**Research Article**

**Effective Pedagogies for the Generation Z Learner: A Systematic Literature Review**

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**Abstract**

**Aim:** To identify effective pedagogies for the Generation Z learner and outcomes.

**Background:** Nursing faculty are challenged to implement effective pedagogies for the new Generation Z learner that are entering the classroom.

**Design:** Systematic review.

**Method:** MEDLINE, EBSCO Discovery Service and CINAHL Plus with Full-Text databases were searched using the following subject headings and keywords: Generation Z, learning style, Generation Z in the classroom, Learning style and generational differences, Teaching strategies, Teaching method, and college teaching for Generation Z. The search was limited to scholarly or peer-reviewed articles published within the past five years.

**Results:** Systematic review yielded several studies that are a Level 5 or higher which does not give a strong evidence base on how to teach this generation or how they learn.

**Conclusion:** More empirical studies are needed on the Generation Z learner in the nursing education classroom. Specifically, studies investigating the learner outcomes after implementing different pedagogies.

**Keywords:** Learning outcomes; Generation Z; Learning styles; Nursing classrooms; Nursing education; Nursing faculty; Teaching strategies; Teaching styles

**Introduction**

The university setting is being challenged with a new incoming student generation. Generation Z’s chronology has been defined by many authors. However, for the purpose of this article [1] definition will be utilized. [1] defined generation Z as individuals who were born between the years of 1995-2010, labeled as the digital generation, and characterized as the most diverse generation to date. In addition, they are often described as being more individualistic self-directed, and distinct from previous generations [2]. Since technology is not the only differentiating characteristic of this generation, their unique characteristics must be considered when developing new and innovative pedagogies for aspiring nurses [3,4]. Therefore, as this generation is entering the university setting, how can nursing faculty align their pedagogies to meet their needs? First, this article will review and assess current research on effective pedagogies for the Generation Z learner and current outcomes for this generation entering the university setting. Secondly, this article will explore pedagogical shifts needed inside and outside the classroom. Lastly, the existing gaps in the current research will be identified along with the need for further research.

**Background**

Generation Z is demographically distinguishable from every previous generation as they are the most formally educated generation in history and predicted to stay in education longer [2]. Throughout the literature labeled as the “digital natives” Generation Z are more virtually present, tolerant of diversity, and driven by greater exposure to digital media [1,2]. It is important to note that the average age range for nursing faculty is 50.9 to 62.2 years depending on faculty rank [5]. Therefore, faculty will be challenged to design their instruction to meet the needs of this generation. Furthermore, faculty comfort zone with technology will be tested [6].

**The Systematic Review**

The purpose of this systematic review was to identify effective pedagogies for the Generation Z learner and review current outcomes for this emerging learner entering the university classrooms. Systematic reviews are valuable to many disciplines as a way to aggregate evidence on a specific topic. In addition, systematic reviews are structured to make clear what is not known on a topic, which can facilitate new primary research on areas where there is a gap in the body of knowledge.

**Methods**

Ten strategies were used to search CINHAL Plus with Full-Text and EBSCO Discovery Service for relevant articles published within the past 5 years on Generation Z. The following keywords and subject headings were used: Generation Z, learning style, Generation Z in the Classroom, Learning style and generational differences, Teaching strategies, Teaching method, and College teaching for Generation Z. A variety of filters and limiters were also used to expand and restrict search results (Table 1).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Search Strategy #1: | Search Strategy #2: | Search Strategy #3: | Search Strategy #4: | Search Strategy #5: | Search Strategy #6: | Search Strategy #7: | Search Strategy #8: | Search Strategy #9: | Search Strategy #10: |
| Databases | EBSCO Discovery Service & CINAHL Plus with Full Text | EBSCO Discovery Service & CINAHL Plus with Full Text | CINAHL Plus with Full Text | CINAHL Plus with Full Text | EBSCO Discovery Service | EBSCO Discovery Service | EBSCO Discovery Service | EBSCO Discovery Service | EBSCO Discovery Service | EBSCO Discovery Service |
| Keywords (kw)/Subject (SU)/Subject (DE) Headings | (kw) Generation Z AND (kw) “learning style” | (kw)Generation Z AND (kw) learning style | (kw) Generation Z in the Classroom | (kw) Learning style AND generational differences | (kw) “Learning styles” | (kw) Teaching strategies for “generation\* differ\*” | (SU) Teaching strategy\* AND (SU) generat\* differ\* | (SU) Teaching method\* AND (SU) generat\* differ\* | (SU) Teaching method\* | (DE) “College teaching– Methods” |
| Filters/ Limiters | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years Limited to SU – Higher Education | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years | Scholarly/Peer-Review Last Five Years Source Types– Academic Journals Subject – Higher Education | Scholarly/Peer-Review Last Five Years Source Types – Academic Journals |
| Special Instructions | Place quotation marks(“”) around words to create a search phrase Use Boolean Searching (AND, OR, NOT) to combine search terms | Place quotation marks (“”) around words to create a search phrase Use Boolean Searching (AND, OR, NOT) to combine search terms | Use natural language searching to find different type results | Use Boolean Searching (AND, OR, NOT) to combine search terms | Place quotation marks (“”) around words to create a search phrase | Place quotation marks (“”) around words to create a search phrase  Truncate search terms by placing an asterisk (\*) at the end of a root word | Truncate search terms by placing an asterisk (\*) at the end of a root word Use database provided subjects/ subject headings to match existing articles | Truncate search terms by placing an asterisk (\*) at the end of a root word | Truncate search terms by placing an asterisk (\*) at the end of a root word | Use database provided subjects/ subject headings to match existing articles |

