportunity for the facilitator and the learners to judge the experience and determine what did not go well (Dreifuerst, 2015). Evaluation does not necessarily stand alone as a separate discussion. Evaluation often occurs in conjunction with other phases of DML (Dreifuerst, 2015). To frame the entire experience in a meaningful way, after the elaborate phase is completed, a quick review should occur regarding things that went well, did not go well, and how they should have been done (Dreifuerst, 2015).

Extend is the final phase of DML and consists of taking what was learned in this experience and extending it to another experience (Dreifuerst, 2015). This is easily done by using "what if" questions to change the details or situation, allowing learners to think-beyond-action and to assimilate and accommodate (Dreifuerst, 2015). Thinking-beyond-action allows the learners to anticipate decision making and apply the new knowledge to additional situations.

The use of these six phases - engage, explore, explain, elaborate, evaluate and extend - allow the learners to reflect-on-action and reflect-beyond-action in a structured manner in order to develop critical thinking and clinical judgment skills (Dreifuerst, 2015). This particular debriefing method helps learners to reflect on their practice and to then transfer their learning to other situations, thinking like a nurse (Dreifuerst, 2015).

Three studies of the DML method were found. All three studies were quasi-experimental in design and addressed two similar questions: (a) compared with usual and customary debriefing methods, does DML positively contribute to development of clinical reasoning skills and (b) do nursing students perceive a difference in quality of debriefing when DML is used (Dreifuerst, 2012; Forneris et al., 2015; Mariani et al., 2013)? The studies conducted by Dreifuerst (2012) and Forneris et al. (2015) found that the use of DML was linked with better clinical judgment in learners, the learner's perceived increased quality of debriefing when DML was used, and a better overall posttest of clinical reasoning was evident following DML. The third study, conducted by Mariani et al (2013), did not show statistical significance in changes of scores between the intervention group who used DML and the control group who did not receive structured debriefing. More information relating to these studies is found in Table 2.

These are the only three studies located for this literature review that explored the effectiveness of DML in the development of learner critical thinking or clinical judgment. Two of the three studies demonstrated improved clinical judgment of the learners and all three studies were perceived as high-quality and student-centered by the learners.

DML was evaluated using the INACSL Standards of Best Practice, as seen in Table 3. Criteria one, the debrief is conducted by an individual competent in debriefing, is mostly met. Based on the literature reviewed, DML meets all of the INACSL required elements with the

exception of the facilitator participating in ongoing education, no information was found relating

to this element. DML is the only debriefing framework that an evaluation scale was found for,

Debriefing for Meaningful Learning Evaluation Scale (Bradley & Dreifuerst, 2016; Waznonis,

2014). For criteria two, the debrief is conducted in an environment conducive to learning, all

required elements are met. Criteria three, the facilitator is able to devote enough attention during

the simulation to effectively lead the debriefing, is met. Criteria four, debriefing is based on a

theoretical framework, is met. Criteria five, the debrief is congruent with objectives and

outcomes is met.

Structured and Supported Debriefing

Structured and Supported Debriefing was developed by the Winter Institute for

Simulation Education and Research (WISER) at the University of Pittsburgh in collaboration

with the American Heart Association (AHA) (Phrampus & O'Donnell, 2013). This collaboration

occurred in 2009 and 2010 and the model was first implemented into AHA curriculum in 2011

(Eppich & Cheng, 2015; Phrampus & O'Donnell, 2013). According to Phrampus and O'Donnell

(2013), the Structured and Supported Debriefing model is structured in that it consists of three

specific debriefing phases with related goals and time estimates and it is supported, meaning it

includes interpersonal support and uses protocols and algorithms. The Structured and Supported

Debriefing model utilizes the gather, analyze, and summarize (GAS) tool (Eppich & Cheng,

2015). In developing this model and tool, a literature review was conducted, theories were

reviewed, and common elements utilized by experienced debriefing facilitators at WISER were

identified (Phrampus & O'Donnell, 2013).

In Structured and Supported Debriefing, the gather, analyze and summarize (GAS) tool is

utilized (Phrampus & O'Donnell, 2013). The gather phase is the first phase during the debrief

and is the facilitator's opportunity to gauge the reactions of the participants to the simulation,

clarify facts, summarize what happened, and establish a safe environment for the debriefing

(Phrampus & O'Donnell, 2013). During the gather phase, the facilitator also identifies the

performance and perception gaps between the participants and the facilitator (Phrampus &

O'Donnell, 2013). The gather phase should comprise approximately 25% of the debrief

(Phrampus & O'Donnell, 2013).

The second phase is the analysis phase. During this time performance and perception

gaps are discussed. Performance gaps are the difference between desired and actual performance

(Phrampus & O'Donnell, 2013). Perception gaps are the difference between the participants'

perception of their performance and the actual performance (Phrampus & O'Donnell, 2013).

Phrampus and O'Donnell (2013) state that much discussion should focus on the thoughts,

feelings, assumptions, underlying knowledge, and situational awareness that contributed to the

participants' actions. This information is elicited via skillful questioning from the facilitator. It

is important to understand the thought process behind the actions of the participants so the

thinking can be either reinforced or corrected. According to Phrampus and O'Donnell, the

analysis phase of debriefing should make up around 50% of the time allotted for debriefing.

