

# MAPPING THE PATH TO PROFICIENCY: ENHANCING SELF-EFFICACY IN NURSING EDUCATION WITH CONCEPT MAPPING

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## **Abstract**

In today's healthcare landscape, organizations seek specific changes in healthcare professionals. Change theories necessitate the application of innovative strategies to the educational process. Simultaneously, nursing education places greater emphasis on reflective practice to effect positive transformations in clinical settings (Shellenbarger.T & Robb M., 2015). Consequently, the utilization of Concept Mapping (CM) in nursing, as a modern teaching method, holds promise. CM relies on the concept of reciprocal correlation in its design, as learning occurs through the establishment of connections between new and pre-existing concepts within the learner's cognitive framework (Moattari M, 2014). Successful development of nursing curricula can advance the field and offer a model for transitioning from traditional to a new paradigm, allowing students to actively engage in knowledge discovery and achieving learning outcomes. Students who rely on rote memorization to learn content often encounter challenges and may experience less successful learning (Jaafarpour M et al., 2015). The need for a change in curricula arises from the challenges faced by nursing as a profession in recent years. Nurses are now responsible for caring for patients with various known and unknown diagnoses, requiring perception and metacognitive skills to enhance performance in clinical settings (Rasulzadeh N. et al., 2015; Billings and J. Halstead, 2009).

**Keywords:** healthcare professionals, change theories, nursing education, concept mapping, curricula, reflective practice, learning outcomes, metacognitive skills, clinical environments, healthcare landscape.

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## **1. Introduction**

Nowadays, health care organizations looking for specific changes in their professionals. Change theories require application of creative strategies to the educational process. In the same time, nursing education provide greater emphasis on reflective practice that achieve positive changes in their clinical setting (Shellenbarger .T, & Robb M.,2015 )Hence, the use of Concept mapping (CM) in Nursing as modern teaching methods can be beneficial. CM relies on the use of reciprocal correlation in its designation: Learning occurs by creating links between new concepts and old concepts that are already in the learner's cognitive architecture. (Moattari M, 2014). Successful development, of nursing curriculum can advance its course and provide a model for the transition from the traditional model to the new paradigm that enables students to actively participate in the discovery of knowledge and the achievement of learning outcomes. Students who learn content by rote memorization often find teaching not easy and may have an unsuccessful experience. (Jaafarpour M, etal 2015). The change in curricula is needed, the reason is nursing as a profession has suffered from major hurdles in recent years, and nurses have become responsible for providing care to patients with multiple known and unknown diagnosis (health problems), which require perception and metacognitive skills to improve performance in clinical environments (Rasulzadeh, N. et al. 2015, Billings and J. Halstead, 2009).

Concept maps as a generative learning strategy foster and create social learning environment, where learners work either in groups or individually to improve their learning. Concept mapping gives learners the opportunity to: Firstly, Thinking about the connections between the concepts which are being learned; Second: organize their ideas in a systematic way and visualize the connection across the basic concepts; And third: interactive thinking about their understanding. Concept maps provide students with deep thinking. In addition, when discussing the generated maps with one another, students seek to stimulate their ideas about the newly acquired concept. Concept mapping is a participatory activity that will provide important learning (Oliver .K., 2012) Concept mapping used to organize students' thoughts, provide patient care planning, prioritization, and foster creativity through critical thinking.

Concept mapping can be used individually as self-directive teaching technique also in a group activity. Group learning, which provides participatory learning in small groups so that students work together to improve each other's learning "(Johnson, D.W., Johnson, RT and Hollubeck, 1993). Concept planning can to be effective in promoting significance learning by enhancing the active participation of students in the data integration and reviewing interpretation, comparison and correlation of existed information, and the construction of ideas (Hussain & Shamswar., 2013). Concept mapping also powerful tool in evaluation that delineates a deeper understanding of learners' physical knowledge (Daugherty, Custer, & Dixon., 2012). Concept maps enable students to effectively solve problems through understanding the integration of factors in patient care (Harrison & Gibbons, 2013). Educators and students can use Concept maps in a learning environment, and are usually created by the academic teacher (professors), and are based on the academic subject courses the college uses. These maps serve as background information for the main topics, retention of learned materials to be implemented and link each lecture together (Ignatavicius D., 2019; Yildirim., 2011; and Schuster., 2011). Concept maps improve learning self-efficacy by maintaining retention of knowledge, clarification of concepts and fostering an interest in learning. Improving self-efficacy is important to improve academic advancement as students with high learning self-efficacy generally reach academic achievement at high level and use more innovative teaching strategies. Understanding seeking concept maps that have also been shown in some studies that promote meaningful learning and enhance the self-efficacy of learners may be particularly beneficial to students because their abilities to integrate theory and practice are close to levels of theoretical knowledge and reasoning to learn practical skills (Wells et al 2015).

Nursing students receive large amounts of new knowledge and skills during their education. A preference for learning styles and personality traits affects their performance throughout their educational programs. Self-efficacy is one of these traits. Self-efficacy "is the capability of an individual in order to perform tasks necessary to accomplish the goal "(Karabacak, et al 2013). Students 'ability to learn new skills and knowledge and how a nursing student performs in clinical practice are affected by the students' level of self-efficacy (Leigh, 2008).

Nursing faculty certify that levels of self-efficacy have a positive effect on student performance during clinical and laboratory settings. High levels of self-esteem are associated with high levels of self-efficacy that enable them to perform more efficiently to meet needs (Bambini et al., 2009). Nursing professionals have great responsibility for the task of securing the next graduation; Students are able to meet manpower requirements. Nursing students should also be self-sufficient students with extensive knowledge to provide patient care safely (Peterson-Graziose et al 2013) Concept maps, when used as part of organizing a learning unit or guiding learning in health care education, make a student's view "conceptually clear" to learners. Many students face obstacles in recognizing basic concepts in the content learned, processed, or presented, among which is the obligation to remember data. There is no

need to evaluate the data. These students ignore the building of holistic relationships between conceptual and represent them in logical way through propositional structures, causing them to see learning as a procedural model to be remembered (Kirk, 2012).

Significance of the study As a result of the advancement of science, , meaningful strategies of learning are becoming more and more important to nursing students to keep pace with these advancements as they relate to nursing practice. Hence, to become professional and having high qualifications, today's nursing students engaged for becoming lifelong self-learners. Concept maps help achieve significant learning by different ways. It is an activity help students to gain opportunities for organization, summarization, synthesis, analysis, and evaluation of different materials. Hence It promotes the nursing students' self-competence development, that used as new practical activities of education (KumarManoj & Rizwaan 2013)Improving students' self-efficacy is especially important to them. Learners can be familiar with teaching methods that lead to superficial rote learning that makes them become teachers centered around knowledge. Traditional teaching methods may increase the gap between theory and perceived practice and this leads to teaching problems for nursing education as it leads to forgetting knowledge, which is difficult to apply in clinical situations. Therefore, the present study was conducted to investigate the effect of using concept maps on the self-efficacy of nursing students.

### **Aim of the Study**

The study aims to investigate the effect of using concept mapping on self- efficacy of nursing students  
Research hypothesis: concept map will improve students' self- efficacy in nursing administration course.

