

IMPROVING ROAD SAFETY AWARENESS THROUGH
EXPERIENTIAL LEARNING: AN ACTION RESEARCH
WITH PRESCHOOL CHILDREN

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

IMPROVING ROAD SAFETY AWARENESS THROUGH EXPERIENTIAL LEARNING: AN ACTION RESEARCH WITH PRESCHOOL CHILDREN

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Children are one of the highest risk groups in traffic injuries and casualties. All around the world, many countries try to decrease hazardous situations concerning traffic through environmental, structural, and educational adjustments. Road safety education is critical to increase awareness of children as pedestrians, bicyclists, passengers, and future vehicle drivers. The purpose of this action research is to analyze the effects of a road safety teaching unit developed by the researcher based on experiential learning theory on knowledge, attitudes, and behaviors of preschool children. The intervention was developed based on the analysis of interviews with four early childhood practitioners in Turkey and a detailed review of educational programs implemented around the world. Nineteen 5 and 6-year old children participated in the intervention study. Before the intervention, they were interviewed through Children's Road Safety Awareness Interview Schedule. After

the implementation of the unit with 6-session, children were interviewed once. However, ten children could not have participated in the post-interviews due to the coronavirus pandemic. The differences in the pre and post-interview statements of children revealed changes in the road safety awareness resulted from the intervention. Observations throughout the learning activities and post-interview with the classroom teacher provided additional data. Findings showed that children's road safety awareness improved after the intervention. Fundamental concepts and rules about traffic were acquired by participants. Positive attitudes for their own and others' safety developed, and safety practices in daily life were reflected in their statements along with feedback by the teacher.

Keywords: traffic education, road safety awareness, road safety unit, intervention study, early childhood education

ÖZ

OKUL ÖNCESİ ÇOCUKLARININ YOL GÜVENLİĞİ FARKINDALIKLARININ DENEYİME DAYALI ÖĞRENME YOLUYLA İYİLEŞTİRİLMESİ

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Çocuklar, trafikte yaralanma ve kaybedilme ihtimali en yüksek olan risk gruplarından biridir. Birçok ülke çevresel, yapısal ve eğitimsel düzenlemelerle trafikteki tehlikeli durumların önüne geçmeye çalışmaktadır. Yol güvenliği eğitimi yaya, yolcu, bisiklet sürücüsü olan ve gelecekte araç sürücüsü olacak çocukların farkındalıklarının artması için kritik öneme sahiptir. Bu eylem araştırmasının amacı, deneyime dayalı öğrenme teorisiyle araştırmacı tarafından geliştirilen yol güvenliği ünitesinin okul öncesi yaştaki çocukların bilgi, tutum ve davranışlarına olan etkilerini incelemektir. Ünite, dört okul öncesi öğretmeniyle yapılan görüşmeler ve çeşitli ülkelerde uygulanan trafik eğitimi programlarının incelenmesiyle oluşturulmuştur. Araştırmanın katılımcıları 5-6 yaş grubundaki 19 çocuktan oluşmaktadır. Uygulamadan önce bütün katılımcılarla uyarlanmış bir hikaye aracılığıyla birebir görüşme yapılmıştır. Altı öğrenme etkinliğinden sonra

son görüşmeler yapılmıştır. Ancak, koronavirüs pandemisinden dolayı son görüşmelerde 10 katılımcıya ulaşılabilmektedir. Çocukların ön ve son görüşmelerde verdikleri yanıtlar arasındaki farklılaşmanın yol güvenliği ünitesinin uygulanmasından kaynaklı olduğu görülmüştür. Etkinlikler sırasındaki gözlemler ve uygulama sınıfının öğretmeniyle yapılan son görüşme bu görüşü destekleyici bulgular sağlamıştır. Sonuçlar, çocukların yol güvenliği farkındalıklarının uygulama aracılığıyla geliştiğini göstermektedir. Trafikle ilgili temel kavram ve kurallar katılımcılar tarafından öğrenilmiştir. Kendilerinin ve diğer insanların trafikte güvenlikleri için olumlu tutumlar geliştirmişlerdir. Sınıf öğretmenin geri bildirimleri ve çocukların görüşme sırasında verdikleri cevaplar, katılımcıların trafikte sergiledikleri güvenli davranışları yansıtmaktadır.

Anahtar Kelimeler: trafik eğitimi, yol güvenliği farkındalığı, yol güvenliği ünitesi, müdahale, okul öncesi eğitimi

To Alpaslan family, Zişan Güner Alpaslan-Mustafa Alpaslan,

their unborn baby

&

all victims of traffic accidents

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LIST OF ABBREVIATIONS

AÇEV	Anne Çocuk Eğitimi Vakfı
EASST	Eastern Alliance of Safe and Sustainable Transport
GRSP	Global Road Safety Partnership
ITF	International Transport Forum
LEARN!	Leveraging Education to Advance Road Safety Now!
MET&Y	Government of Manitoba Education, Training and Youth
MoNE	Ministry of National Education
MPI	Manitoba Public Insurance
OECD	Organization for Economic Co-operation and Development
ROSE 25	European Commission Guide on Road Safety Education
RTI	Road Traffic Injury
SWOV	Institute for Road Safety Research
TÜİK	Turkish Statistical Institution
UNESCO	United Nations Educational, Sciences and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Background to the Study

Transportation is an inseparable part of daily life in the modern world. An individual starts to be exposed to traffic even as an unborn child. However, a variety of human, vehicle, and road-related issues cause some safety problems in traffic situations. World Health Organization (WHO) Global Status Report on Road Safety (2018) revealed that the number of traffic-related deaths and injuries rises every other day, and one person, including all age groups, dies every 26 seconds due to traffic accidents. It means that more than 3400 people die every day around the world, and each year 1.35 million people lost their lives on average because of traffic crashes (WHO, 2018). Besides, countries lost not only citizens but also a considerable amount of money that is approximately 3% of their gross domestic products (WHO, 2018).

Being aware of potentially hazardous situations is a critical factor in preventing traffic accidents (Meyer, Sagberg & Torquato, 2014). Groeger and Chapman define hazard perception as being able to determine dangerous situations based on perceptual information (as cited in Meyer et al., 2014). Unfortunately, vulnerable groups, mainly children, people with special needs, and older adults, are affected by traffic accidents due to the lack of hazard perception skills (Institute for Road Safety Research [SWOV], 2012). Children are one of the most vulnerable groups for traffic accidents because of inadequate cognitive, physical, social, and emotional development required in traffic-related situations (Meir, Oron-Gilad & Parmet, 2015; Meyer et al., 2014; Peden, Oyegbite, Ozanne-Smith, Hyder, Branche

& Rahman, 2008; WHO, 2018). Small body proportion makes them not only more unprotected to injuries but also more difficult to be seen by vehicles. It is also difficult for them to make judgments about the speed and distance of vehicles due to a lack of visual and kinesthetic development. Their hazard perceptions are mainly based on the presence of objects in an environment, which means that if they see a moving vehicle, the driver of this vehicle also sees them (Meyer et al., 2014). World Health Organization (2014) reported that the 4th main reason for the death of children between the ages of 5 and 9 is road traffic accidents because of these inadequate skills and some additional factors (as cited in Global Road Safety Partnership [GRSP], 2017). Besides, among people aged between 5 and 29 years, the main reason for death is road traffic injuries (WHO, 2018). According to the World Bank, by 2030, traffic accidents will be the main cause of death and injuries among children between 5 and 14 years old (GRSP, 2017).

The proportion of casualties and injuries in the traffic changes from country to country, generally in terms of welfare level. The number of deaths is three times higher in low-income countries than in high-income ones (WHO, 2018). While in developed countries, the ratio of traffic burden is tried to be eliminated by engineering, legislation, and education, developing countries are at the beginning of this modification.

Traffic is a dynamic process that requires multidisciplinary collaboration with various stakeholders. Road safety can be defined as strategies to reduce the harm resulting from situations in the traffic (Cambridge Dictionary, 2019). 7 E's of road safety, the most up-to-date version, which are education, engineering, enforcement, exposure, examination of competence and fitness, emergency medical services, and evaluation are determined to decrease the number and the severity of traffic accidents (Groeger, 2011). Education means creating awareness within people about road safety through schools, community events, brochures, and training for specific groups (Groeger, 2011). Driver education is also included in education under the 7Es. Enforcement consists of implementing laws related to traffic and keeping track of the data concerning the traffic. All of the arrangements

about roads and traffic equipment are covered by engineering. Providing the most appropriate support to the scene of an accident is the duty of emergency medical services (U.S. Department of Transportation, 2009). Road safety statistics such as the number of vehicles and the average time spent by road users on the roads are gathered under the heading of exposure. Examination of competence and fitness contains regulations related to driver's license and the level of proficiency among drivers (Groeger, 2011). Lastly, all of these processes should be evaluated to examine the effectiveness of changes that fall under the heading of evaluation (State of Vermont, 2018). Thus, there are currently 7Es of road safety that must be considered by countries while planning traffic-related issues.

Traffic consists of active interactions of pedestrians, animals, and vehicles on the roads (Karayolları Trafik Kanunu, 1983). The Organization for Economic Co-operation and Development (OECD) defines road fatality, in other words road traffic death, as people who die due to traffic accidents within 30 days after the accident (International Transport Forum [ITF], 2016). The estimated road traffic death rate per 100 thousand people is 12.3% in Turkey, and it is high compared to developed countries (WHO, 2018). As can be seen in the table below, the rate is 5.8% in Canada, 5.6% in Australia, 4.1% in Spain, 4.1% in Germany, 3.1% in the United Kingdom, and 2.8% in Sweden (WHO, 2018).

Table 1.1

Estimated Road Casualties per 100 Thousand People by Country

Country	Ratio of Estimated Road Casualties per 100 Thousand People
Sweden	2.8%
United Kingdom	3.1%
Germany	4.1%
Spain	4.1%
Australia	5.6%

Table 1.1 (continued)

Canada	5.8%
Egypt	9.7%
Turkey	12.3%
United States of America	12.4%
China	18.2%
India	22.6%

When the practices implemented in the developed countries with low ratios of casualties are examined, there is a common point. Road safety education starts at preschool years and continues systematically throughout the grades. Besides, there is a collaboration between governmental institutions, non-governmental organizations, and schools. For example, “THINK!” is a series of road safety campaigns officially established by the Department of the Transport of the United Kingdom. The institution provides education resources for children between 3 to 16 years old (THINK!, n.d.). Similarly, the Government of Manitoba Education, Training and Youth (MET&Y) and Manitoba Public Insurance (MPI) work together in Canada to reduce accidents in the province by providing learning resources to schools and conducting researches (MPI & MET&Y, n.d.). Kidsafe, Child Accident Prevention Foundation of Australia, is another organization aiming to minimize injuries among children (Kidsafe, 2017). Last but not least, there are various resources for traffic education in the United States of America. For instance, a transportation unit for kindergarten children is prepared by the New York City Department of Education (2020), and the National Highway Traffic Safety Administration (n.d.) provides resources in the Child Pedestrian Safety Curriculum for children in kindergarten to 5th-grade.

On the other hand, the scarcity of systematic education starting in early childhood years and the lack of collaboration between various stakeholders can be observed in Turkey. Besides, pedestrians constitute the highest amount in road traffic deaths, 23.4%, and children are one of the most vulnerable groups as

pedestrians (WHO, 2018). In fact, among OECD countries, Turkey has the highest rate of child casualties between 0-14 years due to motor vehicle traffic accidents (WHO, 2018). Children constitutes 10.6% of traffic casualties in Turkey, and almost half of the losses, 42.1%, are from children between 0 and 9 years old (Turkish Statistical Institution [TÜİK], 2019). Thus, there is a need to educate children in Turkey about road safety beginning in preschool years since children start to create their ways of understanding and perception related to rules and regulations about traffic through observations and experiences at an early age (Cullen, 1992; Lee, Fang, Weng & Ganapathy, 2018). In this way, children can adopt traffic rules and appropriate behaviors in traffic situations as a habit (Hatipoğlu, 2011). However, Traffic Safety is a must course in 4th-grade at public elementary schools in Turkey (Ministry of National Education [MoNE], 2018a). Two objectives regarding traffic education are included in Life Sciences Lesson in 1st, 2nd, and 3rd grades (MoNE, 2018b). However, there are no specific objectives for road safety in the early childhood education curriculum (MoNE, 2013). In other words, implementing activities related to road safety depends on teachers, and activities focusing on this area are generally done only in Traffic and First Aid Week, the first week of May (Bekir, Çelik Aral & Aydın, 2018). Therefore, there is a need to develop a road safety education program for children starting from early ages in order to increase traffic awareness of young learners and start creating a healthy traffic culture through exposing students to a systematic learning process.

1.2 Purpose of the Study

Early childhood is an important milestone in the lives of children as it includes the foundational years for cognitive, physical, social, and emotional development (The United Nations Children's Fund [UNICEF], 2013). Observations and hands-on experiences of young people constitute the daily habits and perspectives about various issues. Traffic is one of these areas where children rely on their observations of other people and senses based on the developmental level. However, children are one of the vulnerable groups in traffic because of the inadequate level of some required skills such as concentration, determination of

visual timing, and coordination of thinking and acting (MPI & MET&Y, n.d.; Thomson, Tolmie, Foot & McLaren, 1996). Therefore, the focus of this study is education under the 7 E's so as to increase the awareness of preschool children about road safety based on their developmental levels. Awareness of the importance of behaving safely in traffic for the self and other people is the first step in carrying out healthy practices in traffic situations. In this way, the risky behaviors of young children can be significantly reduced in traffic situations, and there can be a chance to raise children with appropriate roles and responsibilities as future adults in traffic (Hatipoğlu, Özdemir & Arıkan-Öztürk, 2012). Because people tend to behave similarly to other people of the community they belong to, it is critical that traffic rules and healthy behaviors in traffic are perceived as a positive norm in a community starting from early ages (Rosenbloom, Sapir-Lavid & Hadari-Carmi, 2009).

The purposes of the study are to investigate current practices implemented in early childhood classrooms about road safety awareness of children, based on this information to develop and implement a road safety education program in a preschool classroom to improve the road safety awareness of children, and to assess its impacts on young learners's knowledge, attitudes, and behaviors. In accordance with these purposes, two specific research questions guided the study:

1. What is the current status of road safety education in early childhood classrooms?
2. What contribution does “the new road safety unit” developed based on experiential learning theory make to preschool children's knowledge, attitudes, and behaviors?

1.3 Significance of the Study

This study is one of the few conducted in Turkey about developing a specific material or program concerning traffic education (Çakır, 2006; Öztürk, 2014) particularly for preschool children (Gürsoy et al., 2015). It can be a starting point for meeting the needs of young learners in early childhood classrooms, as mentioned by scholars in the field of traffic education (Hatipoğlu, 2011; Özdemir,

2010; Yelmen, 2010). Ministry of National Education (2018c) mentioned traffic education during early childhood years in Traffic Action Plan; however, the main focus was on traffic education parks, which are not available for all schools. This study can be useful for increasing attention to include easily accessible learning environments through real-life experiences of children since “experiential learning” is the theoretical background of the unit, which leads to the combination of active participation of children in hands-on activities and daily experiences. Moreover, a compact unit about road safety awareness will be available for early childhood teachers who can modify the activities based on the needs of children in different classrooms. In addition, the effects of this program on a specific age group are examined via an empirical research study. There are no specific objectives concerning road safety awareness in early childhood education curriculum; thus, the study contributes to the field with objectives, particularly about road safety in early childhood education. Furthermore, it is expected that educating children about road safety starting from a young age may lead to a safer society and a more moderate traffic environment, as children get used to performing the traffic rules as a habit, and seeing them as a part of daily practices (Şimşek, Akduman & Alisinanoğlu, 2009). In this way, the number and severity of traffic accidents in Turkey can be decreased since children are real constituents of traffic, and they will be future drivers.

1.4 Definition of the Terms

Conceptual and operational definitions of the frequently used terms in this study are presented below.

Early childhood includes the years between birth to eight years old when the development rate is the highest (United Nations Educational, Sciences and Cultural Organization [UNESCO], 2019). It covers the years until the age of six in the Turkish context (Anne Çocuk Eğitimi Vakfı [AÇEV], 2005). It is the first milestone in an individual’s life with highly complex brain development which is accompanied by cognitive, language, social, emotional, and physical growth

(MoNE, 2013). In this study, early childhood covers the ages between 0 to 6 years old.

Early childhood education refers to the education of children starting from birth to until the age of six in public or private schools with part-day or full-day programs (AÇEV, 2005). Preschool education is also used in the study interchangeably with early childhood education.

Traffic is the combination of all interactions between pedestrians, vehicles, and animals on the roads (Karayolları Trafik Kanunu, 1983). Turkish Language Association (2018) defines traffic as the usage of transportation ways by both pedestrians and vehicles. It consists of actions of road users such as motorists, cyclists, pedestrians, passengers, and drivers. In this study, traffic refers to all kinds of interactions between pedestrians, drivers, animals, vehicles, and roads.

Road safety is a variety of strategies to reduce the harm resulting from traffic-related situations. In other words, it is measures taken to minimize accidents on roads. In this study, road safety and traffic safety have the same meaning, and they stand for all actions to decrease traffic causalities within all age groups.

Road safety awareness is behaving in accordance with traffic rules to be safe in traffic-related situations. In this study, the term is used to mean the knowledge and attitudes of children concerning traffic and behaviors they perform in situations concerning traffic. Traffic awareness and traffic safety awareness imply the same meaning as road safety awareness.

Road safety education is all practices implemented to improve the road safety awareness of people of all ages. The target group of road safety education in this study is early childhood children. The terms traffic education, traffic safety education, and road safety education are interchangeably used in the study.

Road safety education unit is the plans developed for the study. One icebreaking activity and five main activities regarding traffic are included in the unit.

CHAPTER 2

LITERATURE REVIEW

This chapter starts with an explanation of the theoretical background of the study and a review of literature about experiential learning. Then, a short description of early childhood education in Turkey is presented to readers. Historical development of seven E's of road safety is given with an emphasis on education under the seven E's. After that, the definition of road safety is done, and the place of road safety education in curricula around the world and in Turkey described. Research studies about road safety with children abroad and in Turkey are explained in detail. Finally, the chapter is ended with a summary of the literature review.

2.1 Experiential Learning in Education

Experiential learning is defined as the process of learning by doing, including reflections about what is experienced (Kolb, 1984). The works of Dewey, Piaget, and Lewin were the basis for the concept of experiential learning (Cox, 2019; Kolb, 1984). Dewey (1938) stated that experience is the core of learning, which requires the active participation of learners throughout the process. In fact, there should be a relationship between what is learned in school and what is experienced in daily life (Dewey, 1938). This situation leads to the development of pupils and the internalization of concepts. However, all of the experiences are not educative. There are mis-educative and non-educative experiences that do not cause development in human beings (Dewey, 1938). While mis-educative experiences are the ones that do not lead to the formation of new or further experiences, non-educative experiences do not result in long-lasting mental growth

in the learners due to lack of reflections on experiences (Dewey, 1938). At that point, the quality of experiences should be given importance by educators since all experiences do not result in learning. Thus, the important thing in an experience is the quality of it.

“The immediate agreeableness or disagreeableness” and *“the influence upon later experiences”* (Dewey, 1938, p.16) are two aspects of an experience. An educator should pay attention to these two points and should provide learning experiences to students that create further experiences. In other words, there should be an *“experiential continuum”* (Dewey, 1938, p.17) between educative experiences. The experiential continuum includes growth, which means the intellectual, physical, and moral development of a person (Dewey, 1938). There is also the principle interaction that is the relationship between an individual and objects or people for understanding the quality of experience. Two principles cannot be separated from each other, and they help educators to understand the value of experiences. While creating educative experiences to students, educators should not forget that integration of experiences to each other makes them effective, and the educational process should be planned as interrelated stages with a period of time. In addition, educators should be facilitators in learning environments, and students are active participants in the learning process (Dewey, 1938).

Piaget also highlighted the importance of experience-oriented learning through senses, in other words learning by doing, and he stated that young children are little scientists (Kolb, 1984). Children explore the world around them through their senses. They make observations, try to solve problems, and construct their knowledge throughout this process (as cited in Mac Naughton & Williams, 2009). Children between 2 to 7 years old are in the preoperational stage of cognitive development (Bybee & Sund, 1982). In this stage, children think most of the time concretely and able to learn better through hands-on activities. Thus, experiences provided to them should include hands-on practices, demonstrations, games, simulations, and field trips in order to make the learning process more fruitful

(Bybee & Sund, 1982; Kolb, 1984). It is also necessary to create a connection between daily life experiences and learning, as mentioned by Dewey (1938).

Lewin was another researcher who contributed to experiential learning theory with social psychology background (Kolb, 1984). His studies helped to understand the importance of group discussions, decision-making processes, and concrete experiences for learning (Kolb, 1984). Although Dewey did not use the term of experiential learning in any of the titles of his books or articles, he is frequently referenced in the literature of experiential learning (Wurdinger & Carlson, 2010). The name of experiential learning came from the studies of Dewey, Piaget, and Lewin with an emphasis on the significance of experience for learning (Cox, 2019; Kolb, 1984). Problem-based learning, project-based learning, active learning, place-based learning, and service-learning are commonly associated with experiential learning due to the same emphasis on experience (Wurdinger & Carlson, 2010).

Experiential learning has been used in various settings and in all age levels, although the starting point was adult education (Fenwick, 2001). An example of this is experiential learning in museums. It has been adopted as a frequently used teaching method in museums since the 1960s (Piscitelli & Penfold, 2015). In fact, galleries and libraries have also become common places for experiential learning of young children (as cited in Piscitelli & Penfold, 2015). Specific programs based on experiential learning are developed for disadvantaged children, like students living in poverty (Achelpohl, 2018) and children with special needs (Pleiss, 2016). In summer camps, aiming to decrease summer learning loss and to narrow achievement gaps, students benefit from experiential learning (Greenman, 2014). Besides, centers of road safety education and traffic parks are also another way of exposing children to experiential learning, which have been used in different countries such as Poland (Sicińska & Dąbrowska-Loranc, 2015), Turkey (Bolat, Özbek, & Kaygusuz, 2017; Kavıracı & Hatipoğlu, 2016), the United Kingdom (Kullman, 2015), and Finland (Kullman, 2015).

Various studies were conducted about the effects of experiential learning on learners. While some of them resulted in a significant difference in terms of students' learning and skills, the others did not result in a significant change. For instance, Borman, Goetz, and Dowling (2009) investigated the effects of a summer camp with experiential learning on 128 preschool children from low SES families in a study. After completing the 6-week intervention, significant differences were found in pre and post-test results of the treatment and intervention group regarding literacy achievement. In fact, positive feedback from parents, students, and teachers supported the statistical difference. On the other hand, in one study, the reading ability of 8-year olds in a language arts course, one half took the traditional course, and the other half got a course with experiential learning, was tested (Najman, 1996). Before and after the 8-week course, 120 students in the control and treatment group were tested. Results of independent t-test revealed that although there were significant differences in some of the specific reading abilities, such as phonetic analysis and auditory vocabulary, a significant difference in the overall reading ability of second graders assigned in two groups could not find. However, the researcher suggested that since not only children but also their parents more actively involved in the learning process, experiential learning should be operated in classrooms.

Another study tested changes in 260 fourth-graders' ecological science understanding and feelings toward science after taking an experiential program (Loman, 1998). There were three groups, students completing the whole program, students taking the course without on-site experiences, and the control group. A questionnaire was filled out by students at four different time points throughout the intervention. The statistical analysis of paired t-tests showed that there were small changes in three groups, even though the difference in some areas was statistically significant. A study with three groups, similar to the previous one, looked at the effects of experiential learning on knowledge, preference, and consumption of vegetables and fruits among 115-second grade students (Parmer, 2006). Pre and post-assessments were done before and after the 8-lesson intervention program. A mixed model analysis of the data indicated that children in nutrition education and

gardening and nutrition education only groups were significantly improved compared to the control group. In fact, the first group with gardening experience was more prone to eat vegetables than either the control or nutrition education only groups. Therefore, experiential learning was proposed as an effective way of gaining young children healthy habits. Differences in health behaviors among fifth-graders who participated in the elementary health education curriculum including experiential learning and who did not take the course were determined by Vines-Curbow (2001). Analyses of the data collected from 779 participants via a survey revealed a significant difference between two groups in the overall score, including exercise behaviors and safety behaviors. In an environmental education course for children aged between 15 and 18, an experiential field trip was conducted to examine changes in students' knowledge after the trip (Jose, Patrick, & Moseley, 2017). The difference between before and after scores of drawings of teenagers was significant, which meant that experiential learning had a positive impact on students' acquisition of knowledge.

Experiential learning has no longer been seen as a supplemental strategy of learning as it is used in a variety of educational settings with a wide range of learners from different age groups. There are three reasons for this situation (Lewis & Williams, 1994). First of all, the conception of learning has become more humanistic, social, and constructivist rather than behaviorist. Secondly, the variety and wealth of learners' experiences have increased. Lastly, there is a need to be flexible and use previous knowledge in new experiences. Because of these, experiential learning has become the center of education.

