



ISSN Print: 2664-9187  
ISSN Online: 2664-9195  
Impact Factor: RJIF 5.42  
IJNHS 2023; 5(1): 24-31  
[www.nursingjournals.net](http://www.nursingjournals.net)  
Received: 01-12-2022  
Accepted: 04-01-2023

**Dr. Howaida Moawad Ahmed Ali**  
Assistant Professor,  
Department of Pediatric  
Nursing, Benha University,  
Egypt

## Training program concerning employ energetic learning strategies among pediatric nursing students: developmental study

**Dr. Howaida Moawad Ahmed Ali**

**DOI:** <https://doi.org/10.33545/26649187.2023.v5.i1a.41>

### Abstract

**Background:** Strengthening pediatric nursing students to keep pace with digital development so that they can choose an active learning strategy that suits their educational goals, identify educational resources, and have the ability to evaluate themselves.

**Purpose and Design:** This study was adopted a quasi-experimental pre and posttest equivalent experiment and control group, design to examine the effects of training program on developmental level of pediatric nursing student's related to employ energetic learning strategies and self-efficacy.

**Sample and Setting:** Hundred nursing students who enrolled in Pediatric Nursing course in nursing faculty, Benha university, Egypt.

### Instruments

**Tool I:** The Learning and Study Strategies Inventory (LASSI) to measure learning and study practices and attitudes.

**Tool II:** " Modified Short version self-efficacy (SES) to measure student's self-efficacy.

**Tool III:** "Modified Short version the flow state scale (FSS) to measure positive optimal experience experiment group only post applies on pediatric nursing course content.

**Results:** There was statistically positive correlation between pediatric nursing students' female gender with urban residence and well-mannered developmental level concerning the Learning and Study Strategies Inventory, employs energetic learning strategies and their self-efficacy soon after training program. The majority of subgroup pediatric nursing students' trial reported that high score and narrated efficiency learning strategies was animation videos and simulation in practical content and web/computer assisted learning and problem-based learning in theoretical content.

**Conclusion and Recommendation:** Research assert that training program was effective and linked with high developmental level of pediatric nursing students about employing active learning strategies and self-efficacy. Distributing the content of the pediatric nursing curriculum on energetic learning strategies and directing students to learning the course according to the appropriate strategy type this is after their creativity in applying.

**Keywords:** Training program, pediatric nursing students, energetic learning strategies

### Introduction

In light of the digital transformation that includes nursing education, pediatric nursing students must be trained and knowledgeable about active learning strategies to keep pace with the digital generations. The goal is to help students process information more deeply, which allows them to relate new information to existing ideas or experiences and accelerating the efficacy of knowledge and skills retention for students, as well as improving their efficacy (Zarshenas, *et al.*, 2022) <sup>[21]</sup>.

In education systems learners must be possess an increased degree of autonomy and show initiative in learning processes, inspecting learning materials and understanding contents. An efficient growth of knowledge inside and outside of faculty is only possible if students have skills which initiate, guide and control the search for information and later on its processing and storage. Training on learning strategies is necessary for students to use in order to foster their application of results in education (Wegner, *et al.*, 2013) <sup>[17]</sup>.

Along time ago pediatric nursing students, in higher education, should be depend on computer to do their study. Also, using network technology can create, foster, deliver, facilitate learning, and enhance students experience and knowledge.

**Corresponding Author:**  
**Dr. Howaida Moawad Ahmed Ali**  
Assistant Professor,  
Department of Pediatric  
Nursing, Benha University,  
Egypt

So, the rapid developments and growth of information literacy and communication technology had profoundly influence on higher nursing education (Elsayed and El-Sebaie 2022) [5]. Our need to develop and train pediatric nursing students on energetic learning strategies appeared clearly during the Corona virus crisis, and many researches were done supporting and recommending e-learning and simulation in practical training for students (Cook, *et al.*, 2022) [3]. Then it appears to us that students need training in energetic learning methods and self-efficacy in using them, and then develop students' skills and keep pace with digital transformation and develop outcome Learning for students (Hornstvedt, *et al.*, 2018) [6]. Self-efficacy is the judgement that a person makes about their own capability to achieve a future task. High self-efficacy is the confidence or strength of belief that one can learn and experience success in learning. Students tend to avoid tasks that exceed their ability and seek tasks at which they can succeed (Inanlou, *et al.*, 2020) [7]. Therefore, self-efficacy judgements affect which activities students choose or avoid, how much effort they put in, how much resilience they have, and how long they persist with a task.

In study done by (Culha., 2019) [4] concluded that using active learning methods in nursing education provides positive cognitive, affective and psychomotor outcomes for nursing students. Therefore, nursing students should be supported for the use of these methods.