### **2. Methods**

Research-design: A Quasi Experimental research design was used to conduct this study.

Setting:The study was conducted in the Department of Nursing Administration, Faculty of Nursing, Mansoura University, teaches graduate and postgraduate students to be professional nurses and specialists with knowledge and knowledge of management and leadership skills in the context of the continuous change of the health care organization system.

Participants:The study subjects included all 376 students who studied the Nursing Administration course in the 2018-2019 academic year. The sample was divided into two groups: experimental groups (n = 189) and a control group (n = 187)

Tools for data collection: For data collection Two tools used :

Tool( 1): Concept Mapping questionnaire Format: it consists of three parts part I: It is used to collect data on students' personal characteristics such as: age, gender and years of education. part II:: This part was developed by researchers after reviewing the relevant literature (Farag, 2017; Youssef and Mansour 2012).used to assess knowledge of nursing student about concept mapping. It was consisted of 31 questions27 true and false questions and 5multiple choice questions It included questions related to concept mapping definition, goals, benefits, types, uses, components and steps for developing and drawing maps. system of scoring related to students' knowledge was:- Correct answer scored (1)- Incorrect answer scored (0) -The total scoring of nursing students' knowledge was calculated as follows based on cut of value 50% - Less than 50% considered poor. - 50 - less than 75% considered fair.- 75-100% considered good.

part III: Concept Map Assessment Rubric The concept map evaluation model developed by the researcher after the relevant literature reviewing (Farag, 2017;Youssef and Mansour 2012) in which the researchers created a qualitative assessment model to be used in conjunction with the quantitative analysis of the concept map structure. This criterion is divided into four sections for evaluation:

structure, suggestion, relationship and interpretation. Scoring system (response): It consists of three category points (3-1) for each statement, which exceeds the standard, meets the sufficient standard, and is below the standard. Tool 2: Self-Efficacy scale (from the Motivated Strategies for Learning Questionnaire (MSLQ) (Credé and Phillips, 2011); aims to assess students' perceptions about self-efficacy in learning. It contains 8 components. Responses will be judged by a seven Likert scale Points ranging from (1 = "completely disagree" to 7 = "completely agree")

**Validity and Reliability .** Data collection instruments were reviewed by a committee of five nursing administration professors from various faculties specializations to validate the content and adjustments were made to the tools based on their observations. Test reliability was measured by means of a test-retest (Cronbach alpha) which produced internal consistency estimates ranging from 0.78 to 0.80. Ethical considerations Official permission was obtained by using an appropriate communication channel from the Dean of the Faculty of Nursing, Mansoura University, And the head of the department to obtain permission and assist in conducting the study at the college. The ethical approval was obtained from the Faculty of Scientific Research and Ethics Committee, explanation of nature and purpose of the study provided to study participants. In the interview with the subjects. Students have the right to participate or refuse to study. The data collected has been kept confidential. The specificity of the study sample was emphasized. pilot Study For assessing the study feasibility, the sample accessibility , tools clarity, as well as determination of the required time for answering the questionnaire questions. pilot test administered to 10% of the total sample size (38 students) No modifications to the data collection tools were required based on the pilot study results

**Data collection phases** The study was conducted through the following three stages: planning, implementation, and evaluation. All of these stages are approximately 4 months into the 2018/2019 academic year. Classes began from February 2019 to May 2019.

**Planning phase:** concept maps were prepared to cover nursing administration course topics, then give them to professors in this field to determine the validity of the content and conceptual map clarity. Accordingly, adjustments were made to the concept map.

### **Implementation phase:**

The topics were taught to the control group in the traditional methods, while by drawing concept maps the study group taught the same lectures, and the educational sessions were divided into 4 lectures: two theoretical sessions and two practical sessions, the first and second include orientation to all students about the objectives of the educational program, the outline and schedule, And the expected out comes. pretest of Self-Efficiency for students in both the experimental and control groups, before carrying out the concept mapping to determine the baseline category of self-efficacy in learning . The theoretical part was given in the first week to all students on self-efficacy.

In the study group prior to the implementation of concept mapping, a pre-test of the concept mapping questionnaire format: to assess students 'knowledge regarding the concept mapping, it was distributed to the experimental group. The pretest took 20 minutes to be completed. Prior to the start of the lectures, the study group attended orientation sessions,

The third and fourth sessions include an introduction to the concept diagram for the experimental group, which received adequate explanation about (definition, types, uses, importance, benefits and applications) of concept mapping, and awareness of the steps needed to develop CM, training students on how to design the concept diagram focus on the lectures.

Through each lecture, the researchers design the lecture into a map form during explaining the lecture, then students were asked to create their own maps to reflect what they had understand. Then, the researchers corrected the concept maps that the students had created by using the rubrics system.



Whenever there were any misconceptions, positive and constructive feedback was given to them by the researchers and, and a case scenario was also performed on some of the lectures (Communication, Motivation, and Conflict Management) to prepare students to apply the concept map to solve problems in clinical settings.

Next, students were asked to prepare, design and deliver concept maps in small groups where the researchers gave the experimental group three assignments using CM in which each one after 3 lectures to ensure that the experimental group was well understood CM. Then correct the concept maps students constructed according to the rubrics system.

Evaluation phase: Evaluation of training program was done through post-test was conducted for both the experimental and control groups by administering concept mapping questionnaire format, and self-efficacy scale for study group and control groups. The results of the pre and the post tests of the two groups were compared to assess the effect of using concept map.

### Statistical analysis

The data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 22, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, Chi-square test ( $\chi^2$ ) used for the comparison between two groups and more. Student t-test was used for comparing between means of two groups of parametric data of independent samples,. Z value of Mann-whitney test was used for comparison between means of two groups of non-parametric data of independent samples,. F value of ANOVA test was calculated and used to compare between more than two means of parametric data,. For comparison between more than two means of non-parametric data, Kruskal-Wallis ( $\chi^2$  value) was calculated using Pearson's correlation coefficient (r) Correlation between variables was evaluated. Significance was adopted at  $p < 0.05$  for interpretation of results of tests of significance.

### 3. Results

Table (1): personal characteristics data of the studied students (n=376). Variables The studied students (n=376)