2.2 Early Childhood Education in Turkey

Early childhood is a critical period in an individual's life with significant progress in all developmental areas, including cognitive, physical, social, emotional, and language domains (Şirin, 2019). Children pass two stages of cognitive development through early childhood (Piaget, 1964). Infants in the sensorimotor stage learn through their senses, and every concept is new to them. After completing this stage, toddlers move on to the preoperational stage when they

are more mobile and prone to learn through real-life experiences, trials, and errors (Piaget, 1964). Because children's experiences are building blocks for development, the environment and education provided to them are critical. In Turkey, early childhood covers the first six years of life. Early childhood education in Turkey is constituted considering the developmental stages of children and their needs for various and stimulating experiences. Specific objectives and indicators are prepared for each age group between 3 to 6 years old (MoNE, 2013). Being child-centered, flexible, balanced, play-based, helical, and eclectic are some of the core principles of early childhood education curriculum prepared by the Ministry of National Education. Learning by discovery, creativity, and authentic assessment are components of activities implemented in the early childhood classroom (MoNE, 2013). The importance is also given to parent involvement and education since learning of children should not be limited in classes. Learning activities are prepared by early childhood teachers in light of the core principles, considering developmental levels of children in classrooms, and the implementation of integrated activities that focus on more than one developmental area is emphasized. Taking into account the attention span of children, the duration of activities varies between 20 minutes to 45 minutes.

2.3 Seven E's of Road Safety

The origin of E's of road safety concept dated back to 1923. Julien H. Harvey, the director of Kansas City Safety Council, drew a triangle with 3 E letters, which implied Education, Enforcement, and Engineering, for talking about highway safety in a conference (Damon, 1958). After that, Sidney J. Williams, the Director of the Industrial Department of the US Safety Council, detailed the three E's concepts, still seen as the primary elements of road safety (Damon, 1958). With the development in the traffic safety research, the three E's concepts expanded the seven E's: education, engineering, enforcement, exposure, examination of competence and fitness, emergency medical services, and evaluation (Groeger, 2011).

In the literature on road safety, education, one of the E's, is mainly related to two concepts, driver education and public education (Groeger, 2011; McIlroy, Plant, & Stanton, 2019). Driver education, in other words driver training, consists of various steps until taking a driving license. Practical instruction is also a part of driver education, and the education given changes based on the type of vehicle (McIlroy et al., 2019). With driver education, it is aimed to obtain the necessary knowledge and skills for driving a vehicle safely. Public education refers to creating awareness among people about how to stay safe as an individual in traffic situations. While driver education is especially for potential drivers, public education is for all people, including children, parents, older people, drivers, and neighborhoods. Mass media campaigns and education for children are two commonly used methods in terms of public education (Groeger, 2011). Mass media campaigns are generally preferred due to its easiness of reaching many people. Many organizations also design educational activities for children regarding traffic rules and safe behaviors as pedestrians, passengers, and cyclists. In fact, road safety education is a part of the curriculum in many countries.

Engineering under 7 E's is responsible for two areas (Groeger, 2011). The first one is the design of vehicles with maximum safety for drivers, passengers, pedestrians, and other road users. The second one is the construction of roads, which can lead to safe travel as much as possible. Enforcement is about decreasing unsafe situations in traffic by detecting dangerous or criminal behaviors, which are resulted in penalization in the light of traffic laws (McIlroy et al., 2019). All statistics concerning traffic, such as the number of accidents, the average time spent on roads by drivers, and the number of vehicles, are collected in exposure. These data are used by experts to make improvements regarding road safety (Groeger, 2011). The purpose of emergency medical services that are the police, the fire brigade, and the ambulance service is to reach the scene of an accident within the shortest time and to provide the most effective support (McIlroy et al., 2019). Regulations about the driver's license and the assessment of drivers based on the competency standards are under the examination of competence and fitness. All procedures belong to the 6 E's should be evaluated to make necessary

improvements about the regulations (Groeger, 2011). This idea leads to the last E, evaluation. New models continue to be proposed by researchers, such as 14 E's honeycomb structure (Abbas, 2017). In addition to 7 E's, egalitarianism, ethics, ergonomics, empowerment, enabling, and economics are added to the list. Based on the advancement in technology concerning traffic and the attention to road safety directed by authorities can modify the E's in time.

2.4 Road Safety Education

Road safety education is defined by the European Commission (2005) in the project Inventory and Compiling of a European Good Practice Guide on Road Safety Education Targeted at Young People (ROSE 25) as:

- Promotion of *knowledge* and understanding of traffic rules and situations,
- Improvement of *skills* through training and experience
- Strengthening and/or changing *attitudes* towards risk awareness, personal safety, and safety of other road users (p.5).

This definition shows that three points should be reached with road safety education. These are creating knowledge, strengthening skills, and developing attitudes concerning road safety awareness. Road safety education should also be considered as a lifelong process, and it should not be limited to learning in classrooms (Mütze & Dobbeleer, 2019; OECD, 2004). Since traffic is a part of everyday life, children are exposed to it in the streets rather than in classrooms, and they are also a part of traffic. In fact, people learn how to ride or drive different vehicles at different ages, which means that traffic education is not limited to a specific age range.

Road safety education consists of formal and informal educational activities provided to children in schools, homes, and communities (Road Safety Education-Victoria, 2020). While formal one is the form of education given in schools and educational institutions, experiences provided in daily life by parents and communities are grouped as informal activities (SWOV, 2017). An effective road safety education program is a combination of the curriculum with the appropriate

environment and ethos supported by parents and community (Government of Western Australia, 2009).

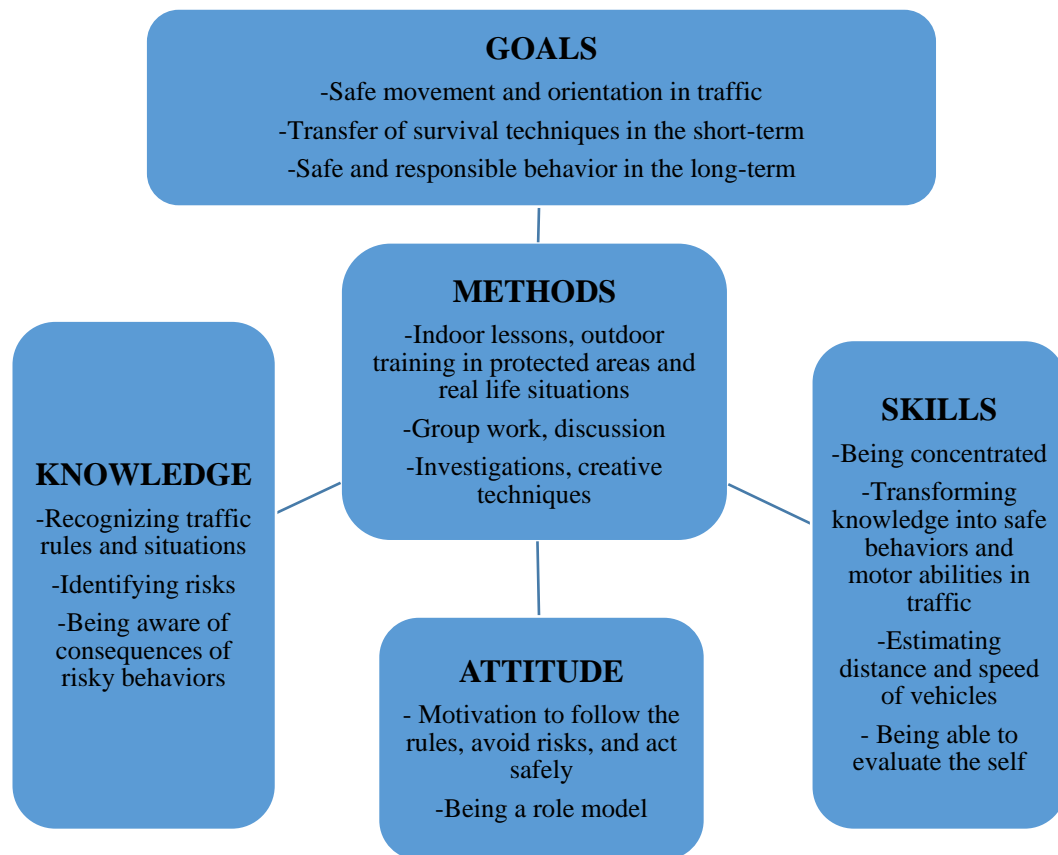


Figure 2.1 Components of Road Safety Education. Adapted from “Good Practice Guide on Road Safety Education”, by European Commission (ROSE 25), 2005, p.6.

The ultimate aim of a road safety education program should be the development of knowledge, skills, and attitudes of young learners to make safe and logical decisions in traffic environments by exposing them to various opportunities (Government of Western Australia, 2009; SWOV, 2020). The main goals of traffic education, the teaching methods for reaching these purposes, and the areas needed to be focused are summarized in the figure above.

2.4.1 Road Safety Education around the World

All around the world, road safety education programs are provided by governmental institutions, such as a part of the curriculum given by the Ministries

of Education, NGOs, or a combination of these stakeholders (Dragutinovic & Twisk, 2006). For example, the nonprofit organization called Safe Kids was founded in 1988 in the US to decrease child casualties resulted from unintentional injuries, including traffic accidents. Today, this organization conducts studies in 30 countries such as Vietnam, South Africa, South Korea, Thailand, Brazil, China, Canada, the Philippines, and India (Safe Kids Worldwide, 2020). Road Safety Education in Victoria (2020) is another initiative taken with the cooperation of various stakeholders to decrease road traffic deaths experienced by children in Australia. Since countries such as Canada, the US, and Australia do not have a centralized curriculum, regulations about road safety education change from state to state. However, in all of the developed countries, there are specific organizations devoted to increasing awareness of children through educational activities about road safety to decrease casualties.

European Union has a long term aim, which is reducing traffic casualties to zero until 2050; thus, all European Countries make an effort to achieve this goal (Sicińska & Dąbrowska-Loranc, 2015). The Status of Traffic Safety and Mobility Education in Europe prepared by Mütze and Dobbeleer (2019) is an informative resource revealing the current situation in Europe. Ministry of Education is responsible for road safety education in most of the countries in Europe. Yet, NGOs and publishing companies work cooperatively with governmental institutions to develop educational materials about traffic. In the majority of states, although traffic education is not a separate subject at primary schools, lessons regarding traffic include both theoretical and practical parts. Moreover, there are specific goals and objectives in the curricula concerning traffic safety and mobility education. The figure below shows the educational levels in which traffic safety and mobility education is provided. A large scale project which is called LEARN! (Leveraging Education to Advance Road Safety Now!) is carried out to increase the quality of road safety and mobility education across Europe (Mütze & Dobbeleer, 2019). The leading target group of the project is children between 6 and 17 years old, and it aims to improve knowledge, attitudes, and skills of children about road safety with developmentally appropriate training and experience and

support for children to choose the best mode of transportation for both themselves and nature.

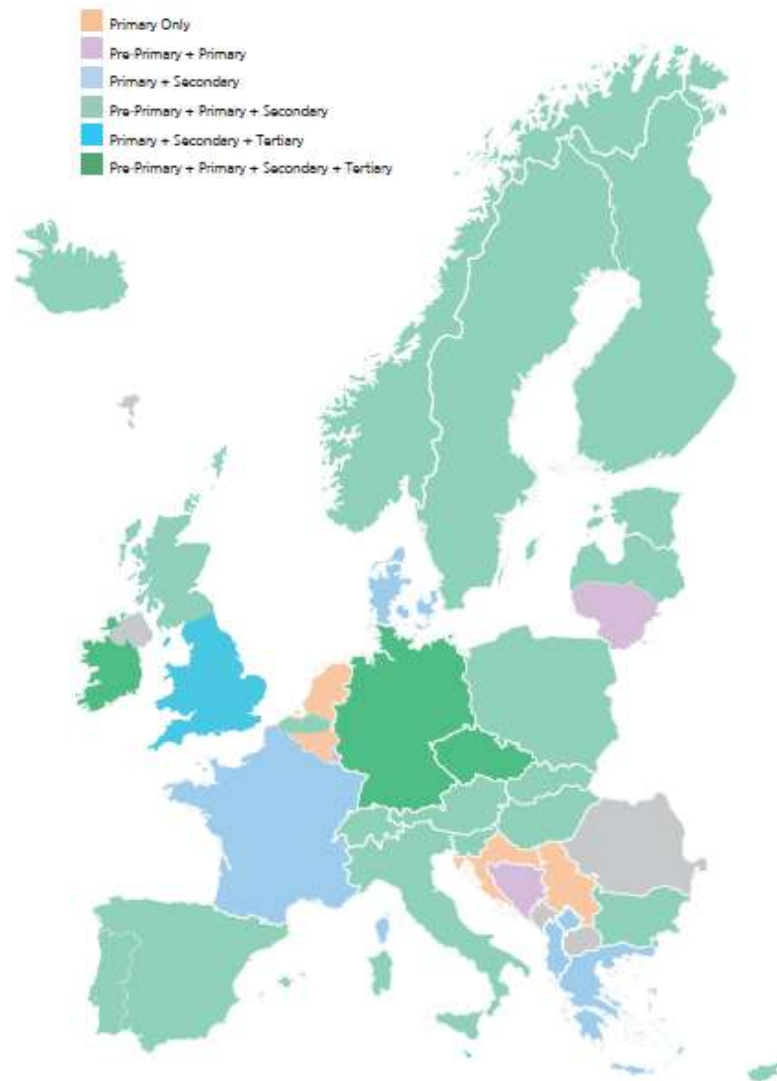


Figure 2.2 Educational Levels of Traffic Safety and Mobility Education in Europe. Adapted from “The Status of Traffic Safety and Mobility in Europe” by F. Mütze, W. D. Dobbeleer, 2019, p.17.

Countries also work cooperatively to reduce road traffic injuries (RTIs) and fatalities. The Road Safety in 10 Countries Project (RS-10) with a five-year timeline, focusing on low-and middle-income countries (LMICs), is an example of this effort (Hyder, Allen, Peters, Chandran, & Bishai, 2013). Even though vehicles in LMICs account for less than 50% of the vehicles around the world, 90% of traffic

casualties happen in these countries (WHO, 2009). Therefore, an initiative is taken by six organizations, including WHO and Global Road Safety Partnership, to decrease RTIs in 10 LMICs. Turkey is one of the ten countries along with Brazil, Cambodia, China, Egypt, India, Kenya, Mexico, the Russian Federation, and Vietnam. The main aim of this project is to promote evidence-based interventions for two significant risk factors in each country with a standardized evaluation procedure containing enough flexibility for the countries (Hyder et al., 2013).

2.4.2 Road Safety Education in Turkey

Children have become more visible in traffic-related issues since 1983 when Highway Traffic Law has been executed. The responsibilities of governmental institutions in Turkey about road safety education are determined by the legislation. In accordance with the law number 2918, preparation of traffic education programs and coordination with early childhood institutions are the duties of MoNE (Karayolları Trafik Kanunu, madde 8, 1983). In fact, traffic and first aid, including hands-on experiences, should be a must course in elementary and secondary schools. The collaboration of MoNE with other governmental institutions is also encouraged. One of the examples of this cooperation is traffic education parks for children who can have a chance to perform what is learned in traffic safety courses in environments adapted from real-life situations (Karayolları Trafik Kanunu, madde 124, 1983).

Weekly schedule of primary schools presented by the Board of Education under the Ministry of National Education shows that traffic safety is a must course only in 4th-grade throughout elementary school years, between 1st-grade and 8th-grade (MoNE, 2018). Besides, there are no specific objectives for road safety in the early childhood education curriculum (MoNE, 2013). Although in the General Action Plan on Traffic, prepared by General Directorate of Private Educational Institutions (OOKGM), it is stated that there are objectives and indicators concerning traffic education in the early childhood education curriculum (MoNE, 2018c), only some of the explanations under objectives and indicators are directly related to road safety. These explanations include some suggestions about

alternative ways of reaching the objectives. In other words, whether or not attaining the objectives with activities regarding traffic depends on teachers.

Traffic and First Aid course was a must course in 12th-grade. However, the name of the course had been changed as Health Knowledge and Traffic Culture, and it has been taught in 9th grade since the 2017-2018 education year (MoNE, 2018c). In the General Action Plan on Traffic, some projects and events about road safety are highlighted. Although all age groups are included in the projects, the main concentration is in elementary school. The aim of these projects is to increase awareness of both children and adults. However, evaluation studies are not conducted for most of the projects.

In general, it can be said that there is an effort to increase awareness of students about road safety in Turkey, and General Traffic Action Plan is the proof of this situation. Yet, the critical point is to evaluate the projects and courses about traffic education and improve them based on scientific data. Otherwise, this attempt might not reach its fullest potential.

2.5 Research Studies Abroad with Children about Road Safety

Studies concerning road safety of children have been conducted all around the world, especially in developed countries, for a long time. Renaud and Suissa did a study in 1989 to determine the effects of three simulation games on traffic awareness of 5-year-old children living in Canada. The three games concentrated on attitudes, behaviors, and both attitudes and behaviors of 136 children in four groups, including one control group and three intervention groups. While there were role-playing and group dynamics elements in the game for attitude, modeling and training elements were included in the game intending to change behavior. A combination of all elements was used in the simulation game for both attitude and behavior. Although the intervention groups scored higher than the control group, the game for changing behavior scored slightly higher than the other two intervention groups. Researchers stated that using simulation games with role-playing, group dynamics, modeling, and training elements might be an effective way to improve behaviors and attitudes of young children about road safety.

Researchers contributed to the literature with an intervention study conducted in Drumchapel, a region with high numbers of traffic accidents among children in Scotland (Thomson & Whelan, 1997). The project had been carried on for 30 months with more than 100 volunteers, aiming to teach three pedestrian skills to children between 5-7 years old through practical training. More than 750 children received training in groups of 2 to 3 in 4 to 6 sessions with a 30-minute duration. The sample who took roadside tests before and after training consisted of 30% of the intervention group. Results indicated that the experiment group enhanced the aimed pedestrian skills with conceptual understanding compared to the control group. In fact, changes were significant two months after the program. Researchers concluded that the project was successful in improving young children's road safety skills, which would typically be expected from older children.

The road safety awareness topic keeps going to attract the attention of researchers and countries around the world as the welfare level of communities increases. Many current studies have been conducted to develop road safety education programs and to evaluate their effects on target groups. One of these studies was done to examine the effectiveness of a school-based pedestrian safety program, called WalkSafe, on elementary school students (Hotz, Cohn, Castelblanco, Colston, Thomas, Weiss, Nelson & Duncan, 2004). Sixteen elementary schools from a high-risk area in the U.S. were chosen as the sample for this one-year-long study. The sample consisted of 6467 students from kindergarten to 5th grade, and evaluations were done through a test in three-time points, as pre, post, and three-month post-testing. In addition, observations were done in four randomly chosen schools from the sample. Results showed significant differences between pre and post-tests among all grade levels. In fact, behavioral differences were detected throughout observations. However, no significant differences were found between post and three-month post-tests. Researchers concluded that the program resulted in knowledge and behavioral changes within students, which meant road safety programs should be implemented across the country (Hotz et al., 2004). Another study with a single group pre-test, post-test design was carried out

in Tirupati, India, to evaluate the effectiveness of a health education program about road safety on 4th-grade children. Data taken from 50 students showed that both knowledge about traffic accidents and knowledge about how to prevent these accidents increased significantly after the intervention (Nirmala & Padmaja, 2012). Miller, Austin, and Rohn (2004) carried out a study with a similar target group to develop pedestrian safety skills of elementary school students in the U.S. An evaluation was done after two interventions which were “*a pedestrian safety awareness campaign*” and “*a training, feedback, and reinforcement package*” (Miller et al., 2004, p. 368). Students were observed during two sessions, morning and afternoon, with an average of 22 students. The behavior of crossing the road was divided into six steps, and observations were conducted based on these steps. After the awareness campaign, crossing behaviors improved slightly. However, the percent of proper road safety behaviors increased significantly after the intervention program. Although safe road crossing behaviors decreased after the withdrawal of the program, researchers suggested that intervention programs can result in the attainment of pedestrian skills (Miller et al., 2004).

Schwebel, McClure, and Severson (2014) conducted a study with a randomized controlled trial to determine the impacts of individualized training in a street, virtual pedestrian training, and training with videos and web sites. Two hundred thirty-one children, aged 7 and 8, were divided into four groups and assessed before, immediately after, and six months later the intervention. The training consisted of six 30-minute sessions. Results revealed that virtual pedestrian training and individualized street-side training were effective compared to training with videos/web sites and no training. Similarly, Schwebel, Combs, Rodriguez, Severson, and Sisiopiku (2016) established the effects of virtual pedestrian safety training on 44 pupils at the age of 7 and 8. Before implementation and after completion of six 15-minute training and 3-week pragmatic trials, children were assessed in virtual reality. Results indicated that the pedestrian safety skills of children improved moderately. While the decision-making process shortened, children’s attention towards traffic decreased. Thus, it was concluded

that road crossing skills of children did not significantly change, which was contradicted the results of the previous study.

Researchers in Ethiopia, a country with high traffic casualties, developed a road safety education program that was adapted by a program, Kerbcraft, from the UK (Salmon & Eckersley, 2010). The program was based on the active participation of children in real-life situations to make the program more effective. Thirty volunteer road safety trainers, aged between 13 and 18 years old, implemented the program with groups of 3 children. After piloting the program, it has been disseminated in Ethiopia. Although formal evaluations are not conducted yet, researchers concluded that there were changes in the behaviors of children in traffic situations. Researchers in Pakistan, another country with high road injuries, conducted a study to investigate the effects of a commercial storybook on road safety knowledge with a pre and post-test design (Ahmad et al., 2018). The sample consisted of 410 4th and 5th-grade students from public and private schools. After determining preexisting knowledge of children about traffic, the storybook was read and discussed with children. Then, two post-tests were performed that were one immediately after the intervention and one two months later. Results revealed that there were significant improvements in knowledge based on gender, grade, and school type.

Transfer of knowledge into behavior has been a common concern in studies about enhancing road safety awareness of children (Raftery & Wundersitz, 2011) since changes in knowledge always do not lead to behavioral changes (Twisk, Vlakveld, Commandeur, Shope & Kok, 2014). This situation emphasized the importance of the distinction between change in knowledge and change in behavior in intervention studies. Twisk et al. (2014) evaluated the effects of five road safety education programs on young adolescents aged between 12 and 25 with a quasi-experimental design. Increasing risk awareness of students was the aim of these programs, which were assessed with self-reported behavior. Three out of five programs were defined as cognitive programs whose purpose was to increase knowledge of students. The other ones were based on fear-appeal and aimed to

decrease risk-taking behaviors through fear of potential negative consequences. Results showed that students in three studies reported behavioral changes; however, the significance of these changes was low. The degree of effect was similar in both cognitive and fear-appeal programs and on both boys and girls from different types of schools (Twisk et al., 2014). Another study with a similar starting point was conducted in Scotland by Zeedyk, Wallace, Carcary, Jones, and Larter (2001). These researchers criticized that studies concerning road safety education lacked adequate evaluation. In other words, evaluations concentrating on knowledge increase did not mean improvement in behaviors. One hundred twenty children aged between 4 and 5 participated in the study with two parts. Firstly, the effects of three road safety interventions on children were tested. These interventions were commercial products, which were a board game, a three-dimensional traffic environment, and a combination of posters and flip-chart materials. All of them improved the knowledge of children that lasted for six months. In the second part of the study, the fact that whether or not 47 children transferred their traffic knowledge gained from the interventions to their behaviors in real-life situations was tested. Yet, children did not perform better than children in the control group. Therefore, researchers highlighted the importance of distinguishing knowledge and behavior.

Based on an extensive literature review, Dragutinovic and Twisk (2006) identified important components that make road safety programs effective. The first one was that these programs should start as early as possible, around at the age of 4 or 5, and continue until the end of secondary school. Secondly, individual training was more effective than group training, and interactions between children should be emphasized in group training to increase effectiveness. Besides, the collaboration between children and adult role models made the programs more powerful. Practicing was also necessary for developing skills related to road safety. In addition, demonstrations and computer-supported programs could be useful for these kinds of training. Similarly, a review study concentrated on what kind of tools and methods were used in intervention studies to decrease injuries among children under the age of 6 (Bruce & McGrath, 2005). Nine studies were included in the

review based on specific criteria. Considering the young ages of children, a variety of tools such as stories, games, role-playing, demonstrations, rehearsal practices, real experiences, cartoons, and simulation games were used. Five studies had positive effects on knowledge, attitude, or behavior of children, while one of the studies had no effects. Researchers concluded that group sessions with interactive learning activities and opportunities to practice made intervention studies more effective. Including parents in the intervention process was also suggested. Before the 2000s, another literature review study was conducted to find out the most effective interventions to reduce unintentional injuries among children (Dowswell, Towner, Simpson, & Jarvis, 1996). Traffic safety was one of the areas in which studies were searched. Dowswell et al. found that pedestrian education with children and parents, bicycle helmet education and legislation, child restraint legislation, and educational campaigns were effective strategies for road safety. They proposed that modifications in education, legislation, and the environmental arrangement could be the best way to decrease unintentional childhood injuries.

Young children make use of observational learning, which means that children observe their surroundings and imitate adults and peers around them (Bandura, 1971). A study carried out by Rosenbloom et al. (2012) revealed that children behave similarly to each other while crossing a road. In other words, if a child sees risky behaviors of his/her friends, the child also tends to act similarly with dangerous behaviors. Moreover, parents are one of the main role models of children since they spend long periods with their children. Behaviors of parents as pedestrian, driver, or passenger are one of the contexts where children observe adults and act based on these observations. Morrongiello and Barton (2009) looked at how parents in Canada supervise their children while crossing road and parents' beliefs about the traffic competence of their children. Results showed that younger children were controlled more than older ones by the adults, and safer crossing behaviors were exhibited by parents when they were with boys compared to girls. In addition, even though the majority of parents thought that children should be educated about road safety, few instructed their children while crossing a road.

