"Marmara Three Stages Cognitive Decision Making Skills Development Model*"

Dr. Burcu DEMİRBAŞ NEMLİ
İstanbul Provincial Directorate of National Education
İstanbul
TURKEY

Prof. Dr. Sefer ADA
Gedik University, Sports Science Faculty,
İstanbul
TURKEY

Doç. Dr. Zeliha Nurdan BAYSAL
Marmara University, Primary Education Department,
İstanbul
TURKEY

Abstract

The aim of the study is to develop a model to improve the decision-making skills of the fourth grade students. The research was carried out mainly two stages: In the first stage, literature review and the second stage, a model was developed. The model is named as "Marmara Three Stages Cognitive Decision Making Skills Development Model". Purpose of the developed model to help the students to recognize the decision making process and to reach the result by using this process when they encounter problems. The model consist of three stages (learning, development, reinforcement). Each stage was prepared in four sessions based on a theme. Each stage deals with a different problem and the model was applied 12 course hours. As a result, all stages of the model include the same implementation steps and the same sessions. In each session, the same decision-making activities were performed respectively.

Keywords: Cognitive decision making, skill, skill development, model development.

1. Introduction

When the Ministry of National Education Curriculum (2006) are examined, it is seen that the skill of decision making is among the skills that directly should be gained in the social studies lesson, and it was found that this skill is not in the other lessons. Upon this, the units and acquisitions of the fourth grade social studies textbook in primary school were examined in detail and two different situations were determined to gain decision-making skills at the end of these examinations. These:

- **First Situation:** Decision making skill in the seventh unit is considered as the skill to be given directly (Unit 7: People and Management).

This study was produced from a part of the PhD thesis titled " A model application for development of cognitive decision making skills of primary school 4th class students" prepared by Burcu DEMİRBAŞ NEMLİ under the counseling of Professor Sefer ADA and Associate Professor Zeliha Nurdan BAYSAL.

- **Second Situation:** Decision making skill in some acquisitions in different units are considered as skill that need to be developed and gained (Unit 2: Learning My History-Acquisitions number 5 and 6, Unit 5: Fortunately There is - Acquisitions number 2 and 6).

In related units and acquisitions; the activities, studies, the process of the lesson in the teacher's book and the notes to the teacher were subjected to a detailed examination and as a result; it did not appear to include the stages / process for developing decision making skills. "Marmara Three Stage Cognitive Decision Making Skills Development Model" was developed to improve the decision making skills of the fourth grade students in primary school; due to deficiencies about the teaching of decision making skills in the program and lack of activities to improve the stages of decision making also the absence of studies on decision making skills for primary school students in the literature.

2. Literature

People may face different issues or situations and make certain decisions during their lives. Therefore, they may feel the need to use decision making skills throughout their lives. If the decision making skill that is thought to be important and used in human life is to be defined: **"It is the process that by collecting the necessary information to solve a problem, creating more than one option for the solution and by making the comparisons between the options and choosing the most suitable option to solve the problem and applying"** (Demirbaş Nemli, 2018; s.9). This skill can be thought short term or even momentarily, but contrary to what is thought, it is not an instantaneous event, it covers a certain process (Hansson, 2005) and the process consists of changeable steps according to different conditions, topics, environment and people (Akaytay, 2004). When the literature is examined; it is seen that four (Kardaş, 2013), five (Acıbozlar, 2006), six (Sarıkaya, 2013; Baysal, 2009), seven (Glickman, 2004), eight (Bağırkan, 1983; Ada ve Baysal, 2012) and nine (Archer, 1980; akt. Tuncer, 2013) stages decision making processes are mentioned. When the decision making processes given at different levels are examined; it is seen that the logic framework of the decision making process is the same and the process is based on common foundations (Demirbaş Nemli, 2018). At this point, interviews were held with experts; age group and developmental characteristics of primary school students were also taken into consideration. At the end of all this; it was concluded that the decision making process for lower grades of primary school are four steps (first and second grades) and the five steps decision making process for upper grades (third and fourth grades). Therefore, the decision making process is presented in five steps at this study as follows (Demirbaş Nemli, 2018; s.20):

- Feeling, Limitation and Identification of the Problem
- Information Collecting
- Solution Options Producing
- Decision Making
- Implementation and evaluation of the decision.