### Research important

In studies of (Salari, *et al.*, 2018) [14] & (Oh, *et al.*, 2019) [11] concluded and recommended that necessary to develop pediatric nursing students self-learning skills, problem-solving and self-efficacy to enable them facing professional and educational challenge, adapt to future professions, and become a graduate who contributes to improving health care systems, qualified for lifelong learning skills and appropriate decision-making. So, the current study aims to training pediatric nursing students on employ energetic learning strategies on neonatal congenital anomalies as theoretical chapter and neonatal injection as practical parts. Improve pediatric nursing student's self-efficacy and set higher goals and expend more effort towards their achievement. Pediatric nursing students need to develop their skills and self-efficacy regarding uses of active learning strategies, to keep pace with digital learning and development in nursing education. Hence the study hypothesis support to offering students, a framework that is

linked with academic success encourage students to perform better.

### Research purpose

- Determine the developmental level of pediatric nursing students (experiment and control) about energetic learning strategies and self- efficacy at starting point and after soon training program.
- Represent the correlation between the pediatric nursing experiment group gender and residence with their total of the Learning and Study Strategies Inventory (LASSI), employ energetic learning strategies and self-efficacy soon after training program.
- Find out which one of energetic learning strategies was prolifically for pediatric nursing students (experiment group) post applies.

### Research hypothesis

- Training program will enhance developmental level of pediatric nursing students (experiment and control) related to employs energetic learning strategies with creative efficacy.
- Pediatric nursing students experiment group who applies energetic learning strategy on congenital anomalies and neonatal injection will display which one of the energetic learning strategies was high productively.

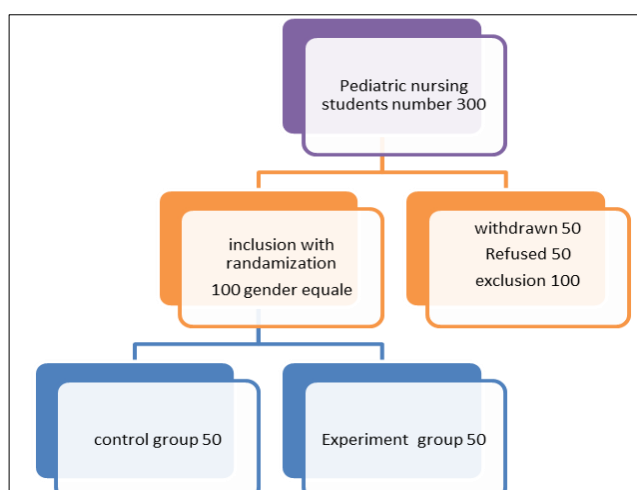
### Technical design

#### Subjects and methods

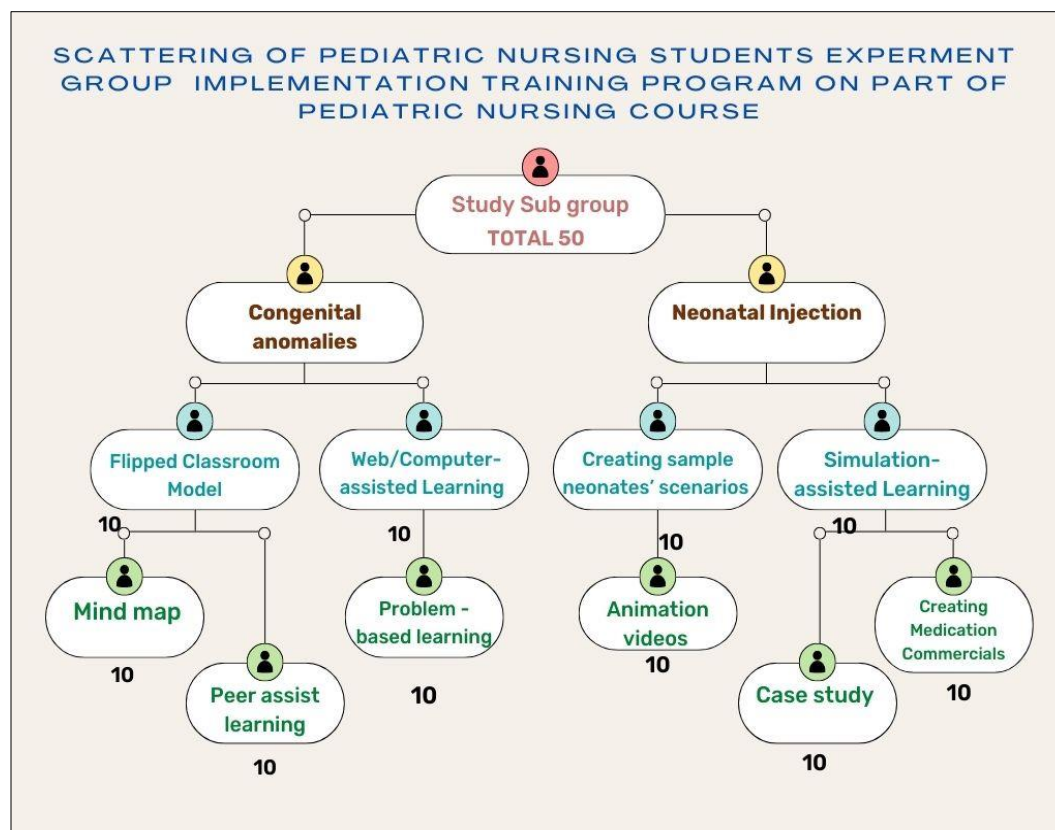
**Research design and setting:** quasi-experimental research carried out in nursing faculty, Benha University, Egypt.