The final phase of the GAS tool is the summary phase. Phrampus and O'Donnell (2013)

suggest that at this time the learners should share the main take-away messages from the

experience and identify positive areas and the areas that need improvement. The summary phase

should consist of approximately 25% of the debrief and it's important to distinguish the

transition to this phase (Phrampus & O'Donnell, 2013). Phrampus and O'Donnell suggest using

structure to make sure the key take away points correlate with the simulation objectives. It is

suggested to utilize something similar to the plus-delta model, where each participant identifies a

certain number of actions or behaviors that were effective and then also identifies a certain

number of behaviors or actions he/she would change to improve performance (Phrampus &

O'Donnell, 2013). To conclude the debriefing session, the facilitator may provide an overall

summary of the experience or may give input to the learners in regards to their performance

(Phrampus & O'Donnell, 2013).

The Structured and Supported Debriefing model was evaluated with the INACSL

Standards of Best Practice, as seen in Table 3. Criteria one, the debrief is conducted by an

individual competent in debriefing, is partially met. No information was found in the literature

regarding the facilitator who uses Structured and Supported Debriefing seeking feedback from

the learners or peers, or participating in ongoing education. For criteria two, the debrief is

conducted in an environment conducive to learning, all required elements are met. Criteria three,

the facilitator is able to devote enough attention during the simulation to effectively lead the

debriefing, is partially met. For this literature search, no studies were found testing the

effectiveness of the Structured and Supported Debriefing model or that the facilitator is only

observing the scenario and not functioning in multiple roles. Criteria four, debriefing is based on

a theoretical framework, is met. Criteria five, the debrief is congruent with objectives and

outcomes is met.

3D Model of Debriefing

The 3D model of debriefing consists of defusing, discovering, and deepening (Zigmont,

Kappus, & Sudikoff, 2011). The goal of the 3D model of debriefing according to Zigmont et al.

(2011) is to help the debriefer facilitate learning which will improve daily practice and client

outcomes. In addition to defusing, discovering, and deepening, it is important that the

experience also includes a pre-briefing, to establish ground rules and expectations, explain the

format, review the objectives and facilitators role, and establish a safe environment, and a

summary, in which key learning objectives and lessons are restated (Zigmont et al., 2011).

The purpose of defusing is to allow each learner to express his/her emotions and reactions

to the experience, to recap and clarify what happened during the scenario, and analyze what

objectives are important to the learners (Zigmont et al., 2011). This occurs immediately after the

simulation scenario and every learner should be given the opportunity to talk about his/her

feelings (Zigmont et al., 2011). It is important for all learners to get the chance to share their

feelings before starting to analyze the experience (Zigmont et al., 2011). This is important

because the learners may not be able to think clearly or reflect objectively until they are able to

share their feelings (Zigmont et al., 2011). The experience should then be reviewed so everyone

has the same understanding about what happened; this is a discussion of the facts and a recall of

the events and can be led by the learners or the facilitator (Zigmont et al., 2011).

The discovering step is used to analyze and evaluate performance and is done using

reflection (Zigmont et al., 2011). The intent is to use questioning to discover the mental models

or rationale the learners used during specific behaviors during the scenario. This is done to

identify gaps or matches between the learners' existing thought processes and actual mental

models (Zigmont et al., 2011). The intent is to discern the why behind the decisions made by the

learners and the actions they took; the decision-making process is the focus. It is important for

the facilitator not to make assumptions. The facilitator needs to ask questions to get an

understanding of the thought processes behind the learners' actions (Zigmont et al., 2011). It is

then important to cue the learners, assisting them to make connections to the desired mental

model and to understand cause and effect (Zigmont et al., 2011). It is also important for the

facilitator to provide an objective perspective on the experience and to assist the learners in

identifying their strengths and weaknesses and where improvements can be made (Zigmont et al., 2011). Another option is for video recordings of the simulation to be used to allow the learners to observe their behaviors, as they are often unaware of these when they are completely immersed in the experience (Zigmont et al., 2011).

The purpose of deepening is to apply lessons from this particular simulation experience so the learners can make connections when in clinical practice (Zigmont et al., 2011). Prompting by the facilitator is done to help the learners connect new learning to the larger clinical environment (Zigmont et al., 2011).

The 3D Model was compared to INACSL Standards of Best Practice, seen in Table 3. Criteria one, the debrief is conducted by an individual competent in debriefing, is partially met. In the literature reviewed, no information was found regarding initial training or ongoing education of the facilitator or seeking feedback from learners and peers. For criteria two, the debrief is conducted in an environment conducive to learning, all required elements are met. Criteria three, the facilitator is able to devote enough attention during the simulation to effectively lead the debriefing, is partially met. Evidence was not found in the literature reviewed to support that this model enhances critical thinking or clinical judgment or that the facilitator is only observing the scenario and not functioning in multiple roles. Criteria four, debriefing is based on a theoretical framework, is met. Criteria five, the debrief is congruent with objectives and outcomes is met.

Gaps in Evidence and Strength of Evidence

Through a review of the literature it is apparent that debriefing is of value in helping learners transfer what occurred during a simulated experience into knowledge to improve future performance (Dreifuerst, 2015; Dufrene & Young, 2014; INACSL Standards Committee, 2016;

Verkuyl et al., 2017). Unfortunately, there is not yet a means to evaluate the debriefing

frameworks. Of the five debriefing methods reviewed, only studies found testing the DML

method for improvement in learners' clinical reasoning skills were found, and these were quasi-

experimental studies (Dreifuerst, 2012; Forneris et al., 2015; Mariani et al., 2013). Other

debriefing frameworks, while based on initial research and professional experience, have not

been tested to determine their effectiveness in the development of critical thinking or clinical

judgment. Higher level evidence, such as large multi-site randomized controlled trials, are

needed to review all of the debriefing methods.