As mentioned above, decision making skill, which is a process consisting of different steps, is considered to be a high level thinking skill. Güneş (2012); emphasized that the thiking skills of many students from elementary to university level are not developed, therefore, it is important to develop higher order thinking skills and mentioned that this is tried to be developed with specially prepared programs. Özdemir (2006); mentioned that the knowledge and skills gained by the students in primary education are basic for the next education levels. Based on this, the Ministry of National Education Curriculum (2006) has been examined and it has been concluded that the programs are not related to the decision making process with steps towards gaining and developing decision making skills; therefore, it was determined that there were deficiencies in the teaching of decision making skills. Due to the reasons mentioned above, "Marmara Three Stage Cognitive Decision Making Skills Development Model" was needed and the model was developed.

3. Method

The research was basically carried out in two stages. In the first stage, a literature review was made on the subject area and the studies in the field of decision making skills were scanned. It has been investigated whether there are examples of programs, models, activities …etc that are designed or developed in the field of decision making skills for primary school students. In the second stage, a model has been developed as a solution to the problems that arise due to the absence of targeted studies to develop decision making skills for primary school students and being felt as a need in the field.

4. Results

4.1. Purpose of the Model

With this model, it is aimed to familiarize students with the decision making process and help them reach the results by using this process when they encounter a problem situation.

4.2. Themes of the Model and Problem Issues

As it is understood from the name "Marmara Three Stage Cognitive Decision Making Skills Development Model", it consists of three stage (learning, development, reinforcement) structure. Each stage was prepared in four sessions based on a theme. Each stage based on a different problem. These problems were obtained by asking the students of the class to be applied as described in detail. In Figure 1, there are problem topics by themes.
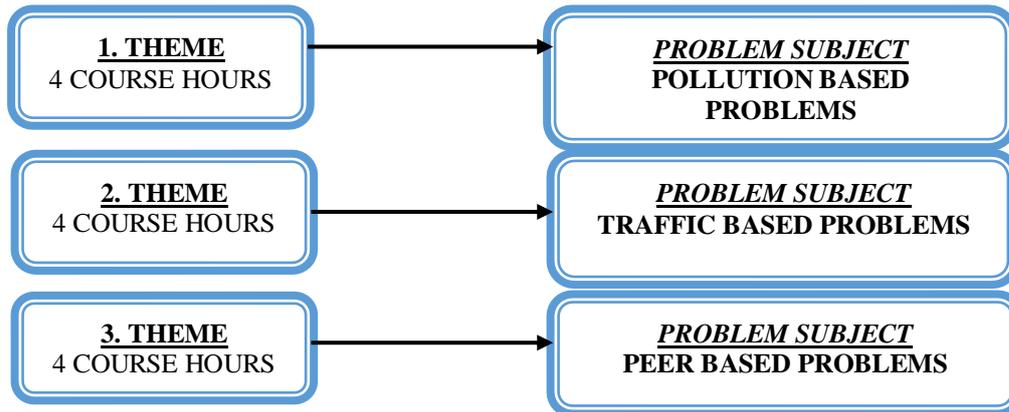
1. THEME 4 COURSE HOURS	→	***PROBLEM SUBJECT*** **POLLUTION BASED PROBLEMS**
2. THEME 4 COURSE HOURS	→	***PROBLEM SUBJECT*** **TRAFFIC BASED PROBLEMS**
3. THEME 4 COURSE HOURS	→	***PROBLEM SUBJECT*** **PEER BASED PROBLEMS**

Figure 1. Problem topics by themes

When Figure 1. examined, each theme has a problem issue. Based on the problem subject, activities related to decision making skills were carried out for four hours, and at the end of these activities, students made solutions by making some decisions. The model was applied in a total of 12 course hours.

4.3. Stages of the Model

Decision making steps in the model consist of three stages considering the processes in the literature section. The first of these stages is the learning stage. The learning stage consists of four sessions and all steps of the decision making process determined in this study are processed as the implementation step. The second stage is the development stage and, as in the first stage, it consists of four sessions and all the steps of the decision making process determined in this study have been processed. The third stage is the reinforcement stage. At this stage, as in the first and second stages, four sessions and all steps of the process were examined.

