

# Using the 'six thinking hats' model of learning in a surgical nursing class: sharing the experience and student opinions

## AUTHORS

### Mevlûde Karadağ

PhD, MSc, BSc, RN  
Assistant Professor, Tokat School for Health Sciences,  
Gaziosmanpaşa University, Turkey  
mkaradağ@gop.edu.tr

### Serdar Saritaş

MSc, BSc  
Instructor, Tokat School for Health Sciences,  
Gaziosmanpaşa University, Turkey

### Ergin Erginer

PhD, MSc, BSc  
Assistant Professor, Education Faculty, Gaziosmanpaşa  
University, Turkey

## KEY WORDS

Six thinking hats model of learning, use in nursing,  
experience, student opinions

## ABSTRACT

### Objective

The purpose of the study was to test the use of a creative teaching method in developing nursing students' critical thinking skills. The 'six thinking hats' model, which was developed by Edward DeBono in 1994, is a teaching method for developing creative thinking by presenting and systematising thoughts and suggestions within a specific structure. The six different hats (white, yellow, black, red, green, and blue) symbolise the thinking system. In this method the students are expected to change their perspectives symbolised by a colour at regular intervals.

### Setting

This study was conducted during the 2006-2007 academic year at Gaziosmanpaşa University.

### Subjects

The research population was comprised of 41 students who were registered for the surgical nursing class in the Department of Nursing at Tokat School for Health Sciences. Purposive sampling was not undertaken for the study with the entire population of students targeted.

### Method

The 'six thinking hats' model was used in theoretical lessons about breast cancer, spinal cord trauma and transplantation nursing in a surgical nursing class. At the end of the theoretic section of the class, the students' opinions were sought about the 'six thinking hats' model of learning. Data were analysed with percentage and Chi square test reporting of the responses.

### Findings

The majority of the students stated that this method facilitated their empathising with the patient; sharing different ideas and opinions; considering the patient holistically; generating creative ideas; looking at an event from positive and negative aspects; and developing their system of thinking. They recommended that this class be taught using this method.

### Conclusion

This study is important because it tested the use of a creative teaching method that is useful for the development of nursing students' critical thinking skills. The study is also important because there are a limited number of references in the literature about the use of the 'six thinking hats' model of learning in university education, and only one in nursing education, and having this type of study in the nursing literature adds to the improvement and enrichment of nursing education.

## INTRODUCTION

The rapid advancement of science and technology in the 21st century, characterised as the age of knowledge, in addition to changes in the structure of societies, has made it essential for innovations in all areas, for example, social, economic, education and health areas (Aybek 2007; Tiwari et al 2006). Changes in the delivery of health care services has left nurses facing care settings in which extensive technology is used, meeting the requests of patients for higher quality care, and facing many problems such as complex health problems and patients' early discharge from hospital. For nurses to be able to cope with these changes and increasing responsibilities they need to have highly developed critical thinking skills (Edwards 2007; Simpson and Courtney 2002; Fowler 1998) which include creative, critical, problem based and analytical thinking, to enable them to process data and form opinions in order to reach new understandings and take on new responsibilities (Hornig et al 2007; Demirci 2003; Maudsley and Strivens 2000).

It is not possible to be able to include all the rapidly expanding and changing information into educational programs to present to nursing students. For this reason it has become essential for students to acquire creative-critical thinking skills so they can find the information they need themselves and for them to develop fundamental methods of understanding that information. Fowler (1998) reported that the development of critical thinking skills that are consistent with complex, modern health care system needs are important for both nurse educators and practising nurses. The literature suggests however that traditional nursing education models do not encourage critical thinking and that theoretical knowledge is not transferred to clinical practice (Mangena and Chabelli 2005; Demirci 2003; Seymaur et al 2003; Maudsley and Strivens 2000). In a qualitative study based on interviews conducted at a nursing school at Rand African University in South Africa it was found that nursing students did not have the necessary characteristics, such as: problem solving; decision making; independent

thinking; having the courage to show empathy with different people; open-mindedness; patience; humanistic behaviours; and scientific knowledge. The reason for this was said to be that their teachers also did not have enough knowledge, were resistant to change, and did not use methods for developing students' critical thinking in classes during nursing education. To eliminate this problem, researchers have recommended that nurse educators use all aspects of critical thinking models in the educational setting and that in the place of a teacher-focused process they create a student-centred educational environment that can develop students' critical thinking skills (Mangena and Chabelli 2005).

