Improving New Nurse Confidence and Skills in Trauma Emergency Rooms through Escape Room Gamification

Ty Svensson

Trudy Busch Valentine School of Nursing, Saint Louis University

NURS 5604: Clinical Studies IV

Professor Bland

April 17th, 2026

Abstract

Title: Improving New Nurse Confidence and Skills in Trauma Emergency Rooms through Escape Room Gamification

Author/Credentials: Ty Svensson

Institution: Trudy Busch Valentine School of Nursing, Saint Louis University

City/State: Saint Louis, Missouri

Background: New and young trauma nurses frequently report low confidence in high-acuity clinical scenarios, a gap that traditional quarterly online learning modules have failed to address. Online modules lack engagement, and opportunities for critical thinking and teamwork.

Aim: This capstone project implemented a trauma-themed escape room to improve confidence and knowledge retention among trauma emergency nurses at a Level I trauma center, replacing passive quarterly online learning modules.

Methods: A pre-simulation confidence survey, post-simulation knowledge assessment quiz, and post-simulation group evaluation form measured outcomes across three simulation sessions. The escape room scenario followed a 34-year-old male trauma patient through a two-rooms focusing on the primary survey (ABCDE framework) and secondary survey including post-CT management, and protocol adherence.

Outcome: Pre-simulation confidence average 3.8/5.0. Post-simulation group evaluations showed Group 1 scoring 5.0/5.0, Group 2 scoring 4.44/5.0, and Group 3 scoring 4.0/5.0, all exceeding pre-simulation confidence. Knowledge assessments average was 93.64% across all participants with overall cohort confidence improved by 17.9%, exceeding the 15% benchmark.

Conclusion: Escape room-based gamification is a feasible and effective replacement for passive online learning modules. Group 2, the youngest and least experienced group, demonstrated the greatest confidence gain (41.4%) and the highest knowledge assessment average (98%), strongly supporting the hypothesis that new and inexperienced nurses benefit most from interactive trauma scenarios. Limitations include a small sample, wider range in nursing experience and non-responsive mannequin. Future escape rooms should prioritize interactive patient simulation resources, recruiting a larger sample size, and continuously adapt scenarios based on nurse surveys.

TABLE OF CONTENTS

TABLE OF CONTENTS

Chapter 1: Introduction and Unit Assessment

Many trauma education programs are exploring the use of gamification to replace traditional online learning modules such as in hospitals requiring quarterly nursing education. The purpose of this capstone project is to increase confidence in nurses with limited experience in the trauma emergency room (ER) and trauma intensive care unit (ICU) by implementing escape rooms as an interactive educational strategy. The escape room activity will follow a simulated trauma patient through phases of emergency stabilization, diagnostic evaluation, and transition to the intensive care unit. Using game-based, interactive learning in place of passive online modules offers nurses an opportunity to practice realistic workplace problems requiring teamwork and critical thinking. Traditional online modules have become tedious, repetitive, and low engagement taking time away from nurses at home. The use of an escape room style interactive activity will be used in place of online modules to help new trauma nurses feel more confident in certain hospital scenarios. The aim is to use an escape room model to engage participants in problem-solving and critical thinking as the new strategy for required trauma nursing education in trauma centers.

Unit Overview

The trauma emergency department (ED) and trauma intensive care unit (ICU) represent fast-paced, high-acuity microsystems where patient outcomes depend on rapid assessment, critical thinking, and coordinated interdisciplinary action. Surrounding the trauma emergency microsystem, tertiary support systems such as the education department collaborate with trauma nurses to build upon skills used within the microsystem. This project focuses on the continuing required education surrounding the trauma microsystem to enhance confidence surrounding nursing skills and prepare young and new trauma nurses for the workforce. Therefore this project will focus on using an escape room as an intervention to improve the hospital's macrosystems

educational effectiveness in promoting new and young trauma nursing skills and confidence. These units routinely care for individuals with life-threatening injuries, including gunshot wounds, motor vehicle collisions, and high-impact blunt or penetrating trauma. Nurses within these settings must rapidly recognize deterioration, initiate lifesaving interventions, and escalate care without delay. The purpose of this capstone project is to strengthen the confidence and readiness of new and young trauma nurses by replacing low-engagement online modules with interactive escape room-based trauma education in place.

Description of the Clinical Problem

Confidence is a critical predictor of a nurse's ability to perform a skill or an assessment under pressure as a person who is insecure is able to make errors due to their uncertainty. Transitioning from school to the workforce frequently exposes gaps in skills to an individual, and escape rooms can offer a bridge to new and young nurses entering trauma care. Current onboarding education using online modules fails to build nursing skills and confidence in transitioning to the workforce. Online modules lack engagement, realism, and opportunities for critical thinking or teamwork which ultimately limits a nurses' growth. Online modules are self-paced educational content that guides users through a series of performative tasks. These performative tasks include uninspiring endless media consisting of PowerPoints and lecture videos that are easy to disengagement from. It is common knowledge surrounding the healthcare field that the goal of these modules is to finish them in a set amount of time instead of actively learning from the educational content. It is not uncommon for young and new nurses to feel unprepared during unfamiliar trauma assignments and online learning modules do not impact young nurses' skills so it does not impact their confidence in trauma situations.

Discussion of Current Process

The existing educational process requires trauma nurses to complete quarterly online modules that review trauma education, safety standards, and clinical practice. Although these modules meet regulatory requirements, the minimum should not be considered the standard in healthcare or in healthcare education. Proposing to change required education from dull online modules to involved engaging, interactive, enjoyable escape room sessions designed to enhance a nurses' confidence at a specific skill goes above and beyond what is required. Educators should want to demonstrate exceptional initiative and provide education beyond their routine responsibilities just like hard working nurses do day in and day out. Escape rooms and the gamification of education create interest in students and provide a more accurate representation of challenging trauma situations compared to online modules.

Patterns Showing a Need for an Intervention

Traditional modules do meet regulatory standards but do not manage to fill in the gaps when new and young nurses transition from school to the workforce. A recurring theme of low confidence in critical skills among new trauma nurses should be addressed by changing the macrosystem around them. Gamified learning is a versatile tool to use in healthcare education as an escape room can teach but also evaluate participants. Beginning to incorporate escape room sessions into nursing trauma education can create a more productive and positive experience for nurses compared to online modules.

Significance of the Problem

The significance behind low confidence nursing can not be underestimated. Feeling uncomfortable, undependable, or unsure of what to do next in a fast-paced environment like trauma departments creates inefficiency and errors. Delays in recognizing life-threatening

conditions and implementing life-saving protocols reduce patient safety, survival, and chances of positive long-term outcomes. A trauma center should be able to deliver high-quality care by nurses who are confident in what they are doing. Improving confidence among young and new nurses through an immersive, educational escape room session can enhance clinical practice at the job site. Team performance, staff satisfaction, and patient safety can all be addressed by improving the quality of education nurses are required to receive to stay competent and confident. Addressing this problem aligns with quality improvement priorities and supports the trauma center in meeting organizational goals for excellence in care delivery.

Chapter 2: Literature Review

Project Overview

The purpose of this project is to implement and evaluate the benefits that gamification has on trauma education in place of required learning modules. Specifically, the project will be using an escape room as the intervention and evaluate the confidence of new emergency room nurses in trauma scenarios before and after participating in the escape room. The motive behind this project is to help new trauma nurses feel more confident in specific trauma care scenarios they have and will continue to face at work. The overall goal of this project is to determine whether an interactive escape room can enhance new nurses' perceived competence, and confidence. Do nurses gain a deeper understanding and find more confidence from spending time in escape rooms or on online learning modules for their required education at the hospital?

Literature Search

An exhaustive literature search was performed on the CINAHL Plus database that used peer-reviewed articles published within the last five years as the search criteria. Words and phrases that were used in the literature included "gamification in education or game-based learning," "emergency department or ED or A&E or accident and emergency," "trauma education," "new nurse or new graduate nurses or novice nurses or young nurses," "escape room or quest room or puzzle room or exit game," "psychology or psychological or mental health". These search terms provided a myriad of relevant research but many of them are non-experimental peer-reviewed articles and not all were about escape rooms. The search criteria would include many qualitative and descriptive research articles that are non-experimental, do not use a control group, and focus on other media such as online simulation and card games. These search terms also do not specify if the gamified intervention is to be group oriented or

individuals, however, the research will include interventions made for the individual and for groups. Additional inclusion criteria for this literature review includes the use of gamification or interactive activities on healthcare education and relevant psychological outcomes such as enjoyment, engagement, and readiness of young professional or student nurses in preparing for the workforce. An emphasis was placed on psychology and similar words as a search term to uncover insight into the psychology of learning, education, and confidence. Psychology adds an important angle to the project that can help explain why escape rooms and gamification at large enhance learning, memory, and confidence in young nurses. The analysis of the research will uncover the reasons why online learning modules should be replaced with interactive gamified required education sessions for nurses. The information provided throughout these articles are supposed to explore how gamification can enhance nurse education and confidence.