Summary of the Evidence

The INACSL Standards of Best Practice, when followed, increase the likelihood of

learners having a positive and transferable learning experience (INACSL Standards Committee,

2016). Using those INACSL Standards to evaluate the debriefing models, it was determined that

the DML framework best meets the criteria established by the INACSL Standards Committee,

because all criteria are met but one element of criteria one. The Structured and Supported model

also aligns well with the INACSL Standards of Best Practice; one element in criteria one and

three elements in criteria three were not found in the literature. The other three models,

Debriefing with Good Judgment, PEARLS, and the 3D model, had three elements of both

criteria one and three that were not found in the literature reviewed. As identified in Table 3,

each of the models reviewed comply with the majority of the INACSL Standards of Best

Practice. All of the debriefing frameworks reviewed have merits for helping adult learners

develop the skills to think like a nurse. All five of these debriefing models align with Kolb's

Experiential Learning Theory.

Conceptual Framework

Kolb's Experiential Learning Theory is considered a cognitive development theory in which behavior, mental processes, and the environment are connected (Wills & McEwen, 2014). It is also considered an interaction theory because the development and changes in thinking, reasoning, and perception of learners is progressive (Wills & McEwen, 2014). The role of the facilitator in experiential learning is to create an environment for big-picture learning to occur; this occurs through the use of group process and problem-solving activities that are incorporated into debriefing (Wills & McEwen, 2014). Underlying characteristics of the theory, as identified by Wills and McEwen (2014), include, the interrelation of behavior, mental processes, and the environment; that individuals learn from their experiences; and that learning is how individuals adapt to the environment. Learning is promoted when it occurs within a realistic experience and when there is connection between the learning and the environment (Phrampus & O'Donnell, 2013).

Kolb's Experiential Learning Theory is cyclic and consists of four parts: concrete experience, reflection, conceptualization, and experimentation (Fewster-Thuente & Batteson, 2018). Phrampus and O'Donnell (2011) describe these same four stages as "Do, observe, think and plan" (p. 78). Fewster-Thuente and Batteson (2018) and Zigmont et al (2011) suggests that for learning to occur, there needs to be active participation in an experience, active reflection on the experience, and then application of the new knowledge to future experiences.

The four steps of Kolb's Experiential Learning Theory align with an experience of simulation and debriefing. The simulated experience itself is the concrete experience in where learners are given the opportunity to feel and do. The second stage of Kolb's Experiential Learning Theory is reflective observation; at this time learners are reflecting on their underlying

thought processes and how it led to their behaviors (Fewster-Thuente & Batteson, 2018; Zigmont et al., 2011). The third stage of Kolb's Experiential Learning Theory is abstract conceptualization where learners think about what occurred during the simulation experience and attempt to explain it (Fewster-Thuente & Batteson, 2018). During the final stage of Kolb's Experiential Learning Theory, active experimentation, learners are applying newly acquired knowledge to other situations, demonstrating learning has occurred (Fewster-Thuente & Batteson, 2018). This occurs at the conclusion of the debriefing session, as well as in future practice, when learners demonstrate the application of the new knowledge by implementing it in different scenarios or settings. This demonstration of enhanced critical thinking and clinical judgment will improve client care and safety as these learners transition from their undergraduate program to practice.

Kolb's Experiential Learning Theory aligns with all of the debriefing methods and could be the theoretical foundation for simulation debriefing. The emphasis on doing, reflecting, and analyzing to improve critical thinking and clinical judgment is truly what simulation and debriefing are about. The combination of behaviors, mental processes, and the environment contribute to the learners learning from their experiences and they then take that learning and adapt to the environment and changing situations (Wills & McEwen, 2014).

Conclusions, Implications, and Recommendations

The purpose of this literature review is to evaluate and compare debriefing models used during simulation experiences and to provide recommendations to nurse educators and researchers with regard to debriefing. This section consists of conclusions drawn from the literature review and evaluation of the debriefing models using the INACSL Standards of Best

Practice, implications for nursing as it relates to the research question, and recommendations for future research and nursing education.

Conclusions

It is known that learning does not occur based on an experience alone, it is a result of the experience combined with meaningful reflection (INACSL Standards Committee, 2016). Kolb's Experiential Learning Theory could be the theoretical foundation for simulation debriefing. The emphasis on doing, reflecting, and analyzing to improve critical thinking and clinical judgment is the purpose of simulation and debriefing.

The five best practice criteria for debriefing, established by the INACSL Standards Committee, increase the likelihood of learners having a positive and transferable learning experience (INACSL Standards Committee, 2016). These five criteria have been used to evaluate the debriefing models identified in this article, based on the available literature acquired for this literature review. Using the INACSL Standards of Best Practice as the criteria to evaluate the debriefing models, it was determined that the DML framework best meets the criteria established by the INACSL Standards Committee. DML met all criteria except one required element of criteria one. The Structured and Supported model was determined to also align well with the INACSL Standards of Best Practice; one element in criteria one and three elements in criteria three were not found in the literature relating to this model. The other three models, Debriefing with Good Judgment, PEARLS, and the 3D model, had three elements of both criteria one and three that were not found in the literature reviewed.