The purpose of this research was to test the 'six thinking hats' method of teaching which, rather than loading students with knowledge, aims to have them use and produce knowledge that develop skills, such as creativity, synthesis, ability to design, problem solving, and critical thinking; and to share students' opinions about this method of learning.

## LITERATURE

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. Consequently the structure of education, the content and presentation methods focus on the development of high level thinking skills, such as analysis, synthesis, evaluation, finding relationships, abstraction, summarising subjects, and having students make connections with the world outside the classroom (Seferoğlu and Akbıyık 2006; Berber et al 2002). High level thinking allows students to combine their knowledge through case studies, numerical data, and other information with their thoughts, to synthesise, generalise, give meaning, and create new ideas or meanings (Demirci 2003).

Creativity is a thought process which is sensitive to problem interference, knowledge deficits, missing elements, and inconsistency. Creativity describes difficulties and looks for and finds solutions. Critical thinking can be defined as reflective thinking and

includes high level thinking processes in which basic thinking skills are used, arguments are analysed, meaning and interpretation is developed, logical thinking patterns are developed, theories that encircle claims and prejudices are understood, and an attitude that is reliable, unique and believable is developed (Horng et al 2007; Edwards 2007; Maudsley and Strivens 2000).

Both creative thinking and critical thinking form the foundation for nursing practice. Consequently, the nursing curriculum should be designed so that students will gain an understanding of theoretical and conceptual nursing knowledge, theory will be transferred to practice, they will develop communication and problem solving skills, and they will learn critical thinking for research and practice (Edwards 2007; Mangena 2005; Fasnach 2003). For these reason it is essential to have an approach in nursing education that is centred on learning critical and creative thinking skills.

In learning centred education the students participate actively in the learning process by exchanging ideas with others, writing, discussing, making connections with the past, putting knowledge they have acquired into practice in daily life, solving problems, and thinking on their own. For a teacher to be able to develop a learning centred class, they need to think critically and creatively themselves and use these skills to create various stimuli and opportunities that will stimulate the students to think (Edwards 2007; Mangena and Chabelli 2005; Maudsley and Strivens 2000).

Although educators agree on the importance of critical thinking skills in the educational system, they do not necessarily agree on how to develop these skills. Various programs exist for developing critical thinking. One of these methods is the 'six thinking hats' model, which was developed in 1994 by Edward De Bono (Aybek 2007; Goebel and Seabert 2006; Kenny 2003; Bonk and Smith 1998).

According to Edward De Bono the most important factor interfering with thinking is complexity. People want to do several things at the same moment as thinking. That is, there are feelings, information, logic,

dreams, and discoveries within thinking and they are combined in one place. While thinking, all these get mixed together and become inseparable. De Bono compared this situation to throwing several balls in the air and trying to catch them. Consequently, to prevent this complexity during thinking De Bono recommends the 'six thinking hats' model. This model is a system of conscious thinking that focuses an individual's thinking in a specific direction for a specific period of time (De Bono 1997).

At the foundation of the 'six thinking hats' model are six different coloured hats which are put on to represent a different point of view in our thinking and which develop creativity. De Bono summarised these hats and the process in this way (Erginer 2008; Goebel and Seabert 2006; Gözütok 2006; Erginer and Bayçu 2004; Kenny 2003; Erginer 2000; Gürkan and Gözütok 1998; Bonk and Smith 1998; De Bono 1997):

**White Hat:** White does not take sides and is objective. This hat contains information, data and cases. The purpose is to present information that can be accessed for evaluation and to guide questions about the subject. It is directed to gathering important information and missing information. When this hat is put on these types of questions are asked:

- What kind of information do we have?
- What kind of information do we need?
- What information is missing?
- How can get the information we need?
- What kind of questions should be asked?

**Yellow Hat:** Yellow, like the sun, sheds light and is positive. It is about optimistic, hopeful and positive thinking. Efforts are made with the yellow hat to find the value and advantages of recommendations that are made and to find the best aspects. Thinking is constructive and productive. Concrete proposals and recommendations are made. The questions asked with this hat are these:

- What is the best aspect of this?
- What are its advantages?
- Who can benefit from this?
- How can these advantages be brought to light?

**Red Hat:** Red calls to mind anger, attitudes and feelings. It gives an emotional viewpoint. When the red hat is used, a chance is given for feelings and perceptions to be verbalised without any explanation. In the same way this hat gives health care personnel permission to explain their own feelings and it also helps them to explain what the patient and family are feeling and how to recognise the feelings they have.