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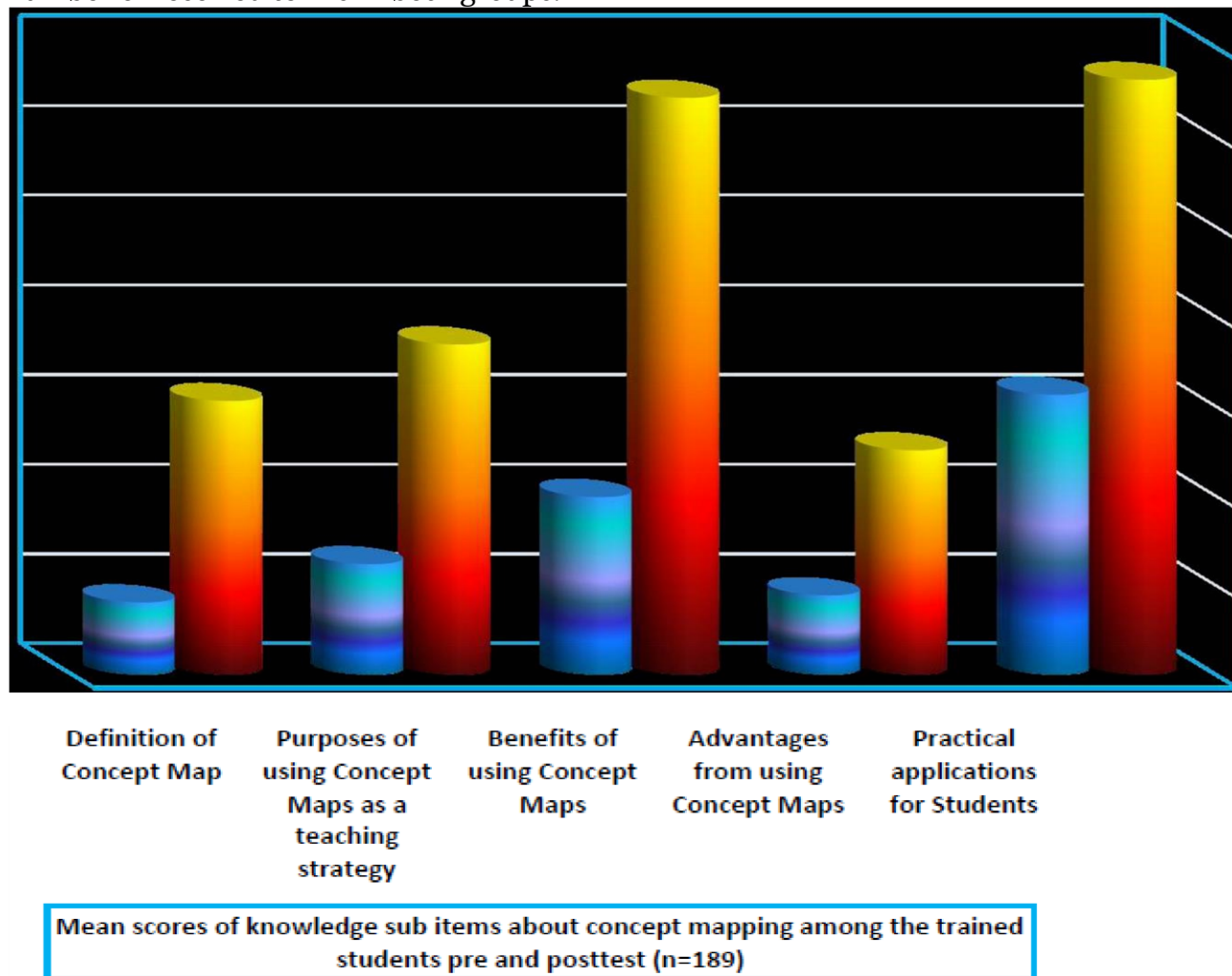
Variables	The studied students (n=376)				$\chi^2$	P
	Study group (n=189)		Control group (n=187)			
	n	%	N	%		
Age years:					1.351	0.245
19-<21	59	31.2	69	36.9		
21-23	130	68.8	118	63.1		
Range	19.00-23.00		19.00-23.00			
Mean±SD	20.75±0.64		20.65±0.61			
gender:					0.002	0.961
Male	54	28.6	53	28.3		
Female	135	71.4	134	71.7		
Living with:					0.372	0.542
Family	176	93.1	171	91.4		
Friends	13	6.9	16	8.6		
Residence:					0.779	0.377
Urban	74	39.2	65	34.8		
Rural	115	60.8	122	65.2		
Previous study:					1.013	0.314
General secondary school	189	100	186	99.5		
Nursing school	0	0	1	0.5		
No. of received terms:					6.437	0.040*
2-4	6	3.2	10	5.3		
5-7	175	92.6	176	94.1		
8 & 10	8	4.2	1	0.5		

Study group= students who were trained for application of concept maps

Control group= students who were not trained for application of concept maps

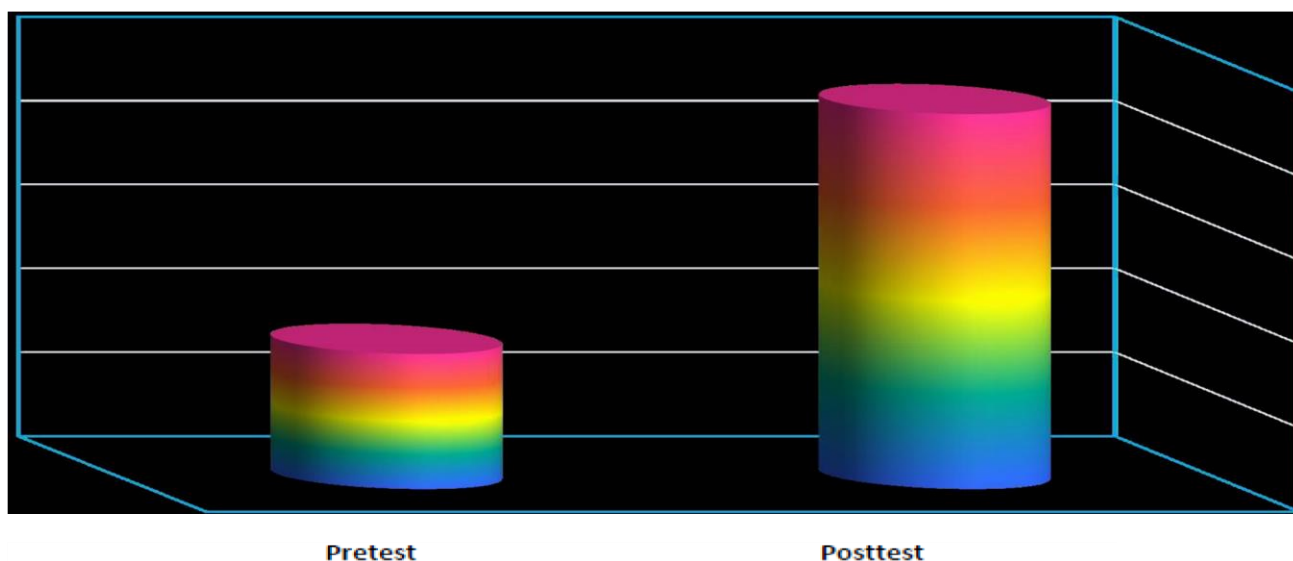
\*Significant (P<0.05)

Table (1) shows personal characteristics data of the studied students. The current study result shows that their mean age was  $(21.98 \pm 1.22)$ , regarding gender more than two third (71.4%) were female. There was no statistically significant differences regarding their demographic characteristics except the number of received terms in both groups.



(n=189).

Table (1) Illustrates mean scores of knowledge sub items about concept mapping among the study group pre and post test. It was noticed before training sessions that majority of the studied students (0.81%, 1.24%, 1.99%, .089%, 3.13%,) respectively were did not know definition, purposes, benefits, advantages, and practical application of concept mapping. On contrast, post training sessions, the majority of the study sample (3.06%, 3.69%, 6.44%, 2.51%, 6.64%,) respectively became knowledgeable about concept mapping



**Mean total knowledge scores among the trained students pre and posttest (n=189)**

Figure (2): Mean scores of total knowledge about concept mapping among the study group pre and post training (n=189).