Overall, the deficits of all models related to (a) education of the facilitator, (b) seeking feedback from learners and peers, (c) the facilitator only observing the scenario, not multitasking by running technical equipment or taking on other roles, and (d) improvement in critical thinking

and clinical judgment. These deficits were either not identified or not met. Perhaps with the

four methods, other than DML, there is initial and ongoing education for facilitators, feedback

sought by facilitators, and support persons to play other roles and run the equipment during the

simulation so the facilitator can focus solely on the scenario, but these were not found in this

literature review. DML, however, is the only framework with quality studies found for this

literature review, confirming the change in undergraduate nursing student critical thinking and

clinical judgment abilities in two of the three studies reviewed.

Implications for Nursing

So, what are best practices for facilitating simulation debriefing to foster undergraduate

nursing students' enhanced critical thinking and clinical judgment? It can be concluded from

this literature review that additional research studies, using high level methodologies, are needed

to evaluate all five of the debriefing frameworks; much of the literature available is expert

opinion, literature review, or quasi-experimental in nature. Of the frameworks reviewed, DML

is best studied, with two of the three studies, indicating an improvement in learners' clinical

judgment. No research studies were found comparing the different debriefing frameworks with

each other, which is needed in the future.

In order for meaningful reflection to occur, a facilitated debrief must occur following a

simulation experience. The INCASL Standards of Best Practice are: the debrief (a) is facilitated

by an individual(s) who is competent in debriefing, (b) takes place in a setting conducive to

learning and facilitates confidentiality, trust, openness, self-reflection, and feedback, (c) is

facilitated by an individual(s) who can concentrate attention during the simulation to effectively

lead the debrief, (d) is guided by a theoretical framework, and (e) correlates with the objectives

and outcomes for the experience. Until research is available indicating that each debriefing

model contributes to improved critical thinking and clinical judgment abilities of undergraduate

nursing students or the superiority of one debriefing model over the others, it is important for

nurse educators to follow the five INACSL Standards of Best Practice during debriefing. Doing

so will increase the likelihood of the learners having a positive and transferable learning

experience.

Recommendations

Based on the literature reviewed, recommendations are made for additional research and

for nursing education.

Recommendations for Research.

The overall level of evidence found for this literature review is low. High quality research

studies are needed to evaluate each method of debriefing to determine if each method is effective

in improving the critical thinking or clinical judgment skills of the learners. There is minimal

evidence that supports the superiority of one debriefing model compared to others, so research is

needed to compare the debriefing methods to one another to determine which method is most

effective in enhancing learner critical thinking and clinical judgment. Perhaps such research will

discover that the model used or how debriefing is done is unimportant. Perhaps the important

piece is that debriefing occurs. The only way to know for sure is for additional research to be

done. This additional research on the debriefing methods will contribute to the growing body of

knowledge regarding simulation debriefing in nursing education and enhance learning for quality

clinical judgment and safe client care.

Recommendations for Education.

The five INCASL Standards of Best Practice include: the debrief (a) is facilitated by an

individual(s) who is competent in debriefing, (b) takes place in a setting conducive to learning

and facilitates confidentiality, trust, openness, self-reflection, and feedback, (c) is facilitated by

an individual(s) who can concentrate attention during the simulation to effectively lead the

debrief, (d) is guided by a theoretical framework, and (e) correlates with the objectives and

outcomes for the experience.

At this time, it is highly important that nurse educators follow the five INACSL

Standards of Best Practice during debriefing. This will ensure that learners have a positive and

transferable learning experience. It is important that nurse educators utilize a debriefing

framework that follows the INACSL Standards of Best Practice with every simulation and

debrief experience. Use of any of the five debriefing frameworks is recommended, as there is no

evidence at this time suggesting the superiority of one model over the others. When additional

research is available indicating which debriefing model(s) contributes to improved critical

thinking and clinical judgment abilities of undergraduate nursing students, and/or the superiority

of one debriefing model over the others, educational practice changes should be made.

Summary

To guide this literature review, the question, what are best practices for facilitating

simulation debriefing to foster undergraduate nursing students' enhanced critical thinking and

clinical judgment, was developed. Five debriefing frameworks were reviewed and critiqued

using the INACSL Standards of Best Practice. Based on the literature reviewed of the five

debriefing models, DML and then Structured and Supported debriefing best align with the

INACSL Standards of Best Practice. The literature found for this review was low level

evidence, consisting primarily of literature reviews and expert opinions. Additionally, there is

minimal evidence to suggest the superiority of one debriefing model over the others. High level

research studies are needed to evaluate each individual debriefing model to ensure critical

thinking and clinical judgment are improved as a result of use of the model, and to evaluate if

one model is superior to the others. Until that research is conducted, it is important for nurse

educators to follow the INACSL Standards of Best Practice for simulation and debriefing to

ensure learners have a positive and transferable learning experience.

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Table 1

Database Search

Date of Search	Keyword Used	Database/Source Used	# of Hits		
			Listed	Reviewed	Used
3/14/2018	Simulation AND nursing education	Science Direct	293	3	3
3/14/2018	Nursing simulation	Science Direct	13629	1	0
3/14/2018	Nursing simulation AND facilitation	Science Direct	6335	1	0
3/14/2018	Simulation debriefing	Science Direct	6024	2	0
3/15/2018	Simulation in nursing	Google Scholar	566000	1	1
3/15/2018	Nursing simulation history	EBSCO	16	1	1
3/15/2018	Nursing AND simulation AND history	EBSCO	14	1	0
3/15/2018	Simulation history	EBSCO	2505	1	1
3/15/2018	Simulation history AND nursing education	EBSCO	14	1	1
3/15/2018	Nursing simulation history	Science Direct	4880	2	0
5/03/2018	Debriefing skills	OVID	4	2	0
5/03/2018	Simulation debriefing	OVID	55	4	1
5/03/2018	Debriefing practice	OVID	4	1	0
5/03/2018	Debriefing technique	OVID	1	1	0
5/03/2018	Debriefing education	OVID	4	1	0
5/03/2018	Nursing debriefing	OVID	1	1	0
5/03/2018	Debriefing strategies	OVID	5	1	0
5/03/2018	Debriefing tools	OVID	1	1	0
5/03/2018	Debriefing process	Proquest	290	4	1
5/03/2018	Debriefing strategy	Proquest	9	2	0
5/03/2018	Debriefing tools	Proquest	9	1	0
5/03/2018	Debriefing technique	Proquest	17	1	0
5/03/2018	Education debriefing	Proquest	9	2	0
5/03/2018	Simulation debriefing	Proquest	132	3	0
5/03/2018	Debriefing Education	CINAHL	244	1	1