**Black Hat:** Black is pessimistic, negative and derogatory. Black reminds us of a judge's robe. De Bono emphasised that this hat is the most beneficial and needs to be the most frequently used hat. This hat draws attention to dangers. It points out risks and why something may not be beneficial. This hat is the critical hat and is an objective intervention that is done to bring to light negative situations. This hat can be used in health care to remind students of policies, protocols, laws and regulations related to situations. It can also be used to help patients, families and personnel think about the possible risks.

**Green Hat:** Green means blessing, productivity and growth. The colour green symbolises growth, energy and life. When thinking is done with the green hat recommendations, new opinions and alternatives are presented. The green hat gives an opportunity to find various possibilities. Everyone who uses the green hat tries to be creative. Putting on the green hat does not automatically make people more creative. However this hat can ensure there is time and attention given to thinking more creatively. This hat looks for the answers to these questions:

- What are some new ideas on this subject?
- What is interesting about this idea?
- What are the differences in these ideas?
- Where will this take me?
- What is the effect of going forward with this idea?
- When this idea is compared with what I know, what will happen?

**Blue Hat:** Blue represents calmness. It tries to have a regular and controlled thought process. The blue hat is used for looking directly at the process of thinking.

This hat tries to answer these questions:

- What should we do next?
- What have we achieved so far?
- What should we do to achieve more?

The blue hat is used to put the hats that are used in a row and summarises the results that have been obtained. The blue hat also observes the thinking process and makes sure that the rules of the game are followed. It helps to stop arguments and ensures discipline.

When the six thinking hats model is used, the order of hats can vary according to the characteristics of the discussion. However when any new suggestion is evaluated it is beneficial to put on the yellow hat before the black hat, because errors in new proposals are more easily found when looking at disadvantages.

#### **Study aims**

The 'six thinking hats' model was used as an experimental study in the theoretical component of the surgical nursing course in the Department of Nursing in the Tokat School for Health Sciences in Turkey at the Gaziosmanpaşa University. The students' opinions about this new procedure were sought at the conclusion of the class.

During the 2006-2007 school year there were 42 students registered for the surgical nursing course however the research population comprised 41 students. Purposive sampling was not undertaken and the entire population was targeted. The class was administered as six hours of theory and 18 hours of clinical practice.

The class was taught by two teachers, one who was a member of the faculty and one, an instructor. During the 'six thinking hats' activity a member of the Education Faculty gave his support. In the last hour of the class an Opinion Survey Form about the 'six thinking hats' model of learning, which had been prepared by the researchers, was given to the students and they were asked to fill it out and return it the following day. The Opinion Survey Form had 20 items and was prepared from related information in the literature and positive and negative student feedback. The form uses a Likert type scale for

evaluation with choices from 'I do not agree', 'I am undecided', to 'I agree'. The mean of every item on this form was calculated.

In the examination of the reliability of the Opinion Survey Form, a Cronbach alpha internal consistency coefficient of 0.96 was found, which gives a high level of reliability. However before the form is used in different areas its reliability and validity need to be re-examined. Data were analysed with percentage and Chi square test.

Written permission was obtained from the administration of the educational facility to conduct the study. Before beginning the class the students were given information about the study and written permission was obtained from the students who wanted to participate.

#### **Study method**

During the first hour of the surgical nursing course the students were given information about the method and the hats' symbols and the classes and dates when the method would be used. To help with implementing the method during class, every student was requested to make hats from cardboard of the six different colours (yellow, white, red, black, green and blue) and to bring them to class.

To prepare a physical environment which would support the students' critical thinking in the class, the students' seats were arranged in a 'U' shape so they could share the space with the teacher and see and communicate with each other (Demirci 2003). Reflective pictures were shown on the wall using a computer to support the continuation of the critical thinking process in the classroom environment. During the classes when the 'six thinking hats' model was used, six big coloured hats were put on the rostrum by the instructor for the purpose of reinforcement of the model.

The students used the 'six thinking hats' model of learning during the nursing care in breast cancer class, and again in the nursing care content in spinal cord trauma class. Finally, after the nursing care in transplantation class was given, two case studies were presented about the subject and groups of

students discussed them among themselves using the 'six thinking hats' model and then shared their group activity with rest of the class.