Figure (2) Integrates total knowledge mean scores about concept mapping pre and post training among the study group. The students' knowledge mean score was  $(8.05 \pm 6.51)$  pre training. While post training this values was improved to be  $(22.35 \pm 9.13)$ .

Table(2) Findings of application of rubrics system as evaluation tool for the study group of students based assignments .

Variables	Evaluation of application rubric sbased assignments (n=38)						$\chi^2$ P
	At beginning of semester (first assignment)		At middle of semester (second assignment)		At end of semester (third assignment)		
	n	%	n	%	n	%	
•Structure:							34.328 0.0001*
Exceeds standard	20	52.6	25	65.8	38	100	
Adequately meets standard	10	26.3	13	34.2	0	0	
Below standard	8	21.1	0	0	0	0	
•Proposition:							11.326 0.023*
Exceeds standard	30	78.9	30	78.9	35	92.1	
Adequately meets standard	4	10.5	8	21.1	3	7.9	
Below standard	4	10.5	0	0	0	0	
• Relationship:							46.304 0.0001*
Exceeds standard	0	0	15	39.5	28	73.7	
Adequately meets standard	30	78.9	20	52.6	10	26.3	
Below standard	8	21.1	3	7.9	0	0	
•Exploratory:							29.463 0.0001*
Exceeds standard	8	21.1	25	65.8	30	78.9	
Adequately meets standard	25	65.8	10	26.3	8	21.1	
Below standard	5	13.2	3	7.9	0	0	

Statistically significant (P<0.05)

Table(2) Incorporates findings of application of concept map scoring rubric for trained group assignments shows high significant difference ( $p=0.001$ ) between the 3 assignments of concept map rubrics that due to improvements in construction of map from beginning to the end.

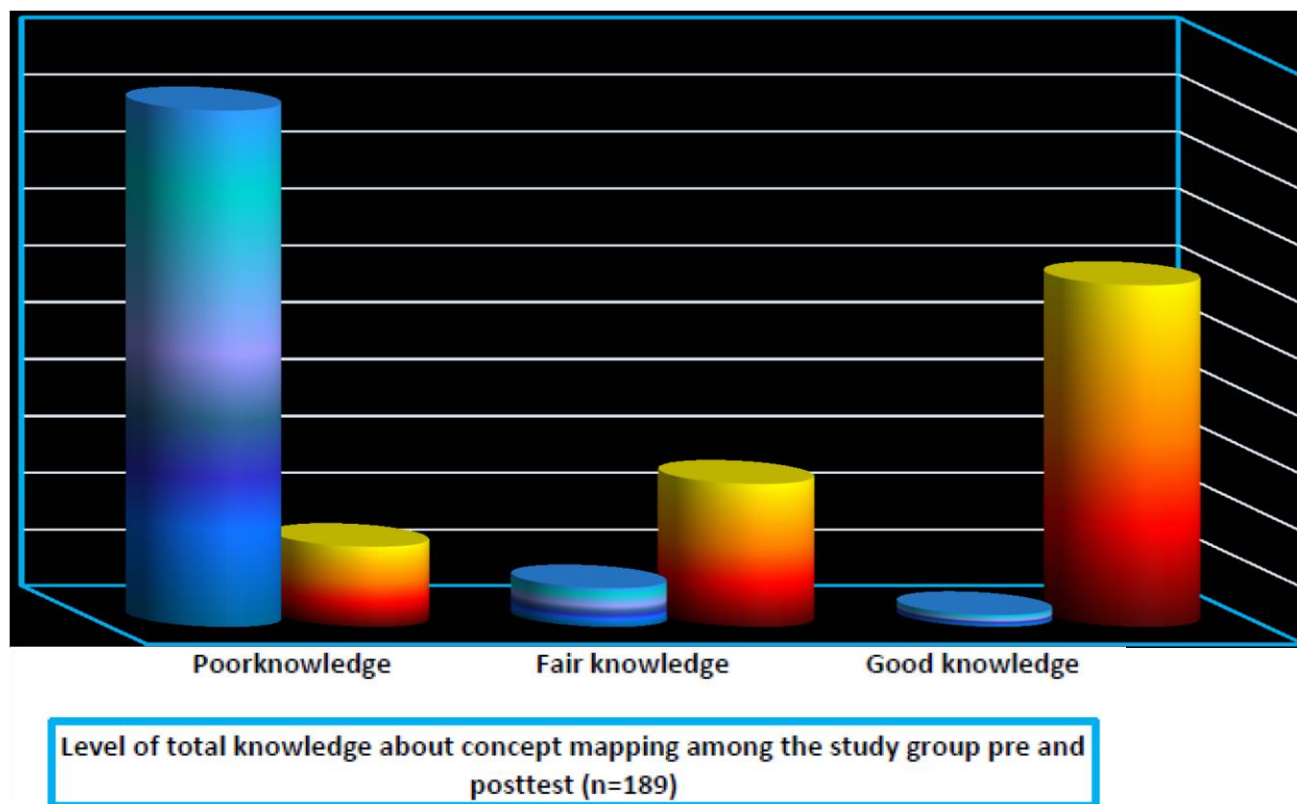


Figure (3): Level of total knowledge scores about concept mapping among the study group pre and posttest (n=189).

Figure (3): Demonstrates total knowledge scores and level about concept mapping among the studied students pre and post training the majority (91%) of study group had poor total knowledge level regarding concept mapping pre training, while post training it was improved to be two thirds (60%) of them had good total knowledge level regarding concept mapping. There were Statistically significant ( $P<0.05$ ) between pre and post test.



