Relationship between Innovative Pedagogies Used by Nursing Educators and Development of Lifelong Learning Competencies among Nursing Students

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Abstract

Background: Incorporating innovative pedagogy in nursing education does not necessarily create novel teaching strategies, but it encourages educators to be communicative, supportive, and reflective, benefit from technology development, and focus on a student-centered approach in their teaching practices. These practices help produce lifelong learning competent nurses who can be creative, select evidence-based sources to meet their learning needs by using advanced technology, and have the decision-making abilities to provide high-quality patient care based on evidence. **Objective:** This study aimed to assess the relationship between innovative pedagogies used by nursing educators and the development of lifelong learning competencies perceived by master's degree nursing students. **Settings:** The study was conducted at the Faculty of Nursing, Damanhour University, during the second semester of the academic year 2022-2023. **Subjects:** (51) nurse educators teach master courses, and (133) nursing students received the preliminary courses of the master program during the autumn 2021-2022 and 2022-2023. **Tools:** two tools were used. "Competencies and characteristics for innovative teaching questionnaire" and "Lifelong learning competence scale". **Results:** This study showed a statistically significant correlation between the nursing educators' characteristics of innovative teaching and the development of students' lifelong learning competencies. **Conclusion:** Applying innovative pedagogy characteristics with different teaching strategies helps develop lifelong learners to meet the needs of a rapidly changing world. **Recommendations:** Higher educational institutions plan a professional development program that can be used to train, orient, stimulate, and evaluate educators about pedagogical practices that promote innovation and help students gain lifelong learning competencies.

Keywords: Competency, Lifelong Learning, Innovative Pedagogy.

Introduction

Nursing education is influenced by many factors, including social, health, technological, economic, and political aspects, which all have an impact on how well nurse education can achieve its aim of training a qualified workforce that can adapt to fast-changing healthcare situations.(Dyson, 2017) Therefore, nursing educators and practice leaders have collaborated to use a competency-based approach in their education. This will change how nursing education is defined and delivered at both entry and advanced levels by using new ways of providing and evaluating clinical experiences and competencies. This significant change will make clear what new nurses can do and improve their readiness for practice.(Giddens & Mansfield, 2023)

The fourth goal of sustainable development goals focuses on "quality education, by ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all." This emphasizes the importance of developing holistic and transformational education that addresses learning content and outcomes, pedagogy, and learning environments.(Rieckmann, 2017)

Pedagogical innovation was described by (Walder, 2017) as "any new teaching practice that differs from the traditional lecture

with the purpose of improving learning." It is grounded in several theoretical foundations, including constructivism, social constructivism, connectivism, and transformative learning theory. These theories promote active and engaged learning, with educators serving as facilitators rather than simply transmitters of information, and students encouraged to collaborate, integrate new knowledge into existing knowledge, and make connections across different contexts. (Mynbayeva et al., 2018) Additionally, (Olimov, 2021) was mentioned that "the innovative process in education is the process of managing change in education."

Innovative pedagogy is based on the idea that traditional teaching methods may not be effective for all students. So, educators innovated in their teaching at the university for student learning improvement and made changes in their students.(Walder, 2017) To become a source of innovation, educators should apply different pedagogical approaches, such as the learner-centered approach, the action-oriented learning approach, and the transformative learning approach, in their teaching practice. (Rieckmann, 2017)

Using innovative pedagogy in nursing teaching and learning methods helps to prepare nurses for the challenges and opportunities of the twenty-first-century healthcare system as it enhances student engagement, motivation, critical thinking, problem-solving, and collaboration skills and provides authentic and realistic learning experiences that simulate the complexities and diversities of practice.(Brown & Cunningham, 2020; Seray-Wurie et al., 2020) Additionally, it facilitates the transition from student to professional nurse, by developing leadership, decision-making, and lifelong learning competencies.(Brown & Cunningham, 2020)

Lifelong learning competencies are the knowledge, skills, and competencies that people need to adapt to changing situations and environments and to participate in learning throughout their lives. They are essential for enabling people to cope with complexity, diversity, and uncertainty and to pursue their personal, professional, and civic goals throughout their lives.(UNESCO Institute for Lifelong Learning, 2022)

The European Commission defined lifelong learning as a strategic goal for enhancing employability, social inclusion, and active citizenship in the knowledge society.(Hozjan, 2009) Additionally, the essential elements for effective lifelong learning support include: (I) covering all age groups; (II) connecting all levels of education; (III) acknowledging all forms of learning; (IV) encompassing all learning domains and places; and (V) serving various purposes.(UNESCO Institute for Lifelong Learning, 2022)

The European Parliament and the Council (European Communities, 2007) recommended "Communication in the mother tongue; Communication in foreign languages; Mathematical competence and basic competencies in science and technology; Digital competence; Learning to learn competence; Social and civic competencies; Sense of initiative and entrepreneurship; and Cultural awareness and expression competence" as key competences for lifelong learning.