The questions asked in relation to each colour 'hat' for the nursing care related to breast cancer are shown in figure 1 and for nursing care in spinal cord trauma in figure 2. Discussion headings according to the 'six thinking hats' model for the case studies are shown in figures 3 and 4.

The use and order of hats in the class are explained below.

**White Hat:** The students were first asked to put on their white hats and define breast cancer. In this 'hat' the students discussed what they knew, what they did not know and what they wanted to find out. The students' thoughts were brought out using the brainstorming method. In this 'hat' activity the students discussed the incidence of breast cancer and the most common treatments. After the students' discussion, the instructor used slides and the question and answer method to explain nursing care in breast cancer. When the topic was finished the class evaluation was done by drawing a concept map in the classroom. The students were also asked to draw their own concept map at home to return to the instructor the following day.

**Yellow Hat:** In the yellow hat activity the question, 'What are the comforts experienced by an individual without breast cancer?' was discussed. Because the yellow hat is the hat that brings out the advantages and benefits and because there were perceived to be no advantages to having breast cancer, the advantages, benefits and comforts of not having breast cancer were discussed. In this 'hat', the students produced ideas about body image and wholeness, and happiness and satisfaction from physical to social and sexual lives.

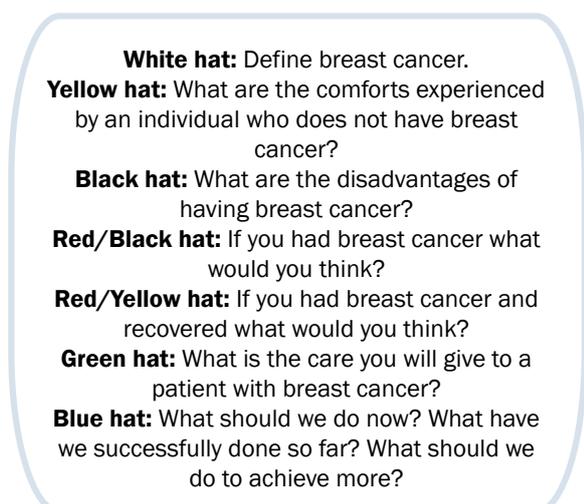
**Black Hat:** When the students put on their black hats, the disadvantages of having breast cancer were discussed. In this 'hat' statements were generated such as the fatality of breast cancer, the side effects of chemotherapy, loss in body image, and change in sexual identity.

**Red Hat:** In the red hat activity the students were asked to discuss what they would do and think if they had breast cancer. Within this 'hat' the students discussed shock, denial and depression, and grief responses to body image change, and loss. When the students were asked: 'How do you think you would feel if you had breast cancer and were cured?' the atmosphere in the room changed immediately and the students joyfully verbalised their happiness.

Opportunity for discussion was provided by conducting the red hat activity after combining two hats as a red-black and red-yellow hat activity. This gave the students the opportunity to understand how a patient might feel from the first diagnosis of the illness to being cured and discharged from care.

**Green Hat:** The students put on their green hats and the most creative care they could give to a patient with breast cancer was discussed. In the first instance, the students had difficulty verbalising creative care. Compared to the other hats they produced fewer ideas, but even though they were few, there were some good, original ideas stated.

**Figure 1: Evaluation of nursing care in breast cancer using the 'six thinking hats' model**

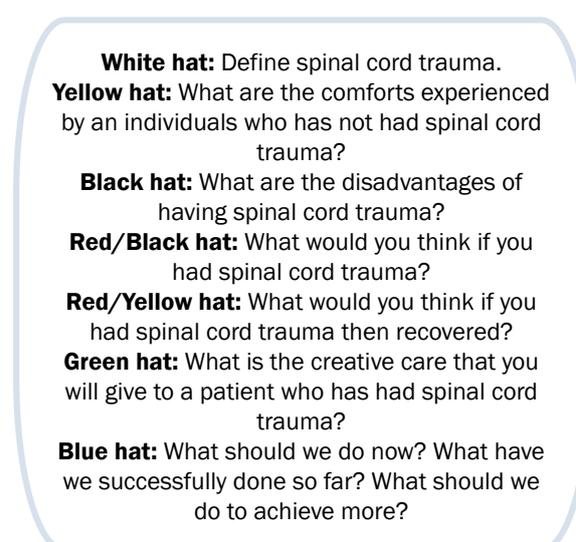


**Blue Hat:** When wearing their blue hats the students were asked to discuss the outcome of the 'six thinking hats' model as a learning and thinking system. The students stated they realised how little they used the yellow hat activity in their lives; that they empathised with the patient in the red hat activity;

and a few students who had cared for patients with breast cancer stated they felt they understood the patient's feelings better. As a class, the students felt they understood better the importance of breast cancer and made the decision to protect their patients and those around them from breast cancer and teach others about breast self examination at every opportunity.