Literature Review

Gamification in nursing education has become an influential strategy due to its ability to increase engagement, motivation, and confidence in its participants (Van Gaalen et al., 2020). The systematic review on *Gamification of Health Professions Education* found that using game-like elements, such as scoring, competitive challenges, and a race against the clock, enhanced learner involvement and confidence across multiple health-related disciplines (Van Gaalen et al., 2020). The inclusion criteria for this systematic review included quantitative as well as mixed-method studies published as articles in peer-reviewed journals on the use of gamification in education for future health professionals (Van Gaalen et al., 2020). A majority of the studies included into this systematic review took place in the USA or Canada and involved undergraduate and postgraduate medical students, as well as nursing, dental and other health professionals (Van Gaalen et al., 2020). The systematic review found that gamification can

improve learning outcomes, by improving student learning behavior, and attitudes towards learning when using game attributes (Van Gaalen et al., 2020). However, a limitation consistently referred to in this systematic review was the concept that very few studies explained why gamification works to enhance learning and most studies did not have well-defined control groups (Van Gaalen et al., 2020). But even considering these limitations the systematic review found that there were no negative outcomes for using gamification (Van Gaalen et al., 2020). Gamification has been able to improve learning outcomes and has not been associated with negative effects (Van Gaalen et al., 2020). Adding substantially to the pool of engaging education research, Fernandes et al. (2025) performed a systematic review and meta-analysis specifically examining escape rooms in nursing education. Across nine experimental studies, escape rooms had a statistically significant association with higher test scores among escape room participants compared with the control groups (Fernandes et al., 2025). Although the studies in the meta-analysis differed the escape rooms by clinical topic, delivery format (physical, digital, hybrid), and session length, the meta-analysis concluded that, compared to standard teaching methods, escape rooms consistently improved participant knowledge (Fernandes et al., 2025). While the inclusion criteria for Van Gaalen et al. (2020) focused on quantitative and mixed-method studies, only experimental designs with control groups were included in systematic review and meta-analysis by Fernandes et al. (2025), which offers a stronger and statistically relevant quantitative argument and evidence for the effectiveness of escape rooms in nursing education. Together, these two thorough reviews of the research performed on gamification and escape rooms offer a compelling argument to implement engaging, enjoyable, interactive content into nursing education.

Several individual studies demonstrate the larger effectiveness of interactive gamified education on young healthcare. Engaging education can take many forms but gamification as a concept to grab an audience's attention, has had positive impacts on students. Anna et al. (2022) developed and validated cardiovascular emergency gamification question cards for undergraduate nursing students. Student surveys yielded high internal consistency (Cronbach's alpha 0.81-0.92), indicating that the card sets reliably measured cardiovascular emergency content (Anna et., 2022). Even with a deck of cards, knowledge retention and confidence does improve when nursing engagement increases. This shows that if engagement is triggered with different gamified media, nurses find readiness, confidence, and knowledge retention in the content they are engaged with (Anna et al., 2022; Ménard et al., 2025). Even if the engagement is not to the same level as an escape room the point is made that gamification improves outcomes through engagement. The *Simulation Training to Increase Resilience of Nursing Groups (STRONG): Results from a Multi-Site Trials* was a quasi-experimental study designed to assess whether an online simulation program increases resilience and self-efficacy in nursing groups using a pre-post intervention design (Ménard et al., 2025). The data displayed significant improvements in resilience, pandemic self-efficacy, general self-efficacy, and coping self-efficacy found at multiple sites increasing the generalizability of the results (Ménard et al., 2025). Inspecting the evidence found in Ménard et al. (2025) alongside Anna et al. (2022) support the concept that interactive educational strategies are effective in strengthening early nurses' confidence and knowledge acquisition. It is self-evident to see that simulation labs and gamified question cards are far more interactive than traditional online modules and that this interactive aspect of simulation labs provides significant and measurable psychological gains to nursing students (Ménard et al., 2025). While this article is not an escape room it does show that

interactive media and engagement from nurses have a positive psychological outcome on young nursing students. The findings of Ménard et al. (2025) highlights the effectiveness of interactive learning on nursing students from a different angle. When analyzed along with *Escape the Monotony* (Seymour et al., 2023) and *Escaping the Silos* (Hudson et al., 2023) it is clear to see that whether it is an online simulation or an escape room, when engagement increases so does confidence (Seymour et al., 2023; Hudson et al., 2023). Therefore, gamified question cards and interactive online simulation labs have been shown to educate undergraduate nursing students as an appropriate interactive tool for education purposes.

The important point to understand is that the vehicle in which we deliver education can be better understood if it draws students in. Individual studies in gamified education are able to offer insight into what students enjoy, engage with, and benefit from. Emergency department participants in *Escape the Monotony: Gamification Enhances Nursing Education* overwhelming enjoyed their time in an escape room learning experience as 98% of participants reported learning new information (Seymour et al., 2023), 97% said the activity increased their confidence in using Trauma Nursing Process and caring for trauma patients (Seymour et al., 2023), as well as 98% found the escape room significantly more engaging and enjoyable than previous clinical learning experiences (Seymour et al., 2023). The study *Escape the Monotony: Gamification Enhances Nursing Education* is a non-experimental, program evaluation study using post-intervention surveys (Seymour et al., 2023). Each statement in the survey used a 5-point Likert-type scale that the emergency department staff used to evaluate the escape room (Seymour et al., 2023). However, this research article does fall inline with the same limitations as seen in the systematic review *Gamification of Health Professions Education* (Van Gaalen et al., 2020) as the article *Escape the Monotony: Gamification Enhances Nursing Education* (Seymour

et al., 2023) does not have a control group, does not compare itself to traditional education and does not investigate why gamification enhanced learning (Seymour et al., 2023). Another research article that compliments gamification is *Escaping the Silos: Utilization of a Pediatric Trauma Escape Room to Promote Interprofessional Education and Collaboration* which explores focusing on rare concepts in trauma (mainly pediatrics) (Hudson et al., 2023). The study was done on an in-person simulation focusing on pediatric trauma using escape room style clues (Hudson et al., 2023). After completing the escape room the participants filled out a survey in which 98% strongly agreed they learned new information (Hudson et al., 2023), 97% strongly agreed that the escape room increased their confidence in Trauma Nursing Process (Hudson et al., 2023), 97% strongly agreed they improved teamwork (Hudson et al., 2023), and 98% found the escape room engaging and enjoyable (Hudson et al., 2023). Both *Escape the Monotony* (Seymour et al., 2023) and *Escaping the Silos* (Hudson et al., 2023) studies show a positive impact on nurses when in an interactive and gamified environment. Taken together, the works of Seymour et al. (2023), Hudson et al. (2023), and Fernandes et al. (2025) suggest that escape rooms are particularly well suited for trauma education as nurses consistently retain knowledge, improve upon skills, and enjoy the escape room session. Trauma education should involve timed pressure, high stakes, and a need for team coordination and problem solving. Engagement from nurses is incredibly meaningful to the outcomes of these qualitative research studies (Seymour et al ., 2023; Hudson et al., 2023). Whether it is the escape room, online simulation, or a deck of cards that hooks the student, multiple sources of published peer-reviewed research indicate a positive relationship between entertaining education and nursing education outcomes.

New nurses transitioning into clinical practice represent another population where escape rooms have been applied as a targeted learning strategy. Navarro and Nolasco (2023) found that

implementing an escape room-based simulation as part of a unit-based orientation program for newly hired nurses who reported that the escape room was engaging and helpful for consolidating unit-specific expectations. This project used a one-group pre-and-post-test research design with a small sample of 10 nurse participants performing skills in the escape room orientation (Navarro & Nolasco, 2023). Participants reported that the escape rooms felt relevant to what they will be dealing with in the workforce as a 5-point Likert scale (Mean = 4.11, for meeting objectives and mean = 4.20 for course execution) indicated a strong perceived value of the activity as part of orientation (Navarro & Nolasco, 2023). Navarro and Nolasco (2023) demonstrate in their research that gamified simulation narrows the gap between theory and practice to better prepare young nurses for the workforce. When considering gamified escape rooms as an effective bridge between school and work alongside Fernandes et al. (2025) meta-analysis that statistically proves that escape rooms improve knowledge, Navarro and Nolasco (2023) orientation escape rooms can be instrumental in nurse residency and continuing education. But escape rooms can be used in so many different educational settings. The article *Evaluating nursing students' outcomes in an educational escape room: Escape a night of rapids!* uses escape rooms as a tool to evaluate students at the end of the first-semester medical-surgical course (Malatesta et al., 2023). The study method strategy was to use a single group post-intervention survey design on 39 students that participated in two rapid response themed escape room scenarios to evaluate learning outcomes from the medical-surgical course (Malatesta et al., 2023). The study focus used a survey to focus on the student's perspectives on learning outcomes and difficulty (Malatesta et al., 2023). While this can lead to a bias survey, as students would like to think that they passed the course, faculty filled out surveys that "... rated the scenarios as somewhat or very difficult (60%; 3/5). All faculty felt that the EER (educational

escape room) was somewhat or very effective in helping students meet each learning objective (100%; 3/ 3)..." (Malatesta et al., 2023, p. 37). *Evaluating nursing students' outcomes in an educational escape room: Escape a night of rapids!* (Malatesta et al., 2023) shares the same limitations as *Escape the Monotony: Gamification Enhances* (Seymour et al., 2023) and *Escaping the Silos: Utilization of a pediatric trauma escape room to promote interprofessional education and collaboration* (Hudson et al., 2023) as it relies on self-reporting surveys indicating high satisfaction among students, no control group, and does not provide enough evidence towards understanding if escape rooms can be used to evaluate students or previous educational lessons.