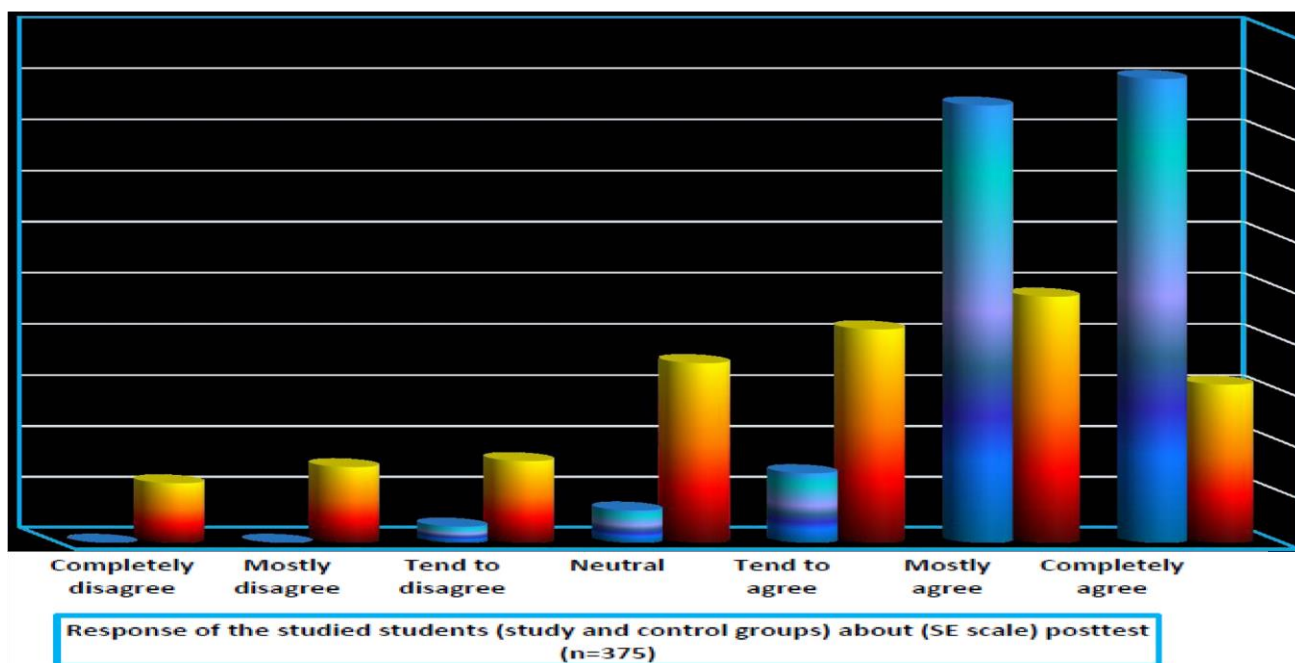


Figure (4): Response about questions regarding perception of self -efficacy for learning and performance sub scale from the motivated strategies for learning questionnaire (MSLQ) of the studied students (study and control group) posttest (n=375).

Figure(4) Demonstrates the responses regarding self-efficacy questionnaire of studied students (study and control groups) posttests. That (5.9%, 7.50%, 8.1%, 17.7%, 21.0%, 24.2%, 15.6%) respectively were Completely disagree, mostly disagree, Tend to disagree, neutral, Tend to agree, Mostly agree, Completely agree for the control group. On the other hand, as regard study group responses were (00%, 0.0%, 1.6%, 3.2%, 6.9 %, 42.9%, 45.5%) respectively

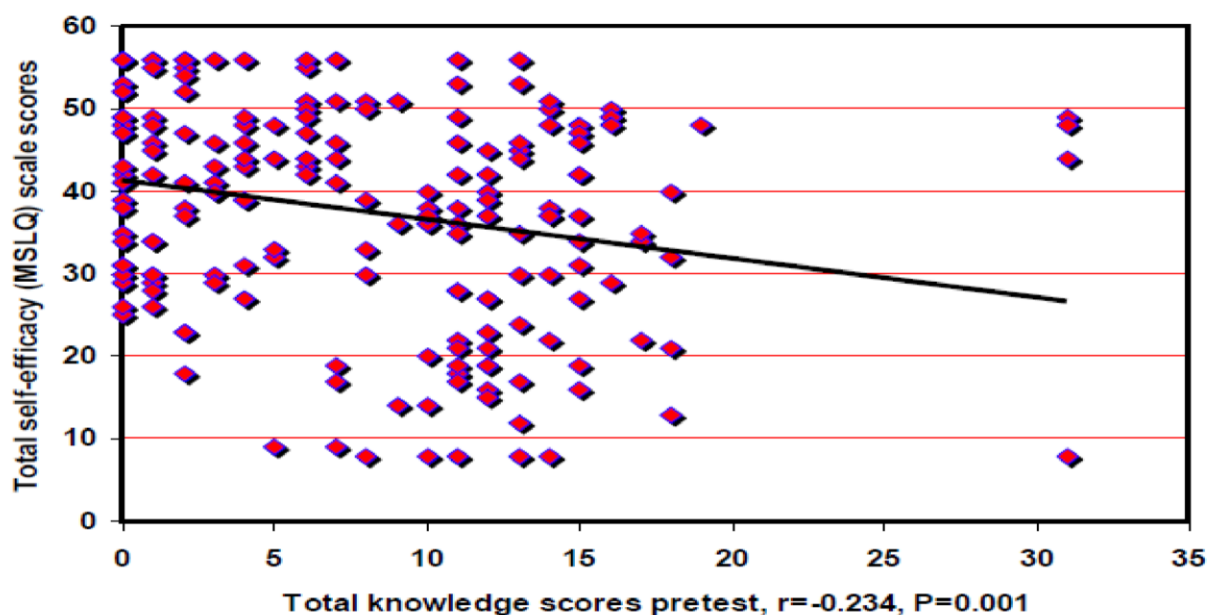


Figure (5): Demonstrates correlation between total knowledge scores and total self-efficacy sub scale (MSLQ) scores among the study group pretest. There was a high statistical significant negative correlation ( $p=0.0001$ ) and ( $r=-0.234$ ).

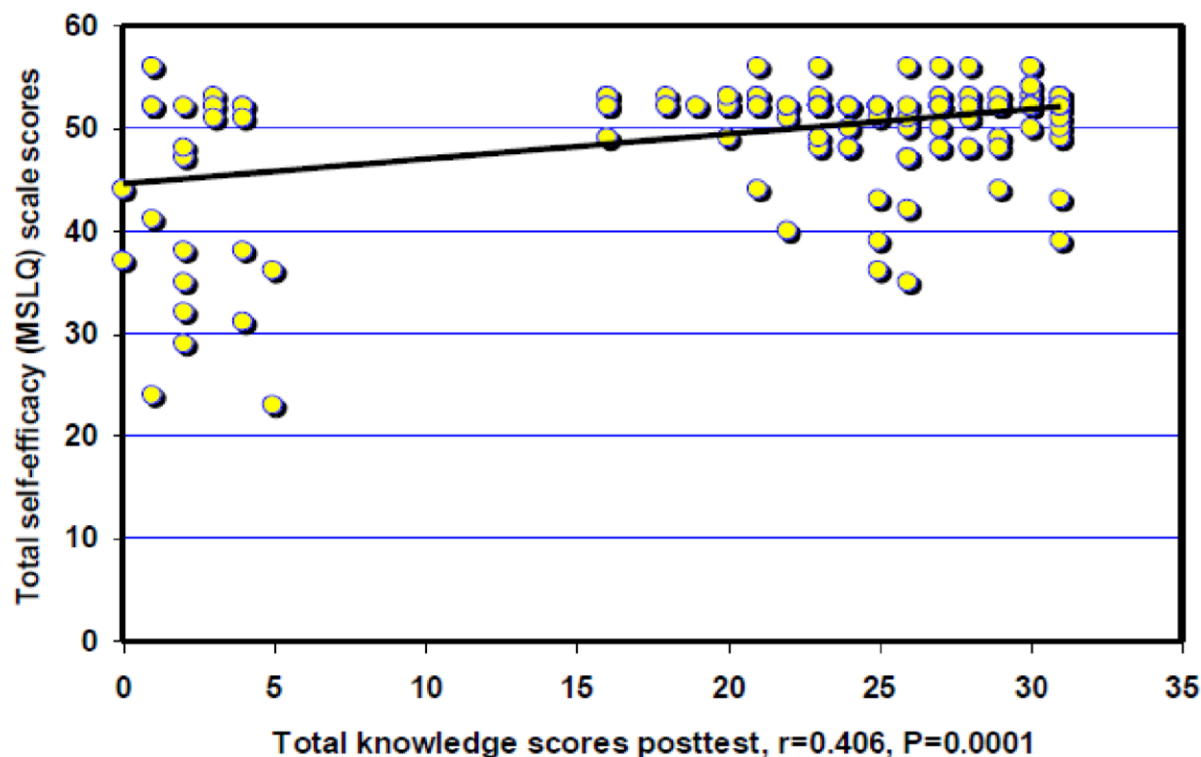


Figure (6) Reports to correlation between total knowledge scores and total self-efficacy sub scale (MSLQ) scores among the study group posttest. There was a high statistical significant positive correlation ( $p=0.0001$ ) and ( $r=0.406$ ) between total knowledge scores and total self –efficacy subscale scores among the study group post intervention.