In a similar manner the nursing care of a patient with spinal cord trauma used the 'six thinking hats' model. Because this was the second time the students had participated in this activity they were able to verbalise the hats' thinking systems more easily. The students experienced some difficulties during the blue hat activity, because there were few spinal cord trauma cases in the clinical areas and the students had limited opportunity to work with this type of patient (Tokat province has a limited number of intensive care unit beds and no neurosurgery intensive care units so patients with spinal cord trauma are generally transferred to surrounding counties) however they stated using this model of learning was better than other methods of learning, such as memorising.

**Figure 2: Evaluation of nursing care in spinal cord trauma using the 'six thinking hats' model**



Two case studies were presented during the nursing care for transplantation class and discussion followed using the 'six thinking hats' model. The class was divided into eight groups of five students. The first

four groups discussed the first case study and the remaining four groups discussed the second case study. At the conclusion of the discussion every group shared their work with the class.

The students stated that the case study discussion using the 'six thinking hats' model was different from other case studies that had been presented, in particular, they realised they had neglected the

patients' and family's feelings both in the case study and in the care they had provided in the hospital. Additionally, combining the 'hats' for a red-black and red-yellow hat discussion gave the students the opportunity to experience the feelings a patient may have from when they first became ill, through diagnosis, treatment, recovery and discharge from care.

**Figure 3: Evaluation of transplantation patients using the 'six thinking hats' model: case study 1**

*Bahadır aged 9 was receiving dialysis for renal failure and received a kidney transplant from her mother in May 2004 at a university hospital. Bahadır really loves her mother and says she will never make her mother sorry she gave her a kidney and now can run and play. Bahadır's current health status is good and her renal function tests are within normal limits.*

Bahadır was asked several questions and she gave her answers.

What is illness? Not being able to play, going to dialysis and not being able to go where you want.

If you had been a doctor what would you have done? I would have made a new kidney.

Where can a new kidney be found? My mother gave it to me as a gift.

What do you think about your new kidney? Sometimes I put my hand on it and give it strength; I want it to feel me.

#### **WHITE HAT**

What do you think Bahadır understands about her diagnosis?

What are Bahadır's concerns and hopes for her future?

What is kidney transplantation?

#### **RED HAT**

Explain the family's feelings of sadness about Bahadır's condition before surgery.

How would you explain Bahadır's experience with anger?

What will Bahadır feel if she has kidney transplant rejection?

What will Bahadır's family feel if she has kidney transplant rejection?

#### **BLACK HAT**

Could Bahadır lose her kidney?

If Bahadır loses her kidney what will her mother who gave the kidney feel?

How would a CMV infection, frequently seen after kidney transplant, affect Bahadır?

#### **YELLOW HAT**

What are your opinions about appropriate holistic care for Bahadır and her mother?

Even though the choices are limited for kidney transplant, what choices are there? (mother, father, sibling, cadaver, etc.)

#### **GREEN HAT**

What are Bahadır's support systems?

What other support systems are needed?

Other than her mother, who are the people who can support Bahadır? What can be done to discover who these people are?

#### **BLUE HAT**

What do you think about Bahadır's treatment process?

**Figure 4: Evaluation of transplantation patients using the 'six thinking hats' model: case study 2**

*Fatma is 7 years old and she was receiving dialysis until May 2002 when she received a cadaveric kidney transplant. However in July 2005 graft rejection occurred and a graft nephrectomy had to be done. Currently she is on the waiting list for organ donation.*

Fatma was asked several questions and she gave her answers.

What is illness? To be on a diet; to not be able to eat ice cream.

Who do you want to stay with you when you are in the hospital? My mother. If she can't stay with me I am left all alone.

What advice can you give to someone who is just starting dialysis? Don't be angry; you won't feel pain.

If you were a doctor what would you do? I wouldn't dialyze anyone; I would find them a kidney right away instead.

#### **WHITE HAT**

What do you think Fatma understands about her diagnosis?

What are Fatma's concerns and hopes for her future?

What is kidney transplantation?