These competencies were showed by (Uzunboylu & Hürsen, 2011) equally important and interrelated, but there is no sufficiently qualified scale that can be used for determining to what extent individuals possess lifelong learning competencies, so developed a scale to measure these competencies, includes: (self-management competencies, learning how to learn competencies, initiative and entrepreneur competencies, competencies of acquiring information, digital competencies, and decision-taking competencies) as important competencies for social development.

As lifelong learners characterized by curious, motivated, reflective, analytical, persistent, flexible, and independent traits that are critical for success in today's globalized economy.(Stefanou et al., 2012) So, lifelong learning is demanded to develop more skills and

encounter challenges resulting from socio-economic factors like globalization, rapid technological growth, the nature of the workforce, the employment market, and the overall aging population.(Guven, 2016)

Also, lifelong learning is essential for nurses, not only in academic settings. It relies on motivation to participate in education in various forms, such as doing yearly training to keep their registered *nursing* license, reading updated research to stay informed on evidence-based practice and clinical guidelines, or enrolling in formal education for advanced practice.(Mikita, 2023)

In addition, students today are more self-directed in their learning; they are interested in learning strategies that involve doing something with the knowledge they acquire. This type of learning needs clear instructions on what the learning goals are and how to practice using the knowledge to attain competencies.(American Association of Colleges of Nursing, 2021)Therefore, educators need to know what makes students engaged in learning and apply innovative principles.(National League for Nursing, 2022) So, this study aims to identify innovative pedagogies used by nursing educators that help to develop lifelong learning competencies and assess the relation between them among master's degree nursing students at the faculty of nursing, Damanhour University

Aims of the Study

This study aimed to assess the relationship between innovative pedagogies used by nursing educators and the development of lifelong learning competencies as perceived by master's degree nursing students at the faculty of nursing, Damanhour University.

Research question:

What is the relationship between innovative pedagogies used by nursing educators and the development of lifelong learning competencies as perceived by master's degree nursing students at the faculty of nursing, Damanhour University?

Materials and Method

Materials

Design: A descriptive correlational research design was used to conduct this study.

Settings: This study was conducted at the faculty of nursing, Damanhour University, in Elbeheira Governorate.

Subjects:

The subject of this study was comprised of all nurse educators who provide courses in master's programs and accepted to participate in this study at the time of data collection (N= 51).**In addition**, all nursing students receiving the preliminary course of the master program (N=133) student during Autumn 2021-2022 & 2022-2023, enrolled in the following departments: Medical-Surgical Department, Critical & Emergency Nursing Department, Obstetrics & Gynecology Nursing Department, Pediatric Nursing Department, Psychology Nursing Department, Community Nursing Department, Gerontology Nursing Department, Nursing Administration Department, and Nursing Education Department, who accepted to participate in this study.

Tools: To collect the data for the study, two tools were used:

Tool(I): Competencies and Characteristics for Innovative Teaching (CCIT) Questionnaire

This tool was adopted by the researcher as it was developed by (Zhu & Wang, 2014) to investigate the teachers' core competencies and characteristics concerning their innovative pedagogical performance. It consists of 17 items grouped into four core competencies: learning competency, social competency, educational competency, and technological competency.

In addition, Personal and academic data: consisted of 6 items.

Scoring system:

The response to those items was scored on a five-point Likert scale ranging from (1)

Strongly disagree; to (5) Strongly agree. The overall score level of the questionnaire ranged from (17-85) and was converted into the following interpretation:

- 17-51 indicates a low level of innovation applied as perceived by educators.
- 52-68 indicates a moderate level of innovation applied as perceived by educators.
- 69-85 indicates a high level of innovation applied as perceived by educators.

Tool (II): Lifelong Learning Competence Scale (LLLCS)

This tool was adapted by the researcher as it was developed by (Uzunboylu & Hürsen, 2011) for the assessment of lifelong learning competencies. It consists of **51** items grouped following sub-dimensions; Self-management competencies: include 13 items, Competencies of learning how to learn: include 12 items, Competencies of initiative and entrepreneurship: include 10 items, Competencies on acquiring information: include 6 items, Digital competencies: include 6 items, Competencies of decision-taking: include 4 items. In addition, personal and academic data included 5 items.