Each of the model's implementation steps includes sub-steps within itself. Throughout the process, the cognitive decision making process was gained to the students by emphasizing the implementation steps specified in Table 4.1. below. The implementation steps of the decision making process and the sub steps of each step are given in Table 4.1:

Table 4.1. Implementation steps and sub steps of "Marmara Three Stage Cognitive Decision Making Skills Development Model"

Implementation Steps	Sub Steps
Step 1: **Feeling, Limitation and Identification of the Problem**	• Feeling the problem, • list what is known about the problem, • collecting information about the problem, • limiting the problem, • identify the problem and • identify sub problems and sub aims of the problem.
Step 2: **Information Collecting**	• Determining what to know about problem and sub problems and doing research, • collecting information to produce options, • comparing new information with current information, • determining whether the collected data (information) is sufficient, • assessing the information collected and • putting information in order of importance.
Step 3: **Solution Options Producing**	• Collecting information to produce options, • generating options to solve problem, • evaluating produced options, • putting the produced options in order of importance, • doing research to produce options, • collecting information to produce options and • determine the effectiveness of the options.
Step 4: **Decision Making**	• Paying attention to at least two options to make a decision, • compare options to each other • elimination the unsuitable options and • choosing the most effective option that can solve the problem.
Step 5: **Implementation and Evaluation of the Decision**	• Evaluate the result that may arise at the end of the determined decision, • identify the positive and negative aspects of the decision made and • apply the decision.

When Table 4.1. is analyzed and as described in the literature section, it is understood that decision making is a complex process. Each step is divided into sub steps in the process.

4.4. Standards and Standard Questions of the Model

In the "Marmara Three Stage Cognitive Decision Making Skills Development Model", the implementation steps determined for the decision making process in each course were standardized and activities were implemented according to these standard steps. The steps standardized according to the common sessions for each theme are shown in Table 4.2.

Table 4.2. Standard questions according to the stapes applied in the lessons

Applied Course and Decision Making Steps	Standard Questions of the Steps
Lesson 1: Feeling, Limitation and Identification of the Problem + Information Collecting (Homework)	• What is the problem that bothers you? • Can you describe the problem? • Let's list what is known about the problem. • What information is needed about the problem? • What have I learned about the problem?
Lesson 2: Solution Options Producing	• What are the solution options that can solve the problem? • What are the advantages or disadvantages of solution options that can solve the problem?
Lesson 3: Decision Making + Implementation of the Decision	• What is your decision to solve the problem? • What should you do to implement your decision?
Lesson 4: Evaluation of the Decision	• Do you regret your decision? • Would you evaluate the decision and its practices? • Do you comply with your decision? • Does your friends comply with their decision? Why is that?

- **Session 1:** Feeling, Limitation and Identification of the Problem Step + Information Collecting Step (Homework),
- **Session 2:** Solution Options Producing Step,
- **Session 3:** Decision Making Step + Implementation of the Decision Step,
- **Session 4:** Evaluation of the Decision Step