Date of Search	Keyword Used	Database/Source Used	# of Hits		
			Listed	Reviewed	Used
5/03/2018	Debriefing AND simulation	CINAHL	132	9	1
5/03/2018	Debrief AND strategies	CINAHL	72	2	0
5/03/2018	Debriefing AND tools	CINAHL	182	1	0
5/03/2018	Debriefing technique	CINAHL	36	1	0
5/18/2018	Theory-based debriefing	EBSCO	4	1	0
5/18/2018	Debriefing with Good Judgement AND theory	EBSCO	28	0	0
5/18/2018	Structured and Supported Debriefing	EBSCO	407	3	1
5/18/2018	PEARLS AND debriefing	EBSCO	0	0	0
5/18/2018	Debriefing with Good Judgement AND nursing	Science Direct	48	6	2
5/18/2018	Structured and Supported Debriefing	Science Direct	8	1	0
5/18/2018	PEARLS AND debriefing	Science Direct	0	0	0
5/18/2018	Structured and Supported Debriefing	Proquest	2	1	1
5/18/2018	Debriefing with Good Judgement	Proquest	1	1	1
5/18/2018	Debriefing for Meaningful Learning	Proquest	34	3	0
5/18/2018	PEARLS AND debriefing	Proquest	6	1	1
5/18/2018	Theory-based debriefing	Proquest	14	2	0
10/31/2019	3D Model of Debriefing	CINAHL	3	1	0
10/31/2019	Defusing, Discovering and Deepening	CINAHL	3	1	1

Date of Search	Keyword Used	Database/Source Used	# of Hits		
			Listed	Reviewed	Used
10/31/2019	Debriefing for Meaningful Learning	CINAHL	6	1	1
11/1/2019	Debriefing for Meaningful Learning	Cochrane Library	7	1	1
11/1/2019	Debriefing for Meaningful Learning	Proquest	44	3	0
1/7/2020	Debriefing for Meaningful Learning	Science Direct	3	2	2
1/7/2020	Debriefing with Good Judgment	Science Direct	76	1	1
1/7/2020	Simulation Debriefing AND Evaluation	Science Direct	315	3	1

Table 2

Literature Review

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Bradley, C. S. & Dreifuerst, K. T. (2016). Pilot testing the debriefing for meaningful learning evaluation scale.	There were no tested instruments to evaluate a facilitator's ability to adhere to a structured debriefing method so the Debriefing for Meaningful Learning Evaluation Scale (DMLES) was developed. The purpose was to test if the DMLES measures a facilitator's ability to implement the DML method of debriefing.	Three facilitators were purposively chosen to submit debriefings with prelicensure nursing students for review. Each facilitator submitted five recordings for a total of 15 debriefing sessions with prelicensure nursing students.	Descriptive pilot study	The DMLES was developed as a 33-item scoring scale to evaluate the six elements of the DML method. Each of the 33 items were scored as either present or not present.	Cronbach's alpha indicated good consistency (0.88) for the DMLES scale. Intraclass correlation coefficient (ICC) was 0.86, ($p <$ .01). The content validity index (CVI) mean score was 0.92, which is considered an acceptable level.	DMLES demonstrated internal consistency, interrater reliability, content validity and the ability of a rater to behaviorally score a debriefing without observing the simulation. This is an attempt to assess how consistently DML is used by facilitator's.	Limitations: small sample size and number of recordings. One site. This scale could be used to evaluate the effectiveness of facilitators using the DML method. Valid and reliable evaluation strategies for evaluating a facilitator(s) are needed.	Level IV

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Dreifuerst, K. T. (2015). Getting started with debriefing for meaningful learning.	Debriefing for meaningful learning (DML) is a method of debriefing that can be used in simulation, or the clinical setting.

Socratic questioning is used to challenge taken-for-granted assumptions.

Six phases - engage, explore, explain, elaborate, evaluate, and extend - are used to facilitate a consistent reflective process. | N/A | Expert opinion | N/A | Using reflection-in-action, reflection-on-action, and reflection-beyond-action, DML helps learners to develop clinical reasoning skills to think like a nurse.

Facilitators and learners use DML together to reflect, improve understanding, prepare for future similar situations, and increase clinical reasoning. | A process to help facilitators guide thinking and reflection in the clinical and simulation environments.