Another study conducted in Australia examined the relationship between parents' knowledge, attitudes, behaviors, and their position in their children's road safety knowledge and skills (Muir, O'Hern, Oxley, Devlin, Koppel & Charlton, 2017). Two hundred seventy-two parents of children aged between 3 and 10 completed the questionnaire. Results revealed participants generally had positive behaviors and attitudes about road safety. However, 23% of parents thought that children should learn road safety behaviors via television, school, or friends. Besides, parents who believed they were the primary people for teaching road safety behaviors to kids significantly differed from the others in terms of education level and residential area. Parents from urban places with university or higher levels of education had more information about road safety and gave more importance to the traffic practices of their children. Studies about the impacts of parents on road safety awareness of children were also conducted in Sweden. Researchers looked at the relationship between traffic density, the purpose of using a bicycle, and informal traffic education given by parents (Johansson & Drott, 2001). Analysis of interviews done with 58 parents revealed that traffic density affected the way children use bicycles. While children living in the inner city did not use bicycles for transportation, bicycling was a common way of transportation for suburban children whose accident numbers were the highest. In fact, the children of parents who reported independence as their main goal for traffic education accounted for 81% of accidents. Parents also mentioned little home-school cooperation in traffic education, and they saw themselves as the primary source for the traffic education of their children. Because of these, researchers concluded that home-school collaboration should be emphasized in traffic education, which should be adapted by taking into consideration the local traffic density.

Researchers also explored the indirect effects of educational programs on road safety on parents. Ben-Bassat and Avnieli (2016) did a study to find out differences in knowledge, awareness, and behavior concerning road safety among parents whose children were exposed to a road safety education program and whose children did not. There were no differences between parents' knowledge

about traffic laws; however, awareness of parents and their attempt to behave safely improved significantly after the program. These results showed that although the main target group of the program was not the parents, it also had positive effects on parents. At the beginning of the 2000s, Zeedyk and Wallace (2003) looked at the effects of a video on children's knowledge and parents' awareness. The video was a product of a trend called edutainment, which aimed at entertaining and educating at the same time children and parents. There were 120 children at the age of 5 and their parents, and pre-test, post-test design with a control group was used in the study. Results showed that the video had a significant effect on neither children nor parents. However, parents thought that the video was an effective educational tool. Thus, researchers concluded that the video was better in terms of entertainment rather than edutainment.

Another study was conducted in Spain with the idea that if children and parents realize dangerous situations in traffic, they can behave safer (Alonso, Esteban, Tortosa, & Useche, 2017). Thus, researchers used a survey to understand the safety perceptions of elementary school children and their parents, a total of 1267 individuals. Results revealed that while 70% of children feel relatively safe, 13% of children do not feel safe as pedestrians due to disrespect for the traffic rules, high density of traffic, lack of traffic lights, and safe places to play. Both children and parents living in small cities feel safer, and participants thought that school environments are safer in small and large cities. In general, pedestrian crossing, low density in traffic, and the presence of traffic lights were the reasons for feeling safer. This study showed that children could identify hazardous situations in traffic, which meant that if adequate education is given, children can behave properly to protect themselves from unsafe conditions. However, researchers from China recently found contrary results through observing road crossing behaviors of elementary school children in grades between 1 and 6 (Schwebel et al., 2018). The number of observed students was 216, almost equally distributed in gender and day time. Observations revealed that although adults were always next to children, 30% of children did not listen to the adults. In fact, less than 1 in 3 children looked at the road before crossing, and more than 1 in 3 children set foot on the lane while

vehicles were coming. Researchers concluded that the behaviors of primary school children were dangerous in the traffic.

2.6 Research Studies in Turkey with Children about Road Safety

The literature review shows that studies about road safety education in childhood is limited in Turkey as the number and variety of studies given in this part reveal the situation. Considering the importance of this issue, road safety awareness needs more attention from scholars in the field, and the studies, explained below, can be seen as the starting point of research in Turkey regarding children's road safety awareness.

An experimental study was done in Ankara to find out the effects of play-based traffic education on preschool and first-grade, in other words elementary school, children, aged between 5 and 6 (Gürsoy et al., 2015). Pre-test, post-test, and retention tests were conducted with experimental and control groups. In addition to 90 children, parents and teachers of them were also in the sample. Interviews were done with children in the experimental group before, after, and three weeks after implementation of the educational program prepared by the researchers, whereas children in the control group were interviewed only before and after the program implemented with children in the experimental group. Scales were also filled by both parents and teachers before and after the implementation to detect changes in children from the perspectives of them. Although there were significant differences in the scores of children in pre-test and post-test results, the data taken from parents and teachers did not reveal a significant change. In fact, the post-test and retention test scores of children in the experimental group were not significantly different. Researchers concluded that educational intervention had a positive effect on road safety awareness of children, and this study might take the attention of scholars to research traffic education at young ages.

Researchers also explored the traffic knowledge and awareness of preschool children (Hatipoğlu, 2011). In this study, 11 open-ended questions were asked to children between the ages of 3 and 6. The sample consisted of preschools with different socioeconomic backgrounds from 6 cities in Turkey. Results

revealed that children had some misconceptions about traffic-related concepts. For example, children said that the reason for following the rules in the traffic was not to be fined, and traffic police was someone to be scared of. Thus, the researcher emphasized the importance of being good role models in traffic situations and explaining traffic-related issues properly and clearly. Another suggestion was that traffic education should be given throughout the year, not only in a special week for traffic. A similar study was carried out in Şanlıurfa to determine the traffic awareness of preschool children based on some variables, which are education level of parents, gender, and type of school (Çelik et al., 2018). The sample was 100 children at the age of five. Results showed that the only significant variable was the educational level of fathers. The higher the fathers' level of education is higher the awareness of children. On the other hand, the educational level of mothers, type of institution, and gender were not significant variables.

There are traffic parks in Turkey for providing experiential learning opportunities to children. Bolat, Özbek, and Kaygusuz (2017) conducted a study to determine the effects of these parks on 4th-grade children. A traffic safety course was implemented in the traffic park for eight weeks, and students who took this course in the park and those who took in the regular classroom were tested with a 16-question pre and post-test. Results showed that there was a significant difference between the pre and post-test results of students. Thus, researchers concluded that traffic training parks were effective environments to increase knowledge of students about road safety. Another study was carried on by Kavsıracı and Hatipoğlu (2016) to identify the differences between traffic knowledge and awareness of children in two elementary schools. In the first school, the regular curriculum, prepared by MoNE, was conducted, and the concept of traffic was given in other courses rather than being given as a separate course. In the second school, traffic education course was conducted starting from the first grade, and a traffic training park was placed in the school garden. Fifteen open-ended questions were asked to children by the researchers, and some differences were found between two groups. Students in the second group identified traffic-related concepts more clearly and established a basis for traffic knowledge. Thus,

researchers concluded that students from the school with a traffic course and a traffic park had more concrete knowledge and awareness about road safety.

Tahiroğlu (2012) conducted a study to examine the effects of values education on traffic rules on 4th-grade children's attitudes. Pre-test, post-test control group design was adopted, and the sample consisted of 54 students. Before and after the intervention, the Traffic Rules Attitude scale, developed by the researcher, was applied to both groups. After the intervention, there was a significant difference between the attitudes of children in two groups showing that values education had a positive effect.

Hatipoğlu, Özdemir, and Arıkan Öztürk (2012) compared the traffic education given to elementary school children in Turkey and various countries. Based on the comparison, researchers suggested some ways to improve the effectiveness of road safety education in Turkey. One of these suggestions was that rather than giving traffic education only at one grade level, it should periodically be provided in primary school years as it has been done in developed countries. Not only traffic rules but also the importance of following the rules, controlling emotions, and taking responsibility should be taught to children. Parents should also be included in the education process to expose children good role models. In addition, experiential learning should be used to make learning more lasting.

2.7 Summary of the Literature Review

The literature review showed that road safety education has grasped the attention of many countries worldwide since the 1980s. In developed countries, it can be said that there is a cooperative effort of various stakeholders, such as universities, NGOs, schools, municipalities, and ministries of education, to decrease traffic casualties with the help of road safety education. In addition to this cooperation, research studies are conducted frequently to examine the current situation in road safety awareness of children and the effectiveness of interventions. On the other hand, low and middle-income countries have started to pay attention to road safety awareness of children for the last couples of decades.

These countries need to take previous initiatives as examples and develop action plans to improve the road safety awareness of vulnerable road users.

Turkey is one of the countries which lack long-lasting projects with scientific background aiming to reduce traffic casualties. As it can be understood from the literature review above, there is a significant need to conduct studies about road safety awareness of children starting from young ages. The collaboration of the stakeholders is required to disseminate road safety education programs all around Turkey and determine their impacts through scientific researches.

Various road safety education programs and materials were developed around the world, and their effects on learners were detected (Renaud & Suissa, 1989; Thomson & Whelan, 1997; Zeedyk et al., 2001; Hotz et al., 2004; Miller et al., 2004; Salmon & Eckersley, 2010; Nirmala & Padmaja, 2012; Schwebel et al., 2014; Ahmad et al., 2018). The duration of studies, the data collection and analysis methods, the target age group, and the sample size changed from study to study. The length of interventions varied between one session to one year with a wide range sample size, including 50 to 6460 participants whose ages were between 4 years old, preschool children, and 18 years old, high school students. The data collection methods were adapted according to the ages of participants. While observations and questionnaires filled by researchers, teachers, or parents were commonly used for young children, older students completed self-reported surveys. Generally, rather than content analysis, statistical analyses were done for the collected data. Similarly, there is one research conducted in Turkey with a quantitative design. It is the only study related to the investigation of the effects of a road safety education program, developed by researchers, on early childhood children (Gürsoy et al., 2015).

Studies about experiential learning also showed that it is an efficient strategy of learning for people to gain new knowledge and skills (Loman, 1998; Vines-Curbow, 2001; Parmer, 2006; Borman et al., 2009; Jose et al., 2017). Especially, young children can benefit from experiential learning the most, as preschoolers learn through senses and hands-on activities. The literature revealed

that quantitative methods were generally used in the studies regarding road safety education. By taking into consideration the young age group of children who participated in this study, qualitative methods are used to collect data about changes in knowledge, attitudes, and behaviors of participants. In fact, it is aimed to check the collected data by taking comments and observations of the classroom teacher, which has not done in the previous studies. Besides, in light of the literature, experiential learning, as one of the most effective ways of improving road safety awareness of young learners, is adopted.

CHAPTER 3

METHOD

This chapter begins with the historical development of action research, operated in the study. Then, the research steps are explained shortly, and the aim and research questions of the study are reminded. After that, the participants are introduced, including the rationale for choosing them. The data collection instruments and the data collection procedure are also presented in detail, followed by the parts of analyzing data and providing trustworthiness. Finally, the limitations of the study are listed.

3.1 Design of the Study

This research was designed as a qualitative study to determine the effectiveness of an educational unit developed by the researcher to improve the road safety awareness of preschool children. Action research design was employed as the idea behind it, and the steps in this design corresponded with the nature of the study (Johnson, 2012).

Lewin introduced action research as a collaborative and dynamic process that included cycles of planning, observation, and reflection to lead social improvement (Hine, 2013). Another definition done by McNiff and Whitehead (2010) was furthering practices through creating knowledge related to the practices. Kemmis and McTaggart described action research as a type of reflective inquiry conducted by people to enhance equity and rationality of their social and educational practices and understanding of these practices (as cited in Hine, 2013). Action research in education can be defined as a process in which people from

inside and outside of an institution actively involve to solve a specific problem or improve the current situation in the institution (Yıldırım & Şimşek, 2016). The definition of action research can be in various ways, but the main idea, actively participating in research to improve the existing state, is the common understanding.

The roots of action research go back to the 1930s and 1940s, although its origin cannot be known clearly (Berg, 2001). As in experiential learning, which places action and experience to the center, the works of Kurt Lewin and John Dewey were the beginning of the concept of action research (Adelman, 1993). Lewin's studies in the social psychology field revealed the concept (Lewin, 1946) as he stated, "*No action without research; no research without action*" (as cited in Adelman, 1993). Thus, Kurt Lewin was associated with the name of action research (Hine, 2013). After that, in the 1950s, action research started to take part in the literature of education with the idea that practitioners, in other words teachers, played the main role in the teaching environment; thus, they needed to be not only participants but also researchers in the studies conducted in schools (Dinkelman, 1997). In this way, researchers could develop individually and improve educational practices using action research as an instrument for social change (Dinkelman, 1997; McNiff & Whitehead, 2010). This means that action research aims to improve the learning of people, which leads to the development of behaviors (McNiff & Whitehead, 2010). Because practitioners are also researchers in action research, several names are used for the design, such as practice-based research, practitioner-based research, practitioner research, and practitioner-led research (McNiff & Whitehead, 2010).

Types of action research are grouped in several ways by different researchers. Berg (2001) outlined these types into three categories. Technical-scientific-collaborative approach, practical-mutual collaborative-deliberate approach, and emancipating-enhancing-critical science approach are the three categories formed based on the groupings of Grundy, Holter, and Schwartz-Barcott, and Mckernan (as cited in Berg, 2001). Technical/scientific/collaborative

action research includes the works of early advocates that aim testing an intervention built on a theoretical framework (Yıldırım & Şimşek, 2016). In the second category, the researcher and practitioner work together to find the problems and the potential interventions to solve these problems (Berg, 2001). The third mode, emancipating/enhancing/critical approach, attempts to bring together experiences and problems of practitioners and theories for solving them, in other words, connect theory and practice through increasing consciousness of practitioners (Berg, 2001).

The process of action research is modeled in different ways such as spiral (Berg, 2001), helix (Hine, 2013), cycle (Johnson, 2012; Yıldırım & Şimşek, 2016). The spiral model of action research is described as plan, act, observe, and reflect by Kemmis and McTaggart (as cited in Berg, 2001). The helix model of Stringer is also named as “Look, Act, Think Model” (as cited in Hine, 2013, p.153). Schön’s model of reflective thinking is similar to the action research cycle process (1983). The distinction in the shape of models results from the difference between how steps are connected. Although the models are described in various shapes, the steps included in the models are similar.

There are common steps in the action research process (McNiff, 2014). Firstly, a problem or an issue that needs specific attention should be found (Johnson, 2012). Secondly, the reason why this issue is important should be explained, and the current situation related to the issue must be identified. After that, a possible solution or strategy should be developed and be implemented. Finally, an evaluation must be done concerning the process to see whether this solution worked or not. Based on the evaluation, some modifications or changes might be made in the strategy if it is necessary (Yıldırım & Şimşek, 2016). Since there is a need to improve the road safety awareness of children starting from preschool years to decrease number and severity of traffic accidents in Turkey, as several researchers proposed (Çelik et al., 2018; Gürsoy et al., 2015; Hatipoğlu, 2011), action research with qualitative data collection techniques was chosen to take into consideration the young age group of the sample.

3.2 Research Questions

This study aimed to find out the impact of a traffic education unit that was designed in the light of the current situation concerning road safety awareness among children and the current practices implemented in various preschool classrooms in Turkey. In order to reach this aim, two research questions were formulated as the following:

1. What is the current status of road safety education in early childhood classrooms?
2. What contribution does “the new road safety unit” developed based on experiential learning make to preschool children’s knowledge, attitudes, and behaviors?

3.3 Participants of the Study

Teachers and students constituted the participants of the study, which means that there are two groups of participants. Teachers were the participants in the first part of the study as interviewees. Maximum variation sampling was used to increase variety in the sample (Patton, 1990). There were four teachers with different years of experience working in a variety of cities with different age groups, as shown in the Table 3.1. While the years of experience of participant teachers varied between 2 years to 11 years, they were living in three cities: Ankara, Diyarbakır, and Mardin. The interviewees were working in both public and private schools with different structures. Whereas one teacher had a preschool classroom in a public elementary school, other teachers were working in public and private independent preschools, which hold an individual school building and facilities. The teachers also had experiences with different age groups ranging from 3 to 6 years.

Table 3.1

Demographic Information about Teacher Interviewees

Participant	Experience	City	School Type	Age Group
TE1	2 years	Mardin	Independent Preschool-Public	4-6 years old
TE2	2 years	Diyarbakır	Preschool Classroom in an Elementary School- Public	3-5 years old
TE3	9 years	Ankara	Independent Preschool-Private	5-6 years old
TE4	11 years	Ankara	Independent Preschool-Public	5-6 years old

Students constituted the second group of participants in the study. The children were chosen through convenience sampling because the school where children got education was easily available for the study, which made the intervention possible and data collection process convenient for the research and researcher (Fraenkel, Wallen & Hyun, 2015). Children were taking full-day education facilitated and guided by two ECE teachers. There were 19 children, 10 girls and 9 boys, in the classroom. All of them were interviewed one by one in a private room before starting the implementation of the unit. Children could not regularly attend all activities because of some inconveniences, such as illness and family issues. The mean number of activities attended by the pre-interview participants is 4,7, and related resources shown in the table below.

Table 3.2

The Number of Learning Activities Attended by the Pre-Interviewees

Participant Number	Number of Road Safety Activities Attended	Participant Number	Number of Road Safety Activities Attended
ST1	1	ST11	4
ST2	3	ST12	5
ST3	6	ST13	6

Table 2.2 (continued)

ST4	5	ST14	3
ST5	6	ST15	6
ST6	6	ST16	4
ST7	6	ST17	6
ST8	4	ST18	6
ST9	3	ST19	5
ST10	4		

At the end of the program, all students should have been interviewed; however, only 10 children, 6 girls and 4 boys, could be reached out due to the **coronavirus pandemic**. Children were aware of the pandemic, and they wanted to go home as soon as possible. This situation created some attention issues in participants, especially two of them who did not answer many questions during the interview. Only 4 post-test interviewees participated in all teaching activities. Table 3.3 shows the number of activities participated by the post-interviewees. Whereas the mean number of activities attended by the post-interview group was 4.4, the average was 5 for the children who could not be reached.

Table 3.3

The Number of Learning Activities Attended by the Post-Interviewees

Participant Number	Number of Road Safety Activities Attended	Participant Number	Number of Road Safety Activities Attended
ST1	1	ST6	6
ST2	3	ST7	6
ST3	6	ST8	4
ST4	5	ST9	3
ST5	6	ST10	4

The age group of participants was between 5-6 years old, in other words 60-72 months, and socioeconomic statuses of their families were close to each other, as reported by the classroom teacher. At least one parent of each child had a job, and most of the parents had a bachelor's degree. Some parents were taking graduate education or completed a master or doctoral degree.

3.4 Intervention and Its Stages

Three stages were included in the intervention. The preparation stage of the intervention started with the first research question, what is the current status of road safety education in early childhood classrooms. To answer this question, first of all, an extensive literature review was conducted to find out what should be expected from young children in terms of road safety awareness considering their developmental level and what kinds of interventions were done to enhance road safety awareness of children. Generally, three points, which were being aware of safe and dangerous situations, behaving properly, and responsibilities for the safety of the self and others, were emphasized in traffic education for young children (Brake, 2014; MPI & MET&Y, n.d.; The Eastern Alliance of Safe and Sustainable Transport [EASST], n.d.). To teach these points, role-playing, real experiences, games, and stories were found as effective teaching methods or tools (Bruce & McGrath, 2005; Dragutinovic & Twisk 2006).

Moreover, the researcher interviewed four early childhood teachers from different cities with varied years of experience to establish a general idea about the practices concerning traffic education implemented currently in early childhood education settings in Turkey.

Based on the findings of the first research question, which were the information obtained from the literature and the interviews, a road safety awareness unit with six sessions (Appendix B) was developed by the researcher. The learning activities were prepared by taking into consideration the accessibility of materials and facilities, as there were differences in urban and rural schools in terms of opportunities. In order to determine the effects of the unit, children were required to be interviewed before and after the implementation. Regarding the young ages

of children, a storybook (Appendix H) was utilized as the instrument of the interviews.

The implementation began on February 18, 2020 with the warm-up activity for the participants and the researcher getting used to each other at the beginning of the second stage of the study. Three days after the warm-up activity, the pre-test was applied separately to each child in the interview room, and responses of children were recorded by a tape recorder. Following this, the main activities were implemented two times a week between February 25 and March 10. During the second activity, a group discussion was done related to basic concepts in traffic. Then, a checklist was given children to make observations with their families until the next learning activity. Based on the children's observations, a vehicle graph was prepared in the third activity with active participation of all children. After a small group activity, safe behaviors in traffic and how to commute by bus and bike were discussed as whole group in the fourth activity. Then, a road crossing song with related movements was practiced by participants. A picture book with questions regarding meaning of traffic lights and how to commute safely by car was read in the fifth activity. Then, road crossing practice was done in the classroom. The last activity was a board game to repeat all concepts and introduce underpass and overpass concepts. Throughout the learning activities, active participation of children was ensured via songs, games, observations, group discussions, small and whole group activities to provide experiential learning opportunities.

While four of the activities were approximately 40 minutes and completed in one session, the duration of the remaining ones was between 60 minutes and 90 minutes. Considering the attention span of the children and their interest in activities, one of the lessons was divided into two sessions, whereas the other one implemented in one time.

Throughout the process, the researcher was the implementer of learning activities, and the classroom teacher acted as an observer, sitting in one corner of the classroom. During the lessons, the tape recorder was used by the researcher to

be able to listen again to the conversations and fill out the observation form. While the classroom teacher sometimes took photographs during the implementation, after the completion of each activity, the researcher took photographs of each child's drawings, graphics, or pictures prepared by the whole class. By the end of the program, one more semi-structured interview was carried out with the main teacher of the sample classroom to get her opinions, observations, and suggestions concerning the unit and to take possible feedbacks provided by the parents of the children, in addition to the post-interviews conducted with children. After finishing the data collection process, the collected data was analyzed, which was the last stage of the intervention process.

3.5 Data Collection Instruments

Four instruments were used in the data collection process. Two of them were utilized during semi-structured interviews with preschool teachers. While the first one was employed in all interviews, the second interview schedule was operated only with the teacher of the sample classroom. In order to collect data from children, two instruments were used. An observation form, prepared by the researcher, was the main tool for recording observations in terms of knowledge, attitudes, and behaviors of children throughout the learning activities. The last instrument was a storybook to examine road safety knowledge, behaviors, and attitudes of the sample. Each of the data gathering instruments is introduced in the following parts.

3.5.1 Teachers' Views about Traffic Education Interview Schedules

Both schedules were developed based on the literature review, considering the important points in the interview schedule preparation process, such as starting with questions regarding demographics, asking open-ended questions rather than yes-no questions, providing flexibility to interviewees with the semi-structured process (Yıldırım & Şimşek, 2016). After the first version, interview schedules were examined by the advisor of the researcher, and the necessary changes were made. Then, the schedules were reviewed by scholars. Based on expert opinion, the schedules were revised and took their final forms.

There was a total of ten questions with two parts in the first interview schedule (Appendix C). Interviews were started with questions regarding demographic information such as university, department, graduate education, and years of experience. After that, participants answered questions about student profiles in their classrooms, including the number of students, socioeconomic status of families, educational levels of parents, etc. Then, teachers' opinions related to the roles of students and teachers in educational settings were taken with a focus on experiential learning. Finally, participants' ideas concerning road safety awareness in early childhood and traffic education activities implemented by them were inquired.

The second schedule (Appendix D) was applied only to the teacher of the sample classroom. There were ten questions under three headings. In the first part, the general opinions of the teacher regarding the implemented traffic program were taken. Next, some questions concerning how to improve the unit were asked. Finally, observations of the teacher about the changes in knowledge, attitudes, and behaviors of children in terms of road safety awareness were highlighted, and feedbacks given by parents to the teacher were mentioned. With this interview, it was expected that the teacher could provide important information about children because of two points. First of all, the researcher was together with children only a short time, and she did not have direct contact with the parents. On the other hand, the teacher always together with children which created an opportunity to observe children, if they talk, play, or behave some concepts related to traffic. In addition, she had strong communication with parents, which could help to determine whether or not children reflect the concepts they learned in daily life.

3.5.2 Children's Road Safety Awareness Interview Schedule

The storybook (Appendix H), "**Deniz'in Sabah Maceraları**", was translated and adapted by the researcher from a storybook, *Matilda's Morning Adventures: A Story with Active Travel and Road Safety Messages for Children*, written by Kim Chute, illustrated by Shannon Melville, and produced by the Western Australian Physical Activity Taskforce (2011). The storybook was used

due to young ages of children and correspondence of the story with objectives in the traffic unit. The story was about a child going to school by different modes of transportation each day. Based on expert opinions, some pages were removed from the story, and some revisions were done by the researcher regarding the flow of the story and the pictures to make the story culturally adapted. For example, traffic signs were changed, the direction of roads was reversed, and English words written on characters were deleted. The story was translated into Turkish, and a variety of questions were added to the story based on the objectives in the traffic unit. Some examples of the questions are where children and adults should sit in the car, what we should pay attention to in the car, and what we should wear while riding a bicycle. Age and content appropriateness of the story was approved by an early childhood education professor. Also, based on the feedbacks of the researcher's advisor, necessary revisions were done in the book. This storybook was used two times during pre and post-interviews with children. Six questions were added to the end of the story for the post-interviews to investigate the general conception and ideas of children about traffic and learning activities.

3.5.3 Observation Form

An observation form (Appendix G) was prepared by the researcher for taking notes during and after the implementation of each activity. The purpose of using an observation form was making the anecdotal record process easier and more systematic (Yıldırım & Şimşek, 2016). Besides, observations regarding knowledge, attitude, and behaviors of children were brought together via the form. It was divided into five parts, which required the attention of the researcher. Daily life observations which were shared by children and their behaviors during learning activities are the components of the observation form. Since experience and observation were the core of experiential learning, they are specifically included in the form. In addition to these, behaviors of children during activities and answers given to the questions in the assessment part were also included in the observation form. As it happened in the previous data collection instruments, expert opinions were also taken for the observation form. Some parts of the form, specifically

needed the attention of the researcher during observations, were improved based on the revisions of the professors.