In the Figure 2 was shown the standardized sessions of the "Marmara Three Stage Cognitive Decision Making Skills Development Model" for all themes. When Figure 2 is examined, the steps mentioned above for all themes have been applied.
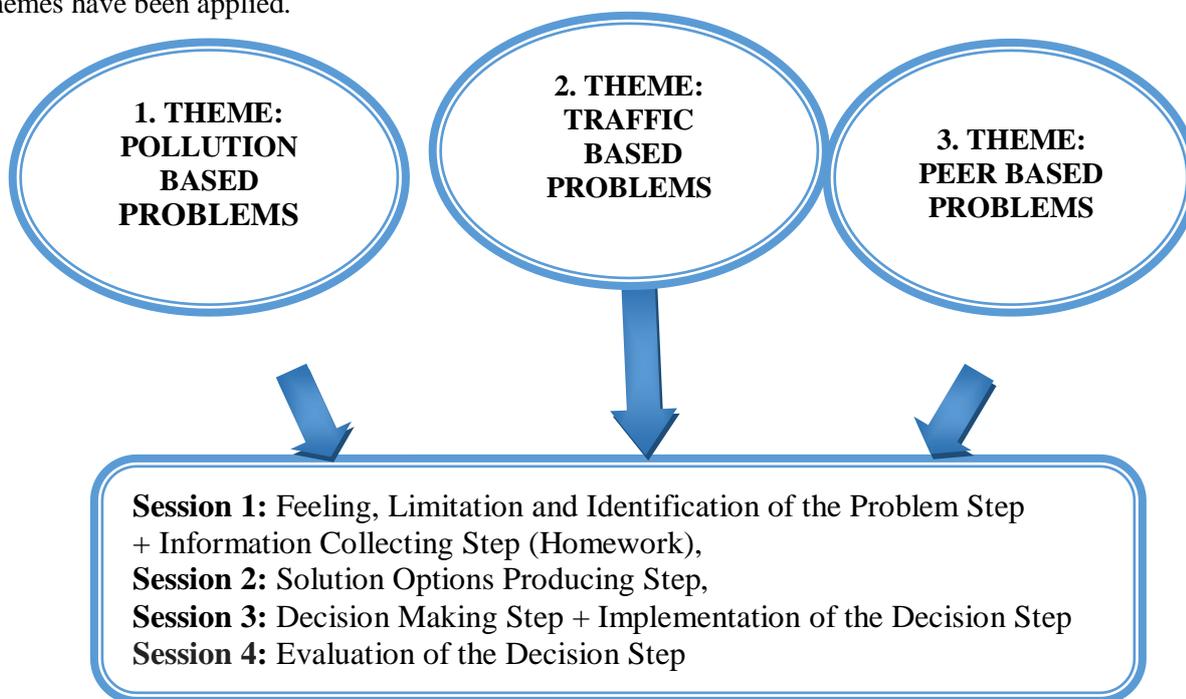

Figure 2. Standardized sessions for all themes of "Marmara Three Stage Cognitive Decision Making Skills Development Model"

In addition, as stated earlier, there are standard questions for each session that are compatible with the relevant decision making step and are intended to provide this step to the student. While teachers applying the model, they aimed to make students think these questions and in the future, to complete the decision making process by asking these questions to themselves without requiring conscious control.

4.5. Functioning of the Model

We can examine the functioning of the model three sections: Before, during and after application.

➢ **Before Application:** Before starting the applications; the current decision making skills of primary school fourth grade students were measured by using **"Marmara Decision Making Skill Perception Scale for Primary School Students"** developed by Ada, Baysal and Demirbaş-Nemli (2017) and also the **"Ali Copes With His Problem Case Analysis Form"** (pretests) specified in the thesis.

➢ **During Application**: The subjects that the students see as a problem are asked, the first three issues that are frequently expressed in line with the answers of the students are determined as the problems. Including four course hours for each problem and activities are applied a total of twelve course hours. Lessons are conducted taking into account the standard steps and standard session questions that are determined. For all problems, activities are applied abide by to the standards of the model, and the students who do not have the ability to make decision, are provided to win; they who have the ability to make decision, are provided to development with the cognitive decision making skill development model.

The model is in three stages as seen in Table 4.3. below. Model consists of learning, development and reinforcement stages. The learning stage is the stage where the students know the decision making skills and steps, and the activities related to the steps are carried out by following the implementation steps of the process. In short, the student meets the decision making process and learns the decision making skills. The development stage is the stage where the decision making skill that was met and learned in the previous stage was further developed. The decision making process and steps are fully understood with the activities that were done. The same steps applied in the learning stage as a structure are applied at this stage and the student performs the activities related to all the steps of decision making skill again. The reinforcement stage is the stage where the decision making skill that learned and developed is fully acquired and reinforced. This stage includes the same implementation steps, sessions and decision making steps as the other two steps. All steps of decision making skills are repeated and reinforced with the activities performed.

All stages of the model include the same implementation steps and the same number of sessions (four sessions). In each session, activities were carried out for the same decision making steps, repectively.