Scoring system:

The response to those items was scored on a five-point Likert scale ranging from (1) No; (2) Less; (3) Medium; (4) very; to (5) Full competency.

The overall score of the scale ranged from (51-255) and was converted into the following interpretation:

- 51-102 indicates no competency as perceived by master's degree nursing students.
- 103-153 indicates less competency as perceived by master's degree nursing students.
- 154-205 indicates medium competency as perceived by master's degree nursing students.
- 206-266 indicates very competence as perceived by master's degree nursing students.

Methods

Official permission was obtained from the Dean of the Faculty of Nursing and Vice Dean for Graduate Studies Affairs, Faculty of Nursing Damanhour University after an explanation of the purpose of the study. Tool (II) was translated into Arabic to be easily understood by the students. Content validity of the tools was done by presenting the tools to be tested to five experts in nursing education for checking the following: **a)** clarity in wording, **b)** relevance of the items, **c)** used of biased words and phrases, **d)** formulating of items, **e)** clarity of instructions. The tools were modified accordingly.

The tool's reliability was measured using Cronbach's Alpha test. The tools were reliable, where r=0.900 for tool I (nursing educators' tool) and r=0.909 for tool II (nursing students' tool) at a statistical significance level of ≤ 0.05. Pilot study: Tools were tested for feasibility and applicability by exposing them to (10%) of the subjects, (10 nursing educators and 14 nursing students) and not excluded from the study due to the smallest number of the total subjects; the pilot study aimed to assess item clarity, feasibility, and applicability, and confirm the anticipated amount of time needed by respondents to complete the questionnaire. The necessary modifications were made accordingly.

Data collection: Tool I & Tool II were shifted from paper-based to electronic sheets by using Google Forms to collect data online. Links of the study questionnaires were disseminated among the study subjects through the Microsoft Team platform and Paper-and-pencil according to the availability of the subjects during a period of

three months from May to July 2023. All nursing educators and students were given the same instructions by the researcher on how to fill out the electronic questionnaire. They were told to read it carefully and answer it thoroughly. The researcher responded to any questions or queries raised by participants.

Ethical considerations

The research approval was obtained from the ethical committee at the Faculty of Nursing, Damanhour University, before the start of the study. The researcher explained to the participants the objectives of the study. Electronic or written informed consent was obtained from the participants of the study. Privacy and confidentiality were assured to all participants. Anonymity of the collected data was maintained during the implementation of the study.

Statistical Analysis

Data was fed to the computer and analyzed using IBM SPSS software package version 23.0. Qualitative data were described using numbers and percentages. The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. The Pearson coefficient test was used to correlate between two normally distributed quantitative variables. The significance of the obtained results was judged at the 5% level.

Results

Table (1) presents the distribution of nursing educators according to their academic and personal characteristics that revealed the majority (84.3%) were females, most of them (41.2%) were lecturers, with about (17.6%) of them working in the medical-surgical department, and (39.2%) had teaching experience more than 20 years. Also, the table showed, that the mostly used innovative teaching and evaluation strategies when teaching master courses are interactive lectures (92.2%), small group discussions (72.5%), writing assignments (68.6%), online exams and quizzes (62.7%), self-evaluation and peer evaluation (56.9% - 54.9%) respectively.

Table (2) shows the personal and academic characteristics of master's degree nursing students, that revealed more than three quarters (88%) were females, the majority (83.5%) of students ages were between 20-30years, about one-third (35.3%) affiliated to nursing administration department, and almost half (51.9%) working in hospitals with the rest (39.8%, 8.3%) working in university and school, respectively. Moreover, more than half (56.4%) have less than 5 years of experience in nursing.

Table (3) illustrates the distribution of nursing educators learning, social, educational, and technological competencies and characteristics of innovative teaching according to the mean and standard deviation. It showed that educational competency and characteristics are the most applied by educators when teaching their master's degree nursing students (mean= 87.7, SD= 11.6) followed by learning competency (mean= 86.3, SD= 15.1), social competency (mean= 86.3, SD= 15.6), and technological competency (mean= 85.8, SD= 17.7).

Table (4) Regarding the overall nursing educators' competencies and characteristics for innovative teaching, the result revealed more than three quarters (82.4%) having a high level of competencies and characteristics for innovation in their teaching. While about one-quarter (17.6%) of educators are moderately innovative in their teaching when instructing master's degree courses.

