

THE EFFECTIVENESS OF USING THE SIX-HATS TEACHING METHOD ON IMPROVING THINKING SKILLS AMONG CRITICAL CARE NURSING STUDENTS

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ABSTRACT

Thinking skills are a necessity for any developing society. The most important aim of education today is to provide individuals with the capacity to be able to think flexibly and have open minds to be able to adapt to different situations. As a result, the educational structure focuses on developing high-level thinking skills such as analyzing, synthesizing, evaluating, finding relationships, abstracting, and illustrating subjects. It is expected that nursing students' innovation will be stimulated by the variety of innovative teaching strategies. **Aim:** the study aimed to explore the effectiveness of using the six-hats teaching method on improving thinking skills among critical care nursing students. **Method:** A descriptive research design was utilized. A total of 54 fourth level students were registered for the critical care nursing course in the first semester 2019/2020 was enrolled in the study. Student's demographic data and six thinking hats model students' opinions questionnaire were used to collect data. **Results:** revealed that 90.7% of students

agree that the six hats model made them consider the negative and positive aspects of the disease and think about the various aspects of a subject. 89.8% revealed that the model helped them produce creative ideas, 88.9% agree that model provided them for sharing of different ideas and thoughts and increased their interest and motivation in class. The average score of the students' response to the six thinking hats model in the two lectures is 34.35 ± 8.41 with satisfactory level 86.1%. **Conclusions:** The input from the study's nursing students showed that using six thinking hats improved their ability to think about the situation creatively, express their various ideas and thoughts, increase their curiosity and motivation, and help them analyze and synthesize their knowledge. **Recommendations:** The future direction for creative nursing research should be to link six thinking hats teaching model with the nursing curriculum to promote the creative thinking skills of nursing students.

Key Words: *students' opinions, six hats thinking model, critical care nursing*

INTRODUCTION

Critical thinking is a key aspect of today's nursing education. Those with the ability to think critically feel the need to change and update what they have taught (Özkutuk et al., 2019). Individuals who have not gained this skill tend to be passive in regard to what has been learned and are not typically creative (Aithal, 2016). Therefore, the use of different teaching models to improve creative and critical thinking in nursing education needs to be tested (Fesler-Birch, 2010).

Although educators agree on the value of the educational system's critical thinking skills, they don't necessarily agree on how these skills can be developed. Critical thinking is improved by several techniques. One of these approaches is the model of six thinking hats that created by Edward De Bono in 1994 (Aybek, 2007).

The model of six thinking hats is a conscious thought system that focuses the thinking of a person in a specific direction for a specific period of time (Karadag, et al., 2009). In the teaching-

learning process, the hat technique is used for the purpose of improving the ability to think, it consists of a mixture of opinion source and side opinions. The aim of this approach is to help individuals make important decisions, observations, and assessments (Erişen & Katmer-Bayraklı, 2016).

Six thinking hats theory has been developed to include blue, yellow, black, white, green, and red hats according to de Bono (De Bono, 2017). These different colors represent a different perspective; White hat it is neutral. It deals with knowledge that is factual. Red hat refers acknowledges feelings like love, pleasure, anger, security, fear. Individuals with red hat thinking collect opinions and reactions to the problem without making guesses. The disadvantage of a red hat is the rejection of facts (Kivunja, 2015).

Yellow hat focuses on the benefits, tries to reduce the likelihood of failure and is concerned about the positive assessment. Individuals with yellow hat thinking will not close the door on an opportunity. Black hat seeks to avoid mistakes, threats and risks. Thus, the first line of thinking will be towards the negative (De Bono, 2017). Green hat seeks new ideas and explores different alternatives. Individuals with green hat thinking do not settle just on one solution. Instead, they go with a set of solutions and think from a variety of perspectives (Petty, 2009). Finally, the blue hat that conducts the process of thinking like a conductor of an orchestra. Individuals with blue hat thinking ensure the Thinking hat guidelines are observed (Mahmoud, 2014).

Thinking hat skill is found to have a vital role in the professional development of teacher and students. Undoubtedly, a teacher has a vital role in the development of the educational learning process, as well as a lot of responsibilities, tasks and duties (Duchesne & McMaugh, 2018). That six hats teaching model not only strengthened the creative and critical thinking skills of the participants, but also had a positive effect on their empathy and understanding (Karadag et al., 2009).