### Participants

A convenience sampling of 100 nursing students out of 300 students who enrolled in the Pediatric Nursing course, during the first semester of the academic year 2022. All students who had computer skills and internet access were included in the study. The sample size was estimated using Epi info program version 10 according to the following parameters; students' size of 300, Confidence coefficient of 95%, expected frequency of 50%, and acceptable error of 5%. The minimum sample size required was 95 students. Eligible students who fit the inclusion criteria and agreed upon their participation were randomly assigned using random number generator program into two equals groups (50 students per group).



**Fig 1:** Flow chart of participants' enlistment manner.



**Fig 2:** Experiment sub-group employ energetic learning strategies

### Instruments

**Tool 1: Part A:** Socio demographic characteristics of pediatric nursing students, such as, gender and residence.

**Part B:** “The Learning and Study Strategies Inventory (LASSI) (Weinstein, *et al.*, 1996) <sup>[19]</sup> to measure learning and study practices and attitudes. The components of strategic learning: *skill, will* and *self-regulation*, at starting point and soon after, training program for experiment and control group”.

**Tool II:** “Modified Short version self-efficacy (SES) believe, ability scale and promoting strategies (Beierlein, *et al.*, (2013) <sup>[2]</sup> to measure efficacy at starting point and soon after training program for experiment and control group”.

**Tool III:** “Modified Short version the flow state scale (FSS) (Jackson *et al.*, 2008) <sup>[8]</sup> to measure positive optimal experience experiment group only post applies appraisal on theoretical congenital anomalies, neonatal injection as practical part of pediatric nursing course, figure 2 show detail scattering energetic learning strategies”.

### Measure outcome

**Tool 1:** “The Learning and Study Strategies Inventory (LASSI) is a 10-scale covered 60-item, Respondent answer each item on a 5-point Likert scale wherein 1 = not at all like me, 2 = not very much like me, 3 = somewhat like me, 4 = fairly much like me, and 5 = very much like me. Assessment of students' developmental level about using learning and study strategies related to following components of Strategic Learning”

- **“Will:** Motivation, Attitude, Anxiety”
- **“Skill:** Selecting Main Idea, Information Processing, Test Strategies”

- **“Self-regulation:** Self-Testing, Concentration, Time Management, and Using Academic Resources”

**Tool 2:** “Modified Short version self-efficacy (SES) contain seven statements categories as 1=Does not apply at all, 2=applies only slightly, 3=somewhat applies, 4=fairly applies and 5=applies completely” Employ self-efficacy”.

**Tool 3:** “Modified Short version the flow state scale (FSS), flow state a positive experiential state, totally a 5-point Likert scale which energetic learning strategies with a higher score indicates a higher level of learning flow.

The total of developmental level of the Learning and Study Strategies Inventory (LASSI) was 300 score, flow state scale 45 score and self-efficacy 35 score, total categorizes as more than 85% well mannered, from 85 to 65% standard and less than 65% deliberated humble soon after training program”.

**Validity and Reliability:** Each tool was inspected by two experts of pediatric nursing teaching staff to assess the content validity was 0.902 the needed modification was done. Reliability was measuring the internal consistency Via Cronbach's alpha= FSS was 0.82, SES was 0.91. The reliability of LASSI subscales is measured by Cronbach's alpha of 0.72–0.88 and demonstrates good validity.

**Pilot study:** Was done on 5% of pediatric nursing students and excluded from study sample after making the necessary modification to support clarity and feasibility of tool application.

### Ethical approval and administrative design

Formal consent taken from faculty of nursing, Benha University before research project conduct. Informed

consent taken from participant after explaining the purpose of the study, participant information well secured and free to withdrawn at any time of the study.

### Field work and procedure

The researcher reviews the recent current & relevant literatures and selected the appropriate energetic learning strategies for pediatric nursing students. The data were collected during one and half months from 15 June to 30 July at 2022 academic years. The electronic survey was distributed for participant to fill the demographic characteristic at Saturday in break time then conduct the program at three phases.

### Phase 1: Assessment and preparation

The researcher equipped the necessary tools and questionnaire to implement the training program in terms of creating a drive to upload all E- material illustration such as educational videos, simulation videos, simulation software, demonstration play software. Before starting the intervention, participants were informed of the purpose and process of the trial, Participants from both groups were

given 45 min to complete the pretest to assess their developmental level about LASSI, self-efficacy and learning flow then fill the main demographic information. The participants in the experiment group were given an additional five-minute explanation about how to apply energetic learning strategies on part of pediatric nursing course (neonatal congenital anomalies and Injection). During the experimental period, participants learned two weeks through predetermined learning strategies (figure 2) and distributed to subgroup each one take two learning strategies one for theoretical and another for practical. Communicate participants to check their learning progress using Microsoft teams meeting two a week and conducted a question-and-answer session. As a final step, all participants complete a post-test to assess outcome variables similar to the pre-test. For ethical reasons, participants in the control group were given the same opportunity to benefits from training program.