**Table 1:** Search Strategies.

**Data Extraction**

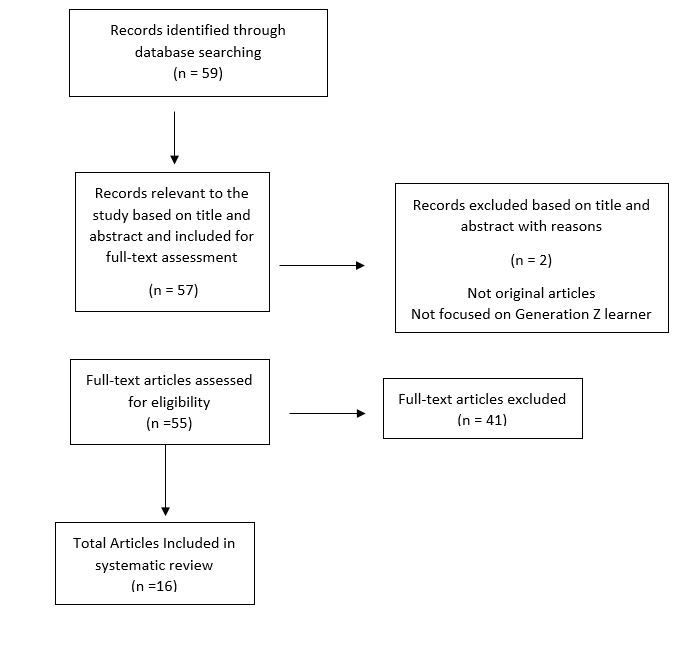
Three authors reviewed the title and abstract from the search data (n=59) and selected articles for full-text review of articles. The studies extracted (n=57) was based on being written in English language, publication year, research design and focus on the Generation Z learner (Figure 1).

**Inclusion**

The final studies selected (n =16) were based on being written in English language, publication year, research design, and focus on the Generation Z learner (Figure 1).

**Exclusion**

The studies excluded (n=41) were based on not being written in English language, publication year, research design, and not being focused on the Generation Z learner (Figure 1).



**Figure 1:** Flow chart of review for selection of studies.

**Review of Selected Articles**

The next session will illustrate and describe studies that have been done on the Generation Z learner. Additionally, the studies focus and discipline area will be highlighted. This review of articles will facilitate identification of gaps in the literature that warrants further investigation by future studies.

