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Exploring Undergraduate Nursing Students' Experiences with Escape Room–Based Assessment of Basic Nursing Skills: A Qualitative Study

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Abstract

Escape rooms have gained popularity as innovative educational tools in recent years. Despite this, traditional Chinese nursing education remains largely teacher-centered, and research on the use of escape room–based teaching methods in nursing education is limited. This study represents a preliminary application of escape rooms to assess basic nursing skills, aiming to explore undergraduate nursing students' experiences with escape room–style evaluations through qualitative interviews. A descriptive phenomenological approach was employed to conduct in-depth interviews with 12 undergraduate nursing students who participated in an escape room scenario for basic nursing skills assessment. The collected data were systematically analyzed using Colaizzi's seven-step method. Analysis identified two primary themes—learning experience and learning feedback—along with five related sub-themes. The sub-themes included creating a relaxed learning environment, enhancing motivation, fostering teamwork and a collaborative learning community, integrating theory with practice, cultivating critical thinking, refining assessment design, and incorporating teacher feedback and review sessions. Escape room–based teaching was positively received, offering a combination of enjoyment, interaction, and relaxation while supporting key educational objectives such as promoting student initiative, teamwork, and critical thinking. Future refinements to escape room activities may further enhance knowledge consolidation and skill development in nursing education.

Keywords: Undergraduate nursing students, Escape room, Nursing education, Qualitative research, Basic nursing skills

Introduction

Fundamental nursing skills are core elements of the nursing curriculum, encompassing both theoretical knowledge and essential practical competencies critical for clinical practice [1]. However, research indicates that undergraduate nursing graduates in China often demonstrate relatively low proficiency in clinical skills [2]. One study found that Chinese graduates scored significantly lower than their South Korean counterparts in clinical problem-solving and judgment abilities [3].

Surveys [4] further highlight the predominance of traditional teacher-centered approaches in Chinese nursing education, where assessments largely focus on individual procedural tasks. As a result, there is limited evaluation of broader competencies such as teamwork and critical thinking. Skill assessments tend to emphasize technical execution over holistic ability, often requiring repetitive practice that can cause fatigue without substantially enhancing comprehensive skills. These challenges underscore the need for innovative teaching strategies that boost student motivation, engagement, and overall learning outcomes.

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Reflecting these concerns, the 2018 National Standards for Teaching Quality in Nursing Education issued by China's Ministry of Education advocated for diversified approaches to evaluating students' professional competence and clinical reasoning [5].

Serious gaming, an educational approach combining game elements with instructional design, enables students to acquire knowledge, practical skills, and professional competence through immersive, scenario-based experiences. This method not only enhances engagement but also improves learning efficiency [6]. In recent years, serious games have been successfully integrated into medical education internationally [7]. Specifically, studies in nursing education suggest that serious games foster learning and enhance collaborative problem-solving among students [8].

Escape rooms (ER) are a type of serious game that provide interactive, engaging, and challenging learning experiences. In escape room–based teaching, educational objectives are embedded within game scenarios, requiring participants to solve sequential puzzles related to the learning goals within a set timeframe to "escape" the scenario. Evidence indicates that escape room–based education can increase student motivation and engagement [9]. This teaching model has been applied in nursing education in various Western and European contexts, including intensive care [10], obstetrics and gynecology [11], community nursing [12], critical and emergency care [13], pediatric nursing [14], and cardiac care [14]. In China, however, research on escape room applications in nursing education is still limited, with existing studies only exploring areas such as cardiovascular internal medicine [16] and oral surgery [17].

In 2020, escape rooms were first introduced as an assessment tool for medical skills, demonstrating adaptability to diverse learning styles and positive feedback from students [18]. This approach transforms traditional skill examinations into immersive and interactive learning experiences. Despite the international evidence, Chinese nursing education remains largely teacher-led, and escape room assessments have rarely been implemented. In response, our research team developed an escape room–based assessment for fundamental nursing skills tailored to the characteristics of Chinese undergraduate students. Through in-depth interviews, we sought to capture students' experiences, summarize their learning encounters, and evaluate the feasibility and effectiveness of this assessment approach, ultimately providing a reference for future optimized assessment designs.