#### **RED HAT**

Explain the family's feelings of sadness about Fatma's condition after her surgery.

How can you explain Fatma's experience with feeling angry?

What did Fatma feel when she had kidney transplant rejection?

What did Fatma's family feel when she had kidney transplant rejection?

#### **BLACK HAT**

Could Fatma die?

What does the family who gave Fatma the cadaveric kidney feel because she lost the kidney?

How will Fatma be affected by CMV infection, frequently seen after kidney transplantation?

#### **YELLOW HAT**

What are your opinions about giving Fatma and her mother appropriate holistic care?

Even though the choices are limited for kidney transplant, what choices are there? (mother, father, sibling, cadaver, etc.)

#### **GREEN HAT**

What are Fatma's support systems?

What other support systems should she have?

Other than her family, who are the people who can support Fatma? What can be done to discover who these people are?

#### **BLUE HAT**

What do you think about Fatma's treatment process?

## **RESULTS**

The students' opinions about the 'six thinking hats' model of learning are listed in table 1. As can be seen in the table, 87.8% of the students stated that the method allowed for sharing different ideas and thoughts; 85.4% that it ensured they considered the patient holistically; 85.4% that it made it easier for them to empathise with the patient; 82.9% that it helped them look at positive and negative aspects

of the subject; 90.2% that they learned to think from different aspects; and 75.6% that it helped them to produce creative ideas.

It was also found that 24.4% of the students thought that the method was time-consuming; 7.3% that the black hat activity had a negative effect on their thoughts; and 12.2% that it turned their empathy into sympathy and had a negative effect.

**Table 1: Distribution of students' opinions about the 'six thinking hats' model**

Student Opinions Number and Percentages	I don't agree		I'm undecided		I agree	
	n	%	n	%	n	%
1: It helped me produce creative ideas.	10	24.4	0	0	31	75.6
2: It made it easier for me to empathise with patients.	5	12.2	1	2.4	35	85.4
3: Empathy turned into sympathy; it had a negative effect on me.	30	73.2	6	14.6	5	12.2
4: It helped me understand the lesson better.	6	14.6	6	14.6	29	70.7
5: It provided for sharing of different ideas and thoughts.	4	9.8	1	2.4	36	87.8
6: It ensured the patient was considered holistically.	5	12.2	1	2.4	35	85.4
7: In particular the black hat activity (negative) made me pessimistic	30	73.2	0	0	11	26.8
8: It made me notice the positive and negative aspects of a disease.	6	14.6	1	2.4	34	82.9
9: It will support my giving of high quality care.	5	12.2	5	12.2	31	75.6
10: It helped me detect differences in my thoughts and helped me know myself.	6	14.6	6	14.6	29	70.7
11: It improved my thinking systems.	6	14.6	3	7.3	32	78
12: I learned to think about different aspects of a subject.	4	9.8	0	0	37	90.2
13: It made me respect different ideas.	7	17.1	3	7.3	31	75.6
14: It made me use what I had learned.	5	12.2	8	19.5	28	68.3
15: It helped me develop my creativity.	7	17.1	5	12.2	29	70.7
16: Discussing the subject from six different aspects was time consuming	25	61	6	14.6	10	24.4
17: It increased my interest and motivation in class	6	14.6	2	4.9	33	80.5
18: It made me think critically.	7	17.1	7	17.1	27	65.9
19: It made me analyse and synthesise the knowledge I had.	4	9.8	6	14.6	31	75.6
20: It moved away from memorising and ensured the knowledge I gained would last.	4	9.8	7	17.1	30	73.2

## DISCUSSION

The needs of the modern world have made it essential for individuals to have the ability to think; to enable them to solve dilemmas they may face in life and make judgements (Seferoglu and Akbıyık 2006). The teaching of thinking in education rather than simply giving and receiving information is gaining importance. The 'six thinking hats' model of learning is a beneficial method for creating a classroom atmosphere in which thoughts can be freely stated and considered within a disciplined structure. In particular, examining a subject from six different aspects helps to simplify complex thinking processes. Taking into consideration the fact that the Turkish educational system is based on memorisation and is examination focused from primary school,

an opportunity at university for students to learn critical and creative thinking is considered critical. The professional roles, responsibilities and decision making processes of nursing also make this essential.

It takes time in the beginning to discuss a subject from six different aspects. However as the students adjust to the thinking process they begin to think more quickly. It is also possible to only use one or a few 'hats' to represent a thinking system according to the characteristics of a subject.