• **After Application: "Marmara Decision Making Skill Perception Scale for Primary School Students"** developed by Ada, Baysal and Demirbaş-Nemli (2017) to determine whether there is an improvement in students' decision making skills at the end of the twelve hours of practice; in addition, the evaluation was carried out with the **"Ali Copes With His Problem Case Analysis Form"** (posttests), which was developed by the researcher in the thesis.

Information on the "Marmara Three Stage Cognitive Decision Making Skills Development Model" can be seen in Table 4.3.

Table 4.3. "Marmara Three Stage Cognitive Decision Making Skills Development Model"

STAGES OF THE MODEL	MARMARA THREE STAGE COGNTIVE DECISION MAKING SKILLS DEVELOPMENT MODEL		
	1. THEME: POLLUTION BASED PROBLEMS		
LEARNING STAGE OF THE DECISION MAKING SKILL	**IMPLEMENTATION STEPS**	1. Session	Feeling, Limitation and Identification of the Problem Step + Information Collecting Step (Homework)
		2. Session	Solution Options Producing Step
		3. Session	Decision Making Step + Implementation of the Decision Step
		4. Session	Evaluation of the Decision Step
	2. THEME: TRAFFIC BASED PROBLEMS		
DEVELOPMENT STAGE OF THE DECISION MAKING SKILL	**IMPLEMENTATION STEPS**	1. Session	Feeling, Limitation and Identification of the Problem Step + Information Collecting Step (Homework)
		2. Session	Solution Options Producing Step
		3. Session	Decision Making Step + Implementation of the Decision Step
		4. Session	Evaluation of the Decision Step
	3. THEME: PEER BASED PROBLEMS		
REINFORCEMENT STAGE OF THE DECISION MAKING SKILL	**IMPLEMENTATION STEPS**	1. Session	Feeling, Limitation and Identification of the Problem Step + Information Collecting Step (Homework)
		2. Session	Solution Options Producing Step
		3. Session	Decision Making Step + Implementation of the Decision Step
		4. Session	Evaluation of the Decision Step

4.6. Evaluation of the Model

Assessment and evaluation are an important part of the educational process. Assessment and evaluation studies are needed to collect information about students' learning levels and to reorganize the teaching process by evaluating this information.

For this reason, at the model; **"Marmara Decision Making Skill Perception Scale for Primary School Students"** developed by Ada, Baysal and Demirbaş-Nemli (2017); in addition, with the **"Ali Copes With His**

Problem Case Analysis Form" which was developed by the researcher in the thesis; teacher diary, researcher diary, student products were used as assessment-evaluation tools.

5. *Conclusions*

"Marmara Three Stage Cognitive Decision Making Skills Development Model" was applied for 12 course hours and observations were carried out by the practitioner and researcher during the process and logs were kept. Based on the logs kept and the examinations made, the following problems were encountered during the application of the model:

- Incorrect functioning of the process as a result of forgetting the problem or detecting the problem incorrectly.
- Students' interest in the researcher, who is an observer, and not being able to focus on the process by getting bored.
- Students not communicating with each other while doing activities and being shy to participate in the lesson.
- Students do not know what information to collect.
- Breaking from the process or forgetting as a result of application sessions not taking place in successive days.

The following suggestions were brought to the problems encountered in the functioning of the model and these suggestions were applied in the process:

- It was given the opportunity to collect the problem and other needed information in the decision envelopes and look as needed.
- They were asked to look more carefully at the images, videos or other in class materials.
- They were asked to think of concrete examples.
- In order to attract the students' attention, activities that make them active, such as the "My Researcher Badge" activity, were focused.
- Thanks to the sharing and display of the home works given in the classroom, a more attentive approach was carried out in the process.
- Students were offered the opportunity to change their opinions at every step of the process.
- In the decision-making process, students were not criticized, not disparaged; encouraged, regardless of their decisions.
- Students were provided to exchange ideas with each other.
- In some sessions, group works was carried out.
- If desired, application-oriented steps were created by changing the ideas.
- The students were guided through standard questions.
- Homework was given to students and they were provided with research and gather information through activities.
- Board system was applied. In-class materials were hung on the board named "I Make a Decision".
- Voting was carried out according to the subject and effectiveness, and application steps determined, than studies were carried out in accordance with the application steps determined until the next session.
- Warning signs describing the decision-making steps were showed throughout the process in the classroom.