Table (5) Represents the development of master's degree nursing students' lifelong learning competencies as they perceived. It showed that digital competency has the greater development among students (mean= 73.3, SD= 17.6), followed by self-management (mean= 69.8, SD= 12.4), acquiring information

(mean= 69.3, SD= 16.2), initiative and entrepreneurship (mean= 69.2, SD= 14.2), learning how to learn (mean= 67.6, SD= 13.5), and decision-taking competency (mean= 65.6, SD= 16.4).

Table (6) shows the distribution of students' overall lifelong learning competencies, the results revealed that almost one-third (29.3%) of master's degree nursing students have a very competent level of lifelong learning competencies, while the majority (66.9%) have a medium competency level of all lifelong learning competencies.

Table (7) illustrates the correlation between nursing educators' competencies for innovative pedagogies and the development of lifelong learning competencies for master's nursing students. There was a statistically positive significant correlation that exists between the overall nursing educator's characteristic for innovative teaching applied and the development of overall students' lifelong learning competencies (r=0.498, P= <0.001).

Also, the table showed there is no significant correlation between the dimension of nursing educators' technological competency and students' competencies of learning how to learn (r=0.169, P=0.052), students' competencies of acquiring information (r=0.137, P=0.117), students' digital competencies (r=0.083, P=0.343), and students' competencies of decision-taking (r=0.140, P=0.108).

Discussion

Rather than merely imparting knowledge, educators must foster lifelong learners by using innovative teaching and learning methods and employing various creative approaches to enhance student comprehension and life skills. These demands use innovative pedagogies that go beyond traditional teaching methods with the shift from teacher-centric to student-centric approaches as it essential for preparing students to thrive in a rapidly changing world.(Vageriya, 2024)

The current study result revealed that the most used innovative teaching and evaluation strategies when teaching master courses are interactive lectures, small group discussions, writing assignments, online exams, quizzes, self-evaluation, and peer evaluation. This may be attributed to the educator's support of the competency-based learning strategy that focuses on students' needs; making the learning process more active, engaging, cooperative, and centered on students; to graduating nurses able to meet the needs of the rapidly changing world.

This finding was aligned with (Carvalho et al., 2021) who conducted a case study about pedagogical innovation in higher education in Portugal and found the most used active learning methodologies included blended learning, project work, cooperative work, incorporation of new technologies, and targeted research as perceived by students and educators. As, these active methodologies contribute to the development of creativity, critical analysis, and autonomy in the research for knowledge.

Also, the result showed that nursing educators have a higher level of overall learning, educational, social, and technological characteristics for innovative teaching, which means that nursing educators are highly innovative when teaching master's degree courses. This may be attributed to their openness to the latest updates in nursing education and using different teaching methods and materials to achieve effective teaching.

This finding was in line with (Rafsanjani et al., 2023) who examined the predictors of innovative teaching practices among Indonesian lecturers and found that pedagogical competency, learning competency, technological competency, and social competency significantly affect the innovative teaching of lecturers. As it enables them to deal with the challenges related to science and technology development.

The results showed that total score of students lifelong learning competencies were at ***medium level*** as students perceive

themselves not fully competent about the skills of lifelong learning. This may be attributed to lack of practice, working environment and workload, pressures of daily life, and lack of resources needed to expand their knowledge. This finding was in line with (Kozikoglu, 2014) who assessed lifelong learning competencies among university and vocational school students in Turkey and found these at the medium level.

This was incongruent with (Örs, 2020) who assessed lifelong learning competencies among undergraduate first and final-year midwifery-nursing students in Turkey, which were at a high level. Moreover, (Demir Acar et al., 2023) who evaluate the relationship between lifelong learning perceptions of pediatric nurses and self-confidence and anxiety in clinical decision-making processes and found pediatric nurses who received master's/PhD education have higher levels of lifelong learning especially among nurses with more professional experience. While, (Şenyuva & Kaya, 2014) showed in their study a poor nurses' lifelong-learning tendencies, when assessing nurses' lifelong learning tendencies and attitudes toward distance education.

The result of a statistically positive significant correlation existed between the overall nursing educator's characteristic for innovative teaching applied and the development of students' lifelong learning competencies. This may be attributed to, the effective application of innovative principles, and the focus of educators to produce students able to search, select evidence-based knowledge, and manage any problems may face in their learning process to become more self-directed learners throughout their life.