To address this hole in the research Kim, Ke, and Brewer (2025) performed research on escape as an assessment tool using a quasi-experimental comparison design. 134 first-year students were cluster-randomized into an experimental group that completed four physical escape rooms and a control group that did a traditional assessment of nursing skills (Kim, Ke, and Brewer, 2025). Both the experimental group and the control group completed a 17 question multiple choice pre-test, a post-test and a retention test, and a questionnaire (Kim, Ke, and Brewer, 2025). The experimental group demonstrated statistically significant improvements on nearly every aspect of the questionnaire that assessed accomplishment, immersion, guidance, playfulness, and social experience, however, there was no statistical difference found between experimental group and control group on knowledge retention in the post-test or retention test (Kim, Ke, and Brewer, 2025). Kim, Ke, and Brewer (2025) research results do not provide evidence that escape rooms can be used as an effective formative assessment tool but instead the article heavily supports the idea of using escape rooms as a means to assess students based on traits that escape rooms inherently have. An escape room was effectively used as a tool to

evaluate students in Kim, Ke, and Brewer (2025) research article even if the escape itself was only assessed on a Likert scale focusing on escape room traits such as immersion, playfulness, and social experience. Van Gaalen et al. (2020) identified similar issues in gamification of education research noting that many studies evaluate interventions using post-intervention surveys from participants rather than assessing the gamified tool itself for validity of nursing content. This pattern is also seen in the study by Kim, Ke, and Brewer (2025), where students assessed the escape room using a Likert-type survey but the escape room tool was not directly evaluated for validity. However, research from a quasi-experimental study supports the use of gamification for developing specific nursing skills such as SBAR communication (Parozzi et al., 2025). 48 undergraduate nursing students in a one-group quasi-experimental research design completed a gamified intervention to improve SBAR communication, and paired samples t-test results demonstrated a statistically significant improvement in structured handover performance (Parozzi et al., 2025). Unlike many other gamification studies that focus on student surveys and enjoyment of the intervention on a Likert scale, Parozzi et al (2025) objectively shows skill growth and not just a positive student perspective. Kim, Ke, and Brewer (2025) demonstrated that escape rooms can function as a valid formative assessment that enable faculty to directly observe student performance, facilitate corrective feedback, while Parozzi et al. (2025) demonstrate that skills can be developed through gamification. When the two studies are considered together, the literature shows that gamified interventions can both develop nursing skills and serve as an engaging, enjoyable way to evaluate, criticize and give feedback to students.

Simulation-based learning should become a cornerstone to nursing education as simulation can bridge the gap between theory and practice. Hussein and Hirst (2023) provided a

review of 21 studies published between 2011 and 2022 to examine whether high-fidelity simulation (HFS) supports the development of clinical reasoning and contributes to patient safety in undergraduate nursing education. Their review identifies consistent evidence that HFS improves knowledge acquisition, critical thinking, self-confidence, and clinical reasoning across a wide range of study designs (Hussein & Hirst, 2023). The review recommends a minimum of three simulations per program as repeated exposure to HFS produces compounding gains (Hussein & Hirst, 2023). This finding is significant because it supports simulation based education as able to reinforce education and skills as students gain exposure to simulation. Duncan et al. (2026). Translates the broad principles established by Hussein and Hirst (2023) into a specific, immersive simulation format for prelicensure nursing students taking nursing fundamentals. Using a sequential mixed-method design, Duncan et al (2026) evaluated a 1.5 hour multi-patient hospital simulation in which 26 students managed three standard patients presenting with congestive heart failure, pneumonia, and diabetic ketoacidosis. Duncan et al. (2026) reported quantitative data from the Casey-Fink Readiness for practice (M = 2.3 pre vs 3.1 post), overall confidence (M = 1.6 pre vs 2.6 post), and clinical problem solving ability (M = 2.8 pre vs 3.3 post). However, critical limitations include the small size of 26 students which limits generalizability and overall importance to the wider body of research in the same field. Duncan et al. (2026) acknowledges the limited size and calls for a replication of the same study with a larger and more diverse sample. Professional skills such as clinical problem-solving ability, peer collaboration, and communication are not developed in lecture, and the findings of Duncan et al. (2026) demonstrate that even interactive simulations can promote professional nursing skills. Together, Hussein & Hirst (2023) and Duncan et al. (2026) demonstrate that simulation-based

learning is most meaningful to prelicensure nursing as a repeated, deliberately designed educational tool that benefits students' clinical reasoning and confidence.

While Hussein and Hirst (2023) and Duncan et al. (2026) treat simulation as a broadly effective educational tool, Rajasekaran et al. (2025) demonstrated the difference in learning outcomes between virtual and mannequin based simulation models. Their systematic review of 14 studies conducted between 2012 and 2023 contains six randomized control trials, four mixed-method studies, and four quasi-experimental designs from seven different countries including Australia, Singapore, Canada, Hong Kong, South Korea, England, and the United Kingdom (Rajasekaran et al., 2025). The systematic review determined that virtual simulation demonstrates advantages in knowledge acquisition, scalability, reduced anxiety, and adaptability for large student groups while mannequin-based simulation retains measurable advantages in skill retention, hands-on clinical performance, and student reports that valued realism in managing deteriorating patient scenarios (Rajasekaran et al., 2025). Although Rajasekaran et al. (2025) demonstrates that virtual simulation improves knowledge acquisition, scalability, and adaptability, these outcomes overlap with traditional lecture-based instruction. It is a mannequin-based simulation that provides a truly distinct educational experience from traditional lecture by offering hands-on skill development and retention. The systematic review ultimately determines that a hybrid approach would provide the most comprehensive education for undergraduate nursing students as synergism between the two models can support the strengths and weaknesses provided by each method. Just as Hussein & Hirst (2023) determines in their scoping review and synthesis of simulation research that repeated exposure provides enhanced outcomes, Rajasekaran et al. (2025) similarly find that exposure to different simulation models would produce stronger and more comprehensive clinical outcomes. While it is easy to benefit

from the hypothetical idea that perfect synergy can be found between different simulation models, the practical reality of undergraduate nursing programs is that budgets are limited and curricular time is constrained. The knowledge acquisition, scalability, and adaptability outcomes that Rajasekaran et al. (2025) attribute to virtual simulation overlap considerably with traditional lecture-based learning. This overlap reduces the practical justification for investing in virtual simulation models when lecture can fulfill the same role alongside mannequin simulation. For most nursing programs, the more realistic nursing program model is not a three-pronged approach of lecture, virtual simulation, and mannequin simulation, but rather the pairing of lecture with mannequin-based simulation with supplemental homework and relative conceptual content to achieve synergism between learning models.

Simulation-based nursing education has traditionally emphasized procedural emergency responses, however, they do not usually emphasize clinical judgment in reassessing a patient with abnormal vital signs. Endo et al. (2025) addressed this gap through a prospective exploratory observational study at a single Japanese university hospital, in which 27 registered nurses completed three patient simulations of escalating severity (normal, low urgency, and moderate risk). After each scenario the nurses would state in hours how long they would wait before rechecking vital signs (Endo et al., 2025). In the low-urgency scenario, nurses with Advanced Life support (ALS) training choose significantly recheck intervals than those without ALS training (median 1 hour for ALS trained vs 3 hours without ALS training). In the moderate-risk scenario, multiple regression analysis determined clinical experience, prior experience recognizing deterioration, and prior experience responding to deterioration as independent variables that led nurses to predict shorter and more clinically appropriate intervals between reassessment of abnormal vital signs. ALS training was not statistically significant as a

factor in reassessment intervals in the moderate-risk scenario. The different results imply that judgment in monitoring patients is shaped by repeated exposure to deteriorating patients rather than formal certification, suggesting that simulations can accelerate clinical reasoning development. The study's primary limitation acknowledged by the authors is the small sample size of 27 nurses at a single hospital and a rigid scenario that reduces variations in outcomes, and a lack of stratifying nurse data such as nurse specialties or nursing units (Endo et al., 2025). While data from Endo et al. (2025) is supportive of the influence that simulations can have on nursing judgement and clinical reasoning, Forsbrand et al. (2025) discussed theoretical and cognitive limitations with faculty members from universities, As extensive research on participants in simulations have been covered, Forsbrand et al. (2025) explored the faculty side of simulations through semistructured interviews with three nursing simulations teachers at two Swedish universities, using a phenomenographic approach to identify five categories of effective instructional strategy: motivating environment, facilitating preparations, active participation, student-centeredness, and reflective observation. Forsbrand et al. (2025) used Barnett's theoretical framework of critical thinking in higher education only the lowest two out of five levels of critical thinking (critical skills and reflexivity). This is a meaningful contribution to the simulation literature because it clarifies the limits of what nursing programs can accomplish through simulation, however the study is substantially limited by its sample of only three participants from two universities in Sweden. These two studies explore the attributes of simulation to better understand the benefits and drawbacks of using this educational tool.

