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# Transforming National League for Nursing Advancing Care Excellence for Seniors Unfolding Cases into Virtual Simulations: An Innovative Approach for Interactive Learning

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## KEYWORDS

concept-based learning;  
INACSL standards;  
interactivity;  
engaged learner;  
nurse education

## Abstract

**Background:** Two National League for Nursing (NLN) Advancing Care Excellence for Seniors (ACE.S) cases were transformed into engaging and interactive virtual simulation learning experiences due to the COVID-19 pandemic.

**Methods:** The purpose of this article is to describe the process of designing and implementing this novel approach to virtual simulation.

**Results:** Faculty aligned each virtual simulation with existing course outcomes, student learning outcomes, concept-based learning principles, and best practices of The International Nursing Association for Clinical Simulation and Learning (INACSL) standards.

**Conclusions:** Practical strategies used to convert these unfolding case studies into virtual simulations for a small private Christian university of undergraduate junior level accelerated nursing students will be revealed.

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## Background

The National Council of State Boards of Nursing (NCSBN, 2020) states the COVID-19 pandemic has significantly impacted nursing education and many nursing programs have experienced cancellation of student clinical learning experiences. Alexander et al. (2015) explored a solution for replacing clinical learning experiences and

proposed that up to 50% of traditional clinical experiences in prelicensure core nursing courses could be substituted by high-quality simulation experiences. The International Nursing Association for Clinical Simulation and Learning (INACSL) standards were used as a framework to guide the transformation of both National League for Nursing (NLN) Advancing Care Excellence for Seniors (ACE.S) cases to virtual simulation learning experiences. The emerging technology of virtual simulation supports an innovative learning strategy for clinical replacement (Sullivan et al., 2019).

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For effective learning to take place, nurse educators must ingrain principles of concept-based learning (CBL).

### Key Points

- Two NLN ACE.S unfolding case studies (Red Yoder and Ertha Williams) were transformed into virtual simulation.
- Embedding CBL principles and INACSL best practices into virtual simulation learning experiences resulted in engaging and interactive learning.
- Virtual simulation learning experiences successfully replaced a total of ten clinical hours.

The concepts of tissue integrity, patient-centered care, care coordination, clinical decision-making, adherence, patient education, and health informatics were aligned with our simulations. According to [Giddens, Caputi, and Rodgers \(2020\)](#) CBL originated from a learner-centered approach in which the learners take ownership of their learning. Learners must be actively engaged in the learning environment and educators must serve as facilitators of learning. Educators must be mindful of minimizing content overload and providing the learner with oppor-

tunities for cognitive processing. Lastly, when learners have time for reflection on clinical decision making, deep learning should occur ([Giddens et al., 2020](#)). In order for effective learning to take place, the active engagement of facilitated learning, cognitive processing and reflection were incorporated into both virtual simulation experiences ([Giddens et al., 2020](#)).

Virtual simulation provides nursing students with the opportunity to apply evidence-based knowledge, improve knowledge retention, and develop clinical competency according to [Foronda, Hudson, and Budhathoki \(2017\)](#) and [Padilha, Machado, Ribeiro, & Ramos \(2017\)](#). [Shin, Rim, Kim, Park, and Shon \(2019\)](#) integrative review identified common educational characteristics in virtual simulations throughout the nursing discipline. Through concept mapping, [Shin et al. \(2019\)](#) identified presence, immersion and affordance as three distinct concepts found in virtual simulation learning. The concept of immersion included the platform, space and levels of animation, fidelity and reality of the virtual simulation. The concept of presence included the interaction and engagement of the virtual simulation. Lastly, the concept of affordance included action control or perceived affordances of the virtual simulation. When these three concepts are engrained into a cycle of engagement within the virtual simulation, learner achievement is promoted ([Shin et al., 2019](#)).

The concepts of presence, immersion, and affordance identified by [Shin et al. \(2019\)](#) provided a framework for both virtual simulations. Faculty who developed these virtual simulations rooted presence, immersion and affordance into both virtual simulations by incorporating

CBL principles and INACSL standards. The purpose of this article is to describe the process of designing and implementing this novel approach to virtual simulation.