3.6 Data Collection Procedures

Before starting the data collection process, the required approval of the METU Human Subject Ethics Committee (Appendix A) was taken. All of the materials used in the study were submitted to the committee for their approval. Since the producer of the story used in the interviews with children gave the written permission on the front page of the storybook for using the story in educational activities, additional permission was not required.

After taking the necessary approval letter, formal data collection procedures began with interviewing the teachers. Participant teachers were reached via phone calls and e-mails. After scheduling the meetings, interviews were carried out face to face or via online platforms. Then, practices implemented in Turkey and around the world were searched, and some traffic education units for preschool children were found. Based on the interviews and example units, the intervention program was prepared.

A meeting was set up with the principal of a preschool. In this meeting, the procedures were explained; approval letters and activity materials were presented for the review of the principal and the vice-principal of the school. After getting their approval, Parent Information Form (Appendix E) and Parent Approval Form (Appendix F), prepared by the researcher, were given to each parent of the possible child participant. Since children were vulnerable participants, and they might not understand the concept of an informed consent form, written permission of parents was taken (Fraenkel, Wallen & Hyun, 2015). Besides, after explaining the process without deception, children's verbal approvals to participate in the study were taken. Later, pre-interviews were carried out with each child and the classroom teacher throughout two afternoons on February 21 and 24. The interviews lasted between 10 and 15 minutes. Then, the intervention had continued for three weeks. Lastly, the post-interviews were done with children and the classroom teacher on March 13. A tape recorder was used during both interviews and educational

activities. In addition, the observation form was filled out by the researcher for describing some observations throughout the process, and at the end of activities, children's works were photographed. Labels were used for the names of participants in observation forms and interviews. Besides, photographs were taken without including children's faces, mainly focusing on the materials.

3.7 Data Analysis

After completing interviews via Teachers' Views about Traffic Education Interview Schedule and Children's Road Safety Awareness Interview Schedule, the data was transcribed verbatim. Throughout this process, the researcher had a chance to listen to the interviews one more time and to increase familiarity with the data. While descriptive analysis was adapted for interviews with teachers, content analysis was conducted in interviews with children. For descriptive analysis, the focus was on the ideas of teachers about traffic topics to teach in early childhood and practices implemented in their classrooms. Following transcription, themes, categories, and codes were formulated for the content analysis of Children's Road Safety Awareness Interview Schedule. A depiction of coding was shown in the figure below.

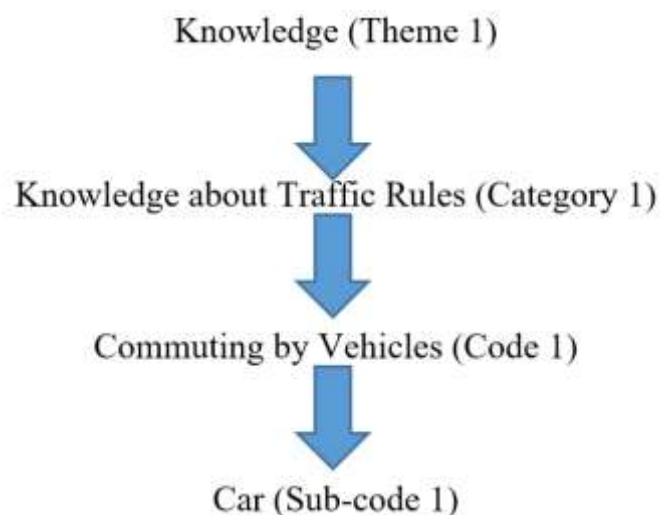


Figure 3.1 A Depiction of Themes, Categories, and Code in the Pre and Post-Interviews based on the Story

Since 10 children participated in the second phase, only these children's data was used for the analysis of post-interviews. In addition to the schedules, observations of the researcher written on the observation form and the drawings of children done during the activities were used for supporting the transcribed data.

3.8 Trustworthiness of the Study

Validity and reliability are indispensable parts of research, which are named as trustworthiness in qualitative studies (Lincoln & Guba, 1985). Confirmability, transferability, credibility, and dependability are four strategies to provide trustworthiness in qualitative researches (Guba 1981; Shenton, 2004; Yıldırım & Şimşek, 2016).

To ensure credibility, a variety of data collection instruments was applied to different participants at various time points. Students were interviewed twice to detect changes in their knowledge and awareness about road safety. In addition, the observations and ideas of the classroom teacher were taken through an interview. Besides, children's drawings, dialogues, and experiences were gathered with the observation form. Moreover, before applying the actual part of the study, the researcher met with children to get them used to the researcher and behave more naturally during activities and interviews.

To provide confirmability, transcriptions of interviews with children were coded separately by two doctorate students in addition to the researcher. Then, codes were discussed between scholars, and coder agreement was ensured. The final revision was done with the support of the advisor.

All procedures were described in detail, and direct quotations were included in the findings to provide transferability of the study. Moreover, dependability was ensured with the guidance of the supervisor of the researcher during the development of instruments and the collection and analysis of the data.

3.9 Limitations of the Study

Every study has some limitations due to various reasons. In the same way, this study contains two limitations within itself. First of all, the sample size is small, and each child could not regularly participate in the activities. This situation might have limited the results and may raise a question mark whether or not the results reflect the actual effectiveness of the program. Secondly, because of the coronavirus pandemic, only 10 children could be interviewed for the post-interview.

CHAPTER 4

FINDINGS

This chapter focuses on the findings of the study. The findings are presented in relation to the research questions. For the first research question concerning the current practices implemented in early childhood classrooms about road safety education, the findings from the analysis of Teachers' Views about Traffic Education Interview Schedule are reported. These findings are used in the preparation of the intervention.

In order to determine the influence of the intervention, which is the second research question, data collected in pre and post-interviews with children via Children's Road Safety Awareness Interview Schedule and the observations are analyzed. Firstly, findings of road safety awareness of children before the intervention are explained. Then, children's traffic awareness during the implementation is presented. Finally, post-interview findings are reported, and a comparison between pre and post-interview findings is made.

The findings regarding the second research question are presented under five headings based on the categories derived from the analysis of answers of the participant children. Knowledge about traffic rules, interpretation of traffic, attitude towards the safety of the self and others, daily life experiences, and answers regarding the story flow are the five categories constituted based on the responses of the children. These categories are grouped under three themes, knowledge, attitude, and behavior, and one additional theme, flow of the story. Knowledge about traffic rules and interpretation of traffic are listed under knowledge theme. Whereas attitude towards the safety of the self and others is categorized under

attitude theme, the theme of behavior includes daily life experiences, and flow of the story consisted of answers regarding the story flow (Table 4.1).

Table 4.1

Organization of Themes, Categories, and Codes derived from Interviews with Children

Theme 1	KNOWLEDGE
Category 1	Knowledge about traffic rules
Code 1	Crossing the road
Code 2	Meaning of traffic lights and signs
Code 3	Commuting by vehicles
Subcode 1	Bicycle
Subcode 2	Car
Subcode 3	Bus
Code 4	Demonstrating dangerous behaviors in traffic
Category 2	Interpretation of traffic
Code 5	Definition of traffic
Code 6	Daily life observations
Subcode 4	Vehicles on the road
Theme 2	ATTITUDE
Category 3	Attitude towards the safety of the self and others
Code 7	Safety of the self
Code 8	Safety of others
Theme 3	BEHAVIOR
Category 4	Daily life experiences
Theme 4	FLOW OF THE STORY
Category 5	Answers regarding the story flow

Moreover, findings from the post-interview with the classroom teacher regarding the road safety education unit are given in this part. The chapter finishes with a summary of the findings.

4.1 Teachers' Views on Traffic Education

Four teachers with different years of experiences were interviewed before the preparation process of the intervention. Findings revealed that the teachers had a shared understanding of what should be taught about traffic in the early years. Rules of crossing the road, the meaning of traffic lights and signs, awareness about proper behaviors as pedestrians and drivers were the main topics mentioned in the interviews. They thought that traffic education began in the family and continued in schools with the cooperation of parents. However, some of them, the ones teaching in rural areas, stated that they did not have a chance to involve parents in educational activities. The interviewees gave various examples regarding learning activities implemented in their classrooms. For example, one participant said:

I brought a steering wheel to the class first. We created a car with chairs. Then, I showed how the cars move in red, yellow, and green light. Everyone got behind the steering wheel and performed how it should be done (TE1).

Önce sınıfa bir direksiyon getirdim. Sandalyelerle araba oluşturduk. Sonra kırmızı, sarı, yeşil ışıktaki arabanın nasıl hareket ettiğini gösterdim. Herkes direksiyona geçerek nasıl yapması gerektiğini uyguladı. (TE1)

All teachers highlighted the benefits of songs and stories for making the learning process easier and smoother. They also emphasized the importance of hands-on experiences, which can be provided by drama, role-playing, and games. One of them stated, *“I try to prepare activities based on the daily life experiences of children”*. The ones living in urban places told the invitation of traffic police to classrooms was a common activity in their schools. In fact, one of them talked about their visits to traffic parks in Ankara. While all teachers told they generally focused on road safety awareness activities during the Traffic and First Aid Week, some of them conducted activities throughout a semester.

In regard to the findings of teachers' views on traffic education, an intervention for improving road safety awareness of children was prepared (See Appendix B).

4.2 Children's Road Safety Awareness before the Intervention

Analysis of responses of 19 participants in pre-interviews were reported here. The findings are presented under five categories.

4.2.1 Knowledge about Traffic Rules

Crossing the road, the meaning of the traffic lights and signs, commuting by vehicles, and demonstrating dangerous behaviors in traffic were the four codes in this category.

Crossing the Road: Three questions listed below were asked in the pre-interview about crossing the road.

1. What should we do while crossing the road?
2. How should we cross at the end of the bicycle road?
3. What should we do when we are in the parking lot?

Looking right and left ($n=8$), waiting for cars to pass ($n=6$), crossing when cars stop ($n=3$), waiting for cars to stop at the red light ($n=2$), holding parents' hands ($n=3$), not running on the road ($n=2$), crossing while holding bicycle ($n=4$) were adequate responses of children to these question. About running on the road, one child said:

She said, "Let's do not run on the road, or the cars might hit us." She should cross calmly over the road so that the cars do not hit him. She needs to look at the road. She firstly looks to the left, then to the right. (ST19)

Sakın yolda koşmayalım yoksa arabalar bize çarpabilir demiştir. Yoldan sakince yürüyerek geçmeli ki arabalar ona çarpmasın. Yola bakması gerekiyor. İlk önce sola bakıyor sonra sağa. (ST19)

On the other hand, two children had some misconceptions about running on the road. For example, ST11 told "*We need to run for crossing over the road. Otherwise, the cars hit.*", ST15 said "*We should run very fast, when the cars get*

too close.". In addition, two children only said "*Look across and be careful.*". Children also indicated false knowledge about crossing the road with a bicycle. Seven of them thought that they should leave bikes and cross the road by walking or bus. Besides, three children said that they did not know the answer.

Meaning of the Traffic Lights and Signs: Some responses given to the three questions were grouped under the meaning of the traffic lights and signs.

1. What should we do while crossing the road?
2. How should we cross at the end of the bicycle road?
3. What should we pay attention while commuting by car?

Meaning of the red-yellow-green lights ($n=3$), meaning of the red-green lights ($n=3$), meaning of the red light ($n=3$), and interpretation of the traffic signs ($n=5$) were the codes about traffic lights and signs.

Children had confusion about which traffic lights were for vehicles, and which traffic lights were for pedestrians. Two children thought red-yellow-green lights were for pedestrians which were meaning that:

They should wait at red light. They should be prepared at yellow light. They should cross at green light. (ST17)

Kırmızı ışık yandığında beklemeliler. Sarı ışık yandığında hazırlanmalılar, yeşil ışık yandığında karşıya geçmeliler. (ST17)

They could not match the red-yellow-green lights with the designated target group. Only one child realized that red-yellow-green lights actually had meanings for vehicles, and she stated:

We have to follow the rules. We have to stop at red light. We must be prepared at yellow light. We must pass at green light. If people are going to cross, then we need to wait. If people wait, cars have to pass. (ST7)

Kurallara uymak zorundayız. Kırmızı ışıkta durmamız gerekiyor. Sarı ışıkta hazırlanmalıyız. Yeşil ışıkta geçmeliyiz. İnsanlar geçecekse beklemeliyiz. İnsanlar beklerse arabalar geçmek zorunda kalıyor. (ST7)

Only three children were aware that there were different lights for pedestrians. ST12 said that *“We need to pass, when the traffic rules [lights] are green. We should not pass, when it lights red.”*. ST13 described the light for pedestrians as the one with a human picture and said *“If there is a picture of a human at the traffic lights, it means she can cross.”*. Although he was aware that the light with the human picture was for pedestrians, he could not explain the meaning of colors.

In addition to these, three children talked only about the red light, which meant that people should cross the road because cars stop at the red light. Some children interpreted the traffic signs seen in the pictures of the story and gave their answers based on these interpretations. For example, ST2, who paid attention to the signs throughout the story, described the pedestrian and bicycle road sign as *“Bicycle and human, (showing the sign on the road) there are separate roads. Children should hold adults’ hands, fathers and mothers”*. He also explained the right-hand bend and said, *“Signs help us to go right and left”*. Three children differently interpreted the sign showing the end of the pedestrian and bicycle road. Whereas ST2 stated *“They should cross the road by bike without holding hands”*, ST7 said *“No walking here.”*, and ST19 told *“Because bicycle is forbidden, they should hold their bikes and take with them”*.

During the pre-interviews, a couple of children made explanations about traffic signs and lights. However, their descriptions mostly included some misconceptions and false knowledge.

Commuting by Vehicles: Responsibilities of passengers and drivers while commuting were included in this category. Bicycle, car, and bus were three vehicles used in the story. Six questions were asked to get children’s ideas about traveling by various vehicles.

1. What should Deniz pay attention while riding the bicycle?
2. Are specific pieces of equipment used by Deniz while riding the bicycle?

3. Where should Deniz, Deniz's brother, Deniz's dog, and Deniz's father sit in the car?
4. Who should drive the car?
5. What should we pay attention while commuting by car?
6. What should we do while getting off the bus?

Various answers were given by the participants regarding the first question, about riding a bicycle. Cars ($n=3$), pedestrians ($n=3$), traffic signs ($n=3$), car road ($n=1$), and sidewalk ($n=1$) were mentioned as traffic-related concepts that Deniz should be careful while riding her bike. Only one child, ST7, did detailed explanation and said "*She has to wait for the cars, and she should not ride fast because she might hit her head. She should go slow and follow the rules.*". Besides, one child did not respond to the question.

Five pieces of bicycle equipment had attracted the attention of children. Answers of the second question, specific pieces used by Deniz, consisted bicycle helmet ($n=8$), bicycle bell ($n=3$), bicycle knee pads ($n=1$), cycling glove ($n=1$), bicycle pedal ($n=1$). However, the number of children who did not respond to the question was six.

The third and fourth questions were about seating arrangements in the car. Although the fact that the person who needed to drive the car was the father was the statement of all children, some children had some false ideas regarding the seating arrangement.

Most children pointed out that Deniz ($n=16$) and her brother ($n=18$) should sit in the back seat. In fact, some of them used the terms of baby seat ($n=3$), child seat ($n=2$), and normal seat ($n=1$), which indicated that they were aware of different types of seating for the various age groups. ST19 stated, "*Deniz needed to fasten the seat belt of her brother.*" Even though many participants did not become familiar with a dog commuting by vehicle, more than one-half of the answers ($n=11$) included the dog sat in the back. In fact, two of them mentioned a special

seat for the dog. Moreover, almost all children ($n=14$) responded as the father sat in the front seat.

Some answers were classified as inadequate or false. For example, one child thought that the father should sit in the back seat, and four children did not respond related to the seating of the father and the dog. Furthermore, two children stated that Deniz sat in the front seat, and ST18 explained:

Her brother is sitting in the middle because he is young. Because there are three places in the back and two places in the front. Deniz can seat next to her dad because she is a little long. Her brother might sit in the middle. Her dog may also be on the right side of her brother. (ST18)

Kardeşi arkada ortaya oturmuştur çünkü o küçük. Çünkü arkada 3 tane yer var, önde 2 tane yer var. Deniz, babasının yanında oturabilir çünkü birazcık uzun. Kardeşi ortada oturabilir. Köpeği de kardeşinin sağ tarafında olabilir. (ST18)

Besides, ST15's response included that the siblings should sit in the front seat and reasoned as "*Children sit on the front because there is nowhere to fall. If you sit at the back, you might fall while braking.*".

The fifth question concerning the issues, which should be paid attention while traveling in the car, had various responses. Looking at signs ($n=2$), lights ($n=2$), other cars ($n=3$), sidewalks ($n=1$), and pedestrians ($n=2$) were answers of children. Besides, two interviewees told that seat belts should be fastened, and ST8 stated: "*Do not open the door.*".

The answers of children regarding the last question, related to getting of the bus, were limited. In addition to not standing in front of the door ($n=3$) and holding parents' hands ($n=1$), ST10 said, "*We should get off carefully. I mean holding these (showing the handle) and going down the stairs.*". On the other hand, seven participants just responded as getting off the bus regularly, and getting off the bus by jumping was the response of ST19.

4.2.2 Interpretation of Traffic

In the pre-interviews, daily life observations of children were the main code under the interpretation of traffic category.

Daily Life Observations: In order to determine the vehicles which the participants see in their daily lives, five questions, as listed below, were included. Throughout the story, the possible transportation ways of the protagonist to the school were asked for each day, in total four times.

1. What do you think Deniz paid attention while walking along the road?
2. Did she pay attention to something passing by the road?
3. How did Deniz go to school the next day? (4 times)
4. What do you think Deniz saw while commuting by the bus?
5. Did she see something on the road while commuting by the bus?

In the first question, only six children talked about the road. While three of them mentioned cars, one child said buses. When the road was specifically asked in the second question, the number of children ($n=9$) talking about the road increased. Motorcycle ($n=1$), truck ($n=1$), bus ($n=2$), sidewalk ($n=1$) were the participants' responses. However, one child thought that Deniz did not pay attention to anything.

By car ($n=18$), school bus ($n=1$), walking ($n=3$), bus ($n=3$), bicycle ($n=4$), scooter ($n=1$) were predictions of children related to the possible ways of transportation to the school.

The aim of the last two questions was the same as the first two ones'. Whether they directly concentrated on the road, which requires awareness, or it was needed to direct their attention to the road were tested. In the fifth question, the answers were cars ($n=2$) and bicycles ($n=2$). However, their responses varied in the last question as car ($n=9$), bike ($n=4$), motorcycle ($n=1$), bus ($n=2$), trailer ($n=1$), dolmush ($n=1$), truck ($n=1$), train ($n=1$), big and small lorry ($n=1$). While

two children did not answer the question, two children replied as “*There is nothing to see on the road.*”.

4.2.3 Attitude towards the Safety of the Self and Others

The reasons and motivations of children to be safe were grouped under this category. Children’s explanations for the questions below concerning how to behave in specific situations reflected their attitudes about road safety. They adopted not only a positive attitude towards the safety of themselves but also others, such as being careful in order not to hurt people while driving car.

1. Did Deniz pay attention to something passing by the road?
2. What should Deniz pay attention while riding the bicycle?
3. Why did Deniz wear the helmet while riding her bicycle?
4. Why should children walk between adults in the street?
5. Why might Deniz, her brother, and her dog have sat at the back seat while commuting by the car?
6. What should we pay attention while commuting by car?
7. What should we do when we are in the parking lot?

In the first question, three children thought in order not to cause an accident and not to hit the car were the reasons for paying attention to cars. A similar explanation was done to the second question by three children. They reflected their positive attitude towards theirs and others’ safety. They explained Deniz should pay attention to the bicycle in front of her because if she hit the bike, this might have resulted in falling of her or the man.

More than half of the participants ($n=10$) answered the third question, about the reason for wearing bicycle helmet, thinking about the safety of the self. They replied Deniz wore the bicycle helmet for not being hurt at the moment of falling. In addition, ST5 said, “*Motorcyclists also wore a helmet*”. On the other hand, three children’s responses consisted of false knowledge. They thought that helmets were worn for not falling down, which meant they helped people to drive properly. The

question was not asked six participants since they did not realize helmets on the previous page of the story.

Children's motivation to be safe also included traffic-unrelated reasoning. The fourth question was for revealing children's motivations for walking between adults in the streets. Responses of more than half of the children ($n=10$) to the fourth questions were about being lost. They explained as if children did not walk between adults in the street, they might get lost, go in the wrong direction, or be kidnapped. While five children did not answer the question, three children just mentioned that because adults were grown-ups.

Some children's explanations ($n=2$) regarding the proper seating arrangement in the car consisted of inadequate or false knowledge. They related this situation only to ages of children, and one of them, ST10, stated that "*Because children cannot drive the car thing, and it might be difficult for Deniz and her brother to fit into the second seat.*" Four children highlighted that for their safety, children should sit in the back seats, and their detailed responses were given under the daily life experiences category. Two children did not answer the fifth question

In the sixth question concerning the situations to be careful when commuting by car, two participants talked about pedestrians who should be paid attention for not hitting them. A significant explanation, including daily life observations, was done by ST5, who said:

We should not kill people. We must be careful. We have to pay attention to animals, cyclists, scooters, cars going on the road. (ST4)

İnsanları öldürmemeliyiz. Dikkat etmeliyiz. Yoldan geçen hayvanlara, yoldan geçen bisiklet sürenlere, scooterlara, yoldan geçen arabalara dikkat etmeliyiz. (ST4)

In addition to the safety of others, ST10 pointed out the importance of fastening the seat belt for safety. She told, "*If you do not fasten your seat belt, you fall out of the car.*". Parallel answers were given to the last question ($n=2$). The reason for looking right and left in the car park and walking on the sidewalk was not being run over by cars.

Positive attitudes towards the safety of themselves and other people' were reflected in the answers of children. Some participants' reasoning included adequate explanations, such as the necessity of wearing helmet and fastening seat belt for protection. However, the others presented limited or false knowledge, especially in the reason for wearing helmet and sitting in the back seat as a child.

4.2.4 Daily Life Experiences

Children answered several questions, given below, in the light of their daily life experiences, which were reflections of their behaviors in traffic-related situations.

1. What should Deniz pay attention while riding the bicycle?
2. Who might be the first and last people in the line?
3. Where should Deniz, Deniz's brother, Deniz's dog, and Deniz's father sit in the car?
4. Why might Deniz, her brother, and her dog have sat at the back seat while commuting by the car?
5. What should we do when we are in the parking lot?
6. What do you think about the morning adventures of Deniz?
7. How do you come to school?
8. Who brings you to school?

ST17 responded to the first question with her experience related to riding her bicycle. She displayed adequate behaviors for commuting safely by bike by saying that *"I pay attention not to fall, to hold tightly, not to hold the bell whenever I want, and to wear my helmet."*

Almost half of the children ($n=8$) reflected their school experiences in the second question about people in the line. They thought that the first and last people in the line were adults as in their school trips. In addition, two children responded as mothers who were also adults. However, almost one-third of the participants replied as friends, which was a sign of inadequate knowledge. Moreover, two children left the question unanswered.

The only participant who thought that the dog should sit in the front seat answered the third question about seating arrangement in the car based on her experience. She responded as *“I saw several times a dog was sitting on the front seat in the car.”*

Five children expressed their daily life experiences in their answers to the fourth question regarding the reasons for the proper seating arrangement in the car. Two children considered sitting in the front seat as dangerous, which might result in a fine by police. ST5 said:

Because children are young, they sit in the back. Because they are too young, they can sit in the front if their parents allow, otherwise they sit in the back. I do not sit in the front either, for example, when I go to school, on a trip or on a holiday. Let's say it's a remote place. I always sit in the back. (ST5)

Çünkü çocuklar küçük olduğu için arkaya otururlar. Çünkü çok küçük oldukları için anne babaları izin verirlerse öne otururlar, yoksa arkaya otururlar. Ben de hiç öne oturmuyorum mesela okula giderken de, gezmeye giderken de, tatile giderken de. Diyelim ki uzak bir yer. Ben hep arkaya oturuyorum. (ST5)

In addition to these, one child stated, *“It is forbidden to sit in the front”*. Another child said, *“There is a rule for children, but some people place children in the front seat, especially young children.* They talked about the rule for safety of children.

ST19 detailed her response to the fifth question concerning what to pay attention in a parking lot in the light of her experiences and said, *“When get on the car in the parking lot, Deniz should fasten her seat belt, also her brother's belt. Her father fasten himself.”*

ST18 highlighted a different point in the sixth question, which was for taking participants' opinions regarding the story, and reflected his experiences:

Exciting, nice, and funny. Because bus is not used for going to school. You can walk or go by car. How do you go by bus? You can get off from bus

only at bus stops. School is not a bus stop anyway. (ST18)

Heyecanlı, güzel ve komik. Çünkü otobüsle hiç okula

gidilmez ki. Yürüyerek sadece duraklarda inilir. Okul bir
gidilebilir, arabayla gidilebilir. durak değil ki zaten. (ST18)
Otobüsle nasıl gitsin? Otobüsle

Children ($n=11$) generally used cars for coming to school. In addition to the school bus ($n=5$), only one child commuted by dolmush and walking. Mostly mothers ($n=12$) took their kids to the kindergarten, while four children were brought by their fathers.