Interactive gamified education can take many forms and be used in many different ways. But there is no drawback for making education more entertaining as found in the systematic review Gamification of Health Professions Education (Van Gaalen et al., 2020). Although escape

room research is still emerging, these studies collectively demonstrate that entertaining education increases engagement and improves nursing confidence across multiple educational formats. Escape rooms and other gamified educational interventions are versatile tools in early nursing education, enabling students to be assessed, taught, and supported in knowledge and skill development as seen in the engaging interventions in these studies. The pattern established in this literature review strongly supports escape rooms and the use of gamification in healthcare education.

Chapter 3: Project Prospectus

Proposed Capstone Project

The purpose of this project is to enhance the confidence of new and young trauma nurses in patient scenarios they have little experience with by implementing an escape room based educational session. The project is designed to improve the microsystem, as it directly influences the confidence and competency trauma nurses have in performing clinical skills at the point of care. To achieve improvement in trauma nursing confidence and competency the educational department will implement interactive trauma simulations designed as escape-room-themed educational sessions. Because educational requirements are completed on a quarterly basis, the project will offer escape room sessions once a quarter and will need ongoing monitoring and support from future student cohorts. Certain aspects of the trauma scenario will be timed to see how long it takes for nurses to start a protocol or recognize that parts of protocols are not finished. This project will evaluate the changes in confidence, teamwork, and performance before and after participation in the escape room activity. This intervention addresses the gap between trauma nurses and engagement with online modules and provides strong alignment to trauma nurses by practicing scenarios they are hesitant in. Engagement in trauma scenarios is intended to improve confidence and competency in performing bedside skills during high-acuity situations by reinforcing clinical decision-making, rapid assessment skills, strengthening teamwork, and promoting proficiency over clinical interventions such as airway management, and adherence to trauma protocols that support positive patient outcomes. Objectives of this project include developing realistic trauma escape room scenarios, implementing escape room sessions with trauma nurses, timing the trauma nurses, collecting pre-and-post participation confidence surveys, and evaluating participant performance during the simulation and after using

an end of session academic test. These objectives are measurable and can help determine if gamified simulation can improve trauma nursing preparedness, however, data collection should extend beyond the first quarter of 2026 and into following years. The education department and the nurse educators support the idea that escape room style trauma scenarios will enhance trauma nurses engagement with supportive education compared to online modules.

Proposed Interventions and Plan

The intervention consists of a trauma-themed escape room designed to replace traditional quarterly online learning modules. The escape room will include timed, sequential rooms requiring nurses to complete urgent tasks under a running clock. Each room contains puzzles, clinical clues, and hands-on tasks that require communication, rapid prioritization, and teamwork. Patient transfers will be happening throughout the escape rooms and effective and meaningful reports will be practiced throughout the trauma scenario. The first two rooms will be for the trauma emergency room nurses while the last two rooms will be for the trauma ICU nurses with report and handoff occurring between departments. Nurse educators will guide trauma nurses through the scenario, answer any questions about equipment, and evaluate the team of trauma nurses throughout the escape room simulation. The nurses will need to solve certain puzzles to move onto the next room. There will be a total of 2 rooms for the trauma emergency nurses and 2 rooms for trauma ICU nurses. These puzzles and tasks will reflect realistic trauma care concepts and scenarios such as initiating emergency interventions, solving an academic well known acronym, and escalating care appropriately. Participants will be required to collaborate as a team to complete each task in time.

Following the escape room, a structured debriefing session led by nurse educators will facilitate reflection, reinforce correct clinical actions, and address areas of improvement. The

debriefing process will be led by the nurse educator to reinforce learning, correct misconceptions, allow participants to reflect and discuss teamwork and individual performance. Participants will be guided to identify strengths, weaknesses, opportunities for improvement, and connect the simulation experience to their work. This process will help stimulate learning by reinforcing trauma protocols, and practicing high-acuity events in order to find more confidence in the events. Trauma nurse feedback obtained during the debriefing session will be used to improve future escape room trauma scenarios.

The education department and nurse educators have demonstrated readiness to implement the trauma scenario escape room. The trauma nurses have not performed in the intervention yet, so there is no reaction by staff to the proposed project but they have signed up to the available schedule. A schedule has been made and provided to trauma nurses so that they know when and where the simulations are available. The education department has expressed willingness to collaborate and assist in development and facilitation of the escape room. Nurse educators have identified ongoing challenges and core trauma concepts they wish to be addressed in the trauma scenario escape room. Key stakeholders involved in this project include trauma nurse educators, bedside trauma nurses, and the education department in the hospital. Nurse educators will assist with the development of the trauma scenarios, guiding the trauma nurses through the scenario, evaluating nurses in the trauma scenario, tracking how long it takes for the nurses to complete certain tasks, debriefing after the trauma scenario, and collecting and evaluating data from confidence surveys and academic tests. Bedside trauma nurses will participate in the educational intervention and provide feedback through surveys and ask questions throughout the trauma scenario. The education department will assist in providing space for the simulation by booking rooms in advance, and supply equipment for the trauma scenario. A scheduled trial run with a

volunteer from the education department has been scheduled with nurse educators for March 25th to work out any unexpected or logistical issues in the escape room before having trauma nurses use the room. Support from the education department and pre-planning a trial run before implementing the escape room demonstrates substantial self-efficacy and preparedness for the trauma scenario escape room educational intervention. Gaining support from stakeholders has been achieved through meetings with nurse educators to align the educational intervention with existing educational goals.

Outcomes to be Measured

To assess the effectiveness of the escape room intervention the following outcomes will be measured using a confidence survey, a performance checklist, and a knowledge assessment. The performance checklist will focus on skills and puzzles being finished in the correct order and within the time limit. The pre-and-post confidence survey will assess perceived readiness and post comfort in trauma scenarios, and if people felt like they learned something from the scenario. The confidence surveys will use a Likert scale to understand the participants appreciation for the escape room session and quarterly data reports will be used to determine long-term support and evaluation of the capstone project. Additional outcome measures will include the nurse educator's evaluation of the team throughout the escape room trauma simulation. The nurse educator's evaluation will focus on intangibles such as leadership, communication, and team sentiment of each other, the patient, and the scenario. Confidence scores collected before and after participation will be used to compare the trauma nurse self-efficacy and perceived readiness. The trauma scenario escape room will provide qualitative and quantitative data used to improve future nursing scenarios and understand the impact of interactive gamified education on nurses.

Anticipated Barriers and Facilitators

Anticipated barriers include constraints on space for the escape rooms, and scheduling constraints for trauma staff. Simulation rooms vary in size and configuration, which may make having large teams work in small rooms very difficult for them. Trauma nurses may also be tired from working previously or recently which may make it difficult for individual trauma nurses to fully participate in the simulation sessions. These barriers are challenging because room sizes differ and nurses need to coordinate participation to perform escape rooms in teams. Anticipated barriers are not inconceivable to work around but should be monitored throughout the trauma scenario escape room sessions. Several facilitating factors support the successful implementation of this capstone project. Facilitating factors include strong engagement from nurse educators, and multiple trauma scenario escape room sessions have been available to sign up for since the beginning of February, 2026. The education department and nurse educators have demonstrated strong readiness and commitment to the trauma scenario escape room. Nurse educators have identified key trauma concepts and ongoing protocol gaps to ensure the scenario aligns with unit specific requirements. The education department has already reserved rooms for the trauma scenario escape room sessions. Early stakeholder collaboration at the beginning of the semester has paved the road for the execution of this project under the proposed timeline.

Proposed Timeline

Project planning and development began in January of 2026 through a collaborative meeting to start scheduling trauma scenario escape room sessions, conversations over gathering data from the project, and specific trauma healthcare concepts seen in the simulation. Before the end January, simulation sessions were scheduled, rooms were reserved and conversations over specific requirements to include in the trauma scenario escape room were had. Scenario material,

evaluations tools, confidence surveys, have been developed throughout February and are to be finalized before the trial run on March 25th. Due to previous bookings, the trial run was scheduled for March 25th, 2026 followed by full implementation of the trauma scenario escape room sessions being scheduled on March 30th, April 1st and April 3rd of 2026 with the trauma nurses. Data collection, including trauma team times, knowledge assessment, nurse educators evaluations, and confidence surveys will be gathered during the last week of March and the 1st week of April. Analysis of collected data and evaluation of project outcomes will occur by Friday of April 10th for submission of final capstone thesis on Friday April 17th.