### Phase 2: Planning and implementation

Training program structure (Table 1) contain detail of the program

**Table 1:** Training program structure

Objective	Content	Time/day	Method and media of training	Pre/Post Evaluation method and task
<ul style="list-style-type: none"> <li>Improve developmental level of pediatric nursing students academic and study skills</li> </ul>	<ul style="list-style-type: none"> <li>"Anxiety (ANX)"</li> <li>"Attitude (ATT)"</li> <li>"Concentration (CON)"</li> <li>"Information Processing (INP)"</li> <li>"Motivation (MOT)"</li> <li>"Selecting Main Ideas (SMI)"</li> <li>"Self-Testing (SFT)"</li> <li>"Test Strategies (TST)"</li> <li>"Time Management (TMT)"</li> <li>"Using Academic Resources (UAR)"</li> </ul>	30-45 m/ Saturday	<ul style="list-style-type: none"> <li>"E- PowerPoint illustration"</li> <li>"Drawboard platform"</li> <li>"Animation scientific Videos"</li> <li>"Scientific game"</li> </ul>	<ul style="list-style-type: none"> <li>E- survey "The Learning and Study Strategies Inventory (LASSI)"</li> <li>Ten scales divided to three learning components:               <ul style="list-style-type: none"> <li>"<b>Will</b>: Motivation, Attitude, Anxiety</li> <li>"<b>Skill</b>: Selecting Main Idea, Information Processing, Test Strategies"</li> <li>"<b>Self-regulation</b>: Self-Testing, Concentration, Time Management, and Using Academic Resources"</li> </ul> </li> <li>at starting point and soon after, training program for experiment and control group</li> </ul>
<ul style="list-style-type: none"> <li>Expansion the pediatric nursing student's strategies that can increase self-efficacy</li> </ul>	<ul style="list-style-type: none"> <li>"Task accomplishment and success"</li> <li>"Peer modelling"</li> <li>"Goals and feedback"</li> <li>"Give daily problem-solving opportunities"</li> <li>"Support students' affirmation"</li> <li>"Use self-assessment"</li> </ul>	30-45 m Saturday	<ul style="list-style-type: none"> <li>"Registered video with explanation"</li> <li>"E- PowerPoint illustration"</li> <li>"Podcast"</li> </ul>	<ul style="list-style-type: none"> <li>E- survey (SES) "short version self-efficacy believes, ability scale and promoting strategies modified for pediatric nursing students,</li> <li>"I solve difficult academic problems I can rely on my skills".</li> <li>"I can accomplish my goals in nursing field</li> <li>I will remain calm in my exam because I know I will have the knowledge to pass"</li> <li>"The motto 'if other people can, I can too' applies to me when it comes to my field of study"</li> <li>"In difficult situations I can rely on my skills".</li> <li>"I can deal with most problems using my own resources".</li> <li>"Even difficult and complicated tasks I can successfully resolve at starting point and soon after, training program for experiment and control group"</li> </ul>
<ul style="list-style-type: none"> <li>Employ energetic learning strategies on theoretical</li> </ul>	<ul style="list-style-type: none"> <li>Neonatal congenital anomalies as</li> </ul>	30-45 m Saturday	<ul style="list-style-type: none"> <li>"Web/Computer-assisted Learning"</li> </ul>	<ul style="list-style-type: none"> <li>E- survey "The flow state scale to measure positive optimal</li> </ul>



and practical parts from pediatric nursing course	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Pathophysiology</li> <li>• Types</li> <li>• Clinical features management</li> <li>• Preoperative and postoperative nursing process</li> </ul>		<ul style="list-style-type: none"> <li>• “Flipped Classroom Model”</li> <li>• “Mind map”</li> <li>• “Problem -based learning and NCLEX question”</li> <li>• “Peer assist learning”</li> </ul>	experience (FSS) has nine items that assess challenge–skill balance, action–awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. Item scores are measured on a 5-point Likert scale where a higher score indicates a higher level of learning flow”. • -“Each sub group of experiment group upload their application on creative drive” • -“Registered video practical checklist for experiment group only” • “Solution form”
	Neonatal injection as types, route and technique	30-45 m Saturday	<ul style="list-style-type: none"> <li>• -“Animation videos”</li> <li>• -“Simulation-assisted Learning”</li> <li>• -“Creating sample neonates’ scenarios”</li> <li>• -“Case study”</li> <li>• -“Creating Medication Commercials”</li> </ul>	

### Phase 3: Evaluation

For control and experiment group pediatric nursing students evaluate at starting point and soon after training program but experiment group evaluates after implement energetic learning strategies on congenital anomalies as theoretical part and neonatal injection as practical part of pediatric nursing course.

**Statistical design:** The data analysis through (SPSS) version 23 the difference between variable as (mean and standard deviation). A correlation coefficient for two variable set. paired t-test for differences between pre and post program. Statistical significance as a two-tailed a  $p$  value of 0.05.