With the six hats method, students express opinions, play role games and perform as a thinker under six different hats (neutral white, critical black, managerial blue, positive yellow, emotional red, and creative green hat)(Ramalingam,2009). In addition, students can move from the subtle memorization of information thinking to the development stage of their analytical and knowledge skills (Gencil & Gencil, 2018).

Wearing hats is a representation for various points of view. In this technique, each student is expected to think and generate ideas about a problem / situation by seeking arguments provided by their own hat and otherwise (Al-Arouani, 2016, AlJarrah, 2019). An innovative method of teaching is beneficial in improving the skills of critical thinking among nursing students as today's education's most important goal is to give students the ability to think flexibly and have open minds to adapt to different circumstances (Özkutuk et al., 2019).

Demonstration of the model of six hats thinking in university education is limited in studies (Karadag, et al., 2009). Since the publication of six thinking hats by De Bono, there have been suggestions in many articles and book chapters about the benefits of this technique in the educational settings (Kivunja, 2015, Pinto et al., 2015, Vernon & Hocking, 2014). To date, the six hats thinking literature has been more focused on educational areas, with a lack of studies on the nursing.

AIM OF THE STUDY

This study aims to explore the effectiveness of using the six-hats teaching method on improving thinking skills among critical care nursing students.

RESEARCH METHODOLOGY

Research Design

A descriptive research design was utilized to conduct this study.

Setting

This study was carried out in critical care nursing class at Faculty of nursing, Mansoura University.

Subjects

Purposive sample consisted of 54 male and female fourth level students were registered for the critical care nursing course. They were selected randomly in the period 2019-2020. The class was offered as the theory for 3 hours.

Sample Size

Calculation of sample size by DSS research.com sample size calculator program with 1 percent error (99.0 percent meaning) and 5.0 percent error (95.0 percent study power), assuming the percentage of that model learned students to think about different aspects of a subjects was 90.2% (Karadag et al., 2009) and its percentage in our locality may be about 68.0%. The sample size measured is 49 and we are adding 10 percent better data quality. So, number of students in each lecture will be 54 and total will be 108.

Tool of the Study

One tool was used for data collection it composed of two parts: Part I - Student's Demographic Data: It included items such as age and, gender; and Part II - Six Thinking Hats model Students' Opinions Questionnaire. This part aimed to assess the students' experience and opinions about using the six hats thinking teaching model to explore the effectiveness of using the six-hats teaching method on improving their thinking skills. It was adapted from Karadag et al. 2009. It included 20 items and was prepared from literature related information. This questionnaire uses a Likert scale for evaluation with choices from 'I do not agree', 'I am undecided', to 'I agree'. The mean of each item on this questionnaire was calculated.

Validity and Reliability

This tool was tested for content validity by 5 experts in critical care nursing staff who review the validity of content. The reliability of the tool was examined using cronbach's alpha reliability test that measures the internal consistency of the tools, it was found 0.96 which indicates high reliability of the tool, with percentage and Chi square test data were analyzed.

Ethical Considerations

The Faculty of Nursing Research Ethics Committee (FNREC)/Mansoura University gave an ethical approval to perform the research. Students were assured of voluntary participation in the study and were allowed to accept or refuse to participate in the study. Any questions the students had were answered; the study questionnaire included an informed part of consent. The students were assured of coding and keeping secret their personal information.

Data Collection

Students are enrolled through the first week of the semester in the course of critical care nursing. Students received all critical care nursing course through traditional method (lectures) except the final two lectures. Two topics were selected for six hat application (myasthenia gravis and fulminant hepatic failure). Before these two lecture started, the students received details about the purpose of the study and the students who wanted to participate in the study obtained oral permission. 54 students were assigned into small groups (6) about 9 students in each.

In the first hour of each lecture(myasthenia gravis and fulminant hepatic failure), all information was provided to the students about six thinking hats technique and hats' symbols (neutral white hat, managerial blue hat, positive yellow hat, critical black hat, and creative green hat, and emotional red hat). The seats of the students were structured in the form of ' U ' to share the area with the lecturer and interact with each other in order to prepare class environment that would help the critical thinking of the students in the class. The participant students were randomly assigned to their experimental conditions (white, green, yellow, red, blue, and black hats).