Materials and Methods

Study design and setting

The study was conducted at a university in Zhejiang Province, where sophomore-level students take a basic nursing course delivered through a traditional theory-and-practice model. Previously, knowledge and skill assessments consisted of written exams and individual practical evaluations. Building on the conventional midterm examination format, this study introduced an innovative escape room–style approach for the final nursing skills assessment.

Research team

A supervising professor oversaw teaching objectives, reviewed and refined the assessment plan, and controlled the complexity of the puzzles. Two graduate students designed operational tasks, set up the escape room scenario, and collected and analyzed interview data. Four instructors from the Nursing Skills Centre participated in the assessment process.

Assessment plan design

The assessment integrated theoretical knowledge with practical nursing skills through escape room game elements. The training lab was arranged with necessary experimental materials, high-fidelity simulators, and clue cards. Two graduate students and four instructors pretested the setup to ensure appropriate difficulty and feasibility, addressing any concerns before implementation **(Table 1)**.

Assessment implementation process

Students received instructions on the game rules. Each escape room included 3–4 levels, and participants completed corresponding operations using hints to advance. Assessment scoring was based on a self-compiled basic nursing skills rubric, with 100 points per operation; scores of 75 or above allowed progression, while scores below 75 required restarting the task. Each session lasted 30 minutes, and the team completing all levels in the shortest time was declared the winner. Teams of 6–7 students were allowed, and five escape rooms were run simultaneously. Students who had finished the assessment waited in a separate classroom to prevent information sharing, and top-ranking teams received rewards. The competitive setup encouraged high engagement and motivation.

Table 1. A skill assessment plan inspired by the principles of escape room design

Section	Description

Setting the Scene	A starting task card is placed inside the classroom to kick off the challenge. For example, the first card describes a patient case: "Mr. Zhang, age 50, has had a persistent fever for 3 days, peaking at 39.5°C. He reports coughing up thick yellow sputum, fatigue, and loss of appetite, but no chest pain or shortness of breath." Students must follow clinical protocols to accurately measure and record vital signs. After correctly completing each step, a clue directs them to the next task card in the sequence. Tasks must be finished in order; success unlocks a key to a cabinet holding a letter. Teams collect letters to spell a victory word. One instructor hint is allowed per group; extra hints add 2 minutes to the final time.
Assessment Content	• Determining nursing care priority levels • Evaluating fever intensity • Recognizing different fever pattern charts • Performing accurate vital signs measurement

Interview framework

An interview protocol was developed with reference to prior literature [19] and focused on exploring students' perceptions of the escape room assessment. The key questions included: (1) Have you ever engaged in an escape room experience before? (2) Could you describe your experience during this assessment? (3) In comparison to conventional assessments, what differences did you notice, and which approach did you prefer? (4) What advantages and limitations do you perceive in the escape room teaching method? (5) Do you have any suggestions for refining or improving this approach?

Study participants

Participants were second-year undergraduate nursing students from a university in Zhejiang Province who had completed the first semester of the basic nursing course and had previously taken a mid-semester skills assessment. A purposive sampling method was applied to select participants from the 72 students who participated in the escape room–based assessment. Eligible participants were required to have completed the escape room assessment, be willing to participate in the interview, and possess sufficient verbal ability to clearly articulate their thoughts. Students who had not participated in the traditional skills assessment were excluded.

The sample size was determined using the principle of thematic saturation, defined as the point at which interviews no longer yielded novel insights [20]. Saturation was reached after ten interviews, and two additional interviews were conducted to confirm this. All selected participants agreed to participate, with no attrition during the study. The final sample included 12 students, comprising nine females and three males, consistent with the predominance of women in nursing programs. To protect confidentiality, each participant was assigned a unique identifier (e.g., Participant 1), as summarized in **Table 2**.