The results showed a highly positive significant correlation between educators' learning competency for innovative teaching and development of students' self-management competencies. This finding was supported by (Shaala et al., 2018) who conducted a study at the Technical Institute of Nursing at Tanta University, about the implementation of a self-directed learning program and found that the program led to improved technical nursing students' management skills competencies, and self-directed learning knowledge.

The current study result showed a statistically positive significant correlation between educators' learning and social competency for innovative teaching and the development of students' initiative and entrepreneurship competencies. This finding agreed with (Chan et al., 2021) who conducted a quasi-experimental study in Hong Kong about enhancing generic capabilities and metacognitive awareness of first-year nursing students using an active learning strategy. Found that using active learning approaches such as flipped classrooms and enhanced lectures with interactive learning significantly improved students' critical thinking, creative thinking, problem-solving, and communication skills as well as a significant change in metacognitive awareness.

The result showed a statistically positive significant correlation exists between educators' educational competency for innovative teaching and the development of students' self-management and learning-to-learn competencies, this finding was supported by (Güven, 2020) who assessed lifelong learning skills in higher education from students' views and found that involving PBL in college curriculums enhances the students' lifelong learning skills such as critical thinking, creativity, and problem-solving skills, and makes the learning process more motivating as well as helps university students gain competencies to cope with real-life problems.

Also, the result of a statistically positive significant correlation between the educator's educational competency for innovative teaching and the development of students' decision-taking competencies, supported by Dowding et al.,(2012) who evaluate decision-making in nursing education and reported that incorporating curriculum through diverse ways of teaching such as problem-based learning, simulation, and feedback, helps students avoid errors and mistakes in clinical practice and complex healthcare situations by

improving their critical thinking, judgment, and decision-making skills.

The statistically positive significant correlation between overall educators' competencies for innovative teaching and the development of students' overall lifelong learning competencies. It can be supported by (Santos et al., 2019) who conducted an integrative review of innovative pedagogical practices in higher education and mentioned that integrating new teaching strategies in pedagogical practices such as (peer evaluation, formative evaluation, active and collaborative learning, flipped classrooms, and mixed approaches with ICTs association as, lectures& PBL) provide students with deep learning, improve communication skills, and help educators with great satisfaction and immediate feedback to students.

However, the result showed there is a relation but not statistically significant between nursing educators' technological competency and students' competencies of learning how to learn, competencies of acquiring information, digital competencies, and competencies of decision-taking. This may be attributed to the method of teaching used by only providing information about how to search and use recent technology without practice on time or follow up; the short period of course that makes students more focused on passing the course with their concept about these technological benefits not necessarily to practice and applied during the course.

There was no statistically significant correlation between nursing educators' technological competency and students' acquiring information and digital competencies. This was congruent with (Martzoukou et al., 2024) who assessed self-perceived digital literacy competencies among nursing students and found that students perceived their digital competencies at the intermediate level and did not achieve an expert level in dimensions of "ICT productivity", "information literacy" and "digital research" that were bases for academic study. Additionally, this finding was attributed to the fact that there is no one way to learn how to use digital tools and advance digital skills of students but it requires different approaches such as "trial and error," "exploration," and "self-taught."

On the other hand, this finding was incongruent with (Elstad & Christophersen, 2017) who found a moderately strong relationship between student teachers' perceptions of digital competency and their self-efficacy in influencing student use of ICT in the service of learning. And attributed that to the student's experience with teacher collaboration efforts to solve ICT-related challenges within a practice school. This difference may be due to the students in the current study not feeling fully competent to use digital tools in their search for the required knowledge.

Moreover, the result showed no significant correlation between nursing educators' technological competency and students' learning-to-learn and decision-taking competencies. It was in accord with (Chan et al., 2021) who found students perceived a slight improvement but not significant in their self-managed learning, adaptability, computer literacy, interpersonal skills, and group work after applying active learning approaches in nursing courses, attributing that to this courses was focused more on hard and fast nursing knowledge, skill, and rationality; and longer time required to develop these capabilities not only a 13-week of the course.

Conclusion

Applying innovative pedagogies in nursing education has a positive and significant correlation with the development of lifelong learning competencies among master's degree nursing students. Educators have learning, educational, social, and technological characteristics that are applied in their teaching and are more innovative. This innovation helped to develop lifelong learners who have self-management, and decision-making competencies, learn how to learn and acquire needed information, use advanced technology to continue their learning, have entrepreneurship abilities to

meet the needs of a rapidly changing world, and provide high-quality patient care that improves the total health of the community.