During the critical care lesson, the students used the six hats teaching method in fulminant hepatic failure class and again in the myasthenia gravis class. Two case studies were presented about (fulminant hepatic failure class and myasthenia gravis class) and students discussed the subject among themselves using the six thinking hats' technique. The questions asked in relation to different colorsof hats (white hat, blue hat, yellow hat, black hat, red hat, and green hat) for the nursing care related to fulminant hepatic failure and myasthenia gravis are shown in table 1.

In the last hour of critical care nursing lecture, every student was requested to express his opinions by using opinion form, and answer it and return it the next day.

Statistical Analysis

Collected data were coded, computed and statistically analyzed using SPSS (statistical package of social sciences), version 16. Data were presented as frequency and percentages (qualitative variables) and mean \pm SD (quantitative continuous variables). Chi square (c2) was used for comparison of categorical variables. Student's t test was used for comparison of continuous quantitative variables (two groups). The difference was considered significant at $P \leq 0.05$.

Table 1: Six thinking hats model

Six thinking hats	Nursing care evaluation myasthenia gravis	Nursing care evaluation fulminant hepatic failure
	<ul style="list-style-type: none"> • Define myasthenia gravis 	<ul style="list-style-type: none"> • Define fulminant hepatic failure.
	<ul style="list-style-type: none"> • Develop rehabilitation plan for a patient with myasthenia gravis. 	<ul style="list-style-type: none"> • Plan follow up schedule for patient with fulminant hepatic failure
	<ul style="list-style-type: none"> • What are the benefits of early diagnosis of myasthenia gravis? 	<ul style="list-style-type: none"> • What are the benefits of early treatment for a patient with fulminant hepatic failure?
	<ul style="list-style-type: none"> • What are the complications of myasthenia gravis? 	<ul style="list-style-type: none"> • What are the complications of fulminant hepatic failure?
	<ul style="list-style-type: none"> • Discuss body image changes related to myasthenia gravis 	<ul style="list-style-type: none"> • How does the disease affect patient's life style?
	<ul style="list-style-type: none"> • Discuss nursing management for myasthenia gravis patient 	<ul style="list-style-type: none"> • What is the nursing management you will give to a patient with fulminant hepatic failure?

RESEARCH RESULTS

This study involved 54 students in the first semester of 2019/2020. Among the group of students who participate in this model, female is more predominant (85.2%), while males represent 14.8% with no statistically significant difference in gender distribution.

Summating the response of the students to the six thinking hats model in the two lectures in table (1) revealed that 90.7% of them agree about item (8) that means the model made the students to consider the negative and positive aspects of the disease and item (12) that means the model learned them to think about the various aspects of a subject. Also, the response of the students was agreements around 90.0% for other six items of the model. The student agree by 89.8% about item (1) that means the model helped them produce creative ideas, 88.9% about item (5) that means the model provided them for sharing of different ideas and thoughts and item (17) that means the model increased their interest and motivation in class. While the students give agree response by 88.0% for item (14) that means the model made them use what I had learned and item (19) that the model made them analyze and synthesize the knowledge they had. The response agrees is 87.0% for the item (11) that the model improved their thinking systems. The agree response of the students is decreased for only three items: item (16) 65.7%

agree that it took time to discuss the subject from six different aspects; items (7) 55.5% agree that the black hat behavior (negative) in particular made them cynical and item (3) 50.5% agree that empathy turned into sympathy; it had a negative effect on them.

Table 2: Students' response to the six thinking hats model in the two lectures

Statements	I don't agree		I'm undecided		I agree	
	No	%	No	%	No	%
	1-It encouraged me to develop creative ideas.	8	7.4	3	2.8	97
2-It made it easier for me to empathies with patients	7	6.5	12	11.1	89	82.40
3-Empathy became sympathy; it affected me negatively.	38	35.2	15	13.9	55	50.5
4-It helped me to better understand the lesson	6	5.6	11	10.2	91	84.3
5-It made it possible to share different thoughts and ideas	7	6.5	5	4.6	96	88.9
6-It ensured the patient was considered holistically	10	9.3	11	10.2	87	80.7
7-The black hat behavior (negative) in particular made me apathetic	27	25.0	21	19.4	60	55.5
8-It made me aware of a disease's positive and negative aspects..	6	5.6	4	3.7	98	90.7
9-It will help my high-quality care	11	10.2	6	5.6	91	84.3
10-This helped me to notice gaps in my thought and allowed me to get to know myself.	11	10.2	7	6.5	90	83.3
11-It improved my thinking systems.	7	6.5	7	6.5	94	87.0
12-I've learned to think about different aspects of a subject.	5	4.6	5	4.6	98	90.7
13-It made me respect different ideas.	6	5.6	9	8.3	93	86.1
14-It mademe use of what I've known.	5	4.6	8	7.4	95	88.0
15-It helped me develop my creativity.	7	6.5	7	6.5	94	87.0
16-It was time to discuss the topic from six different aspects.	22	20.4	15	13.9	71	65.7
17-This made me more interested and motivated in class	7	6.5	5	4.6	96	88.9
18-It made me think critically.	8	7.4	7	6.5	93	86.1
19-It made me analyze and synthesize the knowledge I had.	6	5.6	7	6.5	95	88.0
20-This moved away from memory and ensured that the experience I acquired lasted.	14	13.0	9	8.3	85	78.7