## Case Description

The virtual simulations were implemented in a clinical course that focused on chronic care. Eleven groups of learners completed both virtual simulations. Six learners were assigned to each group. Learner participation in both virtual simulations resulted in ten hours of clinical replacement. NLN ACE.S cases, Sherman “Red” Yoder and Ertha Williams served as the foundation for the development of each virtual simulation. The NLN’s website provided each simulation in an unfolding case study format. Faculty transformed these cases into engaging virtual learning experiences and modified each scenario to align with course concepts. Red, an 80-year-old widower presents in the home health setting with a foot wound that eventually progressed to rule-out sepsis. Red, an insulin dependent diabetic experiences a decline in functional status. Red’s lack of adherence to his proposed plan of care and health promotion activities within the context of patient-centered care were the focuses of this virtual simulation. Ertha Williams in her late 60s experiences memory lapse, increased confusion, and increased agitation. Increasing level of care and interprofessional collaboration to transfer Ertha to a long-term facility were the focuses of this virtual simulation ([NLN, 2020](#)).

## Case Approach

### Facilitator Roles

Faculty involved in facilitating the virtual simulations included one course coordinator, ten clinical expert faculty, and two simulation specialists. All faculty have received basic training in simulation facilitation and debriefing. Simulation specialists have specific knowledge in simulation pedagogy and have undergone training in Debriefing Assessment for Simulation in Healthcare ([Simon, Raemer, & Rudolph, 2010](#)), Debriefing with Good Judgment ([Rudolph, Simon, Rivard, Dufresne, & Raemer, 2007](#)) and [INACSL Standards of Best Practice \(2016\)](#).

Simulation Specialists developed a needs assessment in collaboration with the course coordinator. The needs assessment addressed the underlying threats related to the COVID-19 pandemic, a survey of educators, [American Nurses Association \(ANA\) Gerontological Nursing: Scope and Standards of Practice \(2010\)](#) and curricular concepts according to [INACSL \(2016\) Standards of Best Practice: Simulation Design](#) Criterion 1. The results of the needs assessment were used in conjunction with the course

student learning outcomes to develop the virtual simulation objectives according to [INACSL \(2016\) Stands of Best Practice: Simulation Outcomes and Objectives](#) Criterion 1. In preparation for the execution of the virtual simulations, two simulation specialists were dedicated to transitioning both NLN ACE.S cases to a virtual platform. The two simulation specialists designed the interactive elements of the simulation cases, pre-brief content, debrief content, and simulation evaluation surveys.

Both clinical expert faculty and simulation specialists facilitated the live synchronous virtual simulations. Each live virtual simulation began when a group of six students signed on to the instructor's videoconferencing platform at their specific designated virtual simulation start time. Clinical faculty synchronously played a prerecorded pre-brief and hosted a question-and-answer session with the student group. Clinical expert faculty supervised student progression through each virtual simulation case, hosted synchronous clinical discussion sessions at scheduled intervals, and acted as the physician and social worker during the virtual simulations. Both the clinical faculty and simulation specialist were present for the synchronous debriefing session at the end of the virtual simulation.

## Organization

The technical platforms utilized for both virtual simulations included the university's learning management system (LMS), a videoconferencing platform and a simulated electronic health record (eHR). The backbone for each virtual simulation consisted of two central documents: a detailed timeline schedule and a two-phase PowerPoint presentation. These two central documents guided learners through the engaging and interactive virtual learning experiences.

The PowerPoints were opened simultaneously by faculty and students at the start of each synchronous virtual simulation. The PowerPoint slides contained:

- embedded prerecorded prebriefs
- preparatory materials including screening tools and evaluation rubrics
- embedded prerecorded nurse to nurse reports
- links to simulated electronic health records
- embedded prerecorded videos of simulated encounters with standardized participants
- links to guided structured observation activities
- prompts for calling the physician and social worker

Additionally, all grading rubrics, preparatory work, simulation videos, screening tool assessments, eHR documentation links and appropriate forms were listed on the detailed timeline schedules ([Table 1](#) and [Table 2](#)). Importantly, the timeline schedules ensured clarity, accountability, engagement, timeliness for synchronous sessions and aided in documenting clinical hour replacement learning activities. Timelines served as a guide, providing step-by-

step instructions for all interactions between students and facilitators. Everything the learner needed for each virtual learning experience was provided with intention within these two central documents.

## Virtual Prebrief

Each prebrief was designed and prerecorded by the two simulation specialists prior to each virtual simulation session. The recordings were played for learners during each virtual simulation with an accompanying question-and-answer session lead by clinical expert faculty. Each prebrief relayed detailed information regarding learner expectations, learner objectives, logistical details, virtual simulation modality, limitations within the virtual platform, troubleshooting technology, and instructor contact information according to [INACSL \(2016\) Standards of Best Practice: Facilitation](#) Criterion 3. Each prebrief also emphasized psychological safety and the shared basic assumption of all learners according to [INACSL \(2016\) Standards of Best Practice: Professional Integrity](#) Criterion 3.