Recommendations

- Facilitate learners in their teaching-learning process through innovative pedagogical practices.
- Develop curriculums, learning practices, and environments in a way that helps students to gain lifelong learning competencies.
- Plan a professional development program for higher educational institutions that can be used to train, orient, stimulate, and evaluate educators about pedagogical practices that promote innovation in higher education.
- Evaluate students' opinions about lifelong learning competencies and how educational organizations can support them to develop more competent graduates.

Table (1): Distribution of studied nursing educators according to their personal and academic characteristics (N=51)

Educators' characteristics	Total (N=51)	
	No	%
Gender		
• Male	8	15.7
• Female	43	84.3
Teaching department		
1. Medical-Surgical	9	17.6
2. Community Nursing	6	11.8
3. Administration Nursing	4	7.8
4. Core	4	7.8
5. Gerontology Nursing	7	13.7
6. Nursing Education	5	9.8
7. Critical & Emergency Nursing	3	5.9
8. Pediatric Nursing	2	3.9
9. Obstetrics & Gynecology Nursing	6	11.8
10. Psychology Nursing	5	9.8
Current position		
• Lecturer	21	41.2
• Associate professor	15	29.4
• Professor	15	29.4
Years of teaching experience		
• 1- 5	6	11.8
• 6 -10	5	9.8
• 11 - 15	13	25.5
• 16 - 20	7	13.7
• > 20	20	39.2
Innovative teaching strategies used during master course#		
Interactive lectures	47	92.2
Small group discussions	37	72.5
Writing assignments	35	68.6
Innovative evaluation methods used during master course#		
Self-evaluation	29	56.9
Online exams and quizzes	32	62.7
Peer evaluation	28	54.9

#: More than one answer

Table (2): Distribution of studied nursing students according to their personal and academic characteristics:(N=133)

Students' characteristics	Total N=133	
	No	%
Gender		
• Male	16	12.0
• Female	117	88.0
Age		
20 < 30	111	83.5
30 < 40	21	15.8
40 < 50	1	0.8
Mean± SD	**27.92± 2.05**	
Academic department		
1. Medical-Surgical Department	13	9.8
2. Obstetrics & Gynecology Nursing Department	8	6.0
3. Critical & Emergency Nursing Department	10	7.5
4. Psychology Nursing Department	9	6.8
5. Community Nursing Department	11	8.3
6. Nursing Education Department	26	19.5
7. Administration Nursing Department	47	35.3
8. Gerontology Nursing Department	5	3.8
9. Pediatric Nursing Department	4	3.0
Workplace		
• University	53	39.8
• Hospital	69	51.9
• School	11	8.3
Years of experience in nursing		
< 5	75	56.4
5 - 10	51	38.3
11 - 15	6	4.5
>15	1	0.8

Table (3): Distribution of nursing educators core competencies and characteristics of innovative teaching according to the Mean and SD:(N=51)

Core Competencies	No. of items	Total score		Mean percent score	
		Min – Max	Mean ± SD	Min – Max	Mean ± SD
Learning competency	4	8.0 – 20.0	17.80±2.41	25.0 – 100.0	86.3 ± 15.1
Social competency	5	11.0 – 25.0	22.25±3.13	30.0 – 100.0	86.3 ± 15.6
Educational competency	6	21.0 – 30.0	27.06±2.77	62.5 – 100.0	87.7 ± 11.6
Technological competency	2	2.0 – 10.0	8.86±1.41	0.0 – 100.0	85.8 ± 17.7

Table (4): Nursing educators' overall competencies and characteristics for innovative teaching(N=51)

Overall Core Competencies	Strongly agree	
	No	%
Low Innovation	0	0.0
Moderate Innovation	9	17.6
High Innovation	42	82.4
Total score		
Min – Max.	52.0 – 853.0	
Mean ± SD	76.0 ± 7.7	
Mean percent score		
Min – Max.	51.5 – 100.0	
Mean ± SD	86.7 ± 11.3	

Table (5): Distribution the development of master's degree nursing students lifelong learning competencies according the Mean and SD (N=133)

Lifelong Learning Competencies	No. of items	Total score		Mean percent score	
		Min – Max	Mean ± SD	Min – Max	Mean ± SD
Self-management competencies	**13**	33.0 – 65.0	49.27±6.44	38.5 – 100.0	69.8 ± 12.4
Competencies of learning how to learn	**12**	19.0 – 60.0	44.44±6.50	14.6 – 100.0	67.6 ± 13.5
Competencies of initiative and entrepreneurship	**10**	17.0 – 50.0	37.70±5.70	17.5 – 100.0	69.2 ± 14.2
Competencies on acquiring information	**6**	11.0 – 3.0	22.63±3.90	20.8 – 100.0	69.3 ± 16.2
Digital competencies	**6**	10.0 – 30.0	23.60±4.22	16.7 – 100.0	73.3 ± 17.6
Competencies of decision-taking	**4**	9.0 – 20.0	14.49±2.62	31.3 – 100.0	65.6 ± 16.4

