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Transforming Gen Z Nursing Education Through The Jigsaw Technique

Behera J,[1] Das A,[2] Das S,[3] Rajamani S[4]

1,2 and 3. Senior Tutor, School of Nursing – DRIEMS University. Cuttack. Odisha

4. Professor – School of Nursing – DRIEMS University, Cuttack. Odisha

Corresponding Author email: amritadas787@gmail.com

Abstract

This review article synthesizes evidence from recent studies on the application of the Jigsaw cooperative learning technique in nursing education, with a focus on its transformative potential for Gen Z learners. The Jigsaw method, which involves structured peer teaching and group interdependence, has been shown to significantly enhance cognitive achievement, knowledge retention, self-regulated learning, and student engagement compared to traditional lecture-based approaches. Findings from quasi-experimental and interventional studies indicate that Jigsaw not only improves academic outcomes but also fosters positive attitudes, teamwork, and a supportive learning environment. The integration of Jigsaw with self-regulated learning frameworks further strengthens metacognitive skills and motivation among nursing students. Despite challenges related to time and faculty training, the evidence supports the adoption of Jigsaw as a core pedagogical strategy to align nursing education with the collaborative, active, and technology-rich expectations of Gen Z learners.

Introduction

In the vibrant tapestry of modern education, Gen Z nursing students stand as digital natives, weaving their expectations for dynamic, collaborative, and meaningful learning experiences. Yet, the traditional undergraduate nursing curricula often cling to the well-worn paths of lectures and tutor-driven methods. This discordant symphony leads to a lackluster engagement, shallow learning, fleeting retention, and stunted growth in higher-order skills like self-regulation, teamwork, and problem-solving. Enter the Jigsaw technique, a cooperative learning structure that elegantly bridges these chasms. By distributing responsibility, fostering positive interdependence, and embedding peer teaching into the very fabric of classroom activity, it transforms the learning experience into a harmonious and enriching journey.

Concept of the Jigsaw Technique

The Jigsaw technique stands as a transformative cooperative learning strategy, revolutionizing the educational landscape by fostering deep understanding and collaboration. In this dynamic approach, students engage in two-tiered group interactions: "expert" groups, where they delve into and master specific subtopics, and "home" (jigsaw) groups, where each expert imparts their knowledge, completing the intricate "puzzle" of the topic. Variants such as Jigsaw I–IV, reverse Jigsaw, and subject Jigsaw, while differing in sequencing, expert assessment, and feedback mechanisms, universally embody the core principles of shared responsibility, structured interdependence, and individual accountability. In the realm of health-profession education, the Jigsaw technique has proven its unparalleled adaptability and effectiveness, successfully applied in diverse areas such as microbiology, maternity nursing, basic nursing procedures, and CPR. This versatility underscores its capacity to seamlessly integrate both theoretical and skills-oriented content, making it an indispensable tool for educators seeking to enhance learning outcomes and foster a collaborative learning environment.

Evidence of Cognitive Benefits

Jigsaw consistently raises knowledge scores, absolute success levels, and retention compared to regular lectures or tutorials. In a quasi-experimental study conducted in India involving 50 MBBS and 50 B.Sc. nursing students, Jigsaw groups in microbiology demonstrated significantly higher post-test and retention scores, exhibiting large effect sizes and superior absolute achievement levels compared to tutorial groups, a trend that persisted even in crossover designs. In a study involving maternity nursing students in Egypt (n=310), Jigsaw groups demonstrated significantly greater immediate and four-week follow-up achievement in normal and high-risk pregnancy content compared to lecture groups, suggesting benefits for both initial learning and long-term retention.

Self-Regulated Learning and Engagement

Incorporating Jigsaw into a systematic self-regulated learning (SRL) cycle is especially pertinent for Generation Z, who must operate as lifelong learners in the context of swiftly changing therapeutic practices. A Chinese quasi-experimental study in a Basic Nursing course (n=84) integrated the Jigsaw method into Zimmerman's three-phase Self-Regulated Learning

(SRL) model (forethought, performance, self-reflection), incorporating cycles of self-study, expert group discussions, Jigsaw group instruction, and structured reflection. In comparison to a lecture-based control, the intervention group exhibited significantly elevated total self-regulated learning (SRL) scores, particularly in learning motivation, cooperative ability, and information literacy, as well as enhanced learning engagement (vigour and devotion), with effect sizes in the moderate range. Repeated measures studies indicated that self-assessment and peer-assessment scores (motivation, task completion, cooperation) improved across cycles, implying a gradual enhancement of metacognitive and collaborative skills.

Perception of Educational Environment

The Jigsaw method significantly enhances students' perception of the educational environment, which is essential for the satisfaction, well-being, and persistence of Generation Z learners. An interventional study conducted in Iran involving 100 nursing and emergency medicine students during a CPR course revealed that the Jigsaw group's total DREEM score increased from a weak environment (~47/200) to a strong, highly positive environment (~158/200), demonstrating significant improvements across all subscales (learning, teachers, academic self-perception, atmosphere, social support). In contrast, the traditional group exhibited no meaningful change. The observed changes demonstrate that Jigsaw can swiftly convert a didactic, low-involvement context into a collaborative, supportive, and learner-centred environment, even in a brief, skills-focused workshop.