Table 3 shows that the average score of the students' response to the six thinking hats model in the two lectures is 34.35 ± 8.41 and the average percent score is 85.88 ± 21.04 . The satisfactory level ($\geq 75.0\%$) of the students' response to the six thinking hats model in the two lectures is 86.1% (figure 1).

Tables 4 and 5 show that the average score in male students is higher than in female ones and among students in lecture two than in lecture one but the difference is not significant ($P>0.05$). Satisfactory level is nearly the same in male and females students while it is higher (90.7%) among students in the second lecture than among the first one (81.5%) but the difference is not significant ($P>0.05$).

Table 3: Total score of the students' response to the six thinking hats model in the two lectures

Scores	Min - Max	Mean \pm SD
Raw score	0.0 -40.0	34.35 \pm 8.41
Percent score	0.0 – 100.0	85.88 \pm 21.04

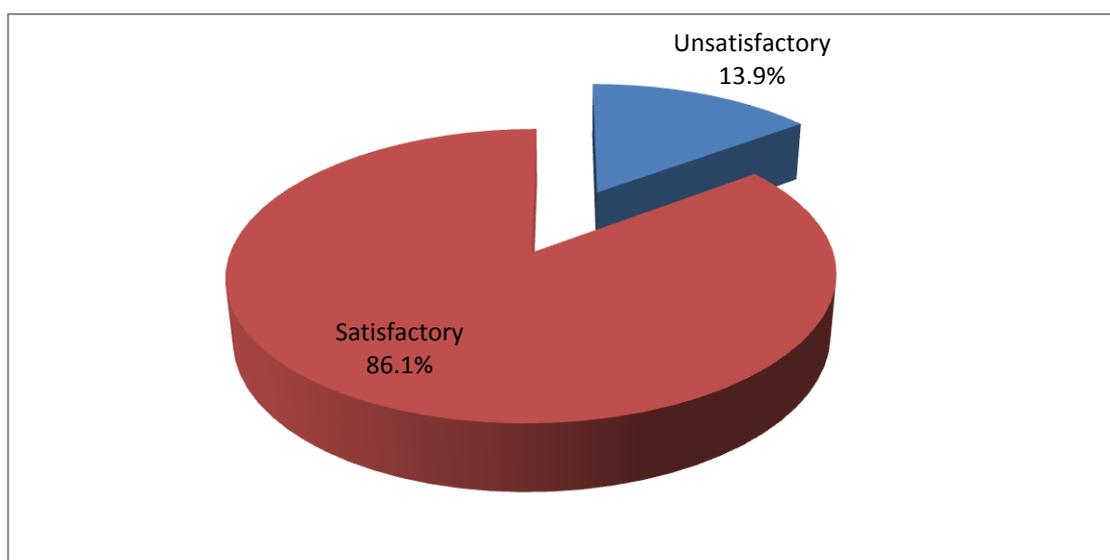


Figure 1: Levels of the students' response to the six thinking hats model in the two lectures

Table 4: Average percent score and levels of the students' response to the six thinking hats model in the two lectures in relation to their sex

Items	Males (16)		Females (92)		Significance test
Average Percent score	89.22 \pm 16.75		85.30 \pm 21.72		t=0.686, P 0.494
Levels	No	%	No	%	
Unsatisfactory (<75.0)	2	12.5	13	14.1	$\chi^2 = 0.030$,
Satisfactory ($\geq 75.0\%$)	14	87.5	79	85.9	P 0.862