Table 2. Demographic data describing the study participants

No.	Sex	Previous research experience	Assessment duration by each team (min's)	Team score (out of 100 points)
P1	Female	No	23'45	87
P2	Female	No	25'12	83
P3	Male	No	23'45	87
P4	Female	No	24'36	85
P5	Female	No	27'44	81
P6	Female	No	24'35	85
P7	Male	No	22'39	91
P8	Female	No	27'44	81
P9	Female	No	26'33	82
P10	Female	Yes	22'39	91
P11	Female	No	24'36	85
P12	Female	Yes	23'55	87

Data collection

All members of the research team were registered nurses with both clinical experience and training in qualitative research methodologies. Prior to the study, researchers received specific instruction on qualitative data collection techniques and effective communication strategies. A female researcher skilled in conducting qualitative interviews carried out 12 semi-structured, in-depth interviews to explore students' learning experiences during the escape room–style assessment. Interviews were conducted in a quiet, controlled environment, and participants were fully briefed on the study's objectives and procedures beforehand. Strict confidentiality was maintained throughout the process. Written informed consent was obtained from all participants. In addition to audio recording, the researcher observed non-verbal cues—including facial expressions and body language—that could not be captured by recording alone. Each interview lasted approximately 30–40 minutes.

Ethical approval

Ethical clearance for the study was obtained from the relevant institutional review board. Participants were provided with a detailed explanation of the study's purpose before beginning the interviews. They signed consent

forms and provided basic demographic information. Participation was entirely voluntary, and students could withdraw at any point without consequence. To protect privacy, all data were anonymized using coded identifiers, and interviews were conducted individually in a quiet setting to maintain confidentiality.

Data analysis

Interview recordings were transcribed verbatim within 24 hours to ensure data accuracy and immediacy. The Colaizzi seven-step method [21] was employed for data analysis: (1) multiple readings of each transcript to gain full immersion and understanding; (2) extraction and coding of significant statements to identify meaningful units; (3) clustering of similar codes into themes with detailed descriptions; (4) verification of findings through participant feedback to finalize themes. Two researchers cross-checked all audio recordings against transcripts to ensure completeness and capture nuances in participant narratives, enhancing the reliability and credibility of the analysis. Any ambiguities or discrepancies were clarified with participants, and unresolved issues were reviewed by experienced qualitative research experts to reach consensus.

Results and Discussion

Analysis of the interview data revealed two primary themes with five related subthemes. These themes and subcategories are summarized in **Table 3**.

Table 3. Themes and subcategories of this study

Theme	Subtheme
Learning Experience	• Creates a motivating and engaging environment • Promotes teamwork and builds a collaborative knowledge-sharing culture • Bridges theory and practice to strengthen critical thinking
Learning Feedback	• Evaluation design needs further refinement • Strengthen the role of instructor feedback and assessment

Learning experience

This theme explored participants' perceptions of the escape room–style assessment, with all participants expressing positive feedback regarding this innovative evaluation approach. Students highlighted the method's notable impact on enhancing motivation, promoting teamwork, and developing effective learning strategies.

A supportive environment that encourages motivation

Participants consistently emphasized that the relaxed and engaging atmosphere of the escape room assessment was a key factor in reducing exam-related anxiety. By embedding the assessment within a game-based framework, the traditionally high-stress environment of skill evaluations was transformed into one that was enjoyable and novel. This approach not only alleviated tension but also boosted students' enthusiasm for learning, demonstrating greater alignment with contemporary educational needs. The gamified nature of the assessment fostered interactivity and practical engagement, further stimulating participants' motivation to acquire knowledge.

"Escape room challenges are much more interesting than regular exams. I don't even feel like I'm taking a test." (P1, female, no research experience)

"I usually get very nervous during exams, which adds pressure. But this time, I felt completely relaxed and free from stress." (P4, female, no research experience)

The inherent challenges and enjoyment associated with the escape room format appeared to increase students' willingness to invest time and effort in preparation, while also enhancing their competitive drive.

"I really enjoyed this format; it felt like playing an exciting puzzle game." (P3, male, no research experience)

"Wanting to win motivated me to review key points and prepare more thoroughly." (P6, female, no research experience).

Promoting teamwork and building a collaborative learning community

Participant feedback underscored the strong collaborative element of the escape room assessment. The format required students to work closely within teams, respond quickly under pressure, and engage in collective problem-solving. Participants valued the experience of working toward a shared goal, which fostered a cohesive learning community. Within this community, students exchanged knowledge, shared insights, and learned from one another's perspectives, which enhanced overall learning effectiveness and contributed to a sense of satisfaction and accomplishment.