**Careers and Workplace Environments**

Perceptions of future careers and workplace environment has been studied throughout the literature with Generation Z. In a group of Generation Z learners enrolled in undergraduate and postgraduate studies (n=141), Desai and Lele [2] investigated the perceptions of Generation Z toward the workplace of their future. Some of the variables that were assessed included internet usage, life on social networks, relations to work with respect to self-confidence, ideal work and teamwork, relation to workplace with respect to ideal workplace, and work from home versus changing/switching workplace. Results indicated that birth year did not predict the perception of respondents toward their workplace, career or behavior on social networking sites and internet usage. Although the study showed a different set of results for Generation Z’s career aspirations, it could not be generalized because other generations were not considered (Table 2).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Author (s)/Year | Research Design | Level of Evidence | Study Aims | Data collection/sample size | Key findings |
| [2] | Survey questionnaire | III | Investigate the perceptions of generation Z workforce towards their future workplace | Structured questionnaire administered (n=141) containing questions related to internet usage, life on social networks, relations to work with respect to self-confidence, ideal work & teamwork, relation to workplace with respect to ideal workplace, work from home and changing/switching workplace | Birth year did not predict the perception of respondents toward their workplace or career Negligible relationship between birth year and Internet usage of the sample Birth year failed t predict behavior on social networking sites as well as Internet usage Generational Z participants overall perception toward work and workplace cannot be generalized |
| [17] | Repeated measures design was used to study | III | Monitor the acquisition of critical thinking skills in an entry level Doctor of Physical Therapy Program of students as they progress through the curriculum and to examine the relationship between learning styles and the acquisition of critical thinking skills. | The study sample consisted of 61 students student outcomes on critical thinking across the curriculum over a 2-1/2-year period. Students completed an online version of the Health Science Rea soning Test (HSRT) and the Kolb Learning Style Inventory, version 4 (KLSI) at the beginning of their program. The students completed the HSRT 3 additional times: at the endagain at the time of graduation at the completion of the student portion of their program.   of their first academic year, at the end of their second summer semester & after their first full-time clinical experience, and | Increase in composite scores from time 1 to time 4 Learning modes had a significant but weak relationship to critical thinking skills. Various components of the curriculum may be related to these gains. The students in the cohort exhibited a variety of learning styles and had no one predominant style |
| [4] | Exploratory | V | Efforts to improve engineering education Explore the concept of a generation and describe some of the specific attributes of Generation z Review the development of engineering education in the U.S. in the past 100 years Discuss potential changes in the classroom to address some of the Generation Z characteristics | Review of engineering curriculum | Recommended Pedagogies for working with the Generation Z in the classroom Integrate active and problem based learning to facilitate student creativity and engagement Help students learn how to take a problem or question and find and critically evaluate sources of information Student Feedback should be ongoing with peer assessment included Helping students make connections with information (use of concept maps) |
| [7] | Survey questionnaire | VI | To understand the main aspects of work-life balance of the Generation z | A 36 item questionnaire administered to first year Generation Z University students who (N=180) | Most respondents value their relationship with their superiors. Trust and respect from leading superiors is one of the most important issues (83.3%) High sense of self-worthiness (56%) and imply that a good employer value flexibility at work and invest in the education of his employees (71.1%), a good paycheck, and flexible working hours Value diversity at the workplace, diversity of opinions and gender and cultures (52%) |
| [10] | Survey | VI | Explore differences in personality for students entering a speech-language pathology program at the same University at different points in time. | Administered the Big Five Personality inventory to speech-language students enrolled in the same regional University in Australia admitted in 2005 (N=98) or 2016 (N= 89) | Differences in demographics- 2016 (N= 89) participants older and did not enter University straight out of high school. In addition, large number not born in Australia. The 2016 students were also identified as having higher levels of extroversion and lower levels of agreeableness. No Generation Z students were in the 2005 cohort but made up over half of the 2016 cohort. Not a statistical difference with regards to openness, conscientiousness, or neuroticism of students entering the speech-language program. |
| [11] | Survey | VI | Explored technology preferences of the Generation Z student in a 3rd year Urban Planning program compare the findings over different time periods to draw conclusions with regard to the change in need and expectations when considering technology usages as part of formal education structures. | Surveys conducted in 2011,2013, 2015, & 2016 (on typical Generation Z students) | Social Media use increased (contacted instructors through social media) 75% of the 2016 survey identified “WhatsApp” as preferred method; 57% indicated the app improved their learning environment 100% in both 2015 and 2016 agreed they used the app to receive academic information from classmates Students preferred written examinations and not electronic exams |
| [13] | Survey | VI | Explored Generation Z technology background, skills, perceived computing self-efficacy, and the role they predict technology will play in their future | Online student perception survey administered using Survey Monkey to students following completion of core computer concepts courses (N=160) | Enjoy computer classes Perceive themselves as experts in use of social media, mobile operating systems, using a smart phone, search the Web & email Want to be more technologically literate, skilled in computer software applications, and cyber security Most stated information security will be important to their future View analyzing information to inform decision-making as a needed skill in their future careers |