Helps learners to be reflective and to develop evaluative thinking. | A worksheet is used to guide the DML process by encouraging thinking, seeing, discussing, reading, and writing. | Level VII |

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Dreifuerst, K. T. (2012). Using debriefing for meaningful learning to foster development of clinical reasoning in simulation.	Identify and measure the effect of the DML debriefing method on the learner's clinical reasoning skills. Identify if the learner's perception of the quality of the debriefing experience when using the DML method id different than customary debriefing methods.	238 undergraduate nursing students in a BSN program at a Midwest University school of nursing.	Quasi-experimental Pretest-posttest	The Health Sciences Reasoning Test (HRST) Debriefing Assessment for Simulation in Healthcare – Student Version (DASH-SV) Debriefing for Meaningful Learning Supplemental Questions (DMLSQ)	The change in pretest to posttest scores was of significant difference ($p = 0.000$) when DML was use. Learners who use DML will have a better overall posttest of clinical reasoning ($p \leq 0.05$). Learner's perceived a difference when DML was used compared to customary debriefing methods ($p \leq 0.001$).	The use of DML is linked with better clinical judgment in learners. There were statistically significant changes in learner scores in the experimental group (DML) vs the control group (traditional debriefing). Learners perceived high-quality debriefing when DML was used.	Limitations: there was not randomization of groups; it was based on cohort scheduling, and this was a single site study. DML shows potential as a valid and reliable method for debriefing with positive learner outcomes.	Level III

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Eppich, W. & Cheng, A. (2015). Promoting excellence and reflective learning in simulation (PEARLS): Development and rationale for a blended approach to health care simulation debriefing.	Describe the PEARLS debriefing script that can be used by facilitators to help implement the PEARLS debriefing framework. Present the PEARLS debriefing framework and how to implement it.	N/A	Expert Opinion	N/A	N/A	The PEARLS framework divides the debrief into four phases: reactions, description, analysis and summary. The reaction phase starts with an open-ended question to illicit the thoughts and feelings of the learners. During the description phase key events are summarized and major problems of the scenario are identified. The facilitator selects a strategy-learner self-assessment,	The PEARLS framework integrates three different strategies to be used by the facilitator as deemed appropriate. Empirical studies are needed to determine the validity of this framework. It's up to each individual facilitator to determine which strategy(s) will be used in the analysis phase.	Level VII

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
						focused facilitation or providing information - to guide each aspect of the debriefing. The summary is either learner directed or facilitator guided.		

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Fey, M. K. & Jenkins, L. S. (2015). Debriefing practices in nursing education programs: Results form a national study.	Describe the varying debriefing practices used among nursing education programs in the United States.	$N = 502$ Nursing program throughout the US.	Descriptive self-reported cross-sectional internet survey.	Survey questions were developed with guidance from concepts of Kolb's Experiential Learning Theory. Three experts in debriefing evaluated the questions and content validity was calculated to be 0.86.	47.5% of facilitators had training. 19% of schools assessed the competence of debriefers. 31% of programs use a guiding theory or model. 82% practice theory-based debriefing (TBD). Programs that assessed facilitator competence were more likely to practice TBD ($p < .01$).	TBD was more common when facilitators had training and were assessed for competence. A training program is needed for facilitators who will lead debriefing. A reliable and valid assessment tool is needed to assess facilitator competence.	The data were self-reported by nursing program deans. After seeing the lack of training and competence assessment, emphasis is placed on the need for development and research of a tool to assess debriefing competence.	Level VI

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Forneris, S. G., Neal, D. O., Tiffany, J., Kuehn, M. B., Meyer, H. M., Blaxovich, L. M., Holland, A. E., Smerillo, M. (2015). Enhancing clinical reasoning through simulation debriefing: A multisite study.	To replicate Dreifuerst's 2012 findings of enhanced clinical reasoning scores using debriefing for meaningful learning (DML). Does DML positively impact the development of clinical reasoning skills when compared to usual debriefing? Do nursing students perceived a difference in quality of debriefing when DML is used compared to usual debriefing?	Convenience sample of 200 nursing students at the beginning of their senior year. 153 students fully participated: 78 students were randomly assigned to the intervention group and 75 were in the control group. Setting: four baccalaureate colleges in the Midwest.	Quasi-experimental	Health Sciences Reasoning Test (HSRT)- a 33 question multiple choice test assessing critical-thinking skills. Debriefing Assessment for Simulation in Healthcare-Student Version (DASH-SV)- used to assess the learners' perceptions of the quality of debriefing, relating to six variables.	Change in mean score on the HSRT for the intervention group (p = .03). p-value of .44 for the control group mean score on the HSRT. p-value of .09 for change in mean scores between the intervention and control groups. p-value of .04 for change in mean score between the intervention and control groups when looking at the DASH-SV scores.	Learners who had DML scored significantly higher in their clinical reasoning than learners with usual debriefing. Learners perceived DML as a higher quality debriefing experience than usual debriefing.	Positive change in clinical reasoning was achieved across multiple settings with multiple facilitators. This study validates the previous research and supports that theory-based debriefing, specifically DML, has positive learning outcomes for nursing students.	Level III

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Maestre, J. M. & Rudolph, J. W. (2014). Theories and styles of debriefing: The Good Judgement Method as a tool for formative assessment in healthcare.	Comparison of the judgmental, nonjudgmental and good judgment approaches to debriefing. Explanation of the advocacy-inquiry method to elicit frames that guide clinical actions.	N/A	Expert Opinion	N/A	N/A	This approach is based on the sharing of opinions and personal view points. It's important to openly discuss errors and/or mistakes to promote patient safety. Combining advocacy and inquiry is important to directly and clearly state the facilitators perspective and elicit the learners thought processes.	The debriefing with good judgment approach helps reveal thought processes that led learners to take certain actions or make statements and can maintain or improve future performance by the learner. Utilizing advocacy and inquiry, enables the facilitator to give specific feedback to learners to help them develop new frames.	Level VII