"It's crucial for each team member to cooperate closely and avoid working in isolation." (P2, female, no research experience)

"We practiced together, observed each other, and pointed out mistakes. Learning collaboratively helped us improve faster." (P4, female, no research experience)

"We shared study materials and discussed procedures when issues arose. Brainstorming allowed us to find optimal solutions efficiently." (P7, male, no research experience)
"Every team member stayed fully engaged, supporting and learning from each other throughout the process." (P9, female, no research experience)

Integrating theory and practice to develop critical thinking
The escape room assessment effectively combined theoretical knowledge with practical application through carefully designed clinical scenarios. This integration enhanced the comprehensiveness and depth of the evaluation and provided insight into participants' overall competencies. By simulating realistic clinical situations, the method promoted reflection, strengthened the connection between theory and practice, and cultivated critical thinking skills.
"In regular exams, only one operation is assessed, but the escape room has multiple levels within a scenario, which better integrates theory and practice." (P1, female, no research experience)
"I often made mistakes during preparation and the exam, but the escape room encouraged me to reflect on why errors occurred and learn from them." (P8, female, no research experience)
"This format is excellent. It assesses not only practical skills but also theoretical knowledge, while the scenario-based design evaluates clinical judgment and critical thinking." (P10, female, research experience)

Learning feedback
This theme explored participants' perspectives and recommendations regarding the escape room–style assessment.

Enhancing the assessment design
Several participants suggested that the assessment design could be improved to ensure fair evaluation. They noted that excessively large or small group sizes may compromise accurate assessment of individual performance. Large groups may dilute individual contributions, making it difficult to evaluate each participant's role, while small groups may hinder effective teamwork, which could affect outcomes. Participants also recommended improvements to scenario realism and challenge, arguing that more immersive and authentic settings would allow students to better demonstrate and refine their skills in a context closer to real clinical practice.
"Some parts of the scenario felt incomplete, which was a little distracting. Future assessments could benefit from more realistic scene setups." (P6, female, no research experience)
"In larger groups, observing everyone's performance is difficult, and tasks may not be evenly distributed." (P7, female, no research experience)
"Even with the changes in setup, the lab still felt too familiar, lacking a sense of urgency or tension." (P10, female, research experience)

Strengthening teacher feedback
Participants emphasized the value of post-assessment feedback from instructors. They indicated that structured discussions could help identify strengths and weaknesses, facilitating targeted improvements in future learning and practical performance. Receiving detailed evaluations from teachers would provide guidance and ensure that students could reflect more effectively on their performance.
"Although we have group debriefs, we're not always confident in our assessments and don't want to bother the teacher. It would be helpful if teachers highlighted each group's issues so we could reflect and learn together afterward." (P5, male, no research experience)
"Comprehensive post-assessment feedback from teachers would clarify our understanding and highlight areas where we need improvement." (P11, female, no research experience)

This study aimed to explore nursing undergraduates' experiences with escape room–based skill assessments. Findings indicate that incorporating game elements created a positive, low-stress environment, echoing prior studies [22, 23]. Compared to traditional assessments, the escape room approach reduced anxiety and fostered teamwork, providing a safe and supportive context that encouraged the development of broader nursing competencies [24, 25].
Interviews highlighted several advantages of the escape room method. Students reported higher engagement and more positive attitudes toward this innovative assessment compared with conventional evaluation formats, consistent with previous research [23]. Escape rooms, originally designed for commercial entertainment, appear highly effective in educational contexts, enhancing motivation and participation. Importantly, even participants with no prior escape room experience found the method enjoyable and valuable, aligning with findings by Garwood *et al.* [26], demonstrating that beginners can readily benefit from this approach.
This success may relate to the generational characteristics of participants. As millennials, the students are familiar with digital media and rapid technological change, making them receptive to immersive and interactive learning

experiences. Escape room assessments integrate gamification, flipped learning, and problem-based learning [27], promoting active engagement, logical reasoning, and independent problem-solving. Participants reported enhanced abilities to gather information, analyze challenges, and develop practical solutions.

Aubeux *et al.* [6] similarly observed that the entertainment aspect of escape room–style learning increased motivation and encouraged proactive participation. By combining interactive, physical, symbolic, and digital elements, escape room assessments transform traditional content into engaging, hands-on experiences. This immersive design strengthens knowledge retention, problem-solving skills, and a sense of achievement, fostering student motivation and active participation.