Chapter 4: Evaluation Plan

The effectiveness of the trauma scenario escape room will be evaluating the changes in trauma nurse confidence, clinical preparedness, and performance in high-acuity situations. Success in confidence scores will be defined as an increase of 15% from pre-survey to post-survey. The evaluation plan directly addresses the identified problem of reduced engagement with traditional online trauma education modules and limited confidence in new and young nurses. By measuring both subjective and objective outcomes before, during and after participation, the project will be able to determine the impact of interactive, simulation-based education improves self-efficacy, competency in high acuity scenarios. Improvement in these areas should be compared across a large sample compared to the three trauma scenario escape sessions scheduled for this quarter. Data analysis methods such as mean score comparisons, comparing pre-surveys to post-surveys, and percent improvement calculations will be performed to determine effectiveness of simulation rooms. The only pre-data that will be collected will be the confidence survey before the simulation. However, advancements in interactive scenario based nursing education are expected to strengthen the quality and safety of patient care within microsystems designated for trauma care. Promoting and practicing high-acuity scenarios is expected to ease self-doubt among new and young nurses to perform critical interventions. Data collection will include pre-confidence surveys, a knowledge assessment after scenario, and a group evaluation form. Clinical outcomes such as protocol adherence rates, time to initiate trauma protocols should be collected over the following quarters as trauma nurses attended more educational sessions. Changes in confidence scores will be analyzed to determine whether participation in the escape will lead to improved nurse self-efficacy and a specific focus will be put on new and young nurses by stratifying the data and focusing on their interruption and

response to the educational intervention. This evaluation plan will address the effectiveness, quality, and benefits of the trauma scenario escape room ability to enhance clinical confidence and prepare nurses for high-acuity scenarios.

Clinical Nurse Leader Role in Project Implementation and Evaluation

Implementing new educational strategies to enhance nurse competency at the point of care in the microsystem reflects the role of the Clinical Nurse Leader (CNL). Implementing system-level interventions and evaluating outcomes to improve healthcare delivery are CNL competencies (Abraham et al., 2013).The academic knowledge and proficiency to design and implement trauma simulation escape room education sessions to improve engagement with content provided by the education department has been provided throughout CNL courses in leadership and evidence based practice. The CNL education has specifically provided education and training in quality improvement methods, data collection, analysis, and assessment of microsystems. The CNL coursework has supported and pointed out techniques to identify gaps in hospital systems. Many CNL roles are needed to implement this project including outcome management, quality improvement, and team facilitator (Abraham et al., 2013). The trauma scenario escape room education sessions are an example of evidenced-based practice being implemented into a hospital operating system which is intended to improve nurse competency in high acuity scenarios and enhance the overall quality and safety of the patient care within the trauma microsystem and mesosystem. This project relates to the roles of the CNL because of the application of improvement theories and evaluations to implement evidence based research. The perspective of the CNL differs from that of a bedside nurse by focusing on system-level improvement rather than individual patient assignments. While personal clinical performance is needed throughout the scenario, the trauma simulation focuses on teamwork within the

microsystem and patient transfers throughout the mesosystem to close gaps in educational content provided by the hospital. The bedside nurse primarily focuses on delivering direct patient care and completing requirements within the microsystem. The perspective of the CNL led the capstone project to incorporate multiple patient transfers, patient reports, and the patient travelling throughout the mesosystem. Instead of focusing solely on one unit, the CNL perspective helped design a simulation intervention that addresses patient transfers between the emergency department and the ICU. This system focused leadership perspective seen in the capstone project allows the CNL to influence care delivery throughout a hospital system by enhancing trauma nurse engagement with content provided from the education department.

Chapter 5: Conclusion

Implementation

The trauma scenario escape room was implemented across three sessions during the final week of March and first week of April 2026 as a replacement for the traditional quarterly online learning module requirement at a Level I trauma center. Implementation involved nurse educators, bedside registered nurses, graduate nurses, nurse externs, and patient care technicians across three scheduled sessions. Nurse educators led each session by delivering the opening Emergency Medical Service radio report, prompting participants through the two rooms in the clinical scenario, and handing out game cards with three components for each game card. The puzzle, teaching points, and the nurse intervention and assessment checklist. For example, Room 1 was meant to guide participants through an ABCDE assessment with the first card having the airway status, interventions for the patient's status, and a puzzle question about airway that must be answered before being given the next card (B for breathing). The education department supported implementation by reserving simulation rooms in advance and providing all necessary clinical equipment. A trial run was completed on March 25, 2026, with volunteers from the education department, which helped provide vital information about the emergency department before bedside nurse participation sessions began such as reducing the length of the EMS report.

Group 1 consisted of four registered nurses, and they completed the escape room in 47 minutes. Group 2 included one registered nurse, two nurse externs, two patient care technicians, and they completed the scenario in 55 minutes. Group 3 consisted of two graduate nurses, and they completed the scenario in 37 minutes. The mixed levels professional nursing of group 2 was not part of the original implementation plan but was easily accommodated for on the schedule and provided valuable insight to the flexibility of escape rooms and nurse-led delegation and

decision making. Group 3 had two person compositions that similarly revealed the impact of team size on how fast groups finished the escape room as less discussion occurred in the escape room with less people in the trauma scenario.

The escape room scenario followed a simulated 34 year-old male trauma patient through two sequential rooms. Room 1 focused on the primary survey using the ABCDE framework (which stands for Airway, Breathing, Circulation, Disability, Exposure). Room 1 focused on the team's ability to manage a compromised airway, hemopneumothorax, hemorrhagic shock, traumatic brain injury, and hypothermia. Room 2 focused on the secondary survey and post-CT management, incorporating a right temporal epidural hematoma, Grade ll Splenic laceration, right hemopneumothorax, and open comminuted right femur fracture. Each room required team communication, rapid prioritization, and protocol adherence throughout. The primary unanticipated challenges were the mixed nursing levels of Group 2 and the small two-person team of Group 3, both of which introduced variability in performance outcomes based on team size rather than clinical knowledge.

The nurse educator script was primarily used to prompt the nursing participants to address aspects of the patient status. It is very difficult for the nurse participants to physically assess and perform an intervention on a mannequin that did not provide any vital signs, voice over, or changes such as deterioration. Due to the mannequin’s restrictions the nurse educator script prompted nursing actions and discussion over specific nursing concepts such as mass transfusion protocol (the requirements to activate protocol, how to know if protocol is working). The nurse participants had a mannequin in the bed and the goal was to read the patient status on each card and address the importance of the information provided, provide an intervention, and to answer the puzzle question to move on to the next card. On the nurse educators script there

were one to two teaching points for each card to discuss with the participants. It was easy to tell that the large groups had a larger discussion for each card as more people would participate in the discussion and answer the puzzle whereas smaller groups had a more streamlined process in discussion and answer puzzles. Comments such as “too much horsing around” were made by Group 1 (4 Registered Nurses) that demonstrated that they had fun but took more time (47 minutes) than Group 3 (2 graduate nurses took 37minutes) to do the escape room. Group 1 also had the highest average of confidence entering the game room but the large group clearly was more inefficient at the escape room than Group 3 (the smallest group). Having the nurse educator direct and prompt nurses to perform actions and answering questions due to the limited capabilities of the mannequin led to a methodical and slow process as each puzzle had to be answered, teaching points addressed, wrong answers discussed before the nurse educator would hand over the next card. The overall prompting and discussion by the nurse educator in regards to the patient status on each card as well as group size led to the amount of time spent performing in the room to be heavily skewed towards large groups taking much longer and was not an accurate evaluation tool between groups.

Outcomes

Outcomes were measured using four evaluation tools aligned with the evaluation plan described in Chapter 4: a pre-simulation confidence survey using a Likert scale, a structured post-simulation group evaluation form using a Likert scale, a nurse educators script that can be used to prompt, assess, and add in teaching points for nurse participants throughout the scenario, and a post-simulation knowledge assessment quiz. The evaluation plan aimed for a 15% increase in confidence after participating in the simulation room. Notable, post-simulation group evaluation mean scores of 5.0 (Group 1), 4.44 (Group 2), and 4.0 (Group 3) respectively all

exceeded the pre-simulation confidence baseline average of 3.8/5.0, suggesting that the trauma escape room scenario improved confidence in general, however, only one group achieved a 15% increase between pre and post data collection. Group 1 had the smallest change in confidence at 6.8%, however, Group 1 was entirely made up of registered nurses who also put all 5/5 on all criteria in the post-simulation student evaluation form. Their actual attention to the Likert scale was most likely minimal and the data provided from this group is most likely skewed when it comes to interpreting their confidence but not their enjoyment and knowledge retention is not as they spent over 47 minutes in the escape room and found their biggest weakness was "too much horsing around".