| [14] | Survey | VI | Explored Generaztion Z preferences in regards to the method of course delivery and teaching methods | Survey administered to undergraduate and graduate students in the Fall 2018 and Spring 2019 semesters to explore their preferences with regards to lecture, hands-on-learning, problem-solving, group-work, informal learning, use of multimedia in the classroom, and diversity of teaching methods in the classroom(N=133) | Majority of participants (>96%) learned more by “doing”. Preferred learning experiences over lecture Videos and case-studies help bring in real-world situations |
| [8] | Review Article | V | Examine the characteristics of Generation Z, their personal expectations, expectations of their future employers and what Universities can do to equip this population for future challenges | Examined current research on the characteristics of Generation Z | Values employers that provide equal opportunity for pay and promotion, opportunity for career advancement, and open-transparent communication Desired more personalized micro-experiences and felt anything is possible. More prone to make online purchases Self education/Self sufficient; prefer to research products and rely on self-service tools Prefer immersive entertainment experience (i.e. storytelling) Skill focused-part of free time activities were devoted to productive and creative activities versus hanging out Value online connections more highly than real activities Online learning preferred; prefer to go straight to the workforce versus traditional path Learn best by creating and hands-on experiences Prefer to learn things on their own using web-based research resources Place a priority on how fast they can find the right information versus actually knowing the right information Strategies for attracting students- early program interactions, minors, concentrations or certificate programs, employer involvement in Curriculum development, career development strategies, experiential Learning Opportunities, online or blended courses, competitive events, boot camps, certificate and Badges, and professional certification programs |
| [15] | Descriptive Case Study | III | Utilization of community-based learning strategies to facilitate Generation Z learner’s interests in public health and health promotion | Constructed a transformational model of learning, where students complete tangible, timely projects with community partner organizations; Revisions made to a Public Health Capstone Course | Transformational model provides opportunities for significant engagement from all parties (i.e. students, community partner organizations, and faculty) Students able to apply their academic learning to real-world projects. Students comment that they feel as if they have made a difference through their efforts. Community partners praise the innovation of the students and the quality of the projects Community partners rates the project teams as excellent in the areas of professionalism, communication, and quality of work. |
| [1] | Literature Review Discussion | lV | Discuss ways instructors can improve course assignments and effectiveness for the Generation Z learner | Examined the latest research on the Generation Z learner and posed questions and recommendations for future pedagogies | Adjust assignments and communication techniques to include: Revise Course Assignments to give choices and a sense of freedom. Provide guidance and examples. Give rationale for assignments relating them to the students personally and why this will matter for their futures. Guide students in selecting and critically analyzing through online resources |
| [19] | Quasi-experimental | ll | Examine the benefits of a gamified learning environment for undergraduate psychology statistics students | Gamification intervention administered in two of four laboratory classes during the first 6 weeks of the 15-week semester. (N=99) | Positive association between week 6 perceived competence and posttest scores in the gamified group |
| [6] | Exploratory Research | V | Exploratory research in a graduate-level English for Academic and Professional Purposes Considers technological applications through the lens of three potential tools that may facilitate the teaching and learning of writing | Students (N=6) filled out a survey at the beginning and at the end of the course regarding the use of three technologies (writing blog, word-of-the day forum, story telling grammar style iMovie) Empirical Observations | More is less when it comes to Technology Salient for teachers to focus on content expectations, not the technology itself (because of students familiarity with web tools) The “new learning environment” requires teachers to check in more often (i.e. iterative form of communication and feedback) |
| [9] | Quasi-experimental | ll | Evaluate the impact of the pair discussion component of interteaching on student quiz performance for two sections of a introductory undergraduate course in behavior analysis | Pair discussion was alternated with whole-class discussion across the two sections (N=49) of the course in a quasi-random fashion throughout the semester Social Validity questionnaire administered | Students performed slightly better throughout the semester on quizzes preceded by pair discussion compared to quizzes preceded by whole-class discussion; However quiz scores was not statistically significant Preference for whole class discussion Students in both class sections reported preference for working as a whole class and perceived better learning outcomes following this condition when compared to the pair discussion |
| [18] | Convergent Parallel mixed design | lll | Determine the effectiveness of blended learning environments enriched with the use of gamification elements | Quantitative (community of inquiry data collection tool, academic achievement test, instructional materials motivation survey) and Qualitative(experience activity, semi-structured interviews, focus group interview) data (N=63) collected simultaneously within a 13-week Information Technologies course for incoming freshman and related with each other for analysis | No significant difference was found between the experiment and control groups’ teaching presence, social presence, cognitive presence, academic achievement and motivation scores Gamification elements in blended learning environments have positive effect on these variables. |
| [16] | Review Article | lV | Discuss the challenges facing new faculty members and present strategies for addressing them. | Describe challenges facing junior faculty members in athletic training programs. Discussion of the Adult learning Model and Constructivism | Educators must incorporate active learning and allow students to be self-directed. Programs must consider holistic integration and application of adult learning principles across their full curriculum, faculty development, preceptor training, and student outcomes. |