#### 4. Discussion

Concept mapping is an educational method that promotes learners to become self-directed learners, think critically and become qualified in doing their work. An effective teaching and learning process is determined by a teacher who is effective in teaching, committed and dedicated at a high level. Concept mapping can be used as educational technique. It is extremely important for the pedagogical nurse to understand their role among students during the teaching and learning process as well as the required learning skills and practices in their educational institutions. Identifying the learning skills of the learner is an important indicator of academic achievement (Yusof et al., 2013). The study was conducted to investigate the effect of using the concept map on self-efficacy among nursing students. According to the current study findings there were significant improvement among nursing students as they became knowledgeable about concept mapping (definition, importance, benefits and steps for performing concept map) after training while pre training and awareness sessions they were not aware of concept map. This might be attributed to the fact that conceptual map is a new educational technique used for the study participants, so the students experience regarding this method increased after awareness sessions as they weren't have previous experience about it. This result was in the same line with Latif;Mohamed<sup>1</sup>; Dahlan (2016) who reported that the level of knowledge in the concept map

based learning group was significantly higher than that of students in the lecture based group after the applying concept map. This finding agreed with, Moahmed (2013) who stated that nursing students' general information of knowledge about concept mapping improved significantly post intervention. As well as these finding were agreed with Ghोजazadeh.,etal (2014) who stated that Students at the end of the semester well known about concept map, uses of it in nursing education and construct integrated maps after awareness sessions due to a significant difference regarding knowledge about concept mapping among the study group. Develop a professional who is able to self-direct and to continue on the educational path, the individual must be skilled in the process of self-learning. These findings agreed with Wilgis & McConnell (2013) who confirmed that level of knowledge about the conceptual map improved between pre- and post-intervention. Cognitive skills such as reasoning, critical thinking and problem solving is necessary for nursing education. And nursing students prefer educational strategies assist in more information long-lasting when gained, and effectively used for reaching such expected outcomes needs a paradigm shift in nursing education

The present study findings revealed that most of the studied sample understand more about definition and purpose of concept map .These results were the same with Bernstein,(2011)who specified that concept mapping is a diagram that organizes information, group data, contains links and visually illustrates relationships between different ideas. Also supported by Chen, etal( 2011) found that Concept mapping can help in representations of information graphically that helps them to integrate their new knowledge with what they have learned previously. helping students to easily classify their knowledge, make them coherent to make a deeper understanding rather than memorizing a series of concepts. Build explicit links and relations between concepts.. In the same line Bittencourt (2013) reported that concept map is alternative method for evaluation the process of teaching and learning and can be applied for, scientific research, education and in nursing practices.

Current study results revealed that all members of the sample have knowledge about how to use concept map and by using it, encourages students to think critically and improve their educational level. With the support of Akeju (2012) who found that concept maps are a method that provide a visual representation of the aquired information. learning methods focuses on visual teaching promote understanding, stimulate thinking, enforce integration of new knowledge, and identify misinterpretation and misconceptions .As well as Saouma & Attieh (2008) stated more than ever that conceptual mapping improves ability of a student's to assess patients comprehensively, patient data synthesis even complicated , and building relationships between data in a healthcare environment. Also Kaddoura et al. (2016) suggested that conceptual mapping is beneficial for nursing students learning in their clinical environment, and added to that similar with Papathanasiou et al. (2014) concluded that concept maps not only support meaningful learning and knowledge building, but the ability to apply a concept map used to show skills of critical thinking and Creativity of learners. the current study findings incorporate that all members of the study sample have knowledgable about how to create a conceptual map, and these results were identical with Jennifer (2011) who confirmed that when drawing the map, the concept is placed in the upper or middle part is the main concept and the other ones are arranged from upper to lower; communicative sentences are presented on the lines between concepts. Likewise with Barchok, Too & Ngeno (2013) found that the steps for creating concept maps in healthcare, occur through certain major steps as follows: developing a basic framework action diagram, analyzing then categorizing the collected data in the form of a personal or objective diagnosis, and correlating data which are subjective or objective , setting goals, interventions, outcomes, and finally assessing patient responses and progression in his health state.

The present study finding showed that CM improve students understanding, synthesis and reflection of concept map on course content that most of student exceeds standard of map assignments when evaluated by rubric assessment method, This may be explained by the researchers continuous guidance and the continuous assessment feedback given to the students for improving their assignments (drawing the concept map). This was supported by Youssef & Mansour( 2012) who found CM strategy more effectively improve active and deep approaches to learning and also emphasized the learners advancement than the lecture based method.

These findings were consistent with Abu Hasheesh , Al-Mostafa & Obeidat (2011) who emphasized that CM teaching technique promoting significant learning, in which learning achieved by learners ability to make organization and relation between the newly information and concepts with in cognitive mental structures. Also in the same line with Shakuntala, B. S. & Nirmala, T. (2012) founded that the rubric scores pretest and post test in comparison were difference in all the construction structure criterion sections of concept map except the map hierarchy.

Furthermore Khurais and Salih (2017) who mentioned that using the concept map evaluation model, this conceptual mapping have direct relation to students' independent abilities for problem solving ., and this finding is contradicted by Farag (2017) who said that near to half of the study sample had average scores, The other half not reach a satisfied scores and no one achieve the perfect concept map in the first assignment

The current study findings showed that students self -efficacy level was improved after application of concept map this may be due to the construction of a concept map exercise required attention from students to the lecture by encouraging them to provide interactive reflection on the lecture content. Indirectly, it allows the students to become astudent centered approaches which actively engaged with the content and information of lecture instead of being passive listener deep approaches to learning and also emphasized,. In the way the intended learning out comes of the lesson was achieved, to help students engage with the subject matter in an active way instead of only listening to a lecture or power point presentation the current study findings are consistent with Oliver (2012),concluded that Concept mapping, is considered a student-directed teaching method, increases the use of self- regulation, promotes self-efficacy, and leads to better achievement of student. Simillary to Chularut, & DeBacker, (2004) showed that the concept mapping approach had significant and positive effects on the students' sense of self-efficacy when learning English as a second language. As well as The current study findings supported by the study findings of Nobahar(2013) he concluded that the students who receive motivation, self-monitoring and self-sufficiency revealed academic achievement . In agreement with Almisad (2019) indicates that students' sense of self-efficacy improved via applying concept mapping approach to teaching educational technology-related project. On agreement with the study done by Khajavi & Ketabi (2012) the results revealed that students which used concept mapping have greater achievement in their learning and perceived self-efficacy in comparison to students which used traditional method strategy .furthermore Sarhangi et al. (2010) demonstrated that concept mapping improve perceptions about ideas or concepts of students, that enable them to understand their mistakes and encourage students to learn effectively. as well as Trevisani et al. (2016) found that concept mapping increase students ability to think independently In the same line Hagell and colleagues (2016) stated that, transformation and application of theoretical learned knowledge to be experienced interactively, conceptual mapping provide chances for students to test their knowledge perfectly This was supported by Samawi, Z., Miller, T. and Haras, M. (2014) study stated that the concept maps complexity degree is increased with passing of time. It has been illustrated that concept mapping is maintain long-term learning, enable moving from theory to real clinical practice, and encourage



students for being self-confident when handling care to patients. And reported that students being aware of concept mapping effectiveness.