Table 1

Comparison of Pre-Simulation Confidence Survey Averages by Group to Post-Simulation Group Evaluation Scores, Overall Pre-Simulation Confidence Average, and 15% Improvement Benchmark Assessment

	Pre-Simulation Confidence Survey Average by Group (Likert Scale)	Overall Pre-Simulation Confidence Survey Average (Likert Scale)	Post-Simulation Group Evaluation Average by Group (Likert Scale)	Overall Post-Simulation Group Evaluation Average (Likert Scale)	Comparison 1 Overall Pre-Sim Avg (3.80) vs Overall Post-Sim Avg (4.48)		Comparison 2 Pre-Sim Avg by Group vs Post-Sim Eval by Group		15% Benchmark Met? (Comp. 2)
Group					**Point Change**	**% Change**	**Point Change**	**% Change**	
Group 1	4.68 / 5.0	3.80 / 5.0	5.0 / 5.0	4.48 / 5.0	+0.68	+17.9%	+0.32	+6.8%	**No ✗**
Group 2	3.14 / 5.0	3.80 / 5.0	4.44 / 5.0	4.48 / 5.0	+0.68	+17.9%	+1.30	+41.4%	**Yes ✓**
Group 3	3.57 / 5.0	3.80 / 5.0	4.0 / 5.0	4.48 / 5.0	+0.68	+17.9%	+0.43	+12.0%	**No ✗**
Overall	**3.80 / 5.0**	**3.80 / 5.0**	**4.48 / 5.0**	**4.48 / 5.0**	**+0.68**	**+17.9%**	**+0.68**	**+17.9%**	**Yes ✓**

Note. All scores use a 5-point Likert scale (1 = Very Bad, 5 = Excellent). Pre-simulation confidence averages are based on surveys across all 11 participants. Post-simulation confidence survey reflect confidence in 16 criteria found throughout the game. Comparison 1 is the same for all rows as it represents the overall cohort comparison: overall pre-simulation confidence average of 3.80/5.0 compared to the overall post-simulation group evaluation average of 4.48/5.0 (+17.9%). Comparison 2 compares each individual group's pre-simulation confidence average to that group's post-simulation evaluation average. The 15% benchmark assesses whether Comparison 2 reached a ≥15% improvement. Group 2 was the only group to individually meet the 15% benchmark (+41.4%). Group 3 came closest at +12.0%. Group 1 entered with the highest pre-simulation confidence (4.68/5.0), leaving the least room for measurable improvement (+6.8%).

Knowledge assessment scores further add to the positive outcomes of the escape room for new and young nurses. Group 1 averaged 92.5% on the post-simulation knowledge assessment quiz, Group 2 averaged 98%, and Group 3 averaged 85%, with an overall average of 91.8% across all eleven participants. These scores demonstrate strong post-simulation knowledge acquisition and retention across all three groups regardless of experience or current professional role. Group 3 had the lowest average as it was the smallest group as one individual scored 8/10 which brought the score down for Group 3; however, Group 2 which had the mixed level of nursing had the highest average on the post simulation knowledge assessment and was the largest group with a total of five participants and very different levels of nursing education. Maybe Group 2 is the strongest group based on knowledge acquisition scores, however, they took the longest time in the escape room and had the lowest pre-confidence survey average of 3.14/5.0. Group 2 is also the same group that had the highest change in confidence between the pre-confidence survey and the post simulation group evaluation form (a 41.4% increase). An accurate interpretation of Group 2's data would be that the group with the least experience (1 nurse, 2 nurse externs, and 2 patient care technicians) came in with the least amount of confidence and therefore paid the most attention during the escape room, spent the most time in the escape room, which led to high post simulation scores in the knowledge assessment and in the post simulation group evaluation form. Group 2 which is the youngest and most inexperienced group demonstrated the most growth and gain from participating in the escape room. The projects goal is to bridge the gap for young nurses entering the field and the data provided from Group 2 and compared to Group 1 (which had high pre-confident survey average group score of 4.68/5.0 and areas for improvement determined to be “too much horsing around”)

suggest that young and inexperienced nurses do benefit the most from interactive trauma scenarios.

Evaluation

The primary goal of this project was to implement a trauma-themed escape room as an interactive educational intervention that improved confidence and clinical performance in new and young trauma nurses. Based on the data collected, this goal was partially met. The overall post simulation group evaluation scores ((Group 1) 5.0, (Group 2) 4.44, (Group 3) 4.0) exceeded the pre-simulation confidence baseline of 3.8/5.0 across all groups, indicating that the intervention did improve confidence when comparing overall averages of the pre and post data. When evaluating the 15% improvement benchmark established in chapter 4, the overall cohort improvement from the pre-simulation confidence survey average of 3.80/5.0 to the overall cohort post-simulation group evaluation average of 4.48/5.0 represented a 17.9% improvement, exceeding the benchmark when assessing the overall averages across all groups. However, at the group level, only Group 2 met the 15% benchmark with a 41.4% improvement, which is consistent with the interpretation that younger and less experienced nurses benefited the most from the trauma scenario intervention. Group 3 came close at 12.0% and had the smallest cohort of only two graduate nurses participating but it is possible to see that if more graduate nurses participated that the 15% benchmark could possibly be met. Group 1 improved their confidence by 6.8% and had such limited improvement due to having the highest pre-confidence survey average. While not every group achieved the 15% increase in confidence between pre-simulation data and post-simulation data, the overall average of confidence from pre-simulation to post-simulation data did increase by 17.9%.

Several factors contributed to the success of this project. Early collaboration with nurse educators and the education department ensured that scenario content was aligned with real protocol gaps identified at the unit level. An emphasis on temperature, primary survey, secondary survey, and mass transfusion protocol was placed on the project by the nurse educators and was built into the simulation scenario. The trial run on March 25th, 2026 allowed the team to resolve logistical and equipment issues before nurse participants sessions began, which prevented disruptions during the actual sessions. The nurse educator script provided structure and consistency across all three sessions by ensuring that teaching points, puzzles, and nursing checklists were addressed for every game card regardless of group composition but was influenced by group size. However, the nurse educators prompting and the patient status displayed on the game cards instead of an interactive monitor and mannequin took away from each group's ability to truly speed through the cards as fast as possible and prevented using time as a meaningful data point for evaluation. The escape room format compensated for the lack of the mannequin's ability to demonstrate the patient's status throughout the simulation, but ultimately made a step by step, card by card process that relied far more in interaction and discussion with the nurse educator than with the mannequin. Overall teamwork and flexibility with the education department and with the nurse participants lead to a successful project with a few unexpected outcomes.

Barriers to this project included the small total sample of eleven participants across only three sessions, which limits the statistical power and generalizability of the project's findings. The mannequin's inability to provide voice response, dynamic vital signs, clinical changes required the nurse educator and the game cards to prompt many nursing actions. The dependences of the nurse educator in the escape room made completion time an unreliable

comparison metric between groups. It was also not explicitly planned to have patient care technicians or nurse externs, however, it was easy to include them into the project as it was designed for new and young nursing professionals. To address the major barrier in this project, advocating for a financial endorsement into patient actors or into mannequins with physiological feedback in the education department would reduce dependence on the nurse educator's role in the escape room and promote more nurse interactions with the patient at bedside. For future projects, it is recommended that the escape room recruit more participants, provide more sessions over more weeks, and to design an escape room that is more interactive with the mannequin than with the nurse educator.

Sustainability

The trauma scenario escape room is easily sustainable. The intervention is operationally feasible, easily changed to address education departments goals, and is able to be influential to nurses at all levels of experience. It is an educational tool that is flexible, repeatable, and adjustable to the nursing education department's goals and bedside nursing surveys. Because escape room sessions are scheduled and attended in person, the nursing education department gains consistent access to nurse survey compliance and completion which results in high quality data to drive decisions about nursing education. Whereas emailed surveys have a reduced participation rate and are therefore less meaningful to the education department as a survey with a low participation rate does not adequately illustrate the trauma department's nursing opinion or concerns. The education department is able to provide consistent institutional support to new and young nurses throughout the beginning of their career by gathering more meaningful surveys and bridging the gap between nursing education and nursing skills in high acuity situations. Ideally, a more interactive mannequin would create a more interactive and realistic trauma scenario.

Adding a new scenario such as the requested pediatric or cardiac trauma scenario would keep the escape room relevant for returning nurses.

CNL Role

This capstone project contributed to the development of CNL role competency across multiple domains. Designing and implementing a system-level educational intervention required the application of CNL competencies in quality improvement, outcome management, evidence-based practice, and team facilitation (Abraham et al., 2013). The process of reviewing evidence-based research on gamified education, partnering with the education department to incorporate unit-level goals, and evaluating outcomes against a predetermined benchmark reflects the CNL's role as a quality improvement facilitator that translates research into a meaningful intervention. The capstone project reinforced how the CNL perspective differs meaningfully from a bedside nurse. Where the bedside nurses focus on nursing interventions to benefit the patient, the CNL focuses on implementing a system level project that supports nurses in the unit. The scenario reflected a trauma patient's journey through the mesosystem as the escape room started with a nurse performing a primary survey assessment, transferring the patient into CT (Computed Tomography), performing a secondary survey assessment and transferring the patient into the Operating Room. Incorporating the patient's journey through the mesosystem required the CNL to think beyond the emergency department and consider how nursing education could address the continuity of trauma care from patient arrival to the operating room. This system-level design perspective is what separates a CNL driven educational intervention from skill practice and competency, as the goal was not to simply teach individual skills but to strengthen the nursing team's ability to move a critically ill patient safely through multiple levels of care. The capstone project ultimately demonstrated that the CNL role

is most impactful when it identifies a gap and provides a bridge between what nurses are taught and what they are expected to do in practice.