Table 2: Article Analysis.

A similar study conducted by Lidija, et al. [7] investigated the main aspects of work-life balance of the Generation Z learner in a group of first year Generation Z university students (n=180). The majority of the respondents (83.3%) valued their relationship with their superiors. Additionally, a high percentage (71.1%) viewed a good employer as someone who invested in the education of their employees and valued flexibility at work.

Another study by Schwieger and Ladwig [8] examined the characteristics of Generation Z with regard to personal expectations, expectations of their future employers and what universities can do to equip this population for future challenges. Generation Z value employers that provide equal opportunity for career development and open-transparent communication. Generation Z are also self-sufficient, prefer online learning, and an immersive entertainment experience, such as, storytelling.

**Teaching and Learning**

In an effort to improve engineering education, Moore, et al. [4] reviewed the development of engineering education in the United States and explored the need for potential changes in the classroom to address the needs of the Generation Z learner. Recommended pedagogies for the Generation Z learner need to include integrating active and problem-based learning to facilitate student creativity and engagement, facilitating problem solving and making connections with a large amount of information. Rosales, et al. [9] evaluated the impact of student pair discussions on student quiz performance for an introductory undergraduate course in behavior analysis. Although, student quiz scores were not statistically significant, students performed slightly better throughout the semester on quizzes preceded by student pair discussions.

Byrne [10] investigated the differences in personality for students entering a speech- language pathology program at the same university between the years of 2005 and 2016. The 2016 cohorts were identified as having higher levels of extroversion and lower levels of agreeableness. There were no Generation Z students in the 2005 cohort, however, they made up over half of the 2016 cohort. Additionally, there was not a statistical difference with regards to openness, conscientiousness, or neuroticism between Generation Z versus non-Generation Z of students entering the speech-language pathology program.

Cilliers [11] explored technology preferences of the Generation Z learner in a third year Urban planning program. Results indicated that social media use increased and respondents (75%) indicated that WhatsApp [12] improved their learning environment and utilized it to receive academic information from classmates. Furthermore, respondents (100%) were confident they knew more about technology than lecturers. However, students indicated they preferred written examinations and not electronic exams. A similar study exploring Generation Z technology background skills, perceived computing self-efficacy, and the role they predict technology will play in their future [13], indicated participants viewed themselves as experts in the use of social media, mobile operating systems, using a smart phone, and searching the web. Participants also reported wanting to be more technologically literate, wanting more skilled in computer software applications. Furthermore, they are interested in learning about cyber security as they see future careers that will require them to analyze information to inform decision-making.

Mosca, et al. [14] explored Generation Z preferences in regards to the method of course delivery and teaching methods. Participants (>96%) learned more by doing and preferred learning experiences over lecture. Moreover participants viewed videos and case-studies as helpful when discussing real-world situations. Another study by Gardner, et al. [15] described revisions made to a public health capstone course utilizing a Transformational Model of learning. This model provided opportunities for significant engagement from students, faculty, and community partners. For example, collaborating with faculty and community partners, students completed various projects, such as, community awareness campaigns, brochures, and legislative briefs. Students felt they were able to apply their academic learning to real-world projects. Additionally, they felt as if they made a difference through their efforts with these real-world projects. Furthermore, the community partners rated the project teams excellent in the area of professionalism, communication, and quality of work. In a similar review discussing how instructors can improve course assignments and effectiveness for the Generation Z learner, recommendations for future pedagogies were to revise course assignments to give the student choices and a sense of freedom. However, guidance and examples should be provided. For example, giving rationale for assignments relating them to the students personally and why this will matter for their future [1].

Barrett, et al. [16] discusses challenges facing junior faculty members in an athletic training program and present strategies for addressing them. Recommendations for future pedagogies were to incorporate active learning and allow students to be self-directed. Additionally, programs must consider holistic integration and application of adult learning principles across their full curriculum, faculty development, preceptor training and student outcomes.