According to Cheung, D. (2015) concluded that students' attitude, motivation, and sense of self-efficacy can be influenced by the teaching approach and the learning activities used. These results were confirmed by Wang, C.D., & Castaneda-Sound, C. (2008) the role of generational status, selfactualization, academic self-efficacy, and perceived social support in the psyche of college students. Having mapping skills enables students to become more independent and motivated learners. The current study results were in compitable with bresseting.,(2018). Reported that there were no differ in the final scores of both groups CM group and the UTM group. He explained that training concept mapping made their limitations in understanding from the first clinical learning changes in self-efficacy over time.. the use of a quantitative measure of learning self-efficacy seems to be suitable enough .

### **5. Conclusion**

The results of the current study, showed an increase in self -efficacy scores in the study group in comparison to the control group, the researchers concluded that teaching with concept mapping may foster student's self- efficacy than using traditional method.

### **6. Recommendation**

Curriculum of nursing must be developed and understanding various teaching and learning strategies enhance meaningful learning and improve students self-efficiency, and needs to change to the student centered learning approach, instead of rote memorization of facts. - Academic staff and management must use suitable and creative teaching methods. and maintain supportive learning environment to foster active learning, and critical thinking skills. -Learning Strategies as concept mapping must be used in all academic nursing courses theory and practice.

### **References**

- Abu Hasheesh M. , Al-Mostafa O. & Obeidat H.(2011): Traditional Versus Nontraditional Methods of Teaching:  
the Impact on Nursing Teaching Effectiveness and Student's Achievements at Nursing Colleges. An -  
Najah Univ. J. Res. (Humanities).25(1), 255-275.
- Akeju O. O. Simpson, Rotimi C. O & Kenni A. M. (2012): Teaching With Concept Mapping Instructional Strategy in Nigeria Secondary Schools. Eurasian J. Phys. Chem. Educ., Jan (Special Issue):13-19.
- Almisad. B., (2019).The Effects of Concept Mapping Instruction on Students' Attitudes, Motivations, and SelfEfficacy inEducational Technology Class The Public Authority for Applied Education and Training (PAAET)College of Basic ducationPAAET,Kuwait.
- Bambini, B., Washburn, J., & Perkins, R. (2009). Outcomes of clinical simulation for novice nursing students: Communication, confidence, critical judgment. Nursing Education Research, 30(2), 79-82.
- Barchok K.H., Too J.K., Ngeno K.J. (2013): Effect of Collaborative Concept Mapping Teaching Strategy on Students' Attitudes Towards Chemistry in Selected Secondary Schools in Kenya. Asian Journal of Social Sciences & Humanities. 2(2), 530-540.



- Bernstein J. M. (2011), Concept Mapping And Student Success In A College-Level Environmental Studies Course, A professional paper submitted in partial fulfillment of the requirements for the degree of Master of Science in Science Education Montana State University ,Bozeman, Montana.
- Billings and J. Halstead. Teaching in nursing: A guide for faculty (3rd. ed) (St. Louis, MO: Saunders, 2009)
- Bittencourt GK, da Nóbrega MM, Medeiros AC, Furtado LG(2013). Concept maps of the graduate programme in nursing: experience report. *Rev Gaucha Enferm.* 2013;34(2):172-6.
- Bressington, Daniel T Wai-kit Wong, Kar KeiClaire Lam, Wai Tong Chien. "Concept mapping to promote meaningful learning, help relate theory to practice and improve learning self-efficacy in Asian mental health nursing students:A mixed-methods pilot study", *Nurse Education Today*, 2018.
- Chen, S. L., Liang, T., Lee, M. L., & Liao, I. C. (2011). Effects of concept map teaching on students' critical thinking and approach to learning and studying. *Journal of Nursing Swedish upper secondary science students' understanding. Journal of Biological Education*, 47(2), 73-83. doi: 10.1080/00219266.2012.716785
- Cheung, D. (2015). The combined effects of classroom teaching and learning strategy use on students' chemistry self-efficacy. *Research in Science Education*, 45(1), 101-116. <https://doi.org/10.1007/s11165-014-9415-0>
- Chularut, P., & DeBacker, T. K. (2004). The influence of concept mapping on achievement, self-regulation, and self-efficacy in students of English as a second language. *Contemporary Educational Psychology*, 29(3), 248-263. <https://doi.org/10.1016/j.cedpsych.2003.09.001>.
- Credé, M., Phillips, L.A., (2011): A meta-analytic review of the motivated strategies for learning questionnaire. *Learn. Individ. Differ.* 21 (4), 337–346.
- Daugherty, J. L., Custer, R. L., & Dixon, R. A. (2012). Mapping concepts for learning and assessment. *Technology and Engineering Teacher*, 71(8), 10-14.
- Farrag RE.(2017) Concept Mapping Strategy: An Effective tool for Improv-ing Maternity Nursing Students' Achievement. *Journal of Nursing Education and Practice.* 2017; 7(3): 12-13.  
<http://dx.doi.org/10.5430/jnep.v7n3p10>
- Ghojzadeh,M., Aghaei,M.H., Naghavi-Behzad,M., Piri, R., Hazrati,H&Azami-ghdash,S.(2014):Using ConceptMaps for Nursing Education in Iran: A Systematic Review.*ResDev Med Educ*; 3(1):67-.72.
- Hagell, P., Edfors, E., Hedin, G., Westergren, A. and Hammarlund, C. (2016) Group Concept Mapping for Evaluation and Development in Nursing Education. *Nurse Education in Practice*, 20, 147-153. <https://doi.org/10.1016/j.nepr.2016.08.006>.