Escape room activities are typically conducted in groups, where participants share resources, exchange clues, and work collaboratively to solve problems. This approach addresses a gap in traditional teaching methods, which often neglect team-building activities, and helps strengthen interpersonal relationships among students during learning. Additionally, the diverse puzzles presented in escape rooms engage different cognitive approaches and roles, allowing each participant to leverage their individual strengths and contribute meaningfully to the team [28]. When disagreements arise, students can discuss, integrate, and expand upon each other's ideas, thereby refining their own understanding. For instance, in a dental escape room designed by Zaug *et al.* [29], participants noted that individual effort alone was insufficient to complete the tasks and that success depended entirely on teamwork [30]. Students reported learning about their teammates' strengths through this process. The simulated, dynamic environment and the time-sensitive nature of escape rooms promote collaboration, increase peer interaction, and enhance collective problem-solving skills. Moreover, research suggests that a relaxed learning environment can further encourage teamwork by providing opportunities for each participant to contribute meaningfully and feel supported by the group [31].

Overall, escape rooms reduce stress and frustration compared with traditional clinical skills assessments, fostering a safe, relaxed, and comfortable environment. Nursing students consistently expressed a preference for the low-pressure setting provided by escape room activities [32]. Within these simulations, students analyzed explicit and implicit information, used relevant props, assessed patient conditions, and performed appropriate nursing interventions to solve puzzles and progress through levels. This process integrates clinical reasoning and decision-making into the learning experience. Previous studies have similarly shown that escape room activities enhance students' critical thinking abilities [23].

This study represents the research team's first attempt to develop and implement a locked-room escape-style assessment for nursing skills. In-depth interviews with participants revealed areas for refinement, highlighting both the challenges and the potential of this approach. Drawing on existing literature and participant feedback, several recommendations emerged to optimize the design of locked-room escape assessments. First, instructional content should align closely with the curriculum while considering students' educational backgrounds and practical needs, ensuring targeted and relevant learning. For example, Morrell *et al.* [32] demonstrated a cardiac arrest–focused locked-room escape game with multiple stages, such as identifying shock types, selecting medications, interpreting ECGs, and describing clinical symptoms, which comprehensively evaluated students' knowledge and skills.

Second, escape room activities should feature engaging storylines with a clear, logical structure, enabling students to acquire knowledge progressively while enjoying the learning experience. Incorporating diverse puzzle formats—such as traditional puzzles, sudoku [33], decoding locks [34], and safe boxes—can increase engagement, enrich instructional design, and offer cost-effective, reusable teaching tools. Enhancing realism through multi-sensory elements like audio, video, and tactile cues creates immersive scenarios that heighten tension and mimic real clinical environments.

Additionally, guided reflection is a critical component of the teaching process. Students should be encouraged to contemplate their experiences, understand the educational purpose of the activity, and connect puzzles with theoretical knowledge and practical skills. Educators can provide feedback to address overlooked areas, highlight strengths, and reinforce key learning objectives. This reflective process also helps students consolidate both cognitive and practical skills, fostering soft skills such as communication, teamwork, and critical thinking.

Future directions may include collaboration with computer science experts to create online escape room formats. These digital platforms could record errors and performance, allowing students to review and analyse their progress individually. Online escape rooms also address limitations of physical sessions, such as accommodating only a small number of participants, thereby expanding access to learning. While escape rooms enhance engagement and holistic skill development, they should complement rather than replace traditional objective structured clinical examinations. Incorporating escape room activities alongside conventional teaching ensures consolidation of essential knowledge while preventing the dilution of learning objectives due to excessive gamification. Prior research has shown that escape room–based learning is most effective when applied to critical or challenging topics to reinforce understanding and skill acquisition.

In conclusion, the flexible nature of escape room pedagogy allows educators to design scenarios and puzzles across diverse disciplines, effectively integrating gamification and simulation-based strategies to foster innovative and competent nursing professionals in China.