Table (6): The overall lifelong learning competencies among master's degree nursing students(N=133)

Lifelong Learning Competence scale	Strongly agree	
	No	%
No competency	1	0.8
Less competency	4	3.0
Medium competency	89	66.9
Very competency	39	29.3
Total score		
Min – Max.	101.0 – 255.0	
Mean ± SD	192.1 ± 25.8	
Mean percent score		
Min – Max.	24.5 – 100.0	
Mean ± SD	69.2 ± 12.7	

Table (7): The correlation between nursing educators' competencies for innovative pedagogies and the development of lifelong learning competencies for master's nursing students.

Lifelong Learning Competencies Scale		Competencies and Characteristics for Innovative Teaching scale				
		Learning competency	Social competency	Educational competency	Technological competency	Overall Innovative Teaching scale
Self-management competencies	**r**	0.481*	0.458*	0.368*	0.181*	0.447*
	p	<0.001*	<0.001*	<0.001*	0.037*	<0.001*
Competencies of learning how to learn	**r**	0.463*	0.448*	0.364*	0.169	0.435*
	p	<0.001*	<0.001*	<0.001*	0.052	<0.001*
Competencies of initiative and entrepreneurship	**r**	0.508*	0.492*	0.406*	0.176*	0.478*
	p	<0.001*	<0.001*	<0.001*	0.042*	<0.001*
Competencies on acquiring information	**r**	0.456*	0.422*	0.338*	0.137	0.412*
	p	<0.001*	<0.001*	<0.001*	0.117	<0.001*
Digital competencies	**r**	0.463*	0.445*	0.323*	0.083	0.407*
	p	<0.001*	<0.001*	<0.001*	0.343	<0.001*
Competencies of decision-taking	**r**	0.457*	0.433*	0.357*	0.140	0.422*
	p	<0.001*	<0.001*	<0.001*	0.108	<0.001*
Overall **Lifelong Learning Competencies Scale**	**r**	0.539*	0.516*	0.413*	0.175*	0.498*
	p	<0.001*	<0.001*	<0.001*	0.044*	<0.001*

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

Levels of correlation	Weak=0.26-0.49	Moderate=0.5-0.69	Strong= 0.70- 0.89	Very strong=0.90- 1.00

Reference

- American Association of Colleges of Nursing. (2021). The essentials: Core competencies for professional nursing education. In.
- Brown, V., & Cunningham, S. (2020). Pedagogy for nursing: challenging traditional theories. *Dimensions on Nursing Teaching and Learning: Supporting Nursing Students in Learning Nursing*, 1-20.
- Carvalho, A., Teixeira, S., Olim, L., Campanella, S., & Costa, T. (2021). Pedagogical innovation in higher education and active learning methodologies–a case study. *Education+ Training*, *63*(2), 195-213.
- Chan, C., Tang, F., Chow, K., & Wong, C. (2021). Enhancing generic capabilities and metacognitive awareness of first-year nursing students using active learning strategy. *BMC Nurs*, *20*(1), 81. https://doi.org/10.1186/s12912-021-00601-7
- Demir Acar, M., Kilinc, C., & Demir, O. (2023). The relationship between lifelong learning perceptions of pediatric nurses and self-confidence and anxiety in clinical decision-making processes. *Comprehensive Child and Adolescent Nursing*, *46*(2), 102-113.
- Dyson, S. (2017). *Critical pedagogy in nursing: Transformational approaches to nurse education in a globalized world*. Springer.
- Elstad, E., & Christophersen, K. (2017). Perceptions of digital competency among student teachers: Contributing to the development of student teachers' instructional self-efficacy in technology-rich classrooms. *Education Sciences*, *7*(1), 27.
- European Communities. (2007). Key competences for lifelong learning: European reference framework. In: Office for Official Publications of the European Communities Luxembourg.
- Giddens, J., & Mansfield, J. (2023). A new era for nursing education: Implications for practice. *Journal for Nurses in Professional Development*, *39*(1), 1-4.
- Guven, M., Kayabas B, Kapti U, Goc S, Nana A. (2016). *Attending lifelong learning activities*. European Commission. Retrieved sebtember2023 from https://ec.europa.eu/programmes/erasmus-plus/project-result-content/c1a24ed0-dafc-4cc4-b006-62e9be16fd30/Lifelong%20Learning%20Activities.pdf,LIFELONG
- Güven, Z. (2020). Lifelong Learning Skills in Higher Education: A Case Study Based on the Students' Views. *Online Submission*.
- Hozjan, D. (2009). Key competences for the development of lifelong learning in the European Union. *European journal of vocational training*, *46*(1), 196-207.
- Kozikoglu, I. (2014). Analysis of university and vocational school students' lifelong learning competences. *J. Instruc. Technol. Teach. Educ*, *3*, 29-43.
- Martzoukou, K., Luders, E., Mair, J., Kostagiolas, P., Johnson, N., Work, F., & Fulton, C. (2024). A cross-sectional study of discipline-based self-perceived digital literacy competencies of nursing students. *Journal of advanced nursing*, *80*(2), 656-672.
- Mikita, K. (2023). *Achievement Motivation Among Generation Z Nursing Baccalaureate Students* Indiana University of Pennsylvania].
- Mynbayeva, A., Sadvakassova, Z., & Akshalova, B. (2018). Pedagogy of the twenty-first century: Innovative teaching methods. *New Pedagogical Challenges in the 21st Century. Contributions of Research in Education*.