Concluding Remarks

This capstone project successfully designed, implemented, and evaluated a trauma themed escape room as an interactive educational intervention for new and young trauma nurses at a level I trauma center, replacing the required online learning modules. The escape room followed a simulated 34-year-old male trauma patient through a two-room scenario focusing on nursing concepts such as the primary survey, secondary survey, patient transfer, and clinical reasoning about hospital protocols. The data collected using the knowledge assessment quiz across all three groups supports the conclusion that the escape room improved clinical confidence and knowledge acquisition among new and young nurses. Overall pre-simulation confidence surveys reflected an average baseline of 3.80/5.0, and was exceeded by the overall post-simulation group evaluations average (4.44) indicating that confidence was gained from the trauma escape room intervention. The overall cohort improved confidence by 17.9% exceeding the project's 15% benchmark, Knowledge assessment scores averaged 91.8% across all eleven participants, with Group 2 (the youngest and least experienced group), demonstrating a 98% average on the knowledge assessment and the greatest improvement in confidence at 41.4%. This pattern strongly supports the project’s core hypothesis that young and inexperienced nurses benefit the most from trauma themed escape rooms. The escape room proved to be educationally effective, however, ultimately limited by a non-responsive mannequin which pushed the nurse educator to be far more involved in the scenario than initially planned. Constant prompting and discussion over each game card led to team time completion to be an irrelevant measure of competency or proficiency at nursing. Ultimately, the trauma scenario escape room is able to

provide positive outcomes in nursing confidence and knowledge retention but is limited by the lack of interactive resources (mainly the stationary mannequin, no interactive monitor, no patient voice over or communication). Future escape room scenarios should prioritize increasing interactions with the patient's status, limit the nurse educators and the game cards role in prompting the nurses, and incorporate data from nursing surveys to address the trauma departments concerns and desires over specific concepts seen in future simulations. Scenario-based education is a feasible and engaging replacement for passive online modules and is capable of producing measurable outcomes that can be easily altered or changed. With additional simulation resources in place, development of additional trauma scenarios, and continuous adaptation based on nurse surveys, trauma scenario escape rooms have the potential to become a foundational part of trauma nursing education that improves nurse readiness, self-efficacy, team performance and quality of care delivered to trauma patients in the unit.

Reference

Abraham, P., Harris, J., Godfrey, M. M., Hilton, N., Kaack L. R., Kuntz, S., Kurtzman, E. T., Leahy, C., Lee, T., Swan, N., Thomas, T., Vann, R., Stanley, J., Kesten, K. S., & Oliveira, H. (2013). *Competencies and curricular expectations for clinical nurse leader education and practice.* American Association of Colleges of Nursing. https://www.aacnnursing.org/portals/0/PDFs/CNL/CNL-Competencies-October-2013.pdf

Anna, A., Wang, C., Lai, W., & Chen, H. (2022). Developing and validating cardiovascular emergency gamification question cards. *Nurse Education Today*, *117*, 105482. https://doi.org/10.1016/j.nedt.2022.105482

Duncan, K. W., Cole, H. S., McCoy, T. P., Armstrong, K. K., Bass, C., Benfield, M., Davis, L., Drury, A., Foley, C., Giles, H., Gladwell, C., Hall, A., Lester, B., McNeil, V., & Strickland, K. (2026). From classroom to clinical: Using simulation to bridge the theory-practice gap and enhance student confidence. *Teaching and Learning in Nursing*, *21*(2), e609–e614. https://doi.org/10.1016/j.teln.2025.11.010

Endo, K., Kubota, K., Karino, K., Sato, R., Miura, S., Ueda, Y., & Iwashita, Y. (2025). Setting the next vital sign observation interval as a learning objective in Simulation-Based Nursing Education: A Prospective Exploratory Observational Study. *Nursing Reports*, *15*(12), 416. https://doi.org/10.3390/nursrep15120416

Fernandes, C. S., Moreira, M. T., Ferreira, M. S., & Lima, A. M. N. (2025). Escape Rooms in Nursing: A Systematic Review and Meta-Analysis. *The Journal of Continuing Education in Nursing*, *56*(5), 175–182. https://doi.org/10.3928/00220124-20250416-05

Reference

Forsbrand, M., Christiansen, L., & Gatzouras, V. J. (2025). Teachers' Strategies and Technology Use for Enhancing Students' Critical Thinking in Nursing Simulation-Based Learning: A Qualitative Pilot study. *INQUIRY the Journal of Health Care Organization Provision and Financing*, *62*, 469580251392452. https://doi.org/10.1177/00469580251392452

Hudson, A., Franklin, K., Edwards, T. R., & Slivinski, A. (2023). Escaping the Silos: Utilization of a pediatric trauma escape room to promote interprofessional education and collaboration. *Journal of Trauma Nursing*, *30*(6), 364–370. https://doi.org/10.1097/jtn.0000000000000757

Hussein, M. T. E., & Hirst, S. P. (2023). High-Fidelity simulation's impact on clinical reasoning and patient Safety: A scoping review. *Journal of Nursing Regulation*, *13*(4), 54–65. https://doi.org/10.1016/s2155-8256(23)00028-5

Kim, C., Ke, F., & Brewer, V. (2025). Escape rooms as formative knowledge assessment: A quasi-experimental study. *Nurse Education Today*, *147*, 106572. https://doi.org/10.1016/j.nedt.2025.106572

Malatesta, T., Hebert, D., Cornine, A., & Amoah, R. (2023). Evaluating nursing students' outcomes in an educational escape room: Escape a night of rapids! *Teaching and Learning in Nursing*, *19*(1), 34–38. https://doi.org/10.1016/j.teln.2023.08.012

Ménard, A. D., Soucie, K., Ralph, J., Pratt, S., & Freeman, L. (2025). Simulation training to increase resilience of nursing groups (STRONG): Results from a multi-site trial. *Clinical Simulation in Nursing*, *106*, 101802. https://doi.org/10.1016/j.ecns.2025.101802

Reference

Navarro, S. P., & Nolasco, M. P. B. (2023). Implementation of Escape Room Simulation Activity for Nurses Transitioning to Clinical Practice. *Journal of the New York State Nurses Association*, *50*(2), 33–39.

Parozzi, M., Meraviglia, I., Ferrara, P., Palomares, S. M., Mancin, S., Sguanci, M., Lopane, D., Destrebecq, A., Lusignani, M., Mezzalira, E., Bonacaro, A., & Terzoni, S. (2025). Effectiveness of a Gamification-Based Intervention for Learning a Structured handover System among undergraduate nursing Students: A Quasi-Experimental Study. *Nursing Reports*, *15*(9), 322. https://doi.org/10.3390/nursrep15090322

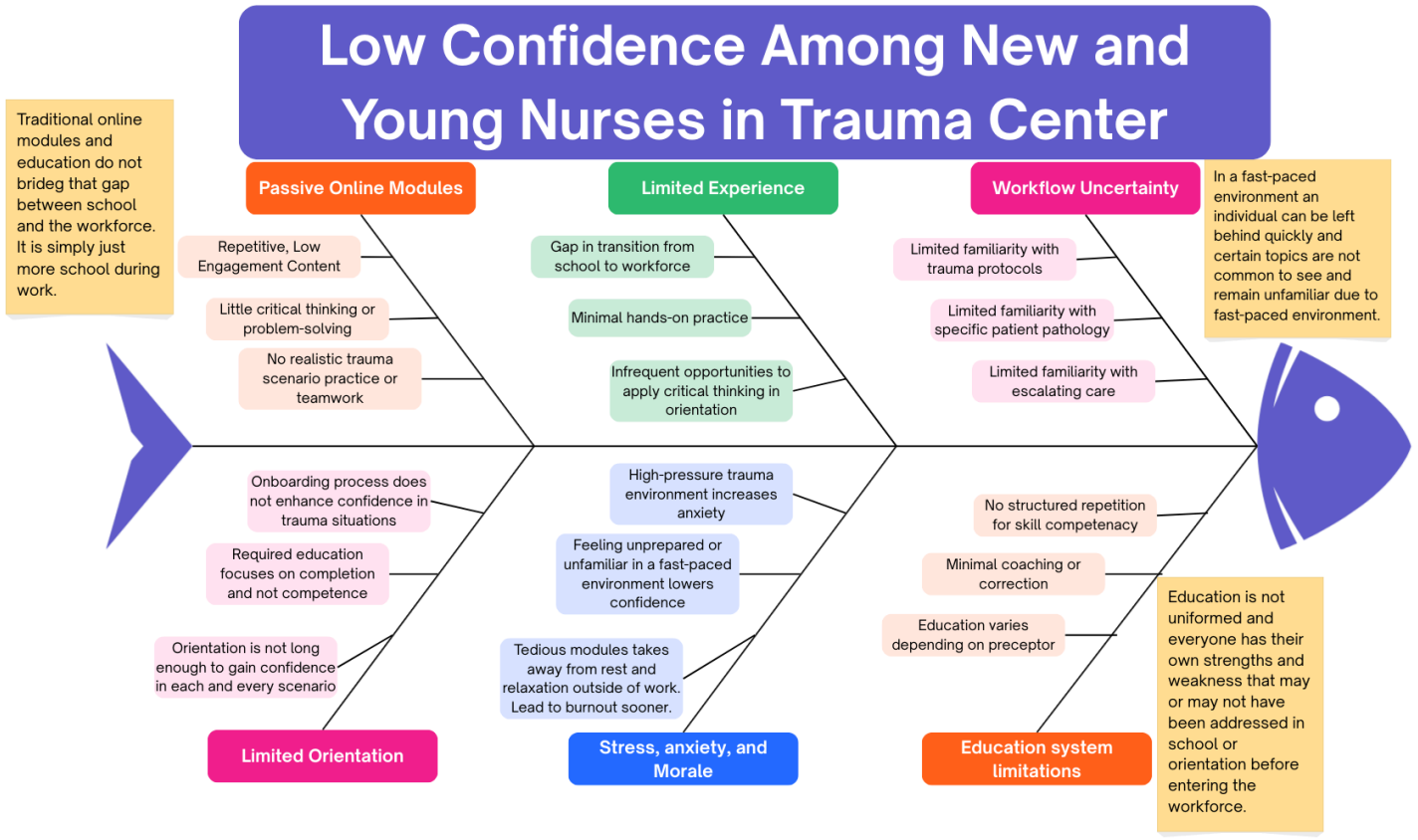
Rajasekaran, R., Zhao, L., Cleary, S., & Harland, J. (2025). The impact of virtual versus mannequin-based simulation on undergraduate nursing students' preparedness for early recognition of clinical deterioration: A systematic review. *Nurse Education in Practice*, *88*, 104563. https://doi.org/10.1016/j.nepr.2025.104563