## Virtual Engagement and Interactivity

Close attention was paid to integrating engaging and interactive learning activities into each virtual simulation. Engaging activities were deliberately scheduled throughout each virtual simulation in segmented phases ([Tables 1](#) and [2](#)). Interactive activities included using screening tools to evaluate each patient, completing guided structured observational activities, calling the clinical expert faculty as the physician and social worker and documenting interventions. Synchronous clinical discussion sessions were scheduled with faculty throughout the day to assist learners with prioritization of care and facilitation of learning related to the increasing needs of the virtual patients. An example of learner prioritization for Ertha included the learner's analysis of the patient condition in the simulated encounter, interpretation of screening tool results, and subsequent recognition of the cognitive decline which prompted reporting to the physician. Frequent intentional engaging activities aligned with immediate faculty feedback enforced concepts of prioritization and clinical judgment.

Attention to physical aspects of fidelity promoted realism in each virtual simulation. In order to simulate a realistic engaging documentation experience and promote the nursing process, a commercial educational simulated eHR was utilized. Discharge forms and transfer forms that were not included as part of the eHR were generated into editable documents. Prior to viewing the prerecorded simulated patient encounters, learners gathered patient data on the simulated eHR to identify patient concerns. After witnessing simulated patient encounters and completing interactive activities, learners documented interventions. Importantly, realism was promoted by using standardized participants for all recorded shift reports and patient encounters.

**Table 1** Student Timeline Virtual Simulation #1: Red Yoder

Timeline	Activity	Description
15 minutes	Simulation Introduction	Log into LMS and Enter videoconferencing platform Verify faculty contact information Watch prebrief for virtual simulation instructions Opportunity for questions
30 minutes	Review preparatory material	Review 4 screening tool documents Review 3 evaluation rubrics
5 minutes	Begin Simulation- Phase 1	Watch live recording of patient report in the home health setting
30 minutes	Watch Phase 1 Simulation video	Watch Red Yoder home health simulation and complete the Phase 1 portion of the simulation Complete the observation activity and evaluate screening tool results.
30 minutes	Check in with faculty	Check in with faculty via teleconferencing platform Discuss plan of care and prioritization
30 minutes	Take a Break	Take a Break! Take some time away from your computer
5 minutes	Begin Simulation- Phase 2	Watch live recording of changed patient status report in the acute care setting
20 minutes	Review Electronic Health Record	Review the patient's demographic data, history and physical, progress notes, vitals, Orders, and MAR in the simulated electronic health record
15 minutes	Watch Part 1 of Phase 2 simulation video	Watch Red Yoder "Part 1 Phase 2" recorded acute care simulation and continue to fill out the simulation observation activity document
30 minutes	Call SBAR report	Call provider (clinical faculty) with a patient report and recommendations
30 minutes	Check in with faculty	Discuss key findings and priority nursing diagnoses
30 minutes	Document	Complete all documentation in the simulated electronic health record. Verify Red's new orders and document his care up to this point including patient report
15 minutes	Watch Part 2 of Phase 2 simulation	Continue to "Part 2 Phase 2" Watch remaining recorded simulation and complete simulation observer worksheet
15 minutes	Wrap up	Finish documentation in the simulated electronic health record Finish simulation observation forms
1 Hour	Debrief	Synchronous debrief via teleconferencing platform with simulation specialist and clinical faculty
	Simulation complete!	Students and faculty complete the evaluation survey for this simulation

The above table illustrates the detailed timeline schedules with corresponding activities and descriptions of learning activities.

Recordings were scripted and took place in the acute care simulation lab and the home health simulation lab to promote physical fidelity and simulate realism.

According to O'Regan, Molloy, Watterson, and Nestel (2016) active observation of simulation activities with a guided structured observation activity has shown to result in learner outcomes that are comparable to hands-on simulation activities. For both simulation learning experiences, a guided structured observation learning activity was assigned. As learners witnessed the recorded patient encounters, learners completed guided observation assignments to vicariously engage with the scenario. Both active observation simulation activities were outlined in the PowerPoint and included on the timeline schedules.