4.2.5 Answers regarding the Story Flow

Throughout the story, children answered some questions based on the flow of the story or the pictures in related pages. Therefore, a separate theme, flow of the story, was established. The category of answers based on the story was put in this theme. Some responses of children given to the questions below were coded under the heading.

1. What do you think Deniz paid attention while walking along the road?
2. Did she pay attention to something passing by the road?
3. How did Deniz go to school the next day? (4 times)
4. What should Deniz pay attention while riding the bicycle?
5. What do you think Deniz saw while commuting by the bus?
6. Did she see something on the road while commuting by the bus?

Children answered the first question, mostly referring to what they saw in the picture. Grasses ($n=5$), flowers ($n=2$), plants ($n=2$), rocks ($n=2$) were repeated responses. Besides, dogs, people, the mother's hat, clouds, holes, and children were mentioned one time. Furthermore, in the morning of the intervention days, another study about forest schools had been conducting. This situation also affected the children's answers. For example, snails and not stepping on the things on the ground were the reflections of the forest school.

Since the road was emphasized in the second question by specifically stating the phrase something passing by the road, the variety of answers based on the story decreased. Rocks ($n=1$), animals ($n=1$), snails ($n=2$), allergen fruits ($n=1$),

and bramble ($n=1$) were responses some of which were affected by the forest school.

If a child answered the third question, about the possible transportation way of Deniz to school, the same as the vehicle in the previous day of the story, the answer was coded under this category. Also, answers given after seeing the page were included. By walking ($n=9$), bicycle ($n=12$), and car ($n=5$) were responses based on the flow of the story.

Rocks ($n=2$) and trees ($n=1$) repeated in the fourth question about the items to be careful while riding a bike. The structure of the last two questions related to commuting by bus was similar to the first two ones. People ($n=15$), animals ($n=11$), houses ($n=8$), trees ($n=6$), people with wheelchair ($n=3$), and people with dogs ($n=2$) were commonly repeated in the fifth question regarding the items seen on the road. Yet, the frequency and variety of responses based on the story declined as animals ($n=3$), plants ($n=2$), house ($n=2$), and people ($n=1$) in the last question in which children's attention was directed to the road. Lack of awareness in traffic concepts was detected in some children whose answers consisted of information only related to the story.

4.3 Children's Road Safety Awareness during the Intervention

Observations of the researcher throughout the intervention, children's works that were done in the learning activities, and photographs taken during the implementation were presented in this part.

At the beginning of the second activity and the end of the last activity, the children were asked to think about the meaning of traffic. Then, they were requested to draw what came to their minds regarding traffic. In this way, the change in children's understanding was detected. To make the comparison more understandable, the first and second drawings of some participants were given together below in the order of activities.



(1)



(2)

Figure 4.1 Drawings of ST9

In the first drawing of ST9, there was a red light that was used for stopping the car. In the second picture, a stop sign was drawn which told the car to stop, and only red and green colors that indicated traffic lights were used.



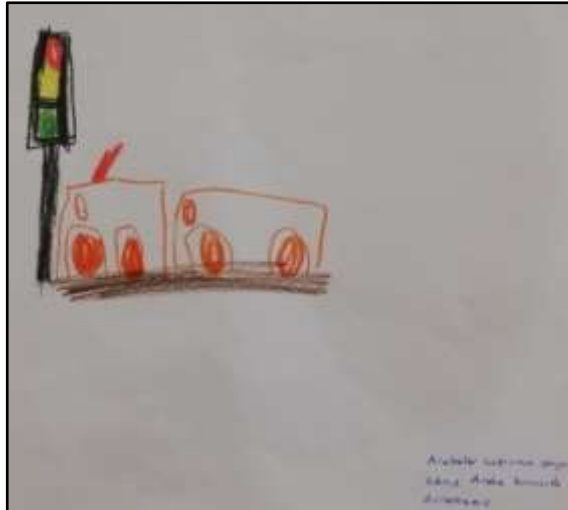
(1)



(2)

Figure 4.2 Drawings of ST3

In the first drawing above, two unrelated items, which were a helicopter and two traffic lights, from different contexts were drawn in the previous activity. Road crossing action with related steps was pictured in the later one. A pedestrian crossing was also drawn by ST3.



(1)



(2)

(3)

Figure 4.3 Drawings of ST12

A traffic light and cars were drawn by ST12 during the second activity (1). The child drew two pictures in the last activity (2 and 3). The road crossing rule was displayed in the second drawing, and traffic lights and a pedestrian crossing sign were pictured. Stop sign with three different shapes were included in the last

drawing. Rectangular, octagonal, and circular shapes showed that ST12 was aware of differences shapes of traffic signs.



(1)



(2)

Figure 4.4 Drawings of ST15

Drawings of ST15 were given above. Whereas cars and a truck were drawn in the first picture, traffic light and a sign were pictured later. The sign meant that it was forbidden to play on the road.



(1)



(2)

Figure 4.5 Drawings of ST18

A car and a bridge were pictured in the first drawing of ST18. A false move of a child who ran while crossing the road with dangerous cars was explained in the second drawing.



(1)



(2)

Figure 4.6 Drawings of ST5

In addition to the road and the traffic light in the first picture of ST5, a pedestrian crossing, a stop sign, and a car were drawn in the second picture. The child was holding her mother's hand.



(1)



(2)

Figure 4.7 Drawings of ST6

In the first picture given above, ST6 drew herself and her mother while waiting at the red light and crossing at the green light. People holding hands of each other and a pedestrian crossing were added to the second drawing. Also, there was a person who let people cross the road.



(1)



(2)

Figure 4.8 Drawings of ST7

The only traffic related part of the first picture, given above, was a traffic light with meanings of colors. The story of siblings playing with traffic toys at home and learning concepts about traffic at the traffic shop was told in the second picture. Besides, the mother was holding both children's hands while crossing the pedestrian road at the green light.

Differences in the children's drawings revealed that throughout the learning activities, participants improved their awareness regarding traffic-related concepts and rules. Cars, traffic lights, and pedestrians were commonly drawn by children during the second activity. Pedestrian road, pedestrian crossing, children holding parents' hands, and traffic signs were added in the second drawings. Besides, children pictured a complete story in the last activity. For example, in a picture, behaviors of children running on the road while crossing was described as

dangerous and wrong, or road crossing steps were identified in another drawing. While in the beginning, children's pictures consisted of limited variety and explanations, they presented more detailed descriptions with terms related to traffic at the end.

On the third day, some children forgot to bring their means of transportation list. However, they participated in the activity based on their memories. At the end of the lesson, the means of transportation graph looked like below.



Figure 4.9 The Means of Transportation Graph

During the fourth activity, each group worked in cooperation and completed their parts in the puzzle. All children were concentrated on their parts, and at the end, a matching picture (Figure 4.11) was formed by children. Children were able to identify safe behaviors in the puzzle, and the activity continued based on the safe behaviors. Some photographs taken in the activity were presented below.



Figure 4.10 Group Work in the 4th Activity



Figure 4.11 The Completed Puzzle

Children paid attention to the preparation process of the fifth activity in the classroom. While the researcher was preparing the roads with white paper tape, some children came and asked what the researcher was doing. Then, the researcher replied, “*What did you think that I was doing?*”. Children’s answers were car road, pedestrian road, and pedestrian crossing. During the activity, some children walked on the road. Thus, the researcher asked:

Researcher: Where are you walking right now?

Children: Car road.

Researcher: Should pedestrians walk on the driveway?

Children: No, they should walk on human road [sidewalk].

Araştırmacı: Siz şu anda nerede yürüyorsunuz?

Çocuklar: Araba yolu.

Araştırmacı: Peki yayalar araba yolunda mı yürümeli?

Çocuklar: Hayır, insan yolunda [kaldırımda] yürümeliyiz.

After this conversation, the children who were walking on the road went back to the sidewalk. When children came to the pedestrian crossing (Figure 4.12), they suddenly started to sing the road crossing song, which was learned in the previous activity. Road crossing practice was done with each child, as shown in the photograph below. Children were paying attention to the traffic concepts as they asked various questions to the researcher during the preparation process.

Besides, they were able to remember what was learned in the previous activity and use the song in road crossing practice.



Figure 4.12 Road Crossing Practice

The last activity specifically attracted the attention of children. All of them had concentrated on the activity until it finished. During the game, children repeated the terms and rules learned in the previous lessons. Besides, underpass and overpass were introduced to children.



Figure 4.13 Images Taken during the Last Activity

Throughout the learning activities, road safety awareness of children improved. Their vocabulary regarding traffic developed, as they used these terms in their answers and drawings. Moreover, they linked what was learned in the previous lessons to the following activities.

4.4 Children's Road Safety Awareness after the Intervention

Findings from the post-interviews with 10 participants and important points in the post-interview with the classroom teacher were presented here. Due to the coronavirus pandemic, all participants could not be interviewed. The five categories that were constituted based on the responses of the children were the same for the post-interviews. These are knowledge about traffic rules, interpretation of traffic, attitude towards the safety of the self and others, daily life experiences, and answers regarding the story flow. These will be presented below in detail, under the related title.

4.4.1 Knowledge about Traffic Rules

In addition to the codes from pre-interviews, another code that was demonstrating dangerous behaviors in traffic was added.

Crossing the Road: An additional question was asked in the post-interview regarding crossing the road. Questions including the new item and responses of children in the second interview were given below.

1. What should we do while crossing the road?
2. How should we cross at the end of the bicycle road?
3. What should we do when we are in the parking lot?
4. Where are the proper places to cross the road?

Looking right and left ($n=5$), holding parents' hands ($n=3$), being careful ($n=2$), not running on the road ($n=2$), waiting for cars to pass ($n=1$), waiting for cars to stop at the red light ($n=4$), crossing while holding the bicycle ($n=4$) were common responses of children in the first two questions. The explanations of the participants became more detailed. For instance, ST7's response for the first

question was that “*You need to look at your right and left. You should not run and be careful.*”. She also said, “*They need to check if there is a passage way [pedestrian crossing]. They should cross the road by looking left and right and holding their bikes.*”. Some children remembered learning activities, especially the song about road crossing steps, and told it in their answers. For example, ST2 said:

<p>They should look at the road. They should also listen to it. They should look at whether cars are coming. Car should pay attention to this line [traffic sign]. (ST2)</p>	<p>Yola bakmalılar. Bir de yolu dinlemeliler. Arabalar geliyor mu diye bakmalılar. Arabalar buradaki çizgiye [trafik levhası] dikkat etmeliler. (ST2)</p>
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Table 4.2

Comparison of Pre and Post-Intervention Findings on Crossing the Road

CROSSING THE ROAD		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Some steps of road crossing were identified by various participants. Only one child listed the steps in order. Some children had a misconception about running on the road while crossing. Most of them were not familiar with the concept of crossing the road with a bicycle.	Most children recognized road crossing steps in order and explained how to cross the road with a bike. They identified safe places to cross the street with terms, such as pedestrian crossing, sidewalk, and pedestrian way. However, running on the road and crossing the road while riding the bike were two false answers, stated by two children.	Children were better able to identify road crossing steps in order. Their familiarity with the concept of crossing the road with a bicycle increased. They used traffic-related terms in their explanations. However, none of them mentioned pedestrian underpass or overpass. The number of participants with misconceptions decreased, but two children still had inadequate knowledge.

The comparison table showed that some children still had inadequate or false knowledge. Three participants thought while crossing the road, bicycles should be left, and children should hold parents’ hands and be careful. Whereas one child stated the road should be passed via riding the bike, another child

responded as, at the end of the sidewalk, children should run and hold parents' hands for crossing the road. Besides, two participants did not answer the second and third questions about bicycle roads and parking lots.

Only one child did not respond to the additional question in the post-interview regarding the proper places for crossing the road. Answers of other children included pedestrian crossing ($n=5$), pedestrian way ($n=1$), bicycle road ($n=1$), traffic signs ($n=2$), sidewalk ($n=4$). In order to answer this question, children used varied terms and explained the steps of the road crossing. For example, ST5 stated, "*We have to look left, then right, and then left again. We must stop at sidewalk and cross the road.*". However, the participants mentioned neither pedestrian underpass nor overpass, which were highlighted on the last day of the intervention.

Meaning of the Traffic Lights and Signs: Three questions from the pre-interview were also applicable for the meaning of traffic lights and signs category in the post-interviews.

1. What should we do while crossing the road?
2. How should we cross at the end of the bicycle road?
3. What should we pay attention while commuting by car?

The sub-codes were the same as meaning of the red-yellow-green lights ($n=1$), meaning of the red-green lights ($n=1$), meaning of the red light ($n=4$), and interpretation of the traffic signs ($n=2$).

The answer of ST7 concerning points to consider while commuting by a car included an adequate explanation about traffic lights' meaning for vehicles. She pointed out:

We need to pay attention to red light, yellow light, and green light. We need to stop at red light. We need to be prepared at yellow light. We need to cross at green light. (ST7)

Kırmızı ışığa, sarı ışığa, yeşil ışığa dikkat etmeliyiz. Kırmızı ışıkta durmalıyız. Sarı ışıkta hazırlanmalıyız. Yeşil ışıkta geçmeliyiz. (ST7)

The number of children talking about the necessity of waiting for the red light for crossing the road increased, and it was reasoned as cars stopped at the red light. In addition, a participant who did not mention anything about traffic lights in the pre-interview described the meaning of red and green lights and stated that:

<p>We must wait for cars as we pass by. They should cross when the red light is on the edge, and when the green light turns on for them [pedestrians]. (ST5)</p>	<p>Yoldan geçerken arabaları beklemeliyiz. Kenarda kırmızı ışık yandığında, onlara [yayalara] yeşil ışık yandığında geçmeliler. (ST5)</p>
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ST2's responses concerning the traffic signs were similar to the ones in the pre-interview. Yet, ST4 realized the sign showing the end of the pedestrian and bicycle road and told, *"There is a restriction for bicycle and human. They should cross by being careful to cars."*

Table 4.3

Comparison of Pre and Post-Intervention Findings on Traffic Lights and Signs

MEANING OF THE TRAFFIC LIGHTS AND SIGNS		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Children mainly focused on the red light. Although they were aware of the traffic lights and colors on them, most of them could not match the lights with target groups as pedestrians and vehicles. Besides, some children realized traffic signs on the pictures and made their descriptions.	Some children explained in detail the meaning of lights for pedestrians and vehicles. Participants mainly concentrated on the red light. Children drew various traffic signs and traffic lights in their pictures and explained their meanings.	More children were aware of the difference in traffic lights for pedestrians and vehicles. More children included traffic lights and signs in their drawings with adequate use of purpose.

Table 4.3 summarized the differences in children's knowledge regarding traffic signs and lights. Some changes were observed in the knowledge of children about the meaning of traffic lights and signs, although the meaning of traffic signs was not a topic specifically included in the intervention. The aim was to create

awareness about traffic signs, and some participants noticed traffic signs and lights in the post-interview and talked about their meanings for vehicles and pedestrians. Besides, traffic lights and signs were included in drawings of almost all participants.

Commuting by Vehicles: Answers of the same six questions about bike, car, and bus were coded and grouped under this category.

1. What should Deniz pay attention while riding the bicycle?
2. Are specific pieces of equipment used by Deniz while riding the bicycle?
3. Where should Deniz, Deniz's brother, Deniz's dog, and Deniz's father sit in the car?
4. Who should drive the car?
5. What should we pay attention while commuting by car?
6. What should we do while getting off the bus?

Cars ($n=4$), pedestrians ($n=2$), traffic signs and lights ($n=2$), bicycle road ($n=3$) were parallel answers given by children in the first question. One child emphasized Deniz should not ride too fast. The question was not answered by one child.

All children ($n=10$) mentioned the bicycle helmet in the second question, and three of them added bicycle knee pads. Besides, bicycle elbow pads were added by two children for the first time.

Similarly, the seating arrangement in the car was described accurately by all children. All participants ($n=10$) responded as Deniz, her brother, and her dog sat in the back seat, and her father sat in the front seat where the steering wheel was. ST4 detailed her answer saying that "*They sit in the child seat with their seat belts fastened*". Two children also talked about a special seat for the dog. Furthermore, all of them ($n=10$) agreed that the father should drive the car. This situation was the same in the pre-interview.

Paying attention to cars ($n=5$), pedestrians ($n=2$), traffic lights ($n=1$), and accidents ($n=1$) were responses of children for the fifth question about issues needing attention when commuting by car. Two children's answers were indicators of their daily life experiences. ST8 said, *"Do not lean on the door."* and ST9 told *"Not to put our hands outside, when we open the window."*

For the last question concerning bus ride, looking at the doors ($n=2$), descending the ladders carefully for not falling ($n=5$), holding parents' hands ($n=2$), paying attention to cars ($n=1$), looking at the road ($n=1$), crossing the road at the red light ($n=1$) were the codes. Answers became more varied, and children started to think about the process after getting off the bus.

Table 4.4

Comparison of Pre and Post-Intervention Findings on Commuting by Vehicles

COMMUTING BY VEHICLES		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Answers regarding issues in being careful while riding a bicycle mainly consisted of cars, pedestrians, and traffic signs. Children talked about five pieces of bicycle equipment. Although most participants stated children should sit in the back seat of the car, some of them thought children should sit in the front seat. Children's responses concerning what to pay attention to commuting by car consisted of various	Children's answers about commuting by bicycle were similar except an additional concept, bicycle road. Bicycle helmets were told by all children. Bicycle knee pads and bicycle elbow pads were also included as safety equipment. All children described the proper seating arrangement in the car. Similar answers were given related to commuting by car. Children's responses about commuting by bus became more varied,	Although the number of bicycle equipment stated by children decreased, all children mentioned bicycle helmet with a focus on safety. Besides, before the intervention, one-third of children did not answer the question about bicycle equipment. Children's responses consisted of more terms and details. Various misconceptions about seating arrangement in the car and limited answers

Table 4.4 (continued)

concepts inside and outside of the car. However, answers about commuting by bus were limited.	consisting of important steps such as holding adults' hands and descending the ladders carefully.	related to commuting by bus were eliminated.
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The responses of children in the post-interviews consisted of more terms and details regarding how to commute by bicycle, car, and bus (Table 4.4). Moreover, various misconceptions and limited answers of participants improved.

Demonstrating Dangerous Behaviors in Traffic: At the end of the story, an additional question was asked to determine what kind of behaviors in traffic were identified as dangerous by participants.

1. What could be dangerous behaviors in traffic?

Driving fast ($n=2$), making a car accident ($n=3$), crossing the road without looking at cars ($n=1$), driving after drinking ($n=1$), jumping the road while cars were coming ($n=1$), not waiting traffic lights ($n=1$) were responses of children. ST5 stated “*When it is too crowded, a car stops in front of us, we may hit it if we go fast.*”. One child did not answer the question. As given in the table below, children mainly focused on cars and identified dangerous situations related to cars rather than pedestrians.

Table 4.5

Comparison of Pre and Post-Intervention Findings on Dangerous Behaviors

DEMONSTRATING DANGEROUS BEHAVIORS IN TRAFFIC		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
An additional question was asked in the post-interviews.	Children stated various dangerous behaviors, including driving fast, driving after drinking, causing an accident, and crossing the road without looking at cars or lights.	Children were able to identify dangerous situations that were mainly concentrated on cars.

4.4.2 Interpretation of Traffic

In addition to daily life observations of children focusing on vehicles on the road, two more questions were asked. While the first one was for directing children to think about a hypothetical situation, the other was for getting children's general conception of traffic.

1. How would vehicles and pedestrians move if there were no traffic signs and lights?

Children gave a variety of answers to this question. Some examples were given below:

Cars would hit people because there were no traffic lights, because there would be nothing to tell them to stop. (ST2)

Arabalar çarparlardı insanlara çünkü trafik ışıkları olmadığı için, onlara durmasını söyleyecek bir şey olmayacağından. (ST2)

They could never move [pedestrians]. Cars would go fast as much as they wanted. Then, they had an accident. (ST7)

Hiç hareket edemezlerdi [yayalar]. Arabalar istedikleri kadar hızlı giderlerdi. Sonra da kaza yaparlardı. (ST7)

Moving slowly, talking to each other, calling traffic police, and crossing the road carefully when cars gave way to pedestrians were the other responses. These answers showed that children were aware of the functions of traffic lights and signs for people as pedestrians and drivers. They were also able to think about some possible solutions.

Daily Life Observations: The same questions in the pre-interview were asked children to determine what kind of changes occurred in their knowledge regarding vehicles on the road.

1. What do you think Deniz paid attention while walking along the road?
2. Did she pay attention to something passing by the road?
3. How did Deniz go to school the next day? (4 times)
4. What do you think Deniz saw while commuting by the bus?
5. Did she see something on the road while commuting by the bus?

In the first question, road ($n=3$), cars ($n=3$), sidewalk ($n=2$), road line ($n=1$), pedestrian crossing ($n=1$) were mentioned by children. ST2 explained the reason for paying attention to the road line as it showed the sidewalk for pedestrians. Moreover, ST5 said *“Because cars could pass from pedestrian crossing, we need to walk on the sidewalk.”*. Furthermore, ST7 stated *“While crossing the road, she should look at her right and left; catch red, yellow, and green light and follow the crossing lights for people”*. Children’s responses had more details and more traffic-related terms, such as road line, side walk, and pedestrian crossing. Besides, more children directly focused on the road without asking a further question specifically about the road.

Car ($n=6$), bus ($n=4$), motorcycle ($n=4$), plane ($n=2$), helicopter ($n=1$), train ($n=1$), bicycle ($n=1$), school bus ($n=1$), dolmush ($n=1$), tractor ($n=1$) were answers to the second question concerning vehicles on the road. ST10 stated, *“She might see a plane and a helicopter in the sky.”*. Besides, the Lamborghini car was specifically told by ST2. Awareness of children about vehicles on the road was increased, as it can be understood from the variety of vehicles listed by them above. Moreover, they were able to make a distinction among vehicles used in different places.

Although predictions of children about possible ways of transportation to school did not change, the frequency of transportation methods other than car was increased. Car ($n=10$), bike ($n=4$), bus ($n=5$), school bus ($n=3$), and walking ($n=3$) were answers.

Traffic-related responses of children to the fourth question were car ($n=4$), bicycle ($n=2$), road ($n=1$), and pedestrian crossing ($n=1$). For the last question, car ($n=7$), bus ($n=3$), minibus ($n=3$), motorcycle ($n=3$), train ($n=2$), plane ($n=2$), helicopter ($n=1$), dolmush ($n=1$), and school bus ($n=1$) were stated.

As given in Table 4.6, there was a positive change in knowledge of children regarding vehicles on the road. More children started to think about alternative

transportation methods other than car. Variety of vehicles mentioned by children and the number of children talking about traffic-related terms increased.

Table 4.6

Comparison of Pre and Post-Intervention Findings on Daily Life Observations

DAILY LIFE OBSERVATIONS		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Most children did not talk about the road without a further question. Four types of vehicles were mentioned by them. Car, bus, bicycle, scooter, and walking were the answers of participants about the possible transportation ways of the child in the story. After asking the probe question, children listed various vehicles which could be observed while commuting by bus.	Traffic terms, such as road, car, sidewalk, and road line, were directly stated by children without asking a further question. Besides, they explained their reasoning and road crossing steps. A variety of vehicles was listed by children regarding possible vehicles on the road. Transportation methods were the same except scooter. Yet, the number of children mentioning various transportation ways other than car was increased. Children mentioned many vehicles, possibly to be seen on the road. Their responses to the hypothetical question indicated they were aware of the function of traffic lights and signs for vehicles and pedestrians.	Children's attention directed to the road during the post-interview. They used more terms in their explanations, and answers regarding vehicles on the road became more varied. More children started to consider bicycle, bus and walking as alternative transportation methods. Their observations about traffic signs and lights revealed their awareness related to the function of these.

Definition of Traffic: Children were requested to make their definition of traffic in addition to the drawings made by them during the intervention.

1. What does traffic mean to you? What comes to your mind when you heard the word “traffic”?

Traffic light ($n=3$), car ($n=2$), road ($n=1$), traffic sign ($n=1$), pedestrian crossing ($n=1$), traffic police ($n=1$), being careful on the road ($n=1$) were the terms came to children’s minds. Definitions of several participants were given below:

Arabaların durduğu yerdir. (ST2)	It is the place where cars stop. (ST2)
Bir sürü arabanın birleştiği yer demektir. (ST4)	It is the place where many cars come together. (ST4)
Böyle çok arabaların olduğu çok kalabalık bir araba (yol) demektir. (ST5)	It is a crowded car [road] which has too many cars. (ST5)
Trafik arabaların gittiği yerdir ve çok araba durduğu zaman polislerin gelmesi lazım çünkü arabalara nereye gideceklerini göstermesi lazım. (ST10)	Traffic is the place where cars go, and polices should come when too many cars stop, because they need to tell cars where to go. (ST10)

Table 4.7

Comparison of Pre and Post-Intervention Findings on Definition of Traffic

DEFINITION OF TRAFFIC		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Children mostly drew traffic lights, vehicles, and pedestrians at the beginning of the intervention.	Some new concepts, such as pedestrian crossings, children holding parents’ hands, and traffic signs, added to the drawings. Children’s definitions of traffic mainly consisted of cars and busy roads.	Children’s pictures became more detailed with varied concepts. They mainly associated cars and crowd with traffic.

Children mainly related cars to their definitions as it was happened in demonstrating dangerous behaviors in traffic. This situation also corresponded

with pictures of children as almost all of them placed cars in their drawings (Table 4.7).