Seymour, A., Borggren, M., & Baker, R. (2023). Escape the Monotony: Gamification Enhances Nursing Education. *Journal of Emergency Nursing*, *49*(6), 805–810. https://doi.org/10.1016/j.jen.2023.06.004

Van Gaalen, A. E. J., Brouwer, J., Schönrock-Adema, J., Bouwkamp-Timmer, T., Jaarsma, A. D. C., & Georgiadis, J. R. (2020). Gamification of health professions education: a systematic review. *Advances in Health Sciences Education*, *26*(2), 683–711. https://doi.org/10.1007/s10459-020-10000-3

Appendix A

Fishbone Diagram of Factors Contributing to Low Confidence Young Nurse



Appendix B

Trauma Nurse Confidence Survey

CONFIDENCE SURVEY

Rate your confidence using the scale below. This survey is completed before and after simulation

Name: | Date: | Department

RATE YOUR CONFIDENCE IN THE FOLLOWING

	Excellent	Good	Average	Bad	Very Bad
Recognize early signs of deterioration in a trauma patient	◯	◯	◯	◯	◯
Performing a rapid assessment	◯	◯	◯	◯	◯
Prioritizing interventions during trauma resuscitation	◯	◯	◯	◯	◯
Identifying signs of hemorrhafe	◯	◯	◯	◯	◯
Adhere to protocol	◯	◯	◯	◯	◯
Initiate appropriate airway intervention	◯	◯	◯	◯	◯
The ABCDE framework	◯	◯	◯	◯	◯

WHAT KIND OF SCENARIO WOULD YOU LIKE TO PRACTICE NEXT?

On a scale from 1-10 rate the scenario

WHAT DO YOU THINK CAN BE BETTER IN THE NEXT SCENARIO

Appendix C

Knowledge Assessment Test

Name: Date: Department:

Knowledge Assessment Quiz

Test your trauma knowledge by taking this short multiple choice quiz. 10 questions. 5 questions are on the back!

6) A patient with a known head injury has hypertension, bradycardia, and irregular breathing. What does this indicate?
A) Opioid withdrawal
B) Cushing's triad
C) Autonomic dysreflexia
D) Fluid overload

7) A 42 year old patient is noted to have petechiae on the chest and arms, ecchymoses around IV sites, a low grade fever, tachycardia and hypotension? What is probably happening to the patient?
A) Alergic reaction
B) septic shock
C) Disseminated Intravascular Coagulation (DIC)
D) hemophilia

8) A trauma patient involved in a car crash presents with bilateral periorbital ecchymosis and cerebrospinal fluid leakage. What type of fracture should the nurse suspect?
A) Maxilary sinus fracture
B) Basilar skull fracture
C) Zygomatic fracture
D) Mandibular fracture

9) What is the priority nurse intervention for a patient with absent breath sounds on the left side, tracheal deviation and distended neck veins?
A) Admininster high-flow oxygen
B) Place patient supine
C) Call respiratory therapy
D) Prepare for needle decompression

10) Patient is diaphoretic, complaining of chest pain, and has palpitations. What is the nurse's priority action?
A) Take an X-ray
B) Collect labs
C) Obtain EKG
D) Provide medications

Name: Date: Department:

Knowledge Assessment Quiz

Test your trauma knowledge by taking this short multiple choice quiz. 10 questions. 5 questions are on the back!

1) During a rapid assessment, which intervention has the highest priority when a trauma patient is unable to speak and has gurgling respirations?
A) Assess blood pressure
B) Insert an oral airway and section secretions
C) Look for signs of bleeding
D) perform neurological exam.

2) Which assessment finding most strongly indicates hypovolemic shock?
A) Pain rated 7/10
B) Oxygen saturation of 90%
C) Decreased respiratory rate
D) Heart rate of 118/min and cool clammy skin

3) In multiple-trauma victims, which assessment finding is the most serious and life-threatening condition?
A) Hematuria
B) Shallow breathing
C) Muscle spasms
D) Infection

4) Trauma patient continues to bleed from a femoral wound despite direct pressure. What is the next best intervention?
A) Elevate the limb
B) Measure heart rate
C) Apply tourniquet
D) Remove dressing and reapply

5) What is the best type of IV to put in for trauma resuscitation?
A) 16 gauge IV
B) 20 gauge IV
C) Central line
C) PICC line

Answer key to quiz

1) B 2)D 3)B 4)C 5)A 6)B 7)C 8)B 9)D 10)C

Appendix D

Student Group Evaluation Form

STUDENT GROUP EVALUATION FORM

CATEGORY	CRITERIA	1	2	3	4	5	COMMENTS
R1-1 | Team Roles	All 4 roles assigned and confirmed out loud before patient arrives	○	○	○	○	○	
R1-2 | Airway	Airway compromise identified; suction, intubation; physician notified; RSI medications named in order	○	○	○	○	○	
R1-3 | Breathing	Bilateral lung fields auscultated; right diminished sounds reported; chest tube threshold stated (≥200 mL/hr)	○	○	○	○	○	
R1-4 | Circulation	Tourniquet confirmed; second large-bore IV/IO established; trauma labs drawn; MTP activated; both HRT criteria stated	○	○	○	○	○	
R1-5 | Disability	GCS calculated (7) and verbalized; CT Head named as priority diagnostic test; physician notified of blown right pupil	○	○	○	○	○	
R1-6 | Exposure	Full exposure performed; log roll initiated; temperature obtained; warming protocol activated	○	○	○	○	○	
R2-1 | Head & Neck	Basilar skull fracture signs verbalized (raccoon eyes, Battle's sign, hemotympanum); NG tube contraindication stated; OG tube confirmed	○	○	○	○	○	
R2-2 | Chest, Abdomen & Pelvis	Chest tube output reported to physician; surgical threshold (≥200 mL/hr) identified; low urine output flagged; pelvis stability test performed once	○	○	○	○	○	
R2-3 | Extremities & Back	Right foot vascular compromise verbalized; Orthopedic Surgery AND Vascular Surgery named; tourniquet time documented; log roll completed with C-collar	○	○	○	○	○	
R2-4 | History & Signs	AMPLE history collected; repeat vitals compared to arrival trend; GCS documented and verbalized; temp and glucose nursing actions stated; lethal triad named	○	○	○	○	○	
R2-5 | CT Scan Results	Two most life-threatening CT findings stated aloud; EVD nursing management verbalized; ICP threshold stated (>20 mmHg)	○	○	○	○	○	
R2-6 | Antibiotics	Antibiotic name, dose, and route confirmed within 60-minute window; sedation and analgesia for intubated patient anticipated; MTP 1:1:1 through blood warmer confirmed	○	○	○	○	○	
R2-7 | Consults & Transport	All specialty consults named; 30-minute arrival requirement stated; correctly chose OR; all transport equipment named; complete SBAR delivered	○	○	○	○	○	

Appendix D

Student Group Evaluation Form

STUDENT EVALUATION FORM CONTINUED							
Teamwork & Communication	Closed-loop communication used throughout; findings verbalized aloud to team; no critical tasks performed in silence	○	○	○	○	○	
Clinical Reasoning	Life threats prioritized correctly; physician escalation appropriate and timely; decisions connected to clinical evidence	○	○	○	○	○	
Overall Performance	Room 1 completed within 25 min; Room 2 completed within 30 min; logical progression maintained throughout	○	○	○	○	○	

STRENGTHS OBSERVED:	AREAS FOR IMPROVEMENT:
_____	_____
_____	_____
_____	_____