- Harrison, S. and Gibbons, C. (2013) Nursing Student Perceptions of Concept Maps: From Theory to Practice. *Nursing Education Perspectives*, 34, 395-399. <https://doi.org/10.5480/10-465>
- Hussain H , Shamsuar NR( 2013 ) Concept map in knowledgesharing model . *International Journal of Information and Education Technology* 3 , 3 , 397 – 400.
- Ignatavicius D.( 2019). Teaching and learning in a concept-Based Nursing Curriculum; A how to best practice approach. USA. Jones& Bartlett Learning.
- Jaafarpour,M.,Aazami,S.,&Mozafari,M.(2016). Does concept mapping enhance learning of nursing students?. *Nurse Education Today*;( 36):129–132. doi: 10.1016/j.nedt.2015.08.029.
- Jennifer Moore Bernstein (2011): Concept Mapping and Student Success in a College-Level Environmental Studies Course. A professional paper submitted in partial fulfillment of the requirements for the degree Master of Science in Science Education, MONTANA STATE UNIVERSITY .Bozeman,Montana.
- Johnson, D.W., Johnson, R.T., & Holubec, E.J. (1993). *Circles of Learning: Cooperation in the Classroom* (4thEd.).Edina, MN: Interaction Book Co
- Kaddoura, M., VanDyke, O., Cheng, B. and Shea-Foisy, K. (2016) Impact of Concept Mapping on the Development of Clinical Judgment Skills in Nursing Students.*Teaching and Learning USA in Nursing*, 11, 101-107. <https://doi.org/10.1016/j.teln.2016.02.001>
- Karabacak, U., Servest, S., Onturk, Z. K., Aslan, F.E., & Olgun, N. (2013). Relationship between student nurses' self-efficacy and psychomotor skills competence. *International Journal of Nursing Practice*, 19, 124-130. doi:10.1111/ijn.12051 Knowledge. (n.d.). In Merriam-Webster online dictionary. Retrieved from <http://www.merriam-webster.com/dictionary/knowledge>.
- Khajavi & Ketabi (2012) studied the effect of conceptmapping strategy on reading comprehension and selfefficacy of intermediate EFLstudents in Iran. Motivated Strategies for Learning Questionnaire (MSLQ) was applied to measure students' self-efficacy beliefs. The results revealed that students in the concept mapping group showed greater achievement in reading comprehension and self-efficacy.
- Khrais, H. and Saleh, A. (2017) The Outcomes of Integrating Concept Mapping in Nursing Education: An Integrative Review. *Open Journal of Nursing*, 7, 1335-1347. <https://doi.org/10.4236/ojn.2017.711096>
- Kirk, D. (2012). Beyond the limits of theoretical discourse in teacher education: Towards a critical pedagogy. *Teaching and Teacher Education*, 2(2), 155-167. EJ 344 613.
- KumarManoj & Rizwaan Mohd. (2013): Impact of Teaching through Concept mapping on Achievement in Social Studies' Components. *International Indexed & Refereed Research Journal*. 4(46). 54-57.

- Latif .A; Mohamed1.R; Dahlan.A (2016): Concept Mapping as a Teaching Tool on Critical Thinking Skills and Academic Performance of Diploma Nursing Students Education in Medicine Journal. 2016; 8(1): 67–74. <http://www.eduimed.com..>
- Leigh, G.T. (2008). High-fidelity patient simulation and nursing students' self-efficacy: A review of the literature. *International Journal of Nursing Education Scholarship*, 5(1), 1-17.
- Mahmoud,H.G.(2012). Critical Thinking Dispositions and Learning Styles of Baccalaureate Nursing Students and its Relation to Their Achievement. *International Journal of Learning & Development*; 2(1): 398 415.
- Moattari, M.,Soleimani, S., Moghaddam, N. J., & Mehbod, F. (2014). Clinical concept mapping: Does it improve discipline-based critical thinking of nursing students.Iran J Nurs Midwifery Res, ;19(1):70-6.
- Nobahar, B., Nemat Tabrizi, A. R., & Shaghaghi, M. (2013):The Effect of Concept Mapping on Iranian Intermediate EFL Learners' Self-efficacy and Expository Writing Accuracy. *Theory & Practice in Language Studies*, 3(11). <https://doi.org/10.4304/tpls.3.11.2117-2127>.
- Oliver K. (2012 )An investigation of concept mapping to improve the reading comprehension of science texts. *Journal of Science Educationand Technology*.; 18(5): 1-18.
- Papathanasiou I., Kleisiaris C, Fradelos E., Kakou K, and Kourkouta L. (2014)Critical Thinking: The Development of an EssentialSkill for Nursing Students. *Journal of Academy of Medical Sciences of Bosnia and Herzegovina*.2014; 22(4): 283–286.
- Peterson-Graoise, V., Bryer, J., & Nikolaidous, M. (2013). Self-esteem and self-efficacy as predictors of attrition in associate degree nursing students. *Journal of Nursing Education*, 52(6), 351-354. doi:10.3928/01484834-20130520-01.
- Rasoul Zadeh N, Sadeghi Gandomani H, Delaram M, Parsa Yekta Z. Comparing the effect of concept mapping and conventional methods on nursing students' practical skill score. *Nurs Midwifery Stud*. 2015;4(3):e27471. doi: 10.17795/nmsjournal27471
- Samawi, Z., Miller, T. and Haras, M. (2014)" Using High-Fidelity Simulation and Concept Mapping to Cultivate Self-Confidence in Nursing Students". *Nursing Edu-cation Perspectives*, 35, 408-409. <https://doi.org/10.5480/12-1042.1>.
- Saouma B.e and Attieh M., (2008): The Effect of Using Concept Maps as Study Tools on Achievement in Chemistry American University of Beirut, Beirut, LEBANON, *Eurasia Journal of Mathematics, Science & Technology Education* , 4(3), 233-246.
- Sarhangi, F., Masumi, M., Ebadi, A., Seyyed, M. and Rahmani, A. (2010) Compar-ing the Effect of Lecture- and Concept Mapping Based Learning on Cognitive Learning Levels. *Iranian Journal of Critical Care Nursing*, 3, 1-5.

- Schuster .P.,(2011): Concept Mapping: A Critical Approach to Care Planning (2nd edn). Philadelphia, PA: FA Davis Company, 2011.).
- Shakuntala, B. S. & Nirmala, T. (2012). Attitude of students on concept mapping: An innovative teaching learning strategy. Nitte, UniversityJournal of Health Science, 2(4), ISSN 2249-7110.
- Shellenbarger T, Robb M. Technology-based strategies for promoting clinical reasoning skills in nursing education. Nurse Educ. 2015;40(2):79-82. doi: 10.1097/ NNE.0000000000000111.
- Trevisani, M., Cohrs, C.R., Soares, M., Duarte, J., Mancini, F., Pisa, I. and Domeni-co, E. (2016) Evaluation of Learning in Oncology of Undergraduate Nursing with the Use of Concept Mapping. Journal of Cancer Education, 31, 533-540. <https://doi.org/10.1007/s13187-015-0869-1>
- Wang, C.D., & Castaneda-Sound, C. (2008). The role of generational status, self-esteem, academic self-efficacy, and perceived social support in college students' psychological. well, H.R., Bernal, C., Bressington, D., (2015): Becoming a mental health nurse: a threeyear longitudinal study. Knowl. Manag. e-Learn. 7 (1), 100–118 (ISSN 2073-79
- Wilgis, M. and McConnell, J. (2013) Concept Mapping: An Educational Strategy to Improve Graduate Nurses' Critical Thinking Skills during a Hospital Orientation Program. The Journal of Continuing Education in Nursing, 39, 119-126. <https://doi.org/10.3928/00220124-20080301-12>
- Yıldırım, B., & Özkahraman, Ş. (2011c). Critical Thinking in Nursing Process and Education. International Journal of Humanities and Social Science ,1 (13), 257-262.
- Youssef .A. M Hanan; Mansour A.M. Magda (2012): The Effect of Concept Mapping on Students' Learning Achievements and Interests in Taif University. Life Science Journal;9(2s). <http://www.lifesciencesite.com>.