4.4.3 Attitude towards the Safety of the Self and Others

Participants reflected their attitudes towards their safety and other people's in the same questions except for the first and last questions from the previous interview.

1. What should Deniz pay attention while riding the bicycle?
2. Why did Deniz wear the helmet while riding her bicycle?
3. Why should children walk between adults in the street?
4. Why might Deniz, her brother, and her dog have sat at the back seat while commuting by the car?
5. What should we pay attention while commuting by car?

Paying attention to the bicycle in front of Deniz for not hurting the biker was repeated by two children in the first question. Half of the interviewees ($n=5$) reasoned wearing the bicycle helmet as not harming themselves. However, in order not to fall and not to feel cold were answers of two children. Besides, two children did not answer the question.

During the pre-interview, none of the participants talked about a traffic-related situation in the third question asking reasons for walking between adults. On the other hand, during the post-interviews, four children thought that children should walk between adults because cars might hit them or adults can pay attention to vehicles. Yet, some children ($n=4$) still linked their reasoning to traffic-unrelated situations, such as not getting lost.

Table 4.8

Comparison of Pre and Post-Intervention Findings on Attitudes towards Safety

ATTITUDE TOWARDS THE SAFETY OF THE SELF AND OTHERS		
Safety of the Self: Some children reasoned paying attention to the bikes as not falling. Whereas	Safety of the Self: Half of the participants stated wearing a bicycle helmet was the reason for not	Safety of the Self: In general, children had a positive attitude towards their

Table 4.8 (continued)

some thought bicycle helmets were used for not being hurt during an accident, others explained helmets were worn for not falling. Children were also motivated to walk between adults for not being lost, which was a traffic-unrelated situation. Four children talked about their safety as the reason for seating in the back seat of the car. Yet, some participants' reasoning was inadequate, such as not being able to drive a car or just being young. Two children talked about seat belts for their safety.	being hurt. However, two children explained as not falling and not feeling the cold. Four children mentioned adults were able to pay attention to vehicles and protecting children from cars. Thus, children should walk between adults. All participants were motivated to sit in the back seat for their safety.	protection. They had some misconceptions about bicycle helmets and seating arrangement in the car. Although some improvements observed in the post-interview, several children's explanations were not adequate. Some participants' focus on traffic-unrelated situations turned into traffic-related situations.
Safety of Others: Children were also motivated to paying attention to cars, roads, pedestrians, and bikes for not hurting other people.	Safety of Others: Paying attention to bicycles, cars, pedestrians, and pedestrian crossings were required not to hurt people or cause an accident.	Safety of Others: Throughout the process, children displayed a positive attitude towards the safety of others and were motivated to behave carefully for protecting other people.

Children continued associating safety with sitting in the back seat of the car. Besides, being careful to cars ($n=5$), pedestrian crossings ($n=2$), and pedestrians ($n=2$) in order not to cause accidents and not to hurt people were highlighted by children as important points to consider in the car. All children mentioned bicycle helmet as a necessary equipment while cycling, and half of them associated the helmet with safety. Walking between adults was also seen as a traffic-related safety precaution that was not stated in the pre-interviews. The

comparison table above showed that children's motivations and attitudes towards their and other people's safety showed improvement in the post-interview as they associated various situations with being safe on the roads.

4.4.4 Daily Life Experiences

Most of the questions, given below, that children associated with their experiences were different in the post-interviews.

1. Why did Deniz wear the helmet while riding her bicycle?
2. Who might be the first and last people in the line?
3. Why might Deniz, her brother, and her dog have sat at the back seat while commuting by the car?
4. What should we pay attention while commuting by car?
5. What should we do while getting off the bus?
6. What could be dangerous behaviors in traffic?

In the first question, ST2 explained the reason for using the helmet with his experience. Because he wore helmet while riding his scooter, Deniz should also use the helmet which was protective.

Almost all children ($n=8$) answered the second question as teachers, which was based on their experiences in the school. Besides, one child thought they were mothers who were also adults. Only one child did not respond to the question.

ST8 said, "*Her father told her.*" in the third question about seats in the car. While ST5 thought about the traffic police, ST7 linked the situation to the safety of the self and explained as;

Because the police may get angry, when they take off the belt and sit in the front. Adults need to sit in the front. (ST5)

Çünkü polis kemeri çıkarıp öne oturduğunda kızabilir. Büyüklerin öne oturması lazım. (ST5)

Because they cannot sit alone there (in the front), they may fall. If her father brakes, they fall. She should sit on the front seat only on her mother's lap. Then, she does not fall. (ST7)

Çünkü orada (önde) yalnız başlarına oturamazlar, düşerler. Babası fren yaparsa düşerler. Bir tek annesinin kucağında önde gidebilir. O zaman düşmez. (ST7)

In the fourth question about what to pay attention in the car, ST8 said, "*Do not lean on the door.*", and ST9 told, "*Not to put our hands outside, when we open the window.*". These were specific rules highlighted by two children.

ST5 associated her experience in train with the question about bus. She stated "*When she gets off the bus, it is the same in trains, firstly her grandmother should get off, and she should wait. Then, she should hold her grandmother's hand, jump, and get off.*".

Lastly, ST9 referred to his behavior while thinking about dangerous behaviors in traffic. He talked about his behavior in the past and said "*While we were coming to school, there was traffic, and we need to cross the road. I was running while crossing.*". However, he was doing this in the past, which can be seen as a positive change in his behavior.

Furthermore, the post-interview with the classroom teacher revealed that she received positive feedbacks from parents. Some of them stated that their children loved the teaching activities, and it was a good opportunity for children to repeat what they knew and learn new concepts about traffic. Besides, the teacher highlighted that the activities were appropriate for children's age and developmental level. She told that in addition to using songs and games, giving children opportunities to gain experience made the learning process smoother. Since she observed the positive effects of lessons on children, she could implement these activities in her classroom when the topics about traffic were taught.

Table 4.9

Comparison of Pre and Post-Intervention Findings on Daily Life Experiences

DAILY LIFE EXPERIENCES		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Some children talked about their everyday life experiences. For example, one participant who drove a bike explained her proper behaviors, such as wearing a helmet and driving carefully. Half of the children reflected their experiences in the pre-interviews as children should walk between teachers on the road. Some children linked sitting in the front seat of the car with a fine by police. One child thought because of airbags, it was dangerous for children to sit in the front. They identified this as a dangerous and forbidden behavior. One child mentioned not only fastening her seat belt but also her sibling's.	One child highlighted his behavior that was wearing a helmet while riding his scooter. Almost all children identified the people in the first and last places of the line as teachers. Some rules, such as not leaning on the door and not putting hands outside of the window, were mentioned by participants. One child identified his misbehavior in the past about running on the road. Parents also talked about improvements in knowledge and behaviors of their children.	Children reflected their daily life experiences throughout the process. Some of them became aware that adults should be the ones walking at the beginning and end of lines. Children started to realize their misbehaviors. Besides, parents gave positive feedbacks about road safety awareness of their children.

Children were able to link their daily life experiences with the questions. As given in the table above, their responses reflected good habits of them, such as wearing bicycle helmet, sitting at the back seat of car, not running on the road, and fastening seat belt, in traffic-related situations. Also, the classroom teacher talked about positive effects of the intervention on children.

4.4.5 Answers regarding the Story Flow

The same questions, except the second question, were replied by some participants based on the story. Answers of children to the second question completely consisted of vehicles on the road, which pointed out that children were more concentrated on the road in the post-interviews.

1. What do you think Deniz paid attention while walking along the road?
2. How did Deniz go to school the next day? (4 times)
3. What should Deniz pay attention while riding the bicycle?
4. What do you think Deniz saw while commuting by the bus?
5. Did she see something on the road while commuting by the bus?

Plants ($n=4$), people ($n=2$), rocks ($n=1$), stroller ($n=1$), not stepping on flowers ($n=1$), not touching things on the ground ($n=1$) were answers in the first question. By walking ($n=3$), bicycle ($n=2$), car ($n=2$), bus ($n=2$) were responses to the second question based on the flow of the story or the picture on the page. In general, the children remembered the story. Although children were confused about the flow of the story, they recognized all transportation methods in the story.

In the third question, only trees ($n=1$) and cliff ($n=1$) were traffic-unrelated answers. People ($n=9$), dog ($n=6$), animals ($n=5$), people with special needs ($n=2$), tree ($n=2$), grass ($n=2$), sky ($n=1$), and cloud ($n=1$) were responses in the fourth question. Finally, in the last question, plant ($n=2$), animals ($n=3$), and rubbish bin ($n=1$) were answers based on the story.

Table 4.10

Comparison of Pre and Post-Intervention Findings on the Story Flow

ANSWERS REGARDING THE STORY FLOW		
PRE-INTERVENTION	POST-INTERVENTION	QUALITATIVE DIFFERENCES
Children responded to various questions based on the flow of the story.	After the intervention, variety of answers regarding the story	During the pre-interview, some children answered

Table 4.10 (continued)

Besides, pictures of the story were reflected in the answers of many children. For instance, plants, animals, houses, and people were frequently repeated by children in questions about what to pay attention on the road.	decreased in the post-interviews. Children were more concentrated on traffic-related concepts. Although similar answers were given by children, the number of children talking based on the story declined in the post-interviews.	questions only based on the story. After the intervention, children were able to concentrate on the traffic-related concepts, such as vehicles, pedestrian crossing, traffic signs, and sidewalk.
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In the second interview, since children were more focused on traffic concepts throughout the story, the variety of answers based on the story decreased (Table 4.10). In other words, traffic-related situations more attracted the attention of children while thinking about the answers. This was a sign of an increase in road safety awareness of children.

4.5 Summary of the Research Findings

Interviews with preschool teachers showed a common understanding among teachers regarding the topics of road safety education in early childhood. In addition, commonly used teaching methods and materials and differences in the practices of urban and rural schools were detected.

The comparison of findings from pre and post-interviews with children revealed that there were positive changes in children's road safety awareness in terms of knowledge, attitude, and behavior. These findings were also supported by the observations of the researcher during the implementation and the post-interview with the classroom teacher. At the end of the intervention, children were more conscious about the importance of safe practices in traffic environments. Their knowledge about fundamental rules for pedestrians, passengers, and drivers enhanced. Besides, they were more motivated to behave safely in traffic. The findings showed that road safety awareness of participants improved after the intervention.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

This is the concluding chapter with a discussion of the study results. The results are discussed under two headings based on the research questions. Besides, some suggestions are made on implications for future research, and the chapter finishes with some recommendations for practice.

5.1 Discussion of the Results

The results of both research questions are discussed consecutively in the light of relevant literature. Regarding the first research question, a discussion about traffic education in preschools in Turkey is done, including some practices around the world. Then, the impacts of the intervention are discussed with regard to previous studies.

5.1.1 Current Situation in Road Safety Education

Results from the interviews with preschool teachers in Turkey were integrated and summarized to draw a frame for the current situation regarding road safety education in early childhood classrooms in Turkey.

Learning activities implemented in classrooms were the main focus during interviews. The most significant result was the difference in learning environments that can be provided to children. While in urban cities, schools are able to visit traffic parks and museums, children in rural cities cannot participate in these kinds of experiential learning opportunities. In addition, children living in urban cities have more chances to hear about traffic compared to their peers living in rural provinces without roads in good condition. Considering this situation, the

intervention was prepared based on the principle of feasibility in all school settings (Appendix B).

There was a common point in the statements of teachers. All participants highlighted the importance of learning through senses and experiences in road safety education. This issue corresponded with the literature indicating that practice is necessary for the improvement of road safety awareness (Bolat et al., 2017; Schwebel, et al., 2014). Besides, the topics, especially meanings of traffic lights and signs and crossing rules, were taught by all teachers. These topics were also parts of several educational programs in other countries. To prepare the intervention unit implemented in the study, educational programs used around the world investigated carefully. In this way, developmentally appropriate practices that were in line with the international trend regarding road safety awareness were developed. Common topics, such as meanings of traffic lights, road crossing steps, safe and dangerous behaviors in traffic, safety equipment in vehicles, were included in the unit.

Various road safety education programs were developed by non-governmental and government organizations around the world. These programs were implemented in coordination with schools. For example, Safe Kids works in 10 countries to decrease unintentional injuries among children (Safe Kids Worldwide, 2020). Road Safety Education in Victoria (2020) is a similar initiative in Australia. LEARN! is a large scale project across Europe (Mütze & Dobbeleer, 2019). Brake is another organization working in the UK and New Zealand (Brake, n.d.). The Kids and Safety is an early childhood road safety program, prepared in New South Wales by the partnership of various institutions (Kids and Traffic, 2014). There is a common aim of these organizations. All of them prepare road safety education programs and awareness campaigns to decrease traffic accidents in many countries. However, results driven from interviews with teachers indicated the lack of these kinds of initiatives in Turkey. Schools are independent of each other concerning what and how to teach traffic safety to kindergarten children. Besides, differences in opportunities that schools can provide their students might

cause variations in the extent and impact of learning activities. Therefore, the need for organizations in Turkey to create a standard and quality traffic safety education can be clearly observed.

Traffic parks should also be disseminated around Turkey because of the importance of real-life experiences in traffic (Kavsıracı & Hatipoğlu, 2016). These parks are commonly used environments around the world for practical training about traffic (Bolat et al., 2017; Kullman, 2015; Sicińska & Dąbrowska-Loranc, 2015). However, in the interviews with preschool teachers, only teachers working in Ankara talked about their visits to traffic parks. In schools where it is not possible to reach the parks, classrooms can be designed as similar to roads or miniatures, or tabletop models of traffic parks might be used in learning activities (Öz & Demirutku, 2018). After repeated practices in simulated environments, experiences in roads and vehicles should be provided to children. Furthermore, schools generally focus on road safety on Traffic and First Aid Week. However, since knowledge and skills related to safety in traffic develop with repeated practices through a period of time, traffic education should be given throughout the year, rather than focusing only on the Traffic and First Aid Week (Özdemir, 2010; Hatipoğlu 2011).

5.1.2 The Influence of Intervention

Results from pre and post-interviews with children and observations throughout the learning activities were discussed in the light of relevant literature to reveal the influence of the intervention.

The current study resulted in an increased awareness of preschool children's traffic safety. Children's limited knowledge about traffic rules, such as road crossing steps, meanings of traffic lights, and how to commute safely by vehicles, improved after the intervention. In addition, their awareness of traffic signs, roads, and vehicles raised. Moreover, their positive attitude towards safety in traffic was enhanced, and their statements reflected positive changes in their behaviors. Overall, children's limited road safety awareness improved. Positive effects of interventions on road safety awareness of children were also established

in previous studies about pedestrian safety skills (Miller et al., 2004; Schwebel et al., 2014; Schwebel, 2016; Thomson & Whelan, 1997) and general road safety education (Ahmad et al., 2018; Duperrex, Bunn & Roberts, 2002; Hotz et al., 2004; Nirmala & Padmaja, 2012; Salmon & Eckersley, 2010). However, nine participants could not be interviewed after the intervention due to the **coronavirus pandemic**. More varied and reliable results could have been reached if the nine children could have been interviewed.

In the first draft of the intervention, parent involvement activities, like investigating meanings of traffic signs seen on the roads, and practices in real environments, such as observations on the street and crossing the road, were planned. However, implementation of these could not be possible in the current study due to safety concerns resulted from the limited number of adults. Considering the role of practice in real settings and parents in traffic education, the unit could have been more effective if the activities in the first draft could be implemented. Moreover, because the researcher was also the implementer in the current study, some difficulties occurred during data collection process, which might result in not capturing every critical moment.

Improvements in knowledge, attitude, and behavior of children showed that experiential learning, emphasized practice, was an effective learning method for traffic safety education. Similarly, previous studies highlighted the importance of including practice-based or experiential education methods in learning activities since they give opportunities to follow traffic rules in real life or real-like environments (Percher, 2009; Rothengatter, 1981; Salmon & Eckersley, 2010; Schwebel, et al., 2014; Thomson and Whelan, 1997; van Shagen & Rothengatter, 1997). Researchers in Turkey also pointed out the implementations in real-life situations for the effectiveness of traffic education programs (Bolat et al., 2017; Kavsiracı & Hatipoğlu, 2016). Although it was not possible to expose children to real environments such as roads and sidewalks, these were tried to be simulated in the classroom. In fact, children's observations and experiences in traffic were integrated, via role-play or games, in the learning activities.

Studies showed that road safety awareness is related to the age and experience of individuals. Especially children in preschool years are more prone to traffic injuries due to difficulty in concentration (Tabibi & Pfeffer, 2007) and insufficient understanding of safety (Whitebread & Neilson, 2000). On the other hand, older age does not always mean safe behaviors found in a study comparing road crossing behaviors of children between 4 and 13 years old (Wang, Tan, Schwebel, Shi & Miao, 2018). Children in the younger age groups followed more the basic steps of crossing than the oldest group. Risk perception is an important skill to behave safely in traffic, and the cognitive level of young children might be inadequate for the development of this ability (Wang et al., 2018). Yet, programs which are developmentally appropriate for preschool children can improve skills related to traffic awareness (Gürsoy et al., 2015; Hotz et al., 2004; Renaud & Suissa, 1989; Thomson & Whelan, 1997; Zeedyk et al., 2001), as in the current study that had a positive influence on children's road safety awareness. The classroom teacher stated that the learning activities were developmentally appropriate for children who actively participated throughout the intervention. After the intervention, participants were able to identify risky behaviors in traffic, including their behaviors in the past and demonstrate a positive attitude towards safety through explaining proper behaviors in various situations such as being a passenger, pedestrian, or biker. Although not paying attention to cars (Zeedyk, Wallace & Spry, 2002) and not looking on the road (Rosenbloom, Ben-Eliyahu & Nemrodov, 2008) were detected as the risky behaviors of children while crossing the road, children in the current study listed road crossing steps adequately, after the intervention. The degree of transfer of knowledge into behavior is a concern in road safety studies (Raftery & Wundersitz, 2011; Twisk et al., 2014). Yet, observations of real-life behaviors were not possible in the study. Therefore, whether or not the knowledge gained by children transferred into behavior could not be directly observed. Children's, their teacher's, and their parents' statements, in addition to the observations of the researcher in the classroom, constituted findings related to behaviors.

In the current study, children's responses to the questions in the pre-interviews demonstrated that they had basic knowledge and some awareness concerning traffic. Some participants answered questions inadequately or wrongly, while other participants were aware of the fundamental traffic concepts such as traffic lights, signs, and vehicles and the necessity of traffic rules. On the other hand, in a large scale study with 804 preschool children from families with varied SES in Turkey, Hatipoğlu (2011) concluded that the knowledge and perception of children regarding traffic were inadequate. The difference between the results of the studies might result from the sample characteristics or sample size. Because children in the current study came from families with middle to high socioeconomic backgrounds, they could have more opportunities to observe and experience good practices in traffic and create adequate preexisting knowledge. Similarly, Çelik et al. (2018) conducted a traffic awareness survey with 100 preschool children in Şanlıurfa, and statistical analysis revealed that children's road safety awareness was at a medium level. In fact, there was a significant difference in traffic awareness among five years old children whose fathers with and without a bachelor's degree. Besides, SES is a critical factor in the probability of involving a traffic accident as the lower the SES of a family, the higher the possibility of children in the family experience an accident (Embree, Romanow, Djerboua, Morgunov, Bourdeaux, & Hagel, 2016; Hagel, Romanow, Enns, Williamson, & Rowe, 2015; Serinken & Özen, 2011). In other words, road safety awareness of children is related to the level of education of their families. Thus, preexisting awareness of participants about traffic was in light with the literature.

As suggested by Öz and Demirutku (2018), a special module in the family education program prepared by the Ministry of Family, Labor, and Social Services might be devoted to traffic culture and safety. Since children from low SES families are at higher risk for having a traffic accident (Serinken & Özen, 2011), this program can be specifically implemented for parents with low SES. Thus, parents can learn how to improve the road safety awareness of both themselves and their children.

Songs and games were used in the intervention in accordance with the learning activities. For instance, after talking about road crossing, a song was taught regarding road crossing steps. Then, while practicing road crossing, children repeated the song themselves. In addition, the researcher observed several times children were singing the song. These were indicators of the internalization of the concepts by children. These results corresponded with the study of Zeedyk and Wallace (2003), who found that unstructured activities, such as songs, videos, and games, do not alone support traffic awareness if they are not used in an educational program. A board game was also prepared to help children repeat the topics in the intervention. It was beneficial for children to see them in one activity. However, the new concepts of underpass and overpass in the board game was not learned by children as none of them mentioned these as proper places to road crossing in the post-interviews.

Some educational materials that lead to unstructured activities are presented in the General Directorate of Security Affairs website for children (Trafik ve Çocuk, n.d.). The variety of these materials should be increased based on the developmental characteristics of age groups, and they should be easily accessible to children. Besides, as around the world, NGOs should be established to develop educational programs, implement interventions, and conduct campaigns for improving road safety awareness of people of all ages in Turkey.

5.2 Implications for Future Research

It is expected that the current study can draw the attention of scholars in the field, and the number and variety of studies regarding road safety awareness of children increase. Based on the current study, some suggestions are made regarding further research studies to enrich the relevant literature in Turkey about raising children's traffic safety awareness and, in turn, practices implemented in schools.

The intervention can be repeated with a larger sample as the sample in the study was homogeneous. The sample might consist of children from families with various SES living in different sites. In this way, SES and exposure to traffic in urban and rural contexts can be variables in determining influences of the program

on different groups. Moreover, making comparisons with groups who receive the intervention and who did not receive can provide more reliable evidence related to the influence of the unit. The same variables, SES and exposure to traffic, can also be included in the future interventions for identifying the effectiveness of them.

Action research method can also be used in further studies since it provides a comprehensive process for implementing interventions. Researchers can work cooperatively with schools and teachers, and modifications can be made in interventions based on feedback and evaluations. In these studies, rather than researchers, teachers might be implementers. Since both being the implementer and the data collector caused some difficulties in the current study, requesting from teachers to be implementers might make the process more efficient. In this way, researchers can become participant observers in interventions, and teachers can provide more pointed feedbacks regarding the interventions. Moreover, to detect more significant changes in attitudes and behaviors, different data collection instruments can be developed.

The number of studies for determining traffic awareness of preschool children in Turkey should be increased to prepare appropriate educational programs based on the levels and needs of the target groups. The relationship of traffic awareness in the Turkish context with variables such as age, educational level of parents, living in urban or rural places should be found with quantitative research methods. Qualitative methods should also be used to receive an in-depth understanding of the current situation. Views of a larger group of teachers can be taken to prepare interventions. Their experiences and opinions should be highlighted to learn about lessons conducted in classrooms, difficulties in the preparation and implementation process of lessons, and ideas of practitioners to make lessons more effective. Then, interventions should be prepared based on the findings of these studies to meet the needs of target groups. Moreover, to ensure the safety of children during interventions and testing of impacts in real-life environments, the number of adults should be reasonable considering the number

of participants. For example, three children can be supervised by one adult. So, children's attitudes and behaviors in traffic can be detected safely.

Road safety awareness of parents should also be discovered with research studies in Turkey as knowledge, attitude, and behaviors of parents regarding traffic safety might affect the awareness of children right now and in the future. Researchers should look at whether or not there is a consistency between what parents report regarding their behaviors in traffic and how they actually behave. In this way, what children learn from their parents can be determined, and this information can be used for modifying interventions. Furthermore, indirect effects of interventions on parents should be researched. Changes in road safety awareness of parents can be a variable to look while considering the impacts of interventions on target groups.

5.3 Implications for Practice

The current study aims to present some implications for early childhood teachers regarding road safety education. Education in schools becomes more effective if there is a consistency in values given at homes and schools (Knafo, 2003). To create this consistency, parents, the primary role models of children, should be included in the traffic education process of their children. Parents can practice what is learned in the school with their children at home, or available parents can participate in activities at schools. Besides, parents can be informed by teachers about the importance of giving information and autonomy to children in traffic. As young children think that adults are protecting them through following traffic, they may consider roads as safe and may not be careful in the streets (Thomson, 2016). Therefore, parents should talk with their children about road safety and give chances to practice in real-life settings. Through parent involvement, parents not only obtain information about the traffic concepts learned by their children but also have an opportunity to modify their behaviors for being good role models and connecting practices in school and home. After taking the required training, parents can be competent assistants or guides in road safety to enhance awareness of their children.

Traffic education is not enough alone if suitable opportunities are not provided to children. Therefore, experiential learning should be adopted in schools to improve road safety awareness. Especially, songs, stories, drama, and games can easily be used in all schools. If school surroundings are appropriate, real-life observations and experiences in real environments should be a part of learning activities.

Action research method can be used by practitioners in schools to increase road safety awareness of children. Flexibility and cyclical process in action research make it usable in schools. Teachers might be able to adapt their interventions in relation to learning environments, current levels of participants, and influences of the interventions on students.

Traffic safety culture can be constituted with the coordination of various stakeholders in individual, region, and country levels (Özkan & Lajunen, 2015). In this way, safe practices can be formed, transferred, and even modified based on the needs of the next generations. At that point, parents, institutions, and schools should assume responsibilities.

In conclusion, the findings of the current study corresponded with the previous studies. Comparison of the existing situation in Turkey and developed countries revealed the necessity of increasing the number of research studies and road safety education programs starting from preschool years in Turkey.