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Mariani, B., Cantrell, M. A., & Meakim, C. (2014). Nurse educators' perceptions about structured debriefing in clinical simulation.	Empirically test and compare clinical judgment of learners debriefed using DML compared to unstructured debriefing. To determine if there is a perceived difference in the quality of debriefing when DML is used in comparison with unstructured debriefing.	Convenience sample of 86 junior-level nursing students in a med-surg course. A mid-sized university located in the mid-Atlantic region.	Mixed method: Quasi-experimental and qualitative focus groups	Clinical judgment was measured using the Lasater Clinical Judgment Rubric (LCJR)	Comparison of LCJR scores in the intervention and control groups were compared ($p = 0.64$). Qualitative findings indicated that the DML debriefing was more learner-focused, had less emphasis on what was right and wrong, was felt to be potentially useful in the future, and learners appreciated figuring out the problem and making connections.	No statistical significance was noted between the control and intervention groups, indicating that debriefing, without regard to the method, is most important. Structured debriefing fosters reflection and learning. Additional studies investigating the effect of the debriefing method on learner outcomes is needed.	The small sample size may be affecting the results. Structured debriefing is valuable for student-focused learning.	Level VI

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Phrampus, P. E. & O'Donnell, J. M. (2013). Debriefing using a structured and supported approach. *The*	To describe the structured and supported approach to debriefing, which uses the GAS (gather-analyze-summarize) tool as a guide.	N/A	Literature Review	N/A	N/A	The debriefing tool used with this framework is the GAS-gather, analyze and summarize-tool.

Gather Phase: elicit reactions to the experience, clarify facts, and describe what happened.

Analyze Phase: in-depth discussion of observed performance and gaps based on learners underlying thoughts, feelings, beliefs, assumptions, and knowledge. | The GAS tool is a framework to help with the flow of debriefing and assist the facilitator to have an organized approach to the debriefing.

The scenario learning objectives drive the discussion during debriefing.

Recommended to spend 25% of time in gather phase, 50% in analyze, and 25% in summarize phase. | Level VII |

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
						Summarize Phase: learners articulate key learning points, take-away messages, and areas they identify that need performance improvement.		

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Rudolph, J. W., Simon, R., Dufresne, R. L., & Raemer, D. B. (2006). There's no such thing as "nonjudgmental" debriefing: A theory and method for debriefing with good judgment.	An explanation of the Debriefing with Good Judgment theory and method.	N/A	Expert Opinion	N/A	N/A	Based on 35 years of research in behavioral sciences on how reflective practice improves professional effectiveness

Learner "frames" are based on knowledge, assumptions and feelings. These frames guide learner actions, which produce clinical results.

Advocacy, an objective observation, and inquiry, a genuine question, helps to elicit the learners frames in relation to actions | The goal of debriefing with good judgment is to learn what the learners' frames are so these can be reinforced or changed, as appropriate.

This method is designed so the learner will clearly understand the facilitator's critical judgment.

This approach has two known limitations, the model presumes that the | Level VII |

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
						observed by the facilitator. Socratic questioning can lead to learner confusion about the nature of the questions and the facilitator's motives.	learner is trying to do the right thing and this approach is difficult if the learner comes from a culture where deferring to authority is expected.	

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Rudolph, J. W., Simon, R., Rivard, P., Dufresne, R. L., & Raemer, D. B. (2007). Debriefing with good judgment: Combining rigorous feedback with genuine inquiry.	An explanation of the development and components of the debriefing with good judgment method. A comparison with judgmental and nonjudgmental debriefing methods.	NA	Expert Opinion	N/A	The goal of debriefing with good judgment is to allow learners to explain, analyze and synthesize information to improve their performance in future situations. Combines advocacy and inquiry in a safe environment to enable learners to review understand how their thoughts affected their actions and in turn the client results.	The debriefing with good judgment method is especially helpful when the facilitator needs to provide critical feedback to the learners, but doesn't want to elicit a defensive or punitive response. It's helpful in identifying underlying thought processes so future decision making can be improved by either reinforcing or altering these thought processes	This model assumes the learner is trying to do the right thing and is dealing with a culture in which the authority of elders is not of paramount importance. Facilitators are often hesitant to share critical thoughts and feelings to avoid confrontation or defensiveness form the learner; sharing that critical feedback is essential for improved clinical outcomes.	Level VII

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Waznonis, A. R. (2014). Methods and evaluations for simulation debriefing in nursing education	Identify and examine methods used for simulation debriefing in nursing education. Identify and examine instruments and strategies to evaluate simulation debriefing.	N/A	Descriptive Literature Review	N/A	22 methods and seven means for evaluating simulation were found. Many methods are similar and developed based on the same theories and/or frameworks. Debriefing with Good Judgment is a unique approach to promote reflection and clinical judgment by identifying frames and creating new or reinforcing the frames for future practice.	Facilitators should strive for consistency with use of a debriefing method. A common language should be adapted within nursing education. The DASH and DES were developed based on debriefing expertise and literature. The DASH and DES are broad tools and can be used to evaluate any debriefing method. The DMLSQ is specific to the evaluation of debriefing	Many debriefing methods have similar phases, use similar approaches, and are based on the same theories and frameworks. There is considerable variation in the suggested use, design, supplemental resources, and evaluation of the various methods. Additional evaluation and comparison of the varying debriefing	Level VI

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
					DML promotes self-directed approaches to debriefing and has an associated evaluation tool, DML Supplemental Questions (DMLSQ). The majority of debriefing methods do not have an associated instrument for evaluation. The Debriefing Experiences Scale (DES) and Debriefing Assessment for Simulation in Healthcare (DASHcan be used to evaluate any simulation debriefing.	done using DML.	methods is needed, especially with higher level studies. Evaluation of debriefing is recognized as important and should occur with all debriefing experiences.	