- National League for Nursing. (2022). *NLN research priorities in nursing education (2020-2023)*. NLN. Retrieved 9/2023 from https://www.nln.org/education/grants-scholarships/research-priorities-in-nursing-education
- Olimov, S. (2021). The innovation process is a priority in the development of pedagogical sciences. *European Journal of Research Development and Sustainability*, *2*(3), 86-88.
- Örs, M. (2020). Lifelong Learning Competencies among Undergraduate First Year and Final Year Midwifery-Nursing Students. *International Journal of Curriculum and Instruction*, *12*, 88-104.
- Rafsanjani, M., Prakoso, A., Andriansyah, E., Wijaya, P., Prabowo, A., & Irwansyah, M. (2023). Examining the Predictors of Innovative Teaching Practices among Indonesian Lecturers. *Revista Colombiana de Educación*(88), 57-73.
- Rieckmann, M. (2017). *Education for sustainable development goals: Learning objectives*. UNESCO publishing.
- Santos, J., Figueiredo, A., & Vieira, M. (2019). Innovative pedagogical practices in higher education: An integrative literature review. *Nurse education today*, *72*, 12-17. https://doi.org/https://doi.org/10.1016/j.nedt.2018.10.003
- Şenyuva, E., & Kaya, H. (2014). Nurses' lifelong-learning tendencies and their attitudes toward distance education: A sample of Turkey. *The New Educational Review*, *36*(2), 17-29.
- Seray-Wurie, M., Hawker, C., & Chitongo, S. (2020). Innovative approaches to nurse teaching and learning. *Dimensions on Nursing Teaching and Learning: Supporting Nursing Students in Learning Nursing*, 83-101.
- Shaala, E., Shabaan, F., & EL-said, K. (2018). Efficacy of self directed learning program to improve technical Institute of nursing students management competencies. *Tanta Scientific Nursing Journal*, *15*(2), 7-24.
- Stefanou, C., Lord, S., Prince, M., & Stolk, J. (2012). The effect of different active learning environments on student outcomes related to lifelong learning. *International Journal of Engineering Education*, *28*(3), 606-620.
- UNESCO Institute for Lifelong Learning. (2022). *Making lifelong learning a reality: A handbook*. UNESCO Institute for Lifelong Learning.
- Uzunboylu, H., & Hürsen, Ç. (2011). Lifelong learning competence scale (LLLCS): The study of validity and reliability. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, *41*(41), 449-460.
- Vageriya, D. (2024). Review on Innovative Methods of Teaching Learning in Nursing and Allied Health Sciences. *Vidhyayana-An International Multidisciplinary Peer-Reviewed E-Journal-ISSN 2454-8596*, *9*(si2).
- Walder, M. (2017). Pedagogical Innovation in Canadian higher education: Professors' perspectives on its effects on teaching and learning. *Studies in Educational Evaluation*, *54*, 71-82.
- Zhu, C., & Wang, D. (2014). Key competencies and characteristics for innovative teaching among secondary school teachers: a mixed-methods research. *Asia Pacific Education Review*, *15*(2), 299-311.