### Virtual Debrief

It was crucial that the simulation specialists facilitated the live debrief at the close of the experience. As a result,

the debrief was facilitated by the educators with the highest level of training in debriefing to meet best practices of [INACSL Standard: Simulation Debriefing \(2016\)](#). The debriefing model used was Debriefing with Good Judgment (Rudolph, Simon, Dufresne, & Daniel, 2006). Clinical expert faculty were also present during the live debrief and served as the content expert. Debriefing occurred synchronously via videoconference at the end of each simulation experience with both video and audio enabled to promote learner engagement in conversation and cognitive processing.

### Discussion

The COVID-19 pandemic changed face-to-face (F2F) learning for all. Inclusion of physical fidelity elements enhanced the virtual learning experience for each virtual patient encounter. Deliberately scheduled opportunities for human-to-human interaction throughout the virtual simula-

**Table 2** Student Timeline Virtual Simulation #2: Ertha Williams

Timeline	Activity	Description
20 minutes	Simulation Introduction	Log into LMS Enter teleconferencing platform Verify faculty contact information Watch pre-brief independently for virtual simulation instructions Opportunity for questions
20 minutes	Review preparatory material	Review 3 screening tool documents Review 3 evaluation tools
5 minutes	Begin Simulation	Watch live recording of patient report
15 minutes	Review HER	Review HER
20 minutes	Check in with faculty	Check in with faculty via teleconferencing platform Discuss plan of care and prioritization
30 minutes	Watch simulation video	Watch live recording of changed patient status report Complete the simulation observation activity.
30 minutes	Call SBAR reports to interprofessional team	Call provider (clinical faculty) with a patient report Call Social Worker (clinical faculty) with a patient report
20 minutes	Check in with faculty	Discuss key findings and priority nursing diagnoses
20 minutes	Document	Complete all documentation to include discharge and transfer form
15 minutes	Wrap up	Finish simulation observation form
45 minutes	Debrief	Synchronous debrief via teleconferencing platform with simulation specialist and clinical faculty
	Simulation complete!	Students and faculty complete the evaluation survey for this simulation

The above table illustrates the detailed timeline schedules with corresponding activities and descriptions of learning activities.

tions allowed for engagement in a virtual environment that substituted hands-on simulation.

Resource utilization was a challenge. Each interactive and engaging component of both virtual simulations were created by the two simulation specialists. This process took ample time and immense effort. When scheduling virtual simulations, a total of 110 hours of live simulation time took place. Due to the significant amount of time required for execution of both virtual simulations, the two simulation specialists were intentional about delegating facilitation responsibilities. It was important that the simulation specialists facilitate activities that required extensive expertise and training in simulation pedagogy, such as debriefing, in order to uphold INACSL standards. The level of training of clinical expert faculty was carefully considered throughout the process of delegating assigned facilitation roles for each virtual simulation due to the excessive time for virtual simulation delivery and limited faculty with expertise in simulation pedagogy.

Another consideration worth discussing is that commercial virtual simulation platforms have limited content and can be costly. When initially considering commercial virtual simulation platforms for use in the chronicity course, options available did not align with student learner and course objectives. The NLN ACE.S cases were free to public access and more closely aligned with student learner and course objectives. Students had already purchased the commercial simulated eHR as part of the nursing program and the university's existing LMS and videoconferencing platforms were utilized, all at no extra cost. Clinical ex-

pert faculty were previously assigned workload for clinical hours in this course. Since clinical was replaced with virtual simulation, there was no cost to the university related to increased faculty workload. As a result, transforming the NLN ACE.S to an engaging virtual simulation resulted in a budget neutral alternative to commercial virtual simulation platforms.

Both virtual simulations were developed and implemented from a learner-centered approach in which students had to take ownership of their learning. The presimulation preparation required the learner to take ownership of their own learning. The learner was an active participant throughout each virtual simulation. The faculty were facilitators of learning. By segmenting the phases and including breaks in the timeline schedules, learners were allowed the opportunity for cognitive processing. Debriefing facilitated reflection and discussion for the opportunity of deep learning. Each of the aforementioned aspects of the virtual simulations represents concept-based learning principles.

## Conclusion

All learners completed both virtual simulations and these virtual learning experiences replaced ten clinical hours. In designing the virtual simulation learning experiences, the goal was to create realistic, engaging experiences aligned with student and course objectives for meaningful learning. Transforming unfolding case studies into engaging and interactive virtual simulations centered around INACSL

standards and CBL principles served as clinical replacement. The aim of this article was to disseminate strategies for designing and implementing novel virtual simulations. The modality of virtual simulation has future potential in nursing education.

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