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
Zigmont, J. J., Kappus, L. J., & Sudikoff, S. N. (2011). The 3D model of debriefing: Defusing, discovering, and deepening.	An explanation of the 3D Model of Debriefing: Defusing, Discovering, and Deepening, which is based on common phases identified in the literature about debriefing.	N/A	Expert Opinion	N/A	N/A	The 3D Model addresses the learner, learning environment, and key experiences. The 3D Model has three components, defusing, discovering and deepening. Defusing is focused on discussion relating to the emotional impact of the experience., allowing learners to participate in meaningful discussion and the facilitator to conduct an assessment of what key points of discussion are.	The 3D Model of debriefing is based on learning theory and common strategies. It is a step-by-step strategy to debrief an experience. Defusing allows learners to release emotions and review the experience. Discovering allows the learner to identify and analyze their mental models. Deepening allows the learner to apply the newly	Level VII

Citation	Purpose	Sample/ Setting	Design/ Framework	Variables/ Instruments	Results	Implications	Comments	*LOE
						Discovering is intended to facilitate learner reflection on his/her own performance and mental models. Deepening is when the learner makes a connection between the learning that occurred and practice. This is best achieved with a repeat simulation or discussion focused on connecting what was learned to practice.	learned information.	

*This level of evidence rating scheme is based on Ackley, B. J., Swan, B. A., Ladwig, G., & Tucker, S. (2008). *Evidence-based nursing care guidelines: Medical-surgical interventions.* (p. 7). St Louis: MO: Mosby Elsevier.

Level I: Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II: Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
Level III: Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV: Evidence from well-designed case-control or cohort studies.
Level V: Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI: Evidence form a single descriptive or qualitative study.
Level VII: Evidence from the opinion of authorities and/or reports of expert committees.

Table 3

INACSL Standards of Best Practice Debriefing Model Critique

Criteria	Required Element	Debriefing with Good Judgment	PEARLS	DML	Structured and Supported	3D Model
1 - The debrief is facilitated by a person(s) competent in the process.	Structured format and reflective discussion	Met	Met	Met	Met	Met
	Acquire initial education	Unknown	Unknown	Met	Met	Unknown
	Seek peer and learner feedback	Unknown	Unknown	Met	Met	Unknown
	Actively engage in simulation-based experiences	Met	Met	Met	Met	Met
	Use of an established instrument	Met	Met	Met	Met	Met
	Participate in ongoing education	Unknown	Unknown	Unknown	Unknown	Unknown
2 - The debrief is conducted in an environment conducive to learning and supports confidentiality, trust, open communication, self-analysis, feedback, and reflection.	Orient learners to debriefing	Met	Met	Met	Met	Met
	Establish confidentiality	Met	Met	Met	Met	Met
	Develop rules for debriefing	Met	Met	Met	Met	Met
	Acknowledge and validate emotional responses of learners	Met	Met	Met	Met	Met
	Treat learners positively	Met	Met	Met	Met	Met
	Assist learners to identify how decision making was influenced	Met	Met	Met	Met	Met
	Engage learners	Met	Met	Met	Met	Met
	Manage unexpected responses	Met	Met	Met	Met	Met
	Balance group participation	Met	Met	Met	Met	Met
	Use a special room to debrief	Met	Met	Met	Met	Met
	Debrief immediately after the simulation	Met	Met	Met	Met	Met
3 - The debrief is facilitated by a person(s) who can devote enough concentrated attention during the simulation to effectively debrief the simulation-based experience.	The facilitator is not distracted by performing multiple functions or roles	Unknown	Unknown	Met	Unknown	Unknown
	Establish professional respect	Met	Met	Met	Met	Met
	Support to operate technology	Unknown	Unknown	Met	Unknown	Unknown
	Learners self-reflect	Met	Met	Met	Met	Met
	Learners drive discussion	Met	Met	Met	Met	Met
	Concrete performance examples are shared	Met	Met	Met	Met	Met
	Formative feedback is shared	Met	Met	Met	Met	Met
	Conceptualize learning for future situations	Met	Met	Met	Met	Met
	Reflect on team performance	Met	Met	Met	Met	Met
	Facilitate critical thinking and clinical judgment	Not Met	Not Met	Met	Not Met	Not Met
	Adapt to learner needs	Met	Met	Met	Met	Met
	Summarize learning at the end	Met	Met	Met	Met	Met

Criteria	Required Element	Debriefing with Good Judgment	PEARLS	DML	Structured and Supported	3D Model
4 - The debrief is based on a theoretical framework	The facilitator takes into account objectives, scenario complexity, learner needs, facilitator competence, and the simulation experience	Met	Met	Met	Met	Met
	Meets minimum phases of reaction, analysis, and summary	Met	Met	Met	Met	Met
5 - The debrief is congruent with the objectives and outcomes	Objectives are considered in the debrief	Met	Met	Met	Met	Met
	Objectives are learner-centered	Met	Met	Met	Met	Met
	Performance gaps are identified based on expected outcomes	Met	Met	Met	Met	Met

Criteria and elements adapted from the INACSL Standards Committee (2016).