Attitudes, Motivation and Affective Outcomes

Jigsaw improves students' attitudes towards learning, confidence, and contentment, according to studies conducted in maternity and other nursing environments. Students in the Jigsaw group in the Egyptian maternity nursing study not only performed better than those in the lecture group, but they also expressed more positive opinions about the teaching approach and strongly agreed with claims of enhanced communication, teamwork, critical thinking, and decision-making skills, as well as a wish to see Jigsaw used in more theory and practice classes. Similar to this, even though some students complained that preparation took a lot of time, more than 80–90% of students in the microbiology study stated that Jigsaw enhanced comprehension, made subjects simpler, encouraged responsibility for learning, and offered a fun peer learning experience.

Alignment with Gen Z Characteristics

Gen Z students prioritise autonomy, technological integration, collaboration, and regular feedback; they also tend to multitask and may possess shortened attention spans in passive settings. Jigsaw aligns with these preferences by:

Active preparation before and during class is required, allowing learners greater control over their pacing and resources.

Implementing peer teaching and heterogeneous grouping facilitates social learning, networking, and exposure to diverse perspectives.

Incorporating immediate feedback from peers and faculty through expert group clarification, home group instruction, and post-session debriefs addresses the need for prompt responses and acknowledgement among Generation Z.

The integration of digital resources (videos, PowerPoint presentations, online material platforms) inherently facilitates blended and technology-enhanced environments anticipated by Generation Z

Table – I: Comparative View: Jigsaw vs Traditional Teaching

Dimension	Jigsaw technique (from attached studies)	Traditional lecture/tutorial
Knowledge achievement	Higher post-test and follow-up scores in microbiology, maternity, CPR and basic nursing.	Modest gains; often no significant change in delayed or environment-perception measures.
Retention of knowledge	Significantly better 3–4-week retention in microbiology and maternity courses.	Greater forgetting; lower absolute achievement and retention scores.
Self-regulated learning (SRL)	Improves motivation, cooperation, information literacy within an SRL framework.	Little structured support for SRL; reliance on teacher direction.
Learning	Higher vigor, dedication and	Minimal change in engagement

engagement	overall engagement after intervention.	indices.
Perception of learning climate	DREEM scores shift from weak to very positive across all domains in CPR training.	No significant improvement in DREEM subscores.
Attitude toward learning method	More positive attitudes, preference for wider adoption, perceived gains in critical thinking and teamwork.	Mixed; some students comfortable, but many view lectures as passive and less effective.
Teamwork and communication	Stronger perceived cooperation, peer support and communication skills.	Limited opportunities for structured peer collaboration.
Faculty role	Facilitator, designer of tasks, monitor of group dynamics and assessor.	Primary knowledge transmitter with limited small-group oversight.

Design Considerations for Gen Z Nursing Curricula

To "transform" nursing education for Gen Z instead of just using Jigsaw once, the method needs to be built into the curriculum and courses in a systematic way. Some important design features that come from the research attached are:

- **Careful topic selection and chunking:** Choose content that can be logically subdivided into complementary "puzzle pieces" (e.g., sub-topics within pregnancy complications, CPR components, nursing procedures).
- **Heterogeneous grouping:** Form home groups mixing academic ability, gender and background to maximise peer scaffolding and balanced participation, as in the SRL–Jigsaw study.
- **Assessment alignment:** Use pre-tests, post-tests, retention tests and validated scales (e.g., SRL, engagement, DREEM, attitude scales) to capture cognitive and affective outcomes and provide data for iterative improvement.
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- **Structured reflection and feedback:** Build in self-assessment, peer assessment and experience-sharing phases after each cycle to reinforce metacognitive growth and professional behaviours.
- **Faculty development:** Train nurse educators in planning Jigsaw sessions, managing group dynamics, using evaluation frameworks (e.g., Kirkpatrick levels I–II) and integrating digital tools that support Gen Z learners.

Challenges and Limitations

The attached articles emphasise time constraints, the risk of unequal participation, and the necessity for faculty competence as significant practical challenges. Certain students view preparation for Jigsaw as time-intensive, and those with lower performance may experience pressure or hinder group progress in the absence of sufficient support and oversight. Brief interventions, such as 2-day CPR or 12-hour SRL–Jigsaw sequences, may not adequately cultivate the self-management aspects of self-regulated learning, indicating that a sustained, longitudinal approach is more effective. Further research is necessary to evaluate clinical performance outcomes and to identify barriers to large-scale adoption in crowded curricula and resource-limited settings.

Implications and Future Directions

Medical, maternity, basic nursing, and emergency education research supports the Jigsaw technique as an effective pedagogical lever to match nursing education with Gen Z learners' needs and develop fundamental professional competencies. Curriculum-wide planning, institutional support for active learning spaces, and assessment systems that promote collaboration, reflection, and ongoing learning above test achievement are needed to scale this transition. Future research might integrate Jigsaw-based learning in theory courses with objective measures of clinical reasoning, teamwork, and patient safety in practice to close the loop between classroom innovation and Gen Z nursing performance.

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