**Discussion**

Learning styles, pedagogies, and learner outcomes for the Generation Z are identified in the literature in various disciplines. However, from this systematic review, empirical studies were not identified in the United States that were specific to nursing education. What was identified along with the results will facilitate a discussion on areas where there is a gap in the body of knowledge.

**Learning Styles**

Although the literature has discussed Generation Z’s perceptions on future careers and work environments, these studies were not specific to the nursing profession. In addition, literature on Generation Z learning styles and effective teaching strategies for this generation within the nursing classroom is scant [3]. The relationship of learning styles and the acquisition of critical thinking skills has been studied in entry-level doctor of physical therapy students [17]. Initially, students (n=61) completed a learning style inventory and critical thinking test, then completed the critical thinking test three additional times over a 2 ½-year period. Results indicated that critical thinking scores increased from time 1 to time 4. Although the cohort exhibited a variety of learning styles, they had a significant relationship to critical thinking skills. How can nursing faculty meet the unique needs of Generation Z? An initial start can be to assess the learning styles of these students upon entering the nursing curriculum. Additionally, learning about their values as college level learners will give faculty a needed insight [1].

**Pedagogies**

Generation Z prefer flipped courses and rely on YouTube as a primary source of self-instruction and they see themselves as problem-solvers and may appreciate jigsaw formats [1]. For example, Faculty can utilize this format when assigning a team project in which individual students can seek information online to contribute to specific elements of the project. Another example would be to utilized web-based games to facilitate critical thinking [3,11]. Additionally, narratives and storytelling can be utilized to examine the various viewpoints of this generation and to facilitate their visualization of real-world situations [3,8,14]

[18] investigated the effectiveness of blended learning environments enriched with the use of gamification elements in a freshman technology course (n=63). Blended learning environments utilize a blended structure with face-to-face and web-based learning activities. Results indicated that gamification elements in blended learning environments have positive effects on social presence, cognitive presence, academic achievement, and motivation scores. Additionally, the effectiveness of gamification in blended learning in terms of academic achievement was measured. The pretest scores of the participants in both the experimental group (x̅ =46,55; SD= 1,97) and control group (x̅ =46,67; SD = 2,30) increased in the posttest for both the experimental group (x̅ =58,55; SD= 2,37) and the control group (x̅ =61,87; SD = 2,20), F(1,61) = 66,473, p<.001. A similar study by [19] examined the benefits of a gamified learning environment for undergraduate psychology statistics students (n=99). A gamification intervention administered in two of four laboratory classes during the first 6 weeks of the 15-week semester found a positive association between the gamified and traditional group for pretest and week 1 Perceived Competence (z= 2.83, p = 0.005) and posttest and week 1 Perceived Competence ( z= 2.98, p = 0.003). However, there were no significant difference between groups for pretest and week 6 Perceived Competence (z= 1.88, p = 0.06) and posttest and Week 6 Perceived Competence (z= -0.10, p = 0.920).

**Learner Outcomes**

Implementing these pedagogies warrants evaluation. What is effective in enhancing Generation Z’s critical thinking and clinical reasoning skills? For example, a pre/posttest study assessing critical thinking after implementing different pedagogies. The notion to “teach how you were taught” in the form of lecturing and talking at students [3] is outdated. There is a need for faculty to shift and create dynamic learning environments of more interactions which will facilitate Generation Z becoming more effective learners [1].

**Limitations**

It is important to recognize possible limitations with conducting this systematic review. Although databases were systematically searched utilizing relevant terms, some studies could have been omitted based on limited information provided in titles or abstracts. Also, only studies published in English were included. In order to limit the risk of excluding relevant studies, the screening process was conducted by three reviewers.

**Implications for Nursing Education and Research**

More empirical studies are needed on the Generation Z learner in the nursing education classroom. Specifically studies investigating the learner outcomes after implementing pedagogies that are aligned with these learner styles. Additionally, this systematic review yielded several studies that are a Level 5 [20] or higher which does not give a strong evidence base on how to teach this generation or how they learn. There is a need for a shift in the discourse on teaching and learning. Some questions to guide future nursing research include:

What are the learning styles of incoming Generation Z in the nursing classrooms?

Which pedagogies are effective?

Which pedagogies prepare them to care for complex patients in the healthcare environments? What are student outcomes in regards to critical thinking, clinical reasoning, self-efficacy, and standardized exams?

What are students intrinsic motivation for continuous, lifelong learning?

**Author Note**

We have no conflicts of interest to disclose.

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