6. Suggestions

In the light of the findings obtained as a result of this study, the following suggestions can be made:

- Ministry of National Education can use the "Marmara Three Stage Cognitive Decision Making Skills Development Model" in the primary school program to improve students' decision making skills.
- The number of sessions of the development section of the "Marmara Three Stage Cognitive Decision Making Skills Development Model" can be increased if needed during the application.
- Considering the "Marmara Three Stage Cognitive Decision Making Skills Development Model", trainings on the implementation and teaching of the model can be given to teachers by Ministry of National Education.

References

Acıbozlar, Ö. (2006). *Yönetici hemşirelerin karar verme stratejileri ve yaratıcılık düzeyleri* (Yayımlanmamış yüksek lisans tezi). Marmara Üniversitesi, Sağlık Bilimleri Enstitüsü, İstanbul. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Ada, S. ve Baysal, Z. N. (2012). *Türk eğitim sistemi ve etkili okul yönetimi.* Ankara: PegemA Yayıncılık.

Ada, S., Baysal, Z.N., Demirbaş Nemli, B. (2017). İlkokul öğrencileri için marmara karar verme beceri algısı ölçeğinin geliştirilmesi. *International Journal of New Trends in Arts, Sports & Science Education (IJTASE), 6*(4), 1-9.

Akaytay, A. (2004). *Karar verme sürecinde maliyet verilerinin rolü: ABC makine ve ticaret sanayi A.Ş. uygulaması* (Yayımlanmamış yüksek lisans tezi). Sakarya Üniversitesi, Sosyal Bilimler Enstitüsü, Sakarya. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Bağırkan, Ş. (1983). *Karar verme.* İstanbul: Der Yayınları.

Baysal, Z.N. (2009). An application of the decision-making model for democracy education: a sample of a third grade social sciences lesson. *Kuram ve Uygulamada Eğitim Bilimleri, 9*(1), 75-84.

Demirbaş Nemli, B. (2018). *İlkokul dördüncü sınıf öğrencilerinin bilişsel karar verme becerilerinin geliştirilmesine yönelik bir model uygulaması* (Yayımlanmamış doktora tezi). Marmara Üniversitesi, Eğitim Bilimleri Enstitüsü, İstanbul. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Glickman, R. (2004). *Optimal düşünce.* İstanbul: Kuraldışı Yayıncılık.

Güneş, F. (2012). Öğrencilerin düşünme becerilerini geliştirme. *Türklük Bilimi Araştırmaları Dergisi (TÜBAR),32,* 127-146.

Hansson, S. O. (2005). Decision theory - a brief introduction. http://home.abe.kth.se/~soh/decisiontheory.pdf adresinden 08/06/2017 tarihinde edinilmiştir.

Kardaş, N. (2013). *Fen eğitiminde argümantasyon odaklı öğretimin öğrencilerin karar verme ve problem çözme becerilerine etkisi* (Yayımlanmamış yüksek lisans tezi). Eskişehir Osmangazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Eskişehir. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Milli Eğitim Bakanlığı (2006). İlköğretim programları. Kıroğlu, K. (Ed.). Ankara: PegemA Yayıncılık.

Özdemir, D. (2006). *Sosyal bilgiler dersinin düşünme becerilerini kazandırma düzeyine ilişkin öğretmen görüşleri* (Yayımlanmamış yüksek lisans tezi). Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü, Eskişehir. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Sarıkaya, M. (2013). *Karar verme süreçleri ve örgütsel sessizlik* (Yayımlanmamış yüksek lisans tezi). Pamukkale Üniversitesi, Sosyal Bilimler Enstitüsü, Pamukkale. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.

Tuncer, M. A. (2013). *Okul yöneticilerinin eleştirel düşünme eğilimleri ile karar verme stratejileri arasındaki ilişki (istanbul ili maltepe ilçesi örneği)* (Yayımlanmamış yüksek lisans tezi). Yeditepe Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul. https://tez.yok.gov.tr/UlusalTezMerkezi/ adresinden erişilmiştir.