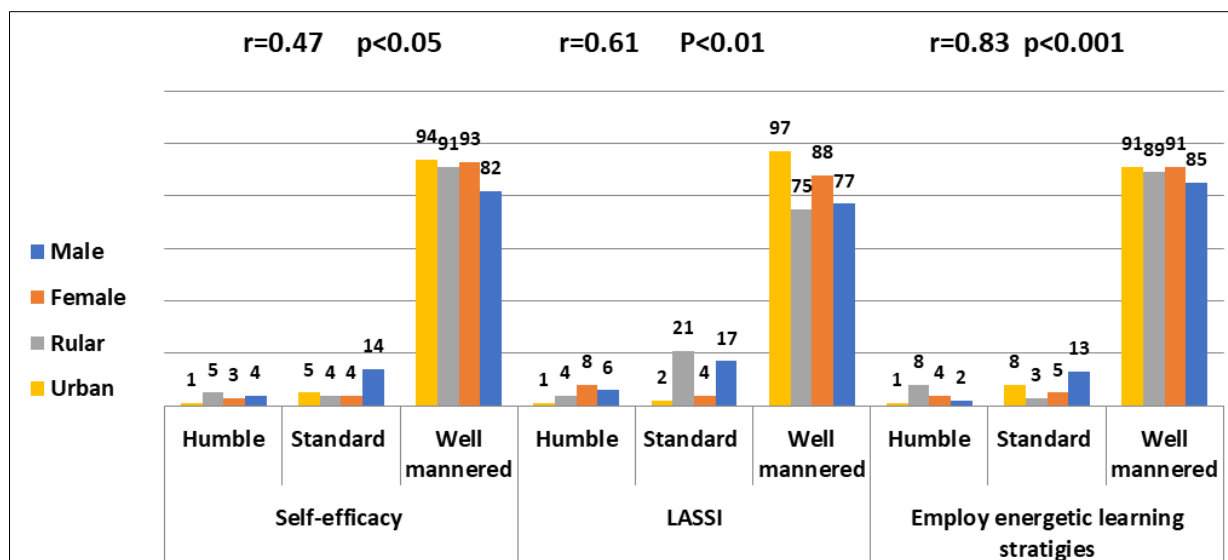
### 3. Results

**Table 2:** Mean and Standard deviation of the developmental level of pediatric nursing students (experiment and control) group starting point and soon after and post two weeks

	Experiment group			Control group			<i>p</i> -value
	Starting point	Soon after	Two-week Post soon trial	Starting point	Soon after	Two weeks without trial	
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD	
The Learning and Study Strategies Inventory (LASSI)							
Will							
Motivation (MOT)	4.2 ±1.21	5.2±2.71	5.8 ±2.05	4.5±1.67	5.2±2.65	5.1 ±2.11	≤0.01
Attitude (ATT)	4.1 ±1.23	5.4±2.62	5.3 ±2.15	4.3±1.83	5.7±2.71	5.3 ±2.10	≤0.01
Anxiety (ANX)	4.3 ±1.01	5.1±2.41	5.7 ±2.21	3.4±1.92	5.8±2.82	5.2 ±2.61	≤0.01
Total	4.2 ±1.15	5.2 ±2.5	5.6 ±2.1	4.06 ±1.8	5.5 ±2.7	5.2 ±2.2	≤0.01
Skill							
Selecting Main Idea (SMI)	3.4 ±1.31	5.4 ±2.13	5.8±2.32	3.9±1.9	5.6±2.14	4.8 ±2.06	≤0.01
Information Processing (INP)	3.1 ±1.21	5.7 ±2.07	5.9±2.34	3.1±1.01	5.4±2.02	5.1 ±2.08	≤0.01
Test Strategies (TST)	3.3 ±1.01	5.6 ±2.05	5.8±2.45	3.6±1.02	5.3±2.06	4.9 ±2.09	≤0.01
Total	3.2 ±1.1	5.5 ±2.08	5.8 ±2.37	3.5 ±1.31	5.4 ±2.07	4.9 ±2.07	≤0.01
Self-regulation							
Self-Testing (SFT)	3.1 ±1.90	5.4 ±2.02	5.9±3.04	3.2±1.12	5.8±2.21	5.5 ±2.01	≤0.01
Concentration (CON)	3.2 ±1.30	4.4 ±2.12	5.4±3.12	3.3±1.32	5.2±2.32	5.1 ±2.21	≤0.01
Time Management (TMT)	3.9 ±1.80	5.3 ±2.22	5.8±3.11	2.5±1.41	5.6±2.45	5.4 ±2.02	≤0.01
Using Academic Resources (UAR)	3.4 ±1.6	4.2 ±2.32	5.1±3.23	2.9±1.65	4.9±2.76	4.1 ±2.03	≤0.01
Total	3.4 ±1.65	4.8 ±2.17	5.5±3.12	2.9±1.37	5.37±2.4	5.02 ±2.06	≤0.01
Total Self-efficacy	3.1 ±2.10	4.29 ±2.12	4.7 ±2.14	2.6 ±2.11	4.8 ±2.21	4.21±2.05	≤0.01
The flow state scale to measure positive optimal experience (FSS)							
Challenge–skill balance	2.2 ±1.90	4.2 ±3.01	4.9±3.31	2.5±1.41	4.2±3.05	3.9 ±2.9	≤0.05
Action–awareness merging	2.3 ±1.81	4.4 ±3.02	4.8±3.23	2.9±1.45	4.1±3.02	3.8 ±2.7	≤0.05
Clear goals	2.1 ±1.74	4.3 ±3.03	4.6±3.21	2.6±1.31	4.3±3.03	4.2 ±3.01	≤0.05
Unambiguous feedback	2.4 ±1.41	4.5 ±3.32	4.7±3.63	2.7±1.25	4.4±3.16	4.1 ±3.02	≤0.05
Concentration on the task at hand	2.6 ±1.30	4.6 ±3.09	4.8±3.11	2.8±1.91	4.6±3.45	4.2 ±3.05	≤0.05
Sense of control	2.4 ±1.51	4.1 ±3.12	4.9±3.53	2.9±1.35	4.5±3.26	4.1 ±3.02	≤0.05
Autotelic experience	2.9 ±1.80	4.3 ±3.22	4.8±3.41	2.7±1.11	4.9±3.35	4.4 ±3.16	<0.05
Total	2.4 ±1.63	4.2±3.11	4.78 ±3.34	2.72 ±1.39	4.42 ±3.18	4.1 ±2.98	<0.01

**Table 2:** The mean score of the experiment and control group starting point and soon after the training program was statistically significant ( $p = 0.01$ ), while two-week post soon

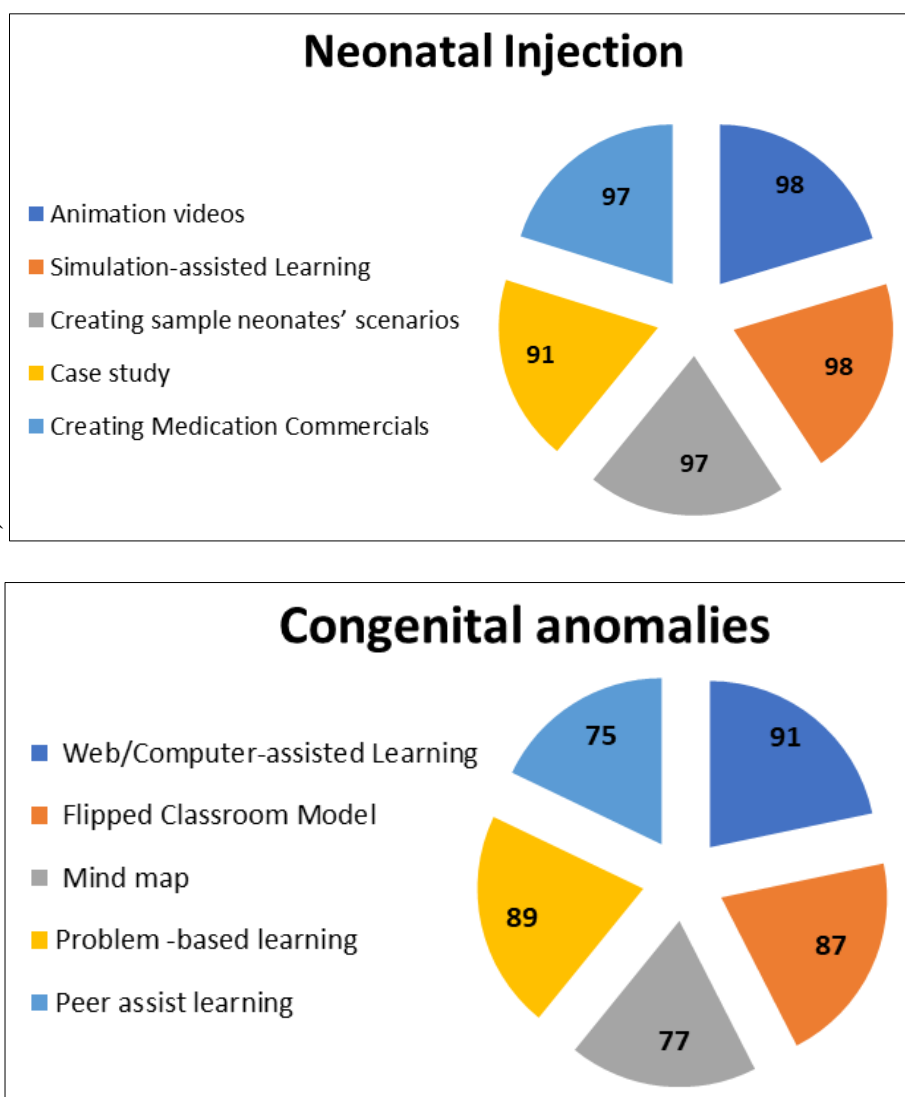
trial for experiment group achieved high developmental level related to LASSI, SES and FSS.



**Fig 3:** Correlation coefficient between pediatric nursing students experiment group gender and residence with their developmental level of LASSI, employ energetic learning strategies and their self-efficacy soon after training program.

**Figure 3:** Proven that there was statistically positive correlation between pediatric nursing students' female gender with urban residence and well-mannered

developmental level concerning to Learning and Study Strategies Inventory (LASSI), employs energetic learning strategies and their self-efficacy soon after training program.



**Fig 4:** Experiment group positive optimal experience around energetic learning strategies post applies on theoretical and practical part of pediatric nursing course

**Figure 4:** Evidence that 98% of subgroup pediatric nursing students trial achieved that high score and narrated efficiency learning strategies for animation videos and simulation for practical content, meanwhile web/computer assisted learning and problem-based learning in theoretical content was 91% and 89% respectively.

## Discussion

The current study supported the scientific research has proven that pediatric nursing students need training to raise their self-efficacy so that they can use active learning strategies and employ them in the pediatric nursing course, where students qualify to develop their skills for lifelong learning and contribute to the development of the nursing profession to keep pace with digital development. Therefore the aim of study was determining the developmental level of pediatric nursing students (experiment and control) about energetic learning strategies, self-efficacy at starting point and after soon training program. Represent the correlation between the pediatric nursing experiment group gender and residence with their total energetic learning strategies and self-efficacy soon after training program. Find out which one of energetic learning strategies was prolifically for pediatric nursing students (experiment group) post applies.

The mean score of the experiment and control group starting point and soon after the training program was statistically significant ( $p = 0.01$ ), while two-week post soon trial for experiment group achieved high developmental level for LASSI, FSS and self-efficacy. According to Joshi *et al.* (2017) <sup>[9]</sup> who found that participants' suggestions to achieve high learning performance referred to consideration of learning styles and strategies like daily revision of topics, being regular and attentive during ward postings. Activities offered in a lively atmosphere with interactions between students and teachers contribute to improving learning efficiency. According to study done by An, *et al.*, (2022) <sup>[11]</sup> in Korea on the nursing students was from two university found that there was not significant interaction between the effects of time and the intervention in perceived learning competency, knowledge, academic stress, and learning flow. In contrast to subitems in the self-regulated learning competency, environmental structuring, task strategies, time management, help seeking, and self-evaluation were significantly improved after intervention. Also, Khalil, *et al.*, (2020) <sup>[10]</sup> found that the main LASSI subscales that were significantly different between high-performing and low-performing students for internal and external examinations.

The present study proven that statistically positive correlation between pediatric nursing students' female gender with urban residence and well-mannered developmental level concerning to Learning and Study Strategies Inventory (LASSI), employs energetic learning strategies and their self-efficacy soon after training program. The results of Viswam Athira *et al.*, (2017) <sup>[16]</sup> reported self-efficacy was high among nursing students 53% and found association between gender female and their self-efficacy. In contrast with study by Tiwari & Srivastava, (2021) <sup>[15]</sup> conduct in India about nursing student's self-efficacy related online learning discover eighty percent were female and half of them were gratified with the online education and two third with poor self-efficacy scores in learning domain.

The current study evidence that the majority of subgroup pediatric nursing students' trial with animation videos and simulation in practical content, meanwhile web/computer assisted learning and problem-based learning in theoretical content was high score and narrated efficiency learning strategies. Phuong *et al.*, (2020) <sup>[13]</sup> study done in Vietnam had same finding and reported that the participants saw PBL as an effective approach for achieving learning outcomes; PBL encouraged proactivity, convenience, and creativity. Visual content enhanced active learning for several core skills. In addition, Park & Moon (2022) <sup>[12]</sup> reported that requires a high level of student preparation with innovative education methods, such as web-based or computer-based learning. Also, An *et al.*, (2022) <sup>[11]</sup> concluded, education strategies use of innovative technology will lead to higher academic achievement. Study done in University of Pittsburgh School of Nursing on 66 students Harlan, *et al.*, (2021) found that preferred learning strategies included voice-over PowerPoints, simulation, case studies, and did not enjoy group work.

The author view that pediatric nursing students were in need of a training program related to active learning strategies in addition to measuring their self-efficacy and their ability to employ these strategies in the pediatric nursing course to achieve success rates of excellence and develop lifelong learning skills and keep pace with the development in digital transformation in the nursing field where nursing students contribute in developing the profession and providing advanced nursing care. The researcher assert that the training program was effective, as the students showed unprecedented cooperation and were able to raise their self-efficacy and became able to employ appropriate strategies for the content that wants to study.

## Conclusion

The study confirms that video animation, web/computer simulation assisted learning and problem-based achieved the highest rates comprehend for pediatric nursing students after applying on neonatal injection as practical parts and congenital anomalies as a theoretical part from pediatric nursing course content.

Research assert that training program was effective and linked with developing the level of pediatric nursing students about employing active learning strategies, and self-efficacy, which achieves the high developmental learning outcomes.

## Recommendation and further research

- The study recommends distributing the content of the pediatric nursing curriculum on energetic learning strategies and directing students to learning the course according to the appropriate strategy type this is after their creativity in applying.
- Orientation program for nursing students about varieties electronic learning resources provided by Benha University.
- Learning strategies based on technology need to be a universal learning method and training students in different research setting area.
- Additional studies are needed to replicate this study using larger sample size, and assess factors affecting learning strategies.

**Ethical clearance**

Taken from faculty of nursing administration, Benha University before research project conduct. Informed consent taken from participant after explaining the purpose of the study, participant information well secured and free to withdrawn at any time of the study.

**Source of funding-** Self.

**Conflict of Interest** - nil.

**Acknowledgement**

The author thanks the administration of the Nursing College, the head of the Department of Pediatric Nursing, and the teaching staff for their collaborations and providing the necessary facilities to conduct the research. The researcher should thank the pediatric nursing students participating in the study for their cooperation and wonderful responses.

**References**

1. An J, Oh J, Park K. Self-regulated learning strategies for nursing students: A pilot randomized controlled trial. *International Journal of Environmental Research and Public Health*. 2022;19(15):9058.
2. Beierlein C, *et al.* Kurzskala zur Erfassung allgemeiner Selbstwirksamkeitserwartungen (ASKU) (Short scale for measuring self-efficacy beliefs (ASKU), Methoden, Daten, Analysen. 2013;7/2:251-78.
3. Cook TC, Camp-Spivey LJ. Innovative teaching strategies using simulation for pediatric nursing clinical education during the pandemic: A case study. *Academic Medicine*. 2022;97(3):S23.
4. Culha I. Active Learning Methods Used in Nursing Education. *Journal of Pedagogical Research*. 2019;3(2):74-86.
5. Elsayed Saleh S, El-Sebaie Badr O, Mohamed Shehata Y. E-Learning Strategy versus Traditional Learning Strategy on Pediatric Nursing Students' Knowledge, Engagement, and Clinical Performance during COVID 19. *Egyptian Journal of Health Care*, 13(1), 663-677.
6. Horntvedt MET, Nordsteien A, Fermann T, Severinsson E. Strategies for teaching evidence-based practice in nursing education: a thematic literature review. *BMC medical education*. 2018;18(1):1-11.
7. Inanlou M, Baha R, Seyedfatemi N, Fadaee Aghdam N, Basirinezhad MH. Self-efficacy and the Related Demographic Characteristics in Nursing Students. *Iran Journal of Nursing*. 2020;33(127):45-57.
8. Jackson SA, Martin AJ, Eklund RC. Long and short measures of flow: The construct validity of the FSS-2, DFS-2, and new brief counterparts. *J. Sport Exerc. Psychol.* 2008;30(5):561-587. doi: 10.1123/jsep.30.5.561.
9. Joshi AS, Ganjiwale JD, Varma J, Singh P, Modi JN, Singh T. Qualitative assessment of learning strategies among medical students using focus group discussions and indepth interviews. *International Journal of Applied & Basic Medical Research*. 2017;7(Suppl 1):S33-S37.
10. Khalil MK, Williams SE, Hawkins HG. The use of Learning and Study Strategies Inventory (LASSI) to investigate differences between low vs high academically performing medical students. *Medical Science Educator*. 2020;30(1):287-292.
11. Oh JW, Huh B, Kim MR. Effect of learning contracts in clinical pediatric nursing education on students' outcomes: A research article. *Nurse education today*. 2019;83:104191.
12. Park K, Moon S, Oh J. Predictors of academic achievement in distance learning for nursing students. *Nurse Educ. Today*. 2022;108:105162. doi: 10.1016/j.nedt.2021.105162.
13. Phuong NTA, Trang HTT, Duc TNM, Nguyet TT, Hang TT, Thao NTT, *et al.* Exploring Learning Strategies of Nursing Students at Hue University of Medicine. and Pharmacy, Vietnam. *Journal of Problem-Based Learning*. 2020;7(2):82-93.
14. Salari M, Roozbehi A, Zarifi A, Tarmizi RA. Pure PBL, Hybrid PBL and Lecturing: which one is more effective in developing cognitive skills of undergraduate students in pediatric nursing course?. *BMC medical education*. 2018;18(1):1-15.
15. Tiwari SK, Srivastava SP. Self-efficacy of online learning among nursing students during COVID-19 pandemic. *International Journal of Community Medicine and Public Health*. 2021;8(9):4439.
16. Viswam Athira, Kaviyabala D, Sayujya CP. Self efficacy among Nursing students, *International Journal of Current Research*. 2017;9(08).
17. Wegner C, Minnaert L, Strehlke F. The Importance of Learning Strategies and How the Project "Kolumbus-Kids" Promotes Them Successfully. *European Journal of Science and Mathematics Education*. 2013;1(3):137-143.
18. Weinstein CE, Palmer DR, Acee TW. LASSI User's Manual: For Those Administering the Learning and Study Strategies Inventory (3th ed.), H & H Pub; c2016.
19. Weinstein CE, Palmer DR, Acee TW. "LASSI: Learning and Study Strategies Inventory 3rd Edition; c1996. Available: <https://www.collegelassi.com/lassi/>
20. Williams C. Nursing students' mindsets and choice of learning strategies. *Nurse Educator*. 2021;46(2):92-95.
21. Zarshenas L, Mehrabi M, Keshavarzi MH. The effect of micro-learning on learning and self-efficacy of nursing students: An interventional study. *BMC Medical Education*. 2022;22(1):1-6.