Table 5: Average percent score and levels of the students' response to the six thinking hats model in the two lectures in relation to the lecture

Items	First lecture (54)		Second Lecture (54)		Significance test
Average Percent score	85.60 \pm 10.73		86.16 \pm 27.90		t=0.137, P 0.892
Levels	No	%	No	%	
Unsatisfactory (<75.0)	10	18.5	5	9.3	$\chi^2 = 1.935$,
Satisfactory ($\geq 75.0\%$)	44	81.5	49	90.7	P 0.164

DISCUSSION

Occasionally students hesitate about the hats and colors because they don't seem to be serious or complicated enough (some students love complexity). Throughout the practice, there has never been a problem with simplicity. Students realize that as simple mental hooks, they need the hats and colors because they can remember hats and colors much better than complex words.

The results of the current findings revealed that the majority of nursing students agreed that using six hats model helped them produce creative ideas and improved their thinking systems. These findings are congruent with Keenye et al. (2003) who conducted a research study about using the six hats as a teaching method to develop nursing students' thinking of creativity. The participant students revealed that many thinking skills were improved. This is in agreement with another research study by Vernon and Hocking (2014) examining the effect of six hats on creativity, and pointed out that this technique increases fluidity and originality compared with the traditional one.

The present study shows that the students agreed that the six hats model help them consider and think about both the positive and negative aspect of a disease and help them share different thoughts and ideas. This finding was confirmed by Karadag et al. (2009) which indicated that 90.2 percent of nursing students reported that the course using six thinking hats helped them to learn from different perspectives, more than 80 percent said the course allowed them to share different opinions and thoughts with others, using empathy and a holistic way of thinking about patients.

The analysis of the current findings revealed that most of the students reported that the model of six hats helped them understand the lesson better. The current findings are supported by Alazawi et al. (2012) who conducted research to investigate the effect of using six-hats thinking technique on Islamic education curriculum preparatory students.

Kaya et al. (2013) tried to find the impact of six thinking hats on student success in teaching subjects in geography classes related to sustainable development, the results revealed that teaching techniques based on six thinking hats has more positive results compared to other teaching techniques suggested in the curriculum. In the same line, Ku (2015) stated that six thinking hats included improved the students' quantitative and qualitative problem-solving techniques compared to students who were not educated using six thinking hats.

Furthermore, the results of the current study reported that the six hats model improved their thinking system and learned them to think about different aspects of subject. These findings are consistent with other researchers Kohn, & Smith (2011) examined the effects of different methods, including six hats, brainstorming and mixed strategies, on the propensity for critical thinking dependent on data interpretation, indicating the highest score with the technique of six hats.

On the other hand, the current study findings revealed that half of the participant students felt that empathy became sympathy, and the result was negative on them. This may be the consequence of the selected topics. Further and in more depth, it is important to examine whether it was the approach or the subjects chosen that turned their empathy into compassion.

The students' opinions results analysis found that the vast majority of the students were satisfied about the using of six hats model. The satisfactory level is nearly the same in male and female students while it is higher among students in the second lecture but the difference is not significant.

Finally, complexity is the biggest enemy of thinking, which leads to confusion. It becomes more enjoyable and effective when thinking is clear and simple. The concept of six thinking hats is very easy to understand and very easy to use.

The effectiveness of the six hats thinking method is much greater than imagined. It is an alternative to the system of arguments that have never been intended to be positive or innovative. With the concept of six hats, the focus is on 'what can be' rather than just 'what is' and how we plan a way forward – not who is right and who is wrong.

CONCLUSION

Findings of the current study supports that using and working with the six hats model in critical care nursing education is both powerful and easy to use. Additionally, it improves nursing students' creative thinking skills, sharing their different ideas and thoughts, increased their interest and motivation and made them analyze and synthesize the knowledge they had. Thus, it allows them to overcome the theory-practice barrier.

RECOMMENDATIONS

The perspectives and students' opinions gained from the six hats teaching model in nursing education should be shared.

LIMITATIONS OF THE STUDY

One group of students was involved in investigating the effectiveness of six hats thinking model and acquiring skills without a control group. It did not cover the practical parts of the topics included. In addition, the study was conducted in one semester at one Faculty of Nursing in Egypt on only fourth-level students. Therefore, it will be very difficult to generalize the findings.

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