Conclusion

The integration of escape room–based teaching into the assessment of basic nursing skills yielded positive outcomes and was well-received by the majority of participants. Combining escape room activities with formal evaluations created a learning environment that was engaging, interactive, and less stressful, while simultaneously achieving educational objectives. Specifically, this approach enhanced students' initiative, promoted active participation, strengthened teamwork, and fostered critical thinking skills. Future iterations of escape room training programs have the potential to further consolidate theoretical knowledge and reinforce practical nursing competencies. The findings from this study provide practical insights and recommendations for the design and implementation of escape room–based teaching, offering guidance for educators and institutions seeking to adopt this innovative strategy in nursing education.

Limitations

Several limitations should be considered. The application of escape room methodologies in nursing education remains limited, and standardized designs for integrating such approaches into skill assessments are lacking. To improve the generalizability and depth of future research, perspectives from subject matter experts or experienced educators who have implemented escape room–based assessments should be incorporated. Additionally, conducting randomized controlled trials could provide more robust evidence regarding the effectiveness of escape room–based teaching in nursing skill development.

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References

1. Chen H, Li XH, Wang PP, Sun H. Investigation on the quality of online teaching of nursing teachers in undergraduate education. Chin J Nurs 2021,56(6):5. doi:10.3761/j.issn.0254-1769
2. Da Z, Pu Z, Sun HY. Survey and analysis on competency of bachelor of nursing graduates: based on mixed methods perspective . Chin J Nurs. 2019;54(3):6. doi:10.3761/j.issn.0254-1769.2019.03.019
3. Lee HY, Kim Y, Kang H, Fan X, Ling M, Yuan Q, et al. An international comparison of Korean and Chinese nursing students with nursing curricula and educational outcomes. Nurse Educ Today. 2011;31(5):450-5. doi: 10.1016/j.nedt.2010.09.002.
4. Wang YJ, Li XH, Li JL, Li W, Ma J, Liu Y, et al. Status quo of practical teaching among teaching activities in Coarse of fundamentals nursing based on National standards for Teaching Quality of nursing disciplines: a cross-sectional study. Mil Nurs. 2023;40(07):39-42.
5. You LM. Interpretation of the National Standards for Nursing Teaching Qual- ity: Educational Evaluation . Chin J Nurs Educ, 2019, 16(1):3. doi:CNKI: SUN: ZHHU.0.2019-01-010
6. Aubeux D, Blanchflower N, Bray E, Clouet R, Remaud M, Badran Z, et al. Educational gaming for dental students: Design and assessment of a pilot endodontic-themed escape game. Eur J Dent Educ. 2020;24(3):449-57. doi:10.1111/eje.12521
7. Guckian J, Eveson L, May H. The great escape? The rise of the escape room in medical education. Future Healthc J. 2020;7(2):112–5. doi:10.7861/fhj.2020-0032
8. de Beer EEHM, van Os-Medendorp HH, Groeneveld SSWM, Jukema JSJS. Perceived contribution of a hybrid serious game to the development of col- laborative problem solving among undergraduate nursing students: a mixed method design. Nurse Educ Pract. 2023;73:103794. doi:10.1016/j. nepr.2023.103794.
9. Shang L, Cheng L, Zhang TT. Experience of undergraduate students participating in escape room themed nursing skill competition training: a qualitative study. J Nurs Sci. 2023;38(19):66-70.
10. Morrell BLM, Ball HM. Can You escape nursing school? Educational escape room in nursing education. Nurs Educ Perspect. 2020;41(3):197–8. doi:10.1097/01.NEP.0000000000000441
11. Edwards T, Boothby J, Succheralli L. Escape room: using an innovative teach- ing strategy for nursing students enrolled in a maternity clinical course. Teach Learn Nurs. 2019;14(4):251–3.
12. Anguas-Gracia A, Subirón-Valera AB, Antón-Solanas I, Rodríguez-Roca B, Satústegui-Dordá PJ, Urcola-Pardo F. An evaluation of undergraduate student nurses' gameful experience while playing an escape room game as part of a community health nursing course. Nurse Educ Today. 2021;103:104948. doi:10.1016/j.nedt.2021.104948