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APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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21 Ocak 2020

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgili: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof. Dr. Ahmet OK

Denetimden önce yaptığımız Betül DEMİRAY'ın "Okul Öncesi Dönem Çocuklarının Yol Güvenliği Farkındalıklarının Deneyime Dayalı Öğrenme Modeliyle İyileştirilmesi" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve 020-ODTÜ-2020 protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Prof. Dr. Mine MISIRLIOĞLU

Başkan

Prof. Dr. Tolga CAN

Üye

Doç. Dr. Pınar KAYGAN

Üye

Dr. Öğr. Üyesi Ali Emre TURGUT

Üye

Dr. Öğr. Üyesi Şenile SEVİNÇ

Üye

Dr. Öğr. Üyesi Müge GÜNDÜZ

Üye

Dr. Öğr. Üyesi Süreyya Özcan KABASAKAL

Üye

B. ROAD SAFETY UNIT

Yol Güvenliđi Ünitesi Etkinlik Planları

Okul öncesi yaş grubu çocuklarının yol güvenliđi farkındalıklarını arttırmak amacıyla hazırlanmış olan plan aşağıda sunulmaktadır. Bu planda toplamda 6 etkinlik vardır. Bu etkinliklerden ilki çocuklarla tanışmak ve kaynaşmak için hazırlanmıştır. Yani, ilk etkinlikte trafik güvenliđiyle ilgili bir konudan bahsedilmemiştir. İkinci etkinlikten itibaren yol güvenliđiyle ilgili konular işlenmiştir. Etkinliklerdeki kazanım ve göstergeler Milli Eğitim Bakanlığı'nın Okul Öncesi Eğitimi Programı'ndan alınmıştır. Etkinliklerde kullanılan görsellere internetteki çeşitli kaynaklardan ulaşılmıştır. Bu etkinliklerle ulaşılması planlanan hedefler aşağıdaki gibidir.

1. Trafikle ilgili temel kavramları tanımlar.
 - a. Yaya, yaya yolu (kaldırım), yaya geçidi, araç yolu, sürücü, yolcu, trafik, trafik işareti, trafik ışığı ve ulaşım aracı kelimelerini açıklar.
2. Ulaşım aracı çeşitlerini listeler.
 - a. Ulaşım araçlarını (araba, bisiklet, motosiklet, otobüs, metro, uçak, helikopter, gemi vb.) kullanım yerlerine göre gruplandırır.
3. Trafikte tehlike oluşturabilecek durumlara günlük hayattan örnekler verir.
4. Toplum güvenliđini sağlayan meslek gruplarını ve bu meslek grupları tarafından kullanılan ulaşım araçlarını ayırt eder.

5. Trafikte yaya olan çocukların güvenliği için yapılması gerekenleri tartışır.
 - a. Karşıdan karşıya geçmek için uygun yerleri keşfeder.
 - b. Karşıdan karşıya bir yetişkinle geçmesi gerektiğini açıklar.
 - c. Karşıdan karşıya geçerken takip edilmesi gereken adımları listeler.
6. Trafik ışıklarındaki renklerin yayalar ve araçlar için ne ifade ettiğini günlük hayattan örnekler vererek açıklar.
7. Ulaşım araçlarında (bisiklet, araba ve otobüs) çocuk yolcuların güvenli yolculuğu için yapılması gerekenleri listeler.
8. Bisiklet sürerken alınması gereken güvenlik önlemlerini açıklar.
9. Oyun oynamak için güvenli olan yerlerin özelliklerini tartışır.

1. ETKİNLİK

ETKİNLİK İSMİ: Birbirimizi Tanıyalım

ETKİNLİK SÜRESİ: 30 dakika

ETKİNLİK ÇEŞİDİ: Oyun Etkinliği (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ	
Sosyal ve Duygusal Gelişim	Motor Gelişim
Kazanım 1: Kendisine ait özellikleri tanıtır. Göstergeleri: Adını ve/veya soyadını söyler.	Kazanım 5: Müzik ve ritim eşliğinde hareket eder. Göstergeleri: Bedenini kullanarak ritim çalışması yapar. Müzik ve ritim eşliğinde dans eder.

MATERYALLER: Çocuk şarkıları

SÖZCÜKLER: isim, merhaba, hoşça kal, tokalaşma

KAVRAMLAR: hareketli, hareketsiz, sesli, sessiz

ÖĞRENME SÜRECİ:

Giriş: Öğretmen kendini çocuklara tanıttıktan sonra “ben de sizleri tanımak istiyorum, haydi hep beraber oyun oynayarak kendimizi tanıtalım” der. Sırasıyla dört tane oyun oynanır.

Geliştirme: Daire şeklinde yere oturulur. İlk oyun ritimle isim söylemedir. Öğretmen örnek olarak “benim ismim ...Seninki ne?” der ve ismini vücuduyla bir ritim yaparak söyler. Sırayla bütün çocuklar ismini ritimle söyledikten sonra hep beraber ayağa kalkarak ikinci oyuna geçilir. Bu oyunda herkes arka arkaya dizilerek tek sıra halini alır ve hafif tempoyla yürüyüşe başlanır. Sıranın başındaki kişi bir hareket yapar ve herkes onu taklit eder. Hareket yaptıran çocuk sıranın en arkasına geçer. Bütün çocuklar sıranın başına geçtikten sonra müzik başlar ve bir sonraki oyuna başlanır. Bu oyunda müzik çalarken herkes istediği şekilde dans eder. Müzik durduğunda herkes heykel olup sessiz ve hareketsiz kalır. Öğretmen bir çocuğun yanına giderek “benim en sevdiğim meyve ...Seninki nedir?” diye sorar. Aynı soruyu birkaç çocuğa sorduktan sonra müzik tekrar başlar. Müzik her

durduğunda çocuklara farklı bir soru sorulur. Bütün çocuklar en az bir kez cevap verdikten sonra son oyuna geçilir. Müzik çalarken herkes sakince yürür. Müzik durduğunda en yakındaki kişiyle tokalaşır “merhaba benim ismim ...Hoşça kal” der ve bir başkasıyla tekrar tokalaşır. Müzik başladığında yürümeye devam edilir. Herkes birbiriyle tokalaştıktan sonra tekrar daire şeklinde yere oturulur.

Sonuç: Öğretmen, “benim ismim neymiş?” diye bütün sınıfa sorar. Ardından, “sıra bende. Hepinizin ismini öğrenebilmiş miyim, haydi bakalım. Eğer ismini hatırlayamadıklarım olursa bana ipucu vererek yardımcı olun lütfen.” dedikten sonra sırayla çocukların ismini söyler. Bütün isimler söylenince etkinlik tamamlanır.

2. ETKİNLİK

ETKİNLİK İSMİ: Hep Birlikte Yollarda **ETKİNLİK SÜRESİ:** 40 dakika

ETKİNLİK ÇEŞİDİ: Bütünleştirilmiş Türkçe-Sanat Etkinliği (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ	
Öz Bakım Becerileri	Dil Gelişimi
Kazanım 7: Kendini tehlikelerden ve kazalardan korur. Göstergeleri: Tehlikeli olan durumları söyler.	Kazanım 5: Dili iletişim amacıyla kullanır. Göstergeleri: Konuşmak için sırasını bekler. Kazanım 6: Sözcük dağarcığını geliştirir. Göstergeleri: Sözcükleri hatırlar ve sözcüklerin anlamını söyler.

MATERYALLER: bez torba, çocuk sayısı kadar dosya, boya kalemi, görsel kartları (Şekil 1), dur tabelası (Şekil 2)



Şekil 1. Görsel Kartları



Şekil 1. (devamı)



Şekil 2. Dur Tabelası

SÖZCÜKLER: trafik, yaya, sürücü, yolcu, yaya yolu (kaldırım), yaya geçidi, araç yolu, yaya geçidi, trafik ışığı, trafik işareti, ulaşım aracı

KAVRAMLAR: güvenli, tehlikeli, hızlı, yavaş, 1-10 arası sayılar

ÖĞRENME SÜRECİ:

Giriş: Sınıfa büyük bir bez torbayla girilir. Öğretmen, torbada ne olabileceğini çocuklardan tahmin etmelerini ister. Tahminler alındıktan sonra öğretmen her çocuğun yanına giderek çantanın içinden eline gelen ilk nesneyi çekmesini ister. Bütün öğrencilerle aynı işlem yapıldıktan sonra çocuklar ellerindeki paketi açarlar. Pakette her çocuk için bir dosya bulunmaktadır. Yapılacak etkinliklerle ilgili çizimler, gözlemler, etkinlik kağıtları vb. bu dosya içinde toplanacaktır. Çocuklara bu dosyanın ne için kullanılacağı açıklandıktan sonra dosyanın kapağına kendilerinin olduğunu anlamalarını sağlayacak küçük bir işaret çizimleri söylenir. Ardından, çocuklara “trafik denilince aklınıza ne geliyor” diye sorularak cevaplarını bir kağıda çizimleri istenir. Herkes çizimini tamamladığında öğretmen çocuklara dur tabelasını tanıtır. “Etkinlikler sırasında bu görseli elinde tutan çocuk konuşacaktır. Nasıl trafikte bu tabelayı görünce araçlar duruyorsa, çocuklar da bu tabelayı gördüklerinde sessiz olup konuşan kişiyi dinleyeceklerdir” der.

Geliştirme: Tabelayı eline alan çocuk çizimini kısaca anlatır. Bütün çizimlerden bahsedildikten sonra bazı terimlerin numaralandırılmış görselleri çocuklara gösterilir. Kaldırım, yaya, sürücü, araç yolu, yaya geçidi, trafik ışığı, trafik işareti gibi terimlerden bahsedilir. Çocukların bu konseptlerle ilgili günlük hayattaki deneyimleri hakkında konuşulur.

Sonuç: İsmi söylenen terimin kaç numaralı görsel olduğunu çocuklar hep beraber söyledikten sonra aynı konsepti ifade eden görseller hep birlikte eşleştirilir. Etkinlik sonunda her çocuğa ulaşım araçları görsellerinden oluşan bir liste verilir ve her çocuk çizelgesini dosyasına koyar. Listede araba, motosiklet, bisiklet, uçak, helikopter, gemi gibi ulaşım araçlarının resimleri vardır. Çizelgedeki ulaşım araçlarının isimleri çocuklarla tartışılır. Bir sonraki etkinlik gününe kadar çocukların bu ulaşım araçlarından hangilerini gördüklerini işaretlemeleri istenir.

DEĞERLENDİRME:

Betimleyici Sorular: -Trafik sizce ne demektir? -Trafikte güvende olmak önemli midir? Neden?

Duyuşsal Sorular: -Etkinlik sırasında en hoşlandığınız/hoşlanmadığınız bölüm neresiydi? -Etkinlik sırasında sizi zorlayan bir durum oldu mu? Nedir?

Kazanımlara Yönelik Sorular: -Trafikteki tehlikeli davranışlar neler olabilir? Neden? -Bugün konuştuğumuz terimlerden en dikkatinizi çekenin ismi ve anlamı nedir?

Yaşama İlişkilendirme Soruları: -Sokakta yürürken güvende olmak için nelere dikkat edersiniz?

AİLE KATILIMI: Dosyaya konulan ulaşım araçları listesi ebeveynler eşliğinde doldurulur.

3. ETKİNLİK

ETKİNLİK İSMİ: Yollardaki Araçlar

ETKİNLİK SÜRESİ: 40 dakika

ETKİNLİK ÇEŞİDİ: Matematik-Türkçe Bütünleştirilmiş Etkinlik (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ	
Bilişsel Gelişim	Sosyal ve Duygusal Gelişim
<p>Kazanım 2: Nesne/durum/olayla ilgili tahminde bulunur.</p> <p>Göstergeleri: Nesne/durum/olayla ilgili tahminini söyler. Gerçek durumu inceler. Tahmini ile gerçek durumu karşılaştırır.</p> <p>Kazanım 7: Nesne veya varlıkları özelliklerine göre gruplar.</p> <p>Göstergeleri: Nesne/varlıkları kullanım amaçlarına göre gruplar.</p> <p>Kazanım 20: Nesne/sembollerle grafik hazırlar.</p> <p>Göstergeleri: Grafiği oluşturan nesneleri veya sembolleri sayar. Grafiği inceleyerek sonuçları açıklar.</p>	<p>Kazanım 16: Toplumsal yaşamda bireylerin farklı rol ve görevleri olduğunu açıklar.</p> <p>Göstergeleri: Toplumda farklı rol ve görevlere sahip kişiler olduğunu söyler.</p>

MATERYALLER: ulaşım araçları listesi (Şekil 3), ulaşım araçları grafiği, ambulans-itfaiye-polis arabası görselleri (Şekil 4)



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Şekil 3. Ulaşım Araçları Listesi



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Şekil 3. (devamı)



22



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24

Şekil 4. İtfaiye-Polis-Ambulans Görseli

SÖZCÜKLER: ulaşım aracı, araba, uçak, taksi, yelkenli, şehir içi otobüsü, tramvay, kayık, motosiklet, kamyonet, kamyon, tren, çöp kamyonu, tır, metro, gemi, şehirler arası otobüs, helikopter, servis, balon, tekne, bisiklet, itfaiye arabası, polis arabası, ambulans, siren, acil durum, havada-karada-suda giden araçlar

KAVRAMLAR: az, çok

ÖĞRENME SÜRECİ:

Giriş: Bir önceki etkinliğin sonunda verilen ulaşım araçları hakkında tartışılarak etkinliğe başlanır. Çocuklara verilen listenin grafik hali duvara asılır. Dur tabelasını tutan çocuk, gördüğü araçları büyük çizelgede işaretler.

Geliştirme: Bütün çocuklar işaretleme işlemini yaptıktan sonra en çok hangi aracın görüldüğü, hiç işaretlenmeyen araçların neden görülmemiş olabileceği üzerine konuşulur ve çocuklara bu araçlardan hangilerini kullandıkları sorulur. Etkinlik boyunca konuşulan araçlar karada, havada ve suda gidenler olarak gruplandırılır. Ardından, çocuklara trafikteyken grafikteki araçlardan farklı olarak gördüğünüz araçlar oldu mu diye sorulur. Kısa bir sohbetten sonra ambulans, itfaiye ve polis arabasının siren sesleri dinletilir ve çocuklara bu araçların görselleri toplu halde verilir. Çocuklar görselleri keserek ayırdıktan sonra sesler sırasıyla tekrar dinletilir ve çocuklardan duydukları sesin hangi araçtan çıktığını tahmin etmeleri istenir. Çocuklar aynı anda tahminlerini gösteren resmi havaya kaldırır. Sesler ve görseller eşleştirildikten sonra resimler çocuklar tarafından dosyalarına konulur.

Sonuç: Bu mesleklerin neden önemli olduğu tartışılır ve trafikte bu araçlarla karşılaşıldığında ne yapılması gerektiği hakkında çocukların fikirleri alınır. Ulaşım araçları grafiğinin üzerinden bir kez daha geçip, çocuklara eğer isterlerse ulaşım araçları listelerini doldurmaya devam edebilecekleri söylenerek etkinlik sonlandırılır.

DEĞERLENDİRME:

Betimleyici Sorular: -Gözlem yaparken en çok hangi ulaşım aracını gördünüz? - Çizelgedeki araçlardan hangilerini kullandınız?

Duyuşsal Sorular: -Trafikte yüksek ses duyduğunda (korna, siren gibi) ne hissediyorsunuz? -Bugün konuştuğumuz araçlardan en çok hangisine binmek istersiniz? Neden?

Kazanımlara Yönelik Sorular: -Karada/havada/suda giden araçlar nelerdir? - Toplum güvenliğini sağlayan meslekler nelerdir? Neden önemlidirler?

Yaşamla İlişkilendirme Soruları: -Günlük hayatta bu araçları neden kullanırsınız? -Bu araçlar olmasaydı sizce bugün nasıl bir hayatımız olurdu?

AİLE KATILIMI: Çocuklar aileleriyle ulaşım araçları listesini doldurmaya devam ederler.

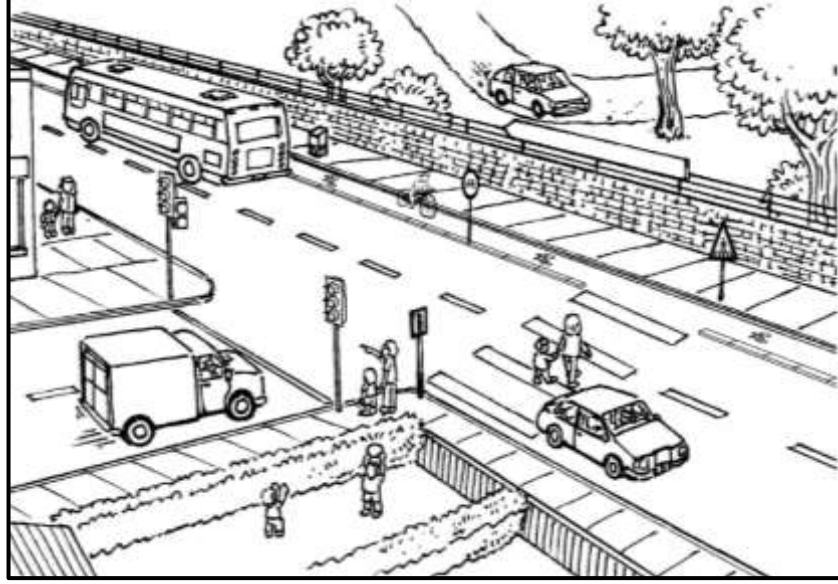
4. ETKİNLİK

ETKİNLİK İSMİ: Trafikte Güvendeyim **ETKİNLİK SÜRESİ:** 60 dakika

ETKİNLİK ÇEŞİDİ: Türkçe-Müzik Bütünleştirilmiş Etkinlik (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ		
Bilişsel Gelişim	Dil Gelişimi	Motor Gelişim
Kazanım 13: Günlük yaşamda kullanılan sembollerini tanıır. Göstergeleri: Verilen açıklamaya uygun sembolü gösterir. Gösterilen sembolün anlamını söyler.	Kazanım 5: Dili iletişim amacıyla kullanır. Göstergeleri: Konuşmayı başlatır, sürdürür, sonlandırır. Sohbeta katılır. Konuşmak için sırasını bekler. Kazanım 7: Dinledikleri/izlediklerini anlamını kavrar. Göstergeleri: Sözel yönergeleri yerine getirir.	Kazanım 5: Müzik ve ritim eşliğinde hareket eder. Göstergeleri: Müzik ve ritim eşliğinde çeşitli hareketleri ardı ardına yapar.

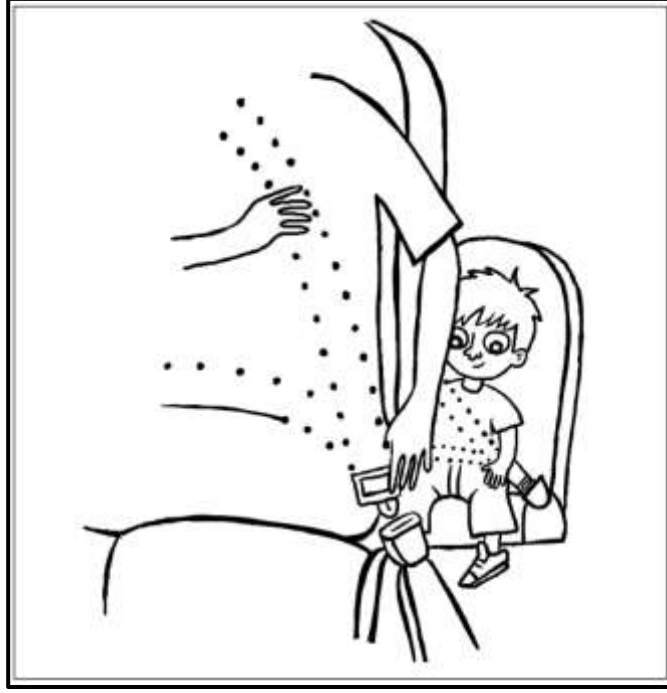
MATERYALLER: büyük boy yapboz (Şekil 5), dur-bak-dinle kuralı görseli (Şekil 6), boya kalemleri, renkli kağıtlar, makas, yapıştırıcı, emniyet kemeri görseli (Şekil 7)



Şekil 5. Büyük Boy Yapboz



Şekil 6. Dur-Bak-Dinle Kuralı Görseli



Şekil 7. Emniyet Kemerini Görseli

SÖZCÜKLER: toplu taşıma aracı, bisiklet yolu, otobüs, servis, bisiklet, kask, emniyet kemeri, karşıdan karşıya geçme kuralı, yetişkin

KAVRAMLAR: sağ, sol, yeşil, kırmızı, sarı

ÖĞRENME SÜRECİ:

Giriş: Öğretmen sınıfa büyük boy bir görselle gelir. Görsel yapboz şeklinde 4-5 parçaya ayrılmış haldedir. Yapbozun ne hakkında olabileceğiyle ilgili çocukların fikirleri alınır. Ardından, her çocuğun torbadan renkli kağıt çekmesiyle sınıf, yapboz parçası sayısı kadar gruba bölünür ve her gruba bir yapboz parçası verilir. Yapboz parçaları bütün haline getirilir ve sınıfça görseldeki durumlar hakkında konuşulur (bir yetişkinin elini tutmak, güvenli yerde oyun oynamak, yaya geçidinden karşıya geçmek, bisiklet yolunda kask takarak bisiklet sürmek, kırmızı ışıkta beklemek). Görseldeki, çocukların ve yetişkinlerin güvenliğini sağlayan durumlar hep beraber tespit edilir. Her grup kendine ait yapboz parçasını boyar ve görsel sınıfın duvarına bütün halde asılır.

Geliştirme: Öğretmen “bugün okula nasıl geldiniz?” diye sorar. “Resimdeki gibi otobüs/servis ya da bisikletle geleniniz oldu mu” der ve toplu taşıma araçlarıyla ve bisikletle nasıl güvenli yolculuk edileceği hakkında sohbet edilir. Ardından, çocukların dikkati yoldan karşıya geçen yayalar üzerinde yoğunlaştırılır. Karşıdan karşıya geçerken uyulması gereken kurallar hakkında çocukların günlük yaşamdaki deneyimleri ışığında tartışılır ve sınıfça bu kurallar listelenir. (Yoldan karşıya geçmeden önce bir yetişkinin eli mutlaka tutulmalıdır. Yolun kenarında durup yola bakmalı ve dinlemeliyiz. Ardından önce sola, sonra sağa, sonra tekrar sola bakıp koşmadan yoldan geçmeliyiz.) Kuralların çocukların akıllarında kalıcı olması için temel adımları simgeleyen görsel çocuklara dağıtılır ve her çocuk görseli istediği şekilde boyadıktan sonra dosyasına yerleştirir.

Sonuç: Karşıdan karşıya geçme kuralıyla ilgili öğretmen tarafından hazırlanan bir şarkı (Dur, Bak, Dinle!) söylenir. Şarkıdaki hareketler ve ritim çocuklar tarafından öğrenilince, şarkı eşliğinde yoldan karşıya geçme kuralı sınıfta hep beraber uygulanır.

Dur, Bak, Dinle!

Bir büyüğün elinden tut.	Karşıya geç, sakın koşma!
Yolun kenarında dur.	Karşıya geç, sakın koşma!
Yola bak, yolu dinle.	Karşıya geç, sakın koşma!
Önce sola, sonra sağa, sonra tekrar sola bak.	Karşıya geç, sakın koşma!

DEĞERLENDİRME:

Betimleyici Sorular: -Trafik ışığındaki renkler, araçlar ve yayalar için ne anlama gelir?

Duyuşsal Sorular: -En çok hangi şekilde okula gelmeyi seviyorsun? (araba, servis, yürüyerek vs.)

Kazanımlara Yönelik Sorular: -Otobüs/servis gibi araçlarda güvenli yolculuk için nelere dikkat etmeliyiz? -Bisiklet sürerken neler yapmalıyız? -Çocuklar karşıdan karşıya nasıl geçmelidir?

Yaşamla İlişkilendirme Soruları: Trafik işaretleri neden gereklidir?

AİLE KATILIMI: Çocukların boyaması için emniyet kemeriyle ilgili bir görsel eve gönderilir.

5. ETKİNLİK

ETKİNLİK İSMİ: Elmo Yollarda

ETKİNLİK SÜRESİ: 40 dakika

ETKİNLİK ÇEŞİDİ: Türkçe Etkinliği (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ	
Bilişsel Gelişim	Sosyal ve Duygusal Gelişim
Kazanım 3: Algıladıklarını hatırlar. Göstergeleri: -Nesne/durum/olayı bir süre sonra yeniden söyler. - Hatırladıklarını yeni durumlarda kullanır.	Kazanım 12: Değişik ortamlardaki kurallara uyar. Göstergeleri: -Kuralların gerekli olduğunu söyler.
Dil Gelişimi	Öz Bakım Becerileri
Kazanım 7: Dinledikleri/ izlediklerinin anlamını kavrar. Göstergeleri: -Sözel yönergeleri yerine getirir. -Dinledikleri/ izlediklerini açıklar. -Dinledikleri/ izledikleri hakkında yorum yapar.	Kazanım 7: Kendini tehlikelerden ve kazalardan korur. Göstergeleri: -Temel güvenlik kurallarını bilir.