The analysis of information and data obtained in the 'white hat' activity, the discussion of felt needs, missing information and how to find this information, has the effect of encouraging students to evaluate the information they have, to be aware of what they

need to learn and to investigate ways of finding the information. This is supported by Kenny (2003) in the study which used the 'six thinking hats' model in palliative care.

Using both the 'yellow hat' and the 'black hat' was important so the students could think about an event from both positive and negative aspects. In this study, half the students' felt this supported their awareness of the positive and negative aspects of a subject and all students felt it helped them think differently about a subject. In health care, the ethical principal of benefiting a patient and avoiding harm makes it necessary for the advantages and disadvantages of all treatment and care that will be given to patients to be considered. There are advantages for the health care team to use the thinking system symbolised by the yellow and black hats to foresee the treatment and care method that will have the most benefit for the patient. Consequently it is suggested that doing critical thinking exercises in education will have a positive effect on the development of critical thinking skills in students which they can then use in practice (Seferoglu and Akbiyik 2006; Demirci 2003).

In the 'red hat' activity the students' attempts to describe the patient and family's feelings gave them insight into a patient and family's psychosocial issues and promoted holistic care. The students' understanding of a patient's feelings and thoughts is connected with their empathy skill. Empathy is one of the important concepts in nursing. Empathy, although a personal characteristic in general, is a characteristic that can be developed through education. An appropriate educational atmosphere needs to be provided for the development of these characteristics in nursing students (Tutuk et al 2002). The 'red hat' activity created an opportunity for students to develop their empathy skills. In the analysis of students' opinions it was found that the overwhelming majority of the students (85.4%) found this method of learning made it easier for them to empathise with the patient and to consider the patient holistically. It was thought that in the 'red hat' activity the students' attempts to recognise and analyse their own feelings and thoughts would

be supported in a positive way, however 12.2% of students had a converse effect and felt the 'six thinking hats' model turned their empathy into sympathy and had a negative effect. This may be a result of the subjects that were chosen; having all female students perhaps made it easier for them to identify with the breast cancer patient; and using a child for the transplantation case study may have had an effect on this result. It is necessary to investigate further and in more detail whether it was the method or the chosen subjects which turned their empathy into sympathy. In particular, giving the students the opinion survey form at the conclusion of every subject and comparing the results may have provided better information on this subject.

The 'green hat' activity was beneficial in helping students be aware of their efforts at creative thinking. In the students' opinions 75.6% agreed that this method helped them produce creative ideas.

The 'blue hat' activity helped students focus on thought process, the information they obtained, the evaluations that were made, and what else could be done. Students and nurses on the wards actually use the system of thinking represented by the 'six thinking hats' in the nursing process used in planning and implementing nursing care without being aware of it. For example in the data collection and analysis stage of the nursing process they have to use the 'white hat' thinking system, when planning individualised patient care the 'green hat', and when evaluating the outcomes of care the thinking system represented by the 'blue hat'. The 'six thinking hats' system organises the thought processes to consider a subject, and simplifies the thinking process for focusing on one aspect of a subject and facilitates considering a subject from every aspect.

## CONCLUSION

The teaching of creative and critical thinking has become essential in nursing education today. Individuals who have critical thinking skills feel the need to improve themselves and revise what they have learned. Individuals who have not gained this skill remain rigid in relation to what was learned and

are not generally creative and constructive (Demirci 2003). Consequently there is a need to test the use of educational models that will teach creative and constructive thinking in nursing education. For these reasons it was thought that it would be important in this study to share the experiences gained using the 'six thinking hats' model in nursing education.

The 'six thinking hats' model is a method of learning that not only improved the students' creative and critical thinking abilities; it also had a positive effect on their empathy skills and getting to know themselves. In the future using this method in different areas of nursing education and sharing the results will have a positive effect on teaching. In addition the system of thinking used in the method will not only help the individuals in their professional lives but also will help them make the right decisions in their personal lives.