13. Dacanay AP, Sibrian J, Wyllie C, Sorrentino E, Dunbar G. Can You escape Sep- sis? Using a Healthcare escape room as an innovative Approach to nursing education. Clin Nurse Spec. 2021;35(2):65–72. doi:10.1097/NUR.00 00000000000578
14. Connelly L, Burbach BE, Kennedy C, Walters L. Escape Room Recruitment Event: Description and Lessons Learned. J Nurs Educ. 2018;57(3):184-187. doi:10.3928/01484834-20180221-12
15. Li YX, Gong CY, Tan L. Application of escape room teaching model in Clinical Practice Teaching in Department of Cardiovascular Medicine for bac- calaureate nursing Students. J Nurs Sci. 2022;37(02):56–9.
16. Gao M, Wu HM, Xie LL. Escape room teaching pedagogy in first-aid skills training for nurses working in stomatological outpatient clinics. J Nurs Sci. 2023;38(02):59–62.
17. Darby W, Bergeron P, Brown N, DeFoor M, Jones B. Escape room relay race: go for the Gold in Formative Assessment. J Nurs Educ. 2020;59(11):646–50. doi:10.3928/01484834-20201020-09
18. Li Z, Liu Y. Nursing research Methods. Beijing: People's Medical Publishing House,2012:87–96.
19. Colaizzi P. Psychological research as the phenomenologists views it. New York: Oxford University Press; 1978. p. 48.
20. Chen XM. Qualitative research and social science research. Beijing: Education Science Publishing; 2000. p. 473.
21. Jo KH, An GJ. Qualitative content analysis experiences with objective struc- tured clinical examination among Korean nursing students. Jpn J Nurs Sci. 2014;11(2):79–86. doi:10.1111/jjns.12006
22. Roman P, Rodriguez-Arrastia M, Molina-Torres G, Márquez-Hernández VV, Gutiérrez-Puertas L, Ropero-Padilla C. The escape room as evaluation method: a qualitative study of nursing students' experiences. Med Teach. 2020;42(4):403–10. doi:10.1080/0142159X.2019.1687865
23. Bani-Issa W, Al Tamimi M, Fakhry R, Tawil HA. Experiences of nursing students and examiners with the Objective Structured Clinical examination method in physical assessment education: A mixed methods study. Nurse Educ Pract. 2019;35:83–9. doi:10.1016/j.nepr.2019.01.006
24. Friedrich C, Teaford H, Taubenheim A, Boland P, Sick B. Escaping the profes- sional silo: an escape room implemented in an interprofessional education curriculum. J Interprof Care. 2019; 33(5):573–5. doi:10.1080/13561 820.2018.1538941
25. Garwood J. Escape to learn! An innovative Approach to engage students in learning. J Nurs Educ. 2020;59(5):278–82. doi:10.3928/01484834-20200422-08
26. Barata G, Gama S, Jorge J. Studying student differentiation in gamified education: A long-term study. Comput Hum Behav. 2017;71(JUN):550–85.
27. Dietrich NE. Classroom: the Leblanc Process—An Educational escape Game . J Chem Educ, 2018, 95(6).
28. Zaug P, Gros CI, Wagner D, Pilavyan E, Meyer F, Offner D, et al. Development of an innovative educational escape game to promote teamwork in dentistry. Eur J Dent Educ. 2022;26(1):116-22. doi:10.1111/eje.12678
29. Guckian J, Sridhar A, Meggitt SJ. Exploring the perspectives of dermatol- ogy undergraduates with an escape room game. Clin Exp Dermatol. 2020;45(2):153–8. doi:10.1111/ced.14039
30. Brown N, Darby W, Coronel H. An escape room as a Simulation Teaching Strategy. Clin Simul Nurs. 2019;30:1–6. doi:10.1016/j.ecns.2019.02.002
31. Pront L, Müller A, Koschade A, Hutton A. Gaming in nursing education: A Literature Review. Nurs Educ Perspect. 2018;39(1):23–8. doi:10.1097/01.NEP.0000000000000251
32. Morrell BS. Escape: A cardiac escape room for undergraduate nursing students. Simulation & Gaming, 2020. doi:10.1177/10468781209 58734
33. Dawkins D, Moore D, Butzlaff A, Wood A, Bolaños A. How to create a zoom escape room for a large didactic nursing course. Nurse Educ. 2021;46(6):E145–6. doi:10.1097/NNE.0000000000001044
34. Kutzin JM. Escape the room: Innovative approaches to interprofessional education. J Nurs Educ. 2019;58(8):474–80.