MATERYALLER: hikaye kartları (Kidsafe, 2017), Elmo çıkartması (Şekil 9), Elmo kuklası, renkli kağıtlar, kağıt bant



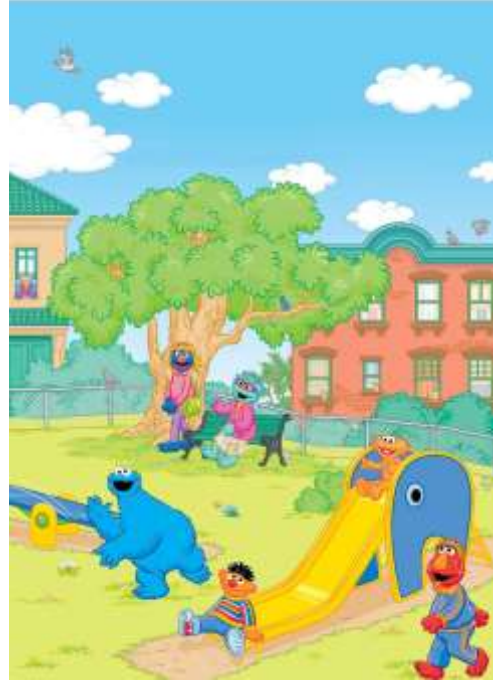
Şekil 8. Hikaye Kartları



Şekil 8. (devamı)



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Şekil 8. (devamı)



Şekil 9. Elmo Çıkartması

SÖZCÜKLER: oyun alanı, emniyet kemeri, çocuk koltuğu, otopark, yeşil ışık, kırmızı ışık

KAVRAMLAR: sağ, sol, güvenli, tehlikeli

ÖĞRENME SÜRECİ:

Giriş: Etkinlikten önce kağıt bantla sınıfta trafik parkuru hazırlanır. Öğretmen sınıfa bir el kuklasıyla girer ve “bugün sınıfımızda bir misafirimiz” *var* der. *Merhaba! Benim ismim Elmo. Hadi hikayemde bana katılın ve hep beraber bir yolculuğa çıkalım. Betül Öğretmen size hikayemi anlatmaya başlasın.* Yere daire şeklinde oturulur. Anlatıcı boynuna kuklayı asar, bir elinde de hikaye kartlarını tutar.

Geliştirme: Elmo gece boyunca mışıl mışıl uyumuş. Sabah uyandığında yatağından enerji dolu bir şekilde kalkmış. Mutfığa gidip ailesiyle kahvaltısına başlamış. Kahvaltı sırasında ailesine *dışarıda oyun oynamak istiyorum* demiş. Annesi Elmo’ya *dışarıdayken nerede güvenli bir şekilde oyun oynayabilirsin* diye sormuş. “Bu soruya cevap verebilmesi için Elmo’ya yardım edelim. Sizce evin dışındayken nerelerde güvenle oyun oynayabiliriz?” Elmo’nun cevabı *oyun parkı* olmuş. Annesi kahvaltıdan sonra Elmo’yu parka götürebileceğini söylemiş. Oyun parkı biraz uzakta olduğu için arabayla gitmeleri gerekmiş. “Elmo ve annesi arabaya binerken nelere dikkat etmeliler?”. Annesi Elmo’yu arka koltuktaki çocuk koltuğuna oturtup kemerini bağlamış. Ardından kendisi de sürücü koltuğuna oturup kemerini takmış. *Herkesin emniyet kemeri takıldıysa yolculuk başlasın.* Yolda giderken kırmızı ışık yanmış ve beklemeye başlamışlar. Sarı yandığında tekrar hareket etmek için hazırlanmışlar. Işık yeşile döndüğünde yolculuğa devam etmişler ve parkın yakınındaki otoparka arabalarını park etmişler. “Arabadan inerken Elmo ve annesinin yapması gerekenler nelerdir?”. Önce Elmo’nun annesi inerek Elmo’nun kapısını açmış ve emniyet kemerini çözmüş. Ardından Elmo arabadan inerek annesinin elini tutmuş. Dikkatli bir şekilde yürüyerek otoparktan çıkmışlar. Parka ulaşmaları için küçük bir yürüyüş yapmaları gerekiyormuş. El ele tutuşarak yol boyunca yürümüşler. Kaldırımında yürüdükleri sırada yoldan karşıya geçmeleri gerekmiş. “Karşıdan karşıya geçerken Elmo ve annesinin yapması gerekenler nelerdir?”. Elmo yol boyunca annesinin elini bırakmamış. Yayaalara yeşil ışık yandığında önce sola, sonra sağa ve tekrar sola bakarak koşmadan yoldan karşıya geçmişler. Yolun karşısına geçtiklerinde Elmo parkı görmüş ve *işte geldik*

demiş. Parkta arkadaşlarıyla doyasıya oynamış. Hep birlikte salıncakta sallanmışlar, kaydıraktan kaymışlar, tahteravalliye binmişler ve top oynamışlar.

Sonuç: Gün sonunda Elmo ve annesi eve dönüş yoluna koyulmuşlar. Arabada annesi Elmo'ya parka gelene kadar güvende olmak için neler yaptığını sormuş. “Soruyu cevaplayabilmesi için Elmo'ya yardım edelim.” Elmo, *arabada emniyet kemerim takılı şekilde arkada çocuk koltuğunda oturdum, arabadan inmek için annemin gelmesini bekledim, yoldan karşıya geçerken annemin elini tuttum ve yeşil ışıkta geçtim. Ayrıca, kaldırımında ve otoparkta oyun oynamayıp annemin elini tuttum* demiş. Ardından, Elmo çocuk koltuğunda uyuyakalmış.

DEĞERLENDİRME: Öğretmen, “hikayede Elmo ve annesi neler yaptı hep beraber hatırlayalım, parkuru bir de biz dolanalım” der. Her çocuğa Elmo çıkartması verilir. Bu sefer süreç çocuklar tarafından yönetilir. Onların verdiği cevaplara göre grup halinde hareketler canlandırılır. Artık biz de Elmo gibi kurallara uyalım denerek etkinlik tamamlanır.

AİLE KATILIMI: Ebeveynlerden Elmo'nun hikayesini çocuklarına sormaları istenir. Evden çıktıklarında Elmo ve annesi/babası gibi hareket edip etmedikleri hakkında konuşurlar.

6. ETKİNLİK

ETKİNLİK İSMİ: Kutudaki Yolculuk

ETKİNLİK SÜRESİ: 90 dakika

ETKİNLİK ÇEŞİDİ: Bütünleştirilmiş Oyun-Sanat Etkinliği (Büyük Grup)

KAZANIMLAR VE GÖSTERGELERİ	
Bilişsel Gelişim	Sosyal ve Duygusal Gelişim
<p>Kazanım 1: Nesne/durum/olaya dikkatini verir.</p> <p>Göstergeleri: -Dikkat edilmesi gereken nesne/durum/olaya odaklanır.</p> <p>Kazanım 10: Mekanda konumla ilgili yönergeleri uygular.</p> <p>Göstergeleri: -Yönergeye uygun olarak nesneyi doğru yere yerleştirir.</p>	<p>Kazanım 6: Sözcük dağarcığını geliştirir.</p> <p>Göstergeleri: -Dinlediklerinde yeni olan sözcükleri fark eder ve sözcüklerin anlamlarını sorar. -Yeni öğrendiği sözcükleri anlamlarına uygun olarak kullanır.</p>

MATERYALLER: kutu oyunu (Şekil 10), şans kartları (Şekil 11), boya kalemleri

SÖZCÜKLER: alt geçit, üst geçit

KAVRAMLAR: ileri, geri, sıra sayıları (1-20 arası)



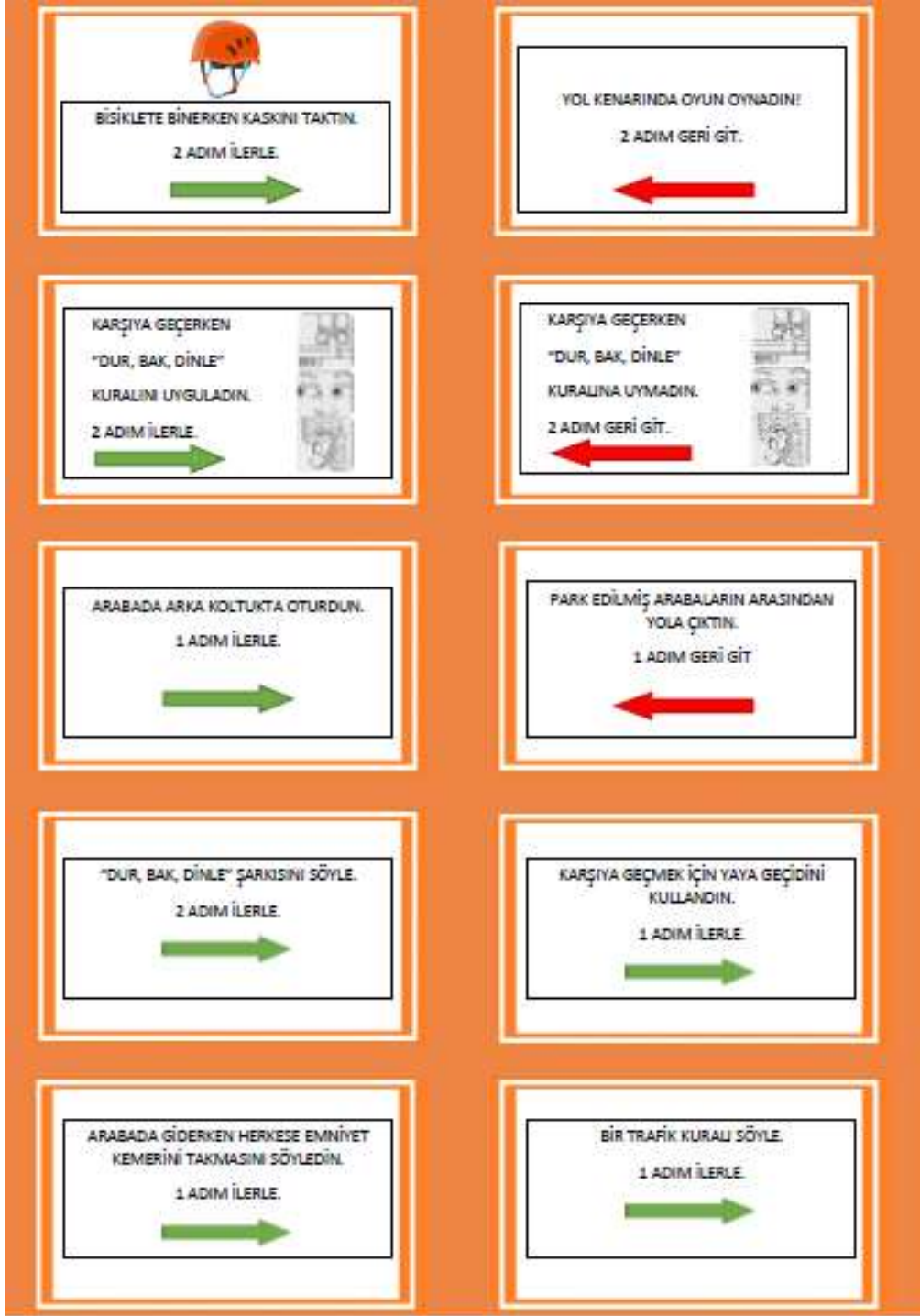
Şekil 11. Kutu Oyunu

ÖĞRENME SÜRECİ:

Giriş: Öğretmen sınıfa büyük bir kutuyla gelir ve çocuklardan kutuda ne olabileceği hakkındaki tahminlerini alır.

Geliştirme: Öğretmenin etrafında U şeklinde yere oturulur ve öğretmen kutuyu açarak içindeki oyunu anlatır. Çocuklar torbadan kağıt çekerler ve aynı renk kağıdı olan çocuklar 2-3 kişilik grup olurlar. Her grup sırasıyla zarı atarak kahramanını ilerletir. Bütün kahramanlar bitiş çizgisine gelene kadar oyun devam eder.

Sonuç: Oyun bittikten sonra çocuklardan trafik denilince akıllarına gelenleri tekrar çizimleri istenir.



Şekil 12. Şans Kartları

DEĞERLENDİRME:

Betimleyici Sorular: -Aklına gelen trafik kurallarından birini açıklar mısın? - Trafikte tehlike oluşturabilecek durumlar nelerdir?

Duyuşsal Sorular: -Bugüne kadar yaptığımız etkinliklerde en beğendiğin hangisiydi? Neden? -Yaptığımız etkinliklerde hoşuna gitmeyen bir şey oldu mu? Varsa, nedir? -Bugün oynadığımız kutu oyunuyla ilgili düşüncelerin nelerdir?

Kazanımlara Yönelik Sorular: -Karşıdan karşıya geçmek için uygun yerler nerelerdir? -Trafikte güvende olmak için neler yapmalıyız?

Yaşamla İlişkilendirme Soruları: -Yaptığımız etkinliklerdeki durumlara/kurallara günlük hayatında dikkat ediyor musun? -Günlük hayatında trafikle ilgili dikkatini çeken/merak ettiğin bir konu var mı?

AİLE KATILIMI: Ailelere etkinliklerde yapılanların günlük hayatta pekiştirilmesi gerektiğinin vurgulandığı bir teşekkür ve veda yazısı gönderilerek etkinlikler sonlandırılır.

C. TEACHERS' VIEWS ABOUT TRAFFIC EDUCATION INTERVIEW SCHEDULE

Trafik Eğitime Yönelik Görüşme Formu (Öğretmenler)

Merhaba,

ODTÜ Eğitim Programları ve Öğretim bölümünde yüksek lisans öğrencisiyim. Yüksek lisans tezim kapsamında okul öncesi dönem çocuklarının trafik bilincini geliştirmeye yönelik bir program hazırlayıp uygulayacağım. Çalışmamın başlangıç noktasında okul öncesi eğitim kurumlarında trafik eğitime yönelik yapılan etkinlikler hakkında genel bir fikir edinmeye çalışmaktayım. Bu nedenle çalışmaya katılımınız büyük bir önem teşkil etmektedir. Araştırma raporunda isminiz ve kurumunuz gizli tutulacaktır. Katılım sırasında sorulan sorulardan ya da herhangi bir uygulama ile ilgili başka bir nedenden ötürü rahatsızlık hissederseniz çalışmadan çekilebilirsiniz. Çalışmaya katılımınız için gönülden teşekkür ederim.

Araş. Gör. Betül Demiray

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Demografik Bilgiler

1. Hangi okuldan kaç yılında mezun oldunuz?
 - a. Mezun olduğunuz bölüm nedir?
2. Lisansüstü eğitim aldınız mı / alıyor musunuz? (Cevap hayırsa 3. sorudan devam edebilirsiniz.)
 - a. Aldıysanız / alıyorsanız, hangi alanda?
3. Kaç yıldır okul öncesi öğretmenliği yapıyorsunuz?
 - a. Hangi okullarda (devlet/özel) kaç yıl öğretmenlik yaptınız?

- b. Kaç yıldır řu anda alıřtığınız okulda ğretmenlik yapıyorsunuz?

Görüşme Soruları

4. Sınıfınızdaki ğrenci profili hakkında bilgi verebilir misiniz?
 - a. Yaş grubu, ğrenci sayısı, ebeveynlerin eğitim durumu, ailelerin gelir düzeyi
5. Sizce okul öncesi dönemde eğitim-ğretim süreci içerisinde ğretmen ve ğrencinin rolü nasıl olmalıdır?
 - a. ğrencinin deneyimlerinin ğrenme süreciyle olan ilişkisi hakkındaki fikirleriniz nelerdir?
 - b. Yaşantısal ğrenme / deneyime dayalı ğrenme diyince aklınıza neler geliyor?
6. Trafik bilinci / yol güvenliğı farkındalığı kelimeleri size ne çağırıştırıyor?
 - a. Bir insanda trafik bilinci / yol güvenliğı farkındalığının ne zaman ve ne şekilde oluşmaya başladığını düşünüyorsunuz?
7. Okul öncesi dönemde trafik bilinci / yol güvenliğı farkındalığı hakkındaki düşünceleriniz nelerdir?
 - a. Okul öncesi dönemde yol güvenliğı eğitimi sizce neleri kapsamalıdır?
8. Sınıfınızda trafik bilincine / yol güvenliğı farkındalığına yönelik ne tür etkinlikler yapılmaktadır? Yaptığınız etkinliklerden bahsedebilir misiniz?
 - a. Bu etkinlikleri hazırlarken hangi kaynaklardan yararlanıyorsunuz?
 - b. Etkinliklerde hangi kazanımlar üzerinde yoğunlaşıyorsunuz?
 - c. Ne tür materyaller kullanıyorsunuz?
 - d. ğrenme süreci ne şekilde gerçekleşiyor? (Uyguladığınız bir etkinliğı örnek olarak anlatabilir misiniz?)
 - e. Trafik farkındalığıyla ilgili olan etkinlikler sınıfınızda ne zaman yapılmaktadır ve ne kadar sürmektedir? (Örneğın Trafik ve İlk Yardım Haftası)
 - f. Aileler bu etkinliklere ne ölçüde katılabiliyor? Aile katılımı sizce nasıl olmalıdır?

- g. Söz konusu etkinliklerden sonra öğrencilerde ne tür değişiklikler yaşanmaktadır?
 - h. Etkinlikleri hazırlarken ve uygularken karşılaştığınız zorluklardan biraz bahseder misiniz?
9. Sınıfınızda trafik bilinci / yol güvenliği farkındalığına yönelik etkinlikler uygulamıyorsanız, uygulamamanızın sebepleri nelerdir?
10. Eklemek istediğiniz bir şey var mı?

D. THE TEACHER’S VIEWS ABOUT THE TRAFFIC EDUCATION UNIT INTERVIEW SCHEDULE

Uygulanan Programa Yönelik Görüşme Formu (Öğretmen)

Merhaba,

ODTÜ Eğitim Programları ve Öğretim bölümünde yüksek lisans öğrencisiyim. Yüksek lisans tezim kapsamında okul öncesi dönem çocuklarının trafik bilincini geliştirmeye yönelik hazırladığım programı sınıfınızda uygulamayı tamamlamış bulunmaktayım. Programa ilişkin görüş ve önerilerinizi almak için bir görüşme yapacağız. Araştırma raporunda isminiz ve kurumunuz gizli tutulacaktır. Katılım sırasında sorulan sorulardan ya da herhangi bir uygulama ile ilgili başka bir nedenden ötürü rahatsızlık hissederseniz çalışmadan çekilebilirsiniz. Çalışmaya katılımınız için gönülden teşekkür ederim.

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Prof. Dr. Ahmet Ok

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Uygulanan Etkinliklere Yönelik Sorular

1. Uygulanan trafik farkındalığı programına yönelik olumlu/olumsuz görüşleriniz nelerdir?
2. Etkinliklerde hedeflenen kazanımlara ne ölçüde ulaşıldığını düşünüyorsunuz?
3. Sizce uygulanan etkinliklerin diğer trafik etkinliklerinden farklılaştığı noktalar var mıdır? Varsa, nelerdir?
4. Bu etkinlikleri önümüzdeki dönemlerde uygulamayı düşünür müsünüz? Neden?

Uygulanan Etkinlikleri Geliştirmeye Yönelik Sorular

5. Sizce programın iyi yönleri ve iyileştirilmesi gereken yönleri nelerdir?
6. Programı geliştirmek için sizce neler yapılabilir?

Çocuklara Yönelik Sorular

7. Programın araştırmacı tarafından uygulanması sırasında deneyimlediğiniz/ilginç bulduğunuz durumlardan bahsedebilir misiniz?
8. Programın uygulanması sürecinde ve program bittikten sonra çocuklarda gözlemlediğiniz değişiklikler nelerdir? (Bilgi, tutum ve davranış açısından)
9. Programın uygulanması sürecinde programla ilgili ailelerden aldığınız geri dönüşler oldu mu? Olduysa, nelerdir?
10. Eklemek istediğiniz bir şey var mı?

E. PARENT INFORMATION FORM

Ebeveyn Bilgilendirme Yazısı

Sevgili Ebeveyn,

Günlük yaşantımızın ayrılmaz bir parçası olan trafik, çocuklar tarafından daha farklı deneyimlenmektedir. Çocukların bilişsel, fiziksel, sosyal ve duygusal gelişimleri, onların trafikle ilgili durumları çeşitli şekillerde yorumlamalarına neden olmaktadır.

Önümüzdeki dört hafta boyunca çocuğunuzla birlikte yol güvenliği farkındalığıyla ilgili etkinliklerde birlikte olacağız. Kampüsün içindeki yollarda gözlem yapacağız, sürücülerin ve yayaların nasıl hareket ettiklerini inceleyeceğiz, trafikte ilginizi çeken durumları sınıfla paylaşacağız. Yani, hayatımızın ayrılmaz bir parçası olan trafiği günlük hayatımızdaki deneyimlerimiz ışığında içselleştireceğiz.

Unutmayın ki çocuğunuzun en önemli rol modeli sizsiniz. Trafikteki davranışlarınız çocuğunuzun şu anda ve gelecekte trafikle ilgili durumlarda nasıl bir tutum sergileyeceğinin habercisidir. Bu yüzden, etkinlikleri yaparken üzerinde özellikle duracağımız konuları sizinle de paylaşmak istedim. Bu sayede çocuğunuzla yürüyüş yaparken ya da bir ulaşım aracında yolculuk ederken siz de bu konular hakkında çocuğunuzla iletişim kurabilirsiniz.

1. Trafikte her zaman dikkatli olmalıyız.
2. Karşıdan karşıya geçerken bir yetişkinin elini tutmalıyız.
3. Yoldan geçmeden önce dur, bak ve dinle.
4. Karşıdan karşıya geçmek için güvenli yerleri kullanmalı ve gerekli adımları takip etmeliyiz.
5. Her zaman emniyet kemeri takmalıyız ya da çocuk koltuğunda oturmalıyız.

6. Her zaman arabanın güvenli kapısından (yolun olmadığı taraf) iniş yapmalıyız.
7. Oyun oynamak için trafiğin olmadığı güvenli yerleri seçmeliyiz.

Etkinlikler boyunca çocuğunuza ait bir dosya olacak. Sizden ricam bu dosyadaki görseller hakkında çocuğunuzla konuşmanız ve bir sonraki derse kadar istenilenleri beraber yapmanız. Bu sayede çocuğunuza öğrendiklerini hem pekiştirme hem de günlük hayatta deneyimleme imkanı vermiş olabiliriz.

Trafik kazalarının en aza indiği, sağlıklı bir trafik kültürüne sahip bir gelecek için hep beraber çabalayalım. Destekleriniz için şimdiden çok teşekkür ederiz.

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F. PARENT APPROVAL FORM

Ebeveyn Onay Formu

Sevgili Ebeveyn,

Bu çalışma Orta Doğu Teknik Üniversitesi Eğitim Programları ve Öğretim bölümünde yüksek lisans öğrencisi Betül Demiray tarafından yürütülmektedir.

Bu çalışmanın amacı nedir?: Çalışmanın amacı, okul öncesi dönem çocuklarında trafik bilinci ve yol güvenliği farkındalığını geliştirmeye yönelik olarak hazırlanmış olan trafik eğitimi programının etkililiğini incelemektir.

Çocuğunuzun katılımcı olarak ne yapmasını istiyoruz?: Bu amaç doğrultusunda, çocuğunuza çalışmanın başında Deniz'in Sabah Maceraları isimli hikayeyi okuyacağız ve çocuğunuzdan bu hikayedeki soruları cevaplamasını isteyeceğiz. Bu esnada cevaplarını ses kaydı ve not alma biçiminde toplayacağız. 4 haftalık atölye çalışması boyunca ses kaydı, fotoğraf (çocuğunuzun yüzü görünmeden) ve not alma yoluyla veri toplamaya devam edeceğiz. Atölye programının sonunda çocuğunuzla trafik bilincine yönelik soruları içeren görüşmeyi tekrarlayacağız. Sizden çocuğunuzun katılımcı olmasıyla ilgili izin istediğimiz gibi, çalışmaya başlamadan çocuğunuzdan da sözlü olarak katılımıyla ilgili rızası mutlaka alınacak.

Çocuğunuzdan alınan bilgiler ne amaçla ve nasıl kullanılacak?: Çocuğunuzdan alacağımız bilgiler tamamen gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Elde edilecek bilgiler sadece bilimsel amaçla (yayın, konferans sunumu, vb.) kullanılacak, sizin ya da çocuğunuzun ismi ve kimlik bilgileriniz, hiçbir şekilde kimseyle paylaşılmayacaktır.

Çocuğunuz ya da siz çalışmayı yarıda kesmek isterseniz ne yapmalısınız?: Katılım sırasında sorulan sorulardan ya da herhangi bir uygulama ile ilgili başka bir nedenden ötürü çocuğunuz kendisini rahatsız hissettiğini belirtirse, ya da kendi belirtmese de araştırmacı çocuğun rahatsız olduğunu öngörürse, çalışmaya son verilecektir. Şayet siz çocuğunuzun rahatsız olduğunu hissederseniz, böyle bir durumda çalışmadan sorumlu kişiye çocuğunuzun çalışmadan ayrılmasını istediğinizi söylemeniz yeterli olacaktır.

Bu çalışmayla ilgili daha fazla bilgi almak isterseniz: Çalışmaya katılımınızın sonrasında, bu çalışmayla ilgili sorularınız yazılı biçimde cevaplandırılacaktır. Çalışma hakkında daha fazla bilgi almak için ODTÜ Sosyal Bilimler Enstitüsü araştırma görevlisi Betül Demiray ile (e-posta: bdemiray@metu.edu.tr) iletişim kurabilirsiniz. Bu çalışmaya katılımınız için şimdiden teşekkür ederiz.

Yukarıdaki bilgileri okudum ve çocuğumun bu çalışmada yer almasını onaylıyorum. (Lütfen alttaki iki seçenektan birini işaretleyiniz.)

Evet onaylıyorum____

Hayır onaylamıyorum____

Ebeveynin adı-soyadı: _____

Bugünün

Tarihi: _____