## REFERENCES

- Aybek, B. 2007. Elestirel düşünmenin öğretiminde Öğretmenin rolü (Teacher's role in critical thinking education). *Bilim Eğitim ve Düşünme Dergisi*, 7(2):88-98.
- Berber, F., Akbulut, F., Maden, H., Gezer, M. and Keser, S. 2002. Düşünme ve elestirel düşünme (Thinking and critical thinking). Available from: <http://www.sevketkeser.net/docs/alldoc/dusunmeveelestireldusunme.pdf> (accessed June 2007).
- Bonk, C. and Smith, G. 1998. Alternative instruction strategies for creative and critical thinking in the accounting curriculum. *Journal of Accounting Education*, 16(2):261-293.
- De Bono, E. 1997. *Altı Düşünme Sapka Tekniği* (Six thinking hats technique). Tuzcular E. (cev) Remzi Kitabevi: Istanbul, Turkey.
- Demirci, C. 2003. Elestirel Düşünme (Critical Thinking). Available from: <http://www.epo.hacettepe.edu.tr> (accessed May 2005).
- Edwards, S. 2007. Critical thinking: a two phase framework. *Nurse Education in Practice*, 7(5):303-314.
- Erginer, E. 2008. *Öğretimi Planlama, Uygulama ve Değerlendirme: Etkinlik Öğretimi Temelli Yaklaşım* (Instructional planning, implementation and evaluation: activity teaching based approach). Pegem A Yayıncılık: Ankara, Turkey.
- Erginer, E. 2000. *Öğretimi Planlama, Uygulama ve Değerlendirme* (Instructional planning, implementation and evaluation). Anı Yayıncılık: Ankara, Turkey.
- Erginer, E. and Bayçu, S. 2004. Altı Düşünme Şapkası Etkinliğinin Resim Derslerinde Uygulanabilirliği (Applicability of the six thinking hats activity in art classes). *Yaşadıkça Eğitim Dergisi / Yaşadıkça Education Journal*, 81(1):9-16.
- Fasnacht, P. 2003. Creativity: a refinement of the concept for nursing practice. *Journal of Advanced Nursing*, 41(2):195-202.
- Fowler, L. 1998. Improving critical thinking in nursing practice. *Journal of Nurses in Staff Development*, 14(4):183-187.
- Goebel, G. and Seabert, D. 2006. Put on your thinking hats. *Journal of School Health*, 76(4):393-395.
- Gürkan, T. and Gözütok F. 1998. *Çağdaş Öğretim Yöntemleri* (Contemporary teaching methods). İlköğretim Müfettişleri Semineri Ders Notları (The course notes of the workshop for primary school's inspectors), Ankara Üniversitesi (Ankara University), Eğitim Bilimleri Fakültesi, Eğitim Araştırma ve Uygulama Merkezi. Ankara: Turkey.
- Gözütok, F. 2006. *Öğretim İlke ve Yöntemleri* (Teaching principles and method). Ekinoks: Ankara, Turkey.
- Hornig, J., Hong, J., Chanlin, L., Chang, S. and Chu, H. 2007. Creative teachers and creative teaching strategies. *International Journal of Consumer Studies*, 29(4):352-358.
- Kenny, L. 2003. Using Edward De Bono's six hats game to aid critical thinking and reflection in palliative care. *International Journal of Palliative Nursing*, 9(3):105-112.
- Mangena, A. and Chabelli, M. 2005. Strategies to overcome obstacles in the facilitation of critical thinking in nursing education. *Nurse Education Today*, 25(4):291-298.
- Maudsley, G. and Strivens, J. 2000. Promoting professional knowledge, experiential learning and critical thinking for medical students. *Medical Education*, 34(7):535-544.
- Seferoglu S. and Akbiyık C. 2006. Elestirel düşünme ve öğretimi (Critical thinking and education). *H.Ü. Eğitim Fakültesi Dergisi* (H.U. Journal of Education), 30(3):193-200.
- Seymour, B., Kinn, S. and Sutherland, N. 2003. Valuing both critical and creative thinking in clinical practice: narrowing the research practice gap? *Journal of Advanced Nursing*, 42(3):288-296.
- Simpson, E. and Courtney, M. 2002. Critical thinking in nursing education: literature review. *International Journal of Nursing Practice*, 8(2):89-98.
- Tutuk, A., Al, D. and Dogan, S. 2002. Hemsirelik öğrencilerinin iletişim becerisi ve empati düzeylerinin belirlenmesi (Determination of communication skills and level of empathy in nursing students). *C.Ü. Hemsirelik Yüksekokulu Dergisi*, 6(2):36-41.
- Tıwari, A., Lai, P., So, M. and Yuen, K. 2006. A comparison of the effects of problem based learning and lecturing on the development of students' critical thinking. *Medical Education*, 40(6):547-554.