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The effect of using think-pair-share cooperative learning strategy on nursing students' perception of their learning

Abeer Mohamed Abdelkader

Minia University, Faculty of Nursing, Nursing Education Department, Minia, Egypt | Knig Faisal University, Al-Hofuf, Saudi Arabia
Email: : abeermabdel@mu.edu.eg

Abstract---The study purpose to examine the effect of using think-pair-share cooperative learning strategy on nursing students' perception of their learning. A quasi-experimental pre- and post-test design was used to examine if think- pair-share cooperative teaching strategy would improve learning perception measured by learning scale. This study took place with a sample of 90 student nurses enrolled in third year and taking the scholarly inquiry course in the second semester of academic year 2018-2019. According to the study results, although there are no significant results in the comparison with pre and posttest mean scores of learning perception scale, the findings indicate high statistically significant difference and positive moderate relationship among all categories of learning perception scale and Cooperative Learning Attitude. Moreover, the study participants have statistically significant different with high level of learning perceptions for all Learning Perceptions Categories Namely Integration of Learning, Understanding Content, and Increase in Skills. In conclusion, this study supports continued use of cooperative learning approach. Also, results pointed to the importance role of cooperative learning in nursing education and the need for further teaching and learning strategies which needs students to utilize teamwork to assist everyone for improving their learning and learning of others.

Keywords---group work, nursing education, social learning, team-based learning, teamwork.

Introduction

To enhance learning of students and problem-solving competencies along with high-level intellectual skills, active instructional techniques must be used in all nursing curriculums. Nurse educators have faced the challenge of requiring a

change of instructional techniques from teacher-centered to student-centered that inspire student nurses to utilize concepts in their professional practice (Khan et al., 2012). Also, communication is essential to practice nursing as nursing staff required to work together with physicians and allied health professionals (wang et.al ,2018). Numerous techniques may be utilized involving active and cooperative learning. Think-Pair-Share (TPS) considered as a method that teachers may utilize for their student learning enhancement. Its a teaching and learning strategy that operate in three phases: (1) Think. The teacher provides a question to raises the students' thinking. Students should only take a few minutes to THINK about the question; (2) a pair. Students work in PAIRS to discuss their answer to choose the answer they think is the most unique; (3) share. Student pairs invited by the teacher to SHARE their answers with the whole class (Kaddoura, 2013; Sulistianingsih, 2018).

The Think-Pair-Share strategy stimulates prior knowledge of students and enhances thinking about answers. TPS improves communication skills of students when they talk about the ideas with each other. Its assists students come to be active contributors in learning and be able to incorporate writing as a means of organizing ideas produced from discussions (Cooper et al., 2021). Zwedberg et.al (2021) stated that Students gain a new perception on learning while doing in pairs at a similar level. Also, they feel free to discuss more productively than they might with their teachers. Furthermore, with each other by thinking critically and logically, recognize what differentiates the various alternatives and draw inferences about how to act. There are several nursing education studies using various types of cooperative learning techniques. However, there are only a few nursing studies regarding think-pair-share strategy (Brinkerhoff, 2013). These constraints show a need to investigate the effects of think-pair-share strategy in perceptions of learning among nursing students at King Faisal University.

Third year nursing students at King Faisal University study nursing courses which includes medical surgical, psychiatric, and maternity nursing. Additionally, they study other courses as professional ethics, research methods, and informatics. Students required practicing many learning activities through group work that prepares highly skilled and professional nurses to deal with the continuous healthcare environment. Also, assessment of student learning and teaching effectiveness were required from King Faisal University nursing students where they asked to provide regular class evaluations via 'minute paper' submission (anonymous). In addition, students will participate in computerized end of course evaluations (confidential).

Furthermore, third year nursing Students in groups of four are required to select an evidence-based topic of interest centered on Saudi Arabia Ministry of Health Awareness Campaign (available online) to write and submit a research proposal (Problem Identification, Purpose(s) of the project, significance of the study, literature review, research design, sample/population, and settings, proposed methods of data collection, ethical considerations, and implications to nursing practice).

Significant of the study

While nursing educators use active educational approaches, learning, and attitudes of student nurses can be developed. The learning outcome is to assist the learners to integrate and utilize concepts for their future practice, which will improve nursing profession quality (Khan et al., 2012). Consequently, it is necessary to find effective instructional techniques and how to be used in nursing education. Then, studies involving effective educational techniques could be communicated to nursing educators, inspiring them to apply those techniques (Dutra, 2013). In current study, the effect of using think-pair-share cooperative learning strategy on nursing students' perception of learning was examined. Current study may perhaps promote support about the usefulness of the think-pair-share cooperative learning strategy. Furthermore, nursing educators be able to adjust how to apply this technique based on the learning perception of students.

Purpose of the study

Examine the effect of using think-pair-share cooperative learning strategy on nursing students' perception of their learning.

Materials and Methods

Research Design

A quasi-experimental pre- and post-test design was used to establish if think-pair-share cooperative teaching strategy would improve learning perception measured by learning scale. This pilot study took place during the second semester of academic year 2018-2019, from February through March 2019.

Participants

A convenience sample of 90 nursing students enrolled in third year and taking the course scholarly inquiry during the second semester of academic year 2018-2019, from February through March 2019 in the traditional baccalaureate nursing program.

Setting

Nursing Department, College of Applied Medical Science (CAMS), King Faisal university (KFU). Saudi Arabia.

Instrument

Self-administered questionnaire was used for data collection of the present study. It is consisted of three parts as follow: Part I: socio-demographic data such as age, gender, previous academic achievement, and place of residence, Part II: Perception of learning scale developed by Yeom (2016) and modified by the researcher. It composed of 15 items that divided into 3 subscales as following: (1) Understanding Content {five items}, (2) Increase in Skills {four items}, and (3)

Integration of Learning {six items}, Part III: Students' Attitude towards Cooperative Learning questionnaire (12 items) developed by McLeish (2009). For analyzing the collected data, the participants were permitted to rate each item on a five-point Likert scale of options which were numerically coded as 1 (strongly disagree); 2 (disagree); 3 (neutral); 4 (agree); 5 (strongly agree). The responses calculated by summing up the scores of each item as follows; a score below 25 indicated low level, a score from 25 to 50 indicated moderate level, and a score more than 50 indicated high level of self-learning perception.

Procedures

The formal agreement was taken from the responsible authorities of nursing department at CAMS once the purpose of the study was explained. Instrument of data collection was translated into Arabic version and tested for content validity by four professors in related specialties namely nursing administration, nursing education, and medical surgical nursing. Additionally, Factor analysis was performed using Kaiser-Meyer-Olkin (KMO) Test to ensure the validity of the instrument. The value was 0.91. Cronbach's Alpha test was used to examine the reliability of the study instrument. The Alpha coefficient was 0.95. A pilot study was conducted on a sample of ten percent from the study subjects (13 students) to examine and ensure the clarity and applicability of the study tool and the necessary modifications were done. The study participants of the pilot were not included in the main subjects of the study. Collection of data done from 1st February to 30th March 2019. The study was carried out as follows.

Planning Phase

The related literature was reviewed by the researcher (course faculty) to prepare class activities to be used in practice exercise with students. Preparation of researcher included selection of relevant journal research articles related to nursing and student level of comprehension. Then, developing handouts about the four research report components topics that used in the study (developing and refining research problems, research design, samples, measurement & data collection in research), which are related to scholarly inquiry curriculum content (Polit & Beck, 2012; Rebar & Gersch, 2014; LoBiondo-Wood & Haber, 2014). To ensure that learners aware about the strategy implementation. The researcher discusses to learners that Think-Pair-Share (TPS) is a cooperative learning technique where learners cooperate to answer a question for reading material. Learners required to (1) think independently around a question answer or a specific topic; and (2) share thoughts with classmates. Reviewing an answer with a classmate helps to concentrate attention, expand contribution, and keep students in understanding the reading assignment.

Implementation phase

Pretest Self-administered questionnaire about perception of learning was provided to all participants of the study by second week of the academic semester. Fifteen minutes was allotted to fill a given questionnaire. Third year nursing students divided into three sections as follows: A (42 students), B (43 students), and C (43 students). The class time was three hours weekly. In the first class of

the academic year, the researcher (course faculty) discusses the course syllabus, overview of the course, and introduction to nursing research. Then, in the next four weeks the following topics were discussed as: key concepts and steps in qualitative and quantitative research, research design in quantitative & qualitative studies, populations and samples in research, measurement & data collection in research. The researcher presents research report sections and subsections followed the standard order (introduction, methods, results, and discussion) in sequential lectures. At the end of each section the researcher provides students with journal research article and instructed them to read a certain section (e.g. introduction, methods, results, and discussion) and answer the set of provided questions as following; 1) The researcher begins by questioning about the text (selected section of research report); 2) Students "think" about what they know or have learned about the topic; 3) Each student should be paired with another student; 4) Students share their thinking with their partner; 5) The researcher expands the "share" into a whole-class discussion; 6) Students were allowed 10 minutes to read and 10 minutes for presentation; 7) The researcher monitors and assist students during their working.

Evaluation phase

Posttest Self- administered questionnaire about perception of learning and attitude towards cooperative learning was provided to all subjects of the study by week 10 of the academic semester. Approximately fifteen minutes was allowed to fill out the questionnaire. Moreover, on week 16 of academic calendar students take their final exam.

Ethical consideration

The study sample participated voluntarily when they notified with the purpose of the study and expressed their agreement. Also, the study sample were free to withdraw at any time without any penalties. In addition, anonymity, privacy, and responses of the study sample were emphasized.

Statistical analysis

Data were analyzed with SPSS v22. Descriptive statistics were used for demographic characteristics of the nursing students. Also, a two-tailed t-test and f-test was used to compare mean and percentage scores for perception of learning and attitudes of cooperative learning scales. addition, Spearmen Rho correlation coefficient was used to measure the relationship between learning perception and cooperative learning attitude. Moreover, significant level measured at P value of ≤ 0.05 .

Results and Discussions

Table 1 shows that most participants (68.3%) were in the age group of 22-23 years. Also, the same table presents that 57.8 % of the participants were single. Moreover, 46.7 % of the participants have very good academic achievement and 85.6 % of the live in urban.

Table 1
Demographic characteristics of the study participants. N=90

Socio-demographic characteristics	No	%
Age		
< 22	27	30
22-23	61	67.8
>23	2	2.2
Total	90	100%
Marital Status		
Single	52	57.8
Married	38	42.2
Total	90	100%
Having children		
No	63	70
Yes	27	30.0
Total	90	100%
Previous academic achievement:		
Pass	2	2.2
Good	18	20.0
Very good	42	46.7
Excellent	28	31
Total	90	100%
Residence Place		
Rural	13	14.4
Urban	77	85.6
Total	90	100%

Table 2 revealed that the study participants have high level of learning perceptions for all Learning Perceptions Categories Namely Integration of Learning, Understanding Content, and Increase in Skills (22.6 ± 2.6 , 19.8 ± 2.0 , 15.9 ± 1.9 respectively). Also, the same table showed that highly statistically significant differences were existed with all categories of learning perceptions scale ($p = .0001$). Active learning techniques are suggested to improve student learning. Think-Pair-Share is a cooperative learning strategy because in its second stage learners are requested to contribute their thoughts and answers with their peers and later in the third stage, they contribute their answers in front of the whole class. Kaddoura (2013).

The current study results revealed that the study participants have high level of learning perceptions for all Learning Perceptions Categories Namely Integration of Learning, Understanding Content, and Increase in Skills. Also, highly statistically significant differences were existed with all categories of learning perceptions scale. This finding conforms to Wong (2012) who stated that learning happens when learners understand and apply new knowledge and skills. Moreover, it shows individual change, and the change is fostered through a continual development from basic knowledge to comprehension, building connotations, and creation. Also, this result agrees with Fareed & Masry (2017) and Moloneyet.al. (2020) who asserted that nursing students should have experience and competency in performing all their roles as a care provider, manager, educator,

advocator, and researcher. These nursing roles require the use of nursing skills such as synthesis, analysis, communicating effectively, thinking critically, and solving clinical problems. Moreover, student nurses must be equipped with interpersonal and clinical skills for their future professional roles.

Table 2
Pre -test Mean Scores of Learning Perceptions scale Levels by the study participants. N=90

Learning Perceptions Categories	Learning Perceptions Levels			F test	P-value
	Low (≤ 25)	Moderate (26-50)	High (> 50)		
	Mean $\pm$ S. D	Mean $\pm$ S. D	Mean $\pm$ S. D		
Understanding Content	5.5 $\pm$.7	14.4 $\pm$ 3.1	19.8 $\pm$ 2.0	70.229	.0001**
Increase in Skills	5.5 $\pm$ 2.1	10.7 $\pm$ 3.0	15.9 $\pm$ 1.9	58.789	.0001**
Integration of Learning	9.0 $\pm$ 4.2	15.6 $\pm$ 4.2	22.6 $\pm$ 2.6	53.737	.0001**

Table 3 showed that the highest mean scores by the study participants were obtained with 3 items of the learning perception scale as follows: "I got an improved comprehension of how learning nursing supports individuals deal with actual world issues", "I got a an improved comprehension of how thoughts in the class session connect with concepts confronted in the classroom discussions outside of the scope of nursing practice", and "I got an improved competences of recognizing types of learned data in this class" (3.6 $\pm$.1.1, 3.4 $\pm$.09, 3.4 $\pm$.1.0 respectively). Also, current study findings presented the highest mean scores by the study participants with 3 items of the learning perception scale as follows "I got an improved comprehension of how learning nursing supports individuals deal with actual world issues", "I got a an improved comprehension of how thoughts in the class session connect with concepts confronted in the classroom discussions outside of the scope of nursing practice", and "I got an improved competences of recognizing types of learned data in this class".

These findings consistent with Kaddoura (2013) who affirmed that through utilizing active instructional methods like TPS to improve learning in educational institutions, nurses of the future may be well equipped to resolve numerous problems confronted in clinical setting and full of hope leads to safe and effectively take care of the patient. Moreover, once learners integrate cooperative learning, they be able to create innovative answers to the clinical questions, connect ideas and construct propositions. Additionally. Nguyen et.al (2015) showed that the capability for learners to comprehend concepts, to produce knowledge and to resolve problems is the indicator of their level of proficiency in critical thinking.

Table 3
Pre-test Descriptive Statistics for Each Learning Perceptions Category. N=90

Learning Perceptions Categories	Mean + S. D
Understanding Content	
I got an improved comprehension of the main concepts learned in this class.	3.3±.09
I got an improved comprehension of the relationships between the main concepts learned in this class.	3.3±.09
I got an improved comprehension of how ideas in the class session relate to ideas encountered in other nursing classes.	3.3±.09
I got an improved comprehension of how thoughts in the class session connect with concepts confronted in the classroom discussions outside of the scope of nursing practice	3.4±.09
I got an improved comprehension of how learning nursing supports individuals deal with actual world issues	3.6±.1.1
Increase in Skills	
I got an improved competences of recognizing types of learned data in this class	3.4±.1.0
I got an improved competences of recognizing a sound argument and appropriate use of evidence.	3.3±.1.0
I got an improved competences of developing a logical argument.	3.2±.1.1
I got an improved competences of working effectively with others.	3.3±.1.3
Integration of Learning	
I got an improved long-term memorization of key ideas learned in this class	3.2±.1.0
I got an improved mastery of the content learned in this class.	3.1±.1.1
I got an improved ability of linking key ideas from class to other knowledge.	3.1±.1.1
I got an improved skill of applying knowledge and skills learned in this class to other situations.	3.2±.0.9
I got an improved skill of using systemic reasoning in approaching problems	3.3±.1.0
I got an improved comprehension of how to use a critical approach to analyze data and arguments in daily life.	3.2±.1.0

Table 4 indicated that there were no significant results in the comparison with pre and post-test mean scores of learning perception scale. However, mean pre-test score for integration of learning (19.1) was lower than the mean post-test score (20.2). On the other hand, understanding content category of learning, pre-test score (17.1) was higher than the post-test score (15.9). In addition, this study indicated no statistically significant differences with the comparison of pre and post-test scores of learning perception scale. However, the post-test mean score of integration of learning category was higher than pre-test mean score. These

findings seem to agree with Buzinski et.al. (2020) who proposed that the degree of preparation required for every student to improve competence and comfort in involvement with all classmates may not take place in almost all circumstances. On the other hand, this result contradicts with Kaddoura (2013) findings. He indicated that as the critical thinking results of the TPS class increased significantly other than the non-TPS class, the results presented prove that this teaching-learning approach is helpful in fostering critical thinking in students.

Table 4
Pre and post-test mean scores of learning perception by the study participants.
N=90

Learning Categories	Pre-test		Post-test		t test	P-value
	Mean	± SD	Mean	± SD		
Understanding Content	17.1	± 4.1	15.9	± 4.4	1.730	.085
Increase in Skills	13.3	± 3.7	13.3	± 3.4	.215	.830
Integration of Learning	19.1	± 5.3	20.2	± 5.3	1.258	.210

Table 5 indicates high statistically significant difference and positive moderate relationship among all categories of learning perception scale and Cooperative Learning Attitude ($p = .0001$). Regarding Understanding Content, it was noticed that positive relationship with Increase in Skills, Integration of Learning, and Cooperative Learning Attitude ($r = .780, .736, \text{ and } .672$ respectively). Additionally, the same table display moderate positive relationship among Increase in Skills, Integration of Learning and Cooperative Learning Attitude ($r = .610 \text{ and } .587$ respectively). Moreover, it was observed that positive moderate relationship was existed among Integration of Learning and Cooperative Learning Attitude ($r = .734$).

Moreover, the present study showed high statistically significant difference and positive moderate relationship among all categories of learning perception scale and Cooperative Learning Attitude. Additionally, the findings displayed moderate positive relationship among Increase in Skills, Integration of Learning and Cooperative Learning Attitude. These findings are in the line with Oyelana et.al (2018) who revealed that learning includes a fundamental skill set, an insight of the distinctive structure of content, and innovative incorporation of theoretic material to focus on difficult practical problems. Also, Arvidson et.al (2017) indicated that during cooperation and discussions of small groups, the learning transformation leads to meaningful explanations to real-life problems today. Furthermore, Herwiyanti et.al (2019) demonstrated that If students are more active in the learning process, their high achievement can also be predicted or improved. Additionally, Zwedberg et.al (2021) showed that participants were capable of coping with learning and how to learn simultaneously. Also, work thru others lead to the improvement of cooperative competences; for instance, one of the learners might distribute tasks and delegate to the partner, and this was good action to identify the priorities, trying to facilitate and clarify complex ideas.

Table 5
Correlation Matrix of Learning Perceptions Categories and Cooperative Learning Attitudes of The Study Participants. n=90

Learning Perceptions Categories	Understanding Content		Increase in Skills		Integration of Learning		Cooperative Learning Attitude	
	r	P-value	r	P-value	r	P-value	r	P-value
Understanding Content							.672	.0001*
Increase in Skills	.780	.0001**					.587	.0001*
Integration of Learning	.736	.0001**	.610	.0001**			.734	.0001*
Attitude	.672	.0001**	.587	.0001**	.734	.0001*		

Table 6 display percentage distribution of Students' Attitude towards Cooperative Learning. The findings showed that 38.9 % of the students agrees that their attitude for work could be enhanced by Cooperative learning. Additionally, 37.8% of them agrees that Cooperative learning enhances their class participation. Furthermore, 37.8% indicated that they learn to work with other students who are diverse from them. Despite the positive results regarding satisfaction with cooperative learning, 36.7% of the study participants undecided that group work makes their work better organized. Moreover, the present study displayed positive attitudes towards cooperative learning. The agree to the following statements: Cooperative learning can improve their attitude towards work, Cooperative learning enhances their class participation, they learn to work with other students who are different from them, Cooperative learning helps them to socialize more, and when they work with other students, they achieve more than when they work alone.

Similarly, these findings match with Kaddoura (2013) who stated that collaboration is a worthy principle. Inquiry revealed that students who work collaboratively understand well and are more academically successful. Along with teamwork, participants are more prepared to hear to others' opinions, contribute to thoughts, explain variations, and build different interpretations. Also, teamwork is a useful instructional strategy that improves critical thinking, whereas fostering constructive intellectual, emotional, and social effects. Moreover, Cooper et al. (2021) proposed that the think-pair-share is an effective educational strategy intended to provide each student in a class the chance to think and speak about the concepts they are learning.

Also, Branneya et.al (2018) and Tran (2014) showed that, learners benefit after listening to their classmate through the share piece of the think-pair-share. Also, in collaborative learning conditions, the concepts being explained are frequently explained. In addition. the constant explanation of learning concepts gives

learners who either get the clarification or those who provide the clarification with extensive comprehension and full retention of studied concepts for long time.

Limitations of this study

There were a few limitations associated with this study. The first limitation was missing for control or comparative group that reinforce the validity of the results. The second limitation presented in this study was the convenience sample which threatens the generalizability of results. The last limitation of the current study was the small sample size.

Table 6
Percentage Distribution of The Study Participants Attitude Towards Cooperative Learning

No	Statement	strongly agree		agree		undecided		disagree		strongly disagree	
		No	%	No	%	No	%	No	%	No	%
1.	I enthusiastically contribute to cooperative learning actions.	20	22.2	20	22.2	26	28.9	14	15.6	10	11.1
2.	When I work with other students, I get more done than working on my own	13	14.4	23	25.6	22	24.4	17	18.9	15	16.7
3.	My attitude for work could be enhanced by Cooperative learning.	15	16.7	35	38.9	20	22.2	11	12.2	9	10.0
4.	Cooperative learning assists me to more social contact.	17	18.9	29	32.2	15	16.7	17	18.9	12	13.3
5.	Cooperative learning improves work communication with students.	15	16.7	25	27.8	28	31.1	9	10.0	13	14.4
6.	Cooperative learning enhances class participation	11	12.2	34	37.8	26	28.9	10	11.1	9	10.0
7.	Innovation is facilitated with	17	18.9	26	28.9	26	28.9	9	10.0	12	13.3

No	Statement	strongly agree		agree		undecided		disagree		strongly disagree	
		No	%	No	%	No	%	No	%	No	%
8.	cooperative learning Group activities facilitate experience of learning	20	22.2	23	25.6	25	27.8	9	10.0	13	14.4
9.	I am learning to work with students who are diverse from me.	20	22.2	34	37.8	24	26.7	5	5.6	7	7.8
10.	I like the content more when I work with other students.	14	15.6	20	22.2	30	33.3	15	16.7	11	12.2
11.	Group work make my work better organized	20	22.2	14	15.6	33	36.7	11	12.2	12	13.3
12.	I like to use more teamwork by my teachers	14	15.6	19	21.1	30	33.3	12	13.3	15	16.7

Recommendations

- Students should be motivated by their teachers to become stakeholders in their learning
- Emphasis the need for instructions with hands on experience to enable students with more long-term retention of knowledge.
- Conduct a similar study to assess the impact of TPS and other active teaching strategies on students from more than one program.
- Replication of this study using a larger sample size with a control group that do not experience cooperative learning would strengthen the study and rule out confounding factor such as maturation of the participants that may have influenced on the outcomes.

Conclusion

Since nursing is a team-based practice, educational strategies that foster incorporation and decrease the gap between theory and practice are preferred. In current study, participants appreciated think-pair-share cooperative learning strategy, and so, the usage of cooperative learning is recommended, as it increases the chance for student nurse to improve comprehensive competences which are basis to standard patient care such as clinical decision-making and critical thinking skills. Also, this study supports continued use of cooperative learning approach. Results point to the importance role of cooperative learning in

nursing education and the need for further teaching and learning strategies which needs students to utilize teamwork to assist everyone for improving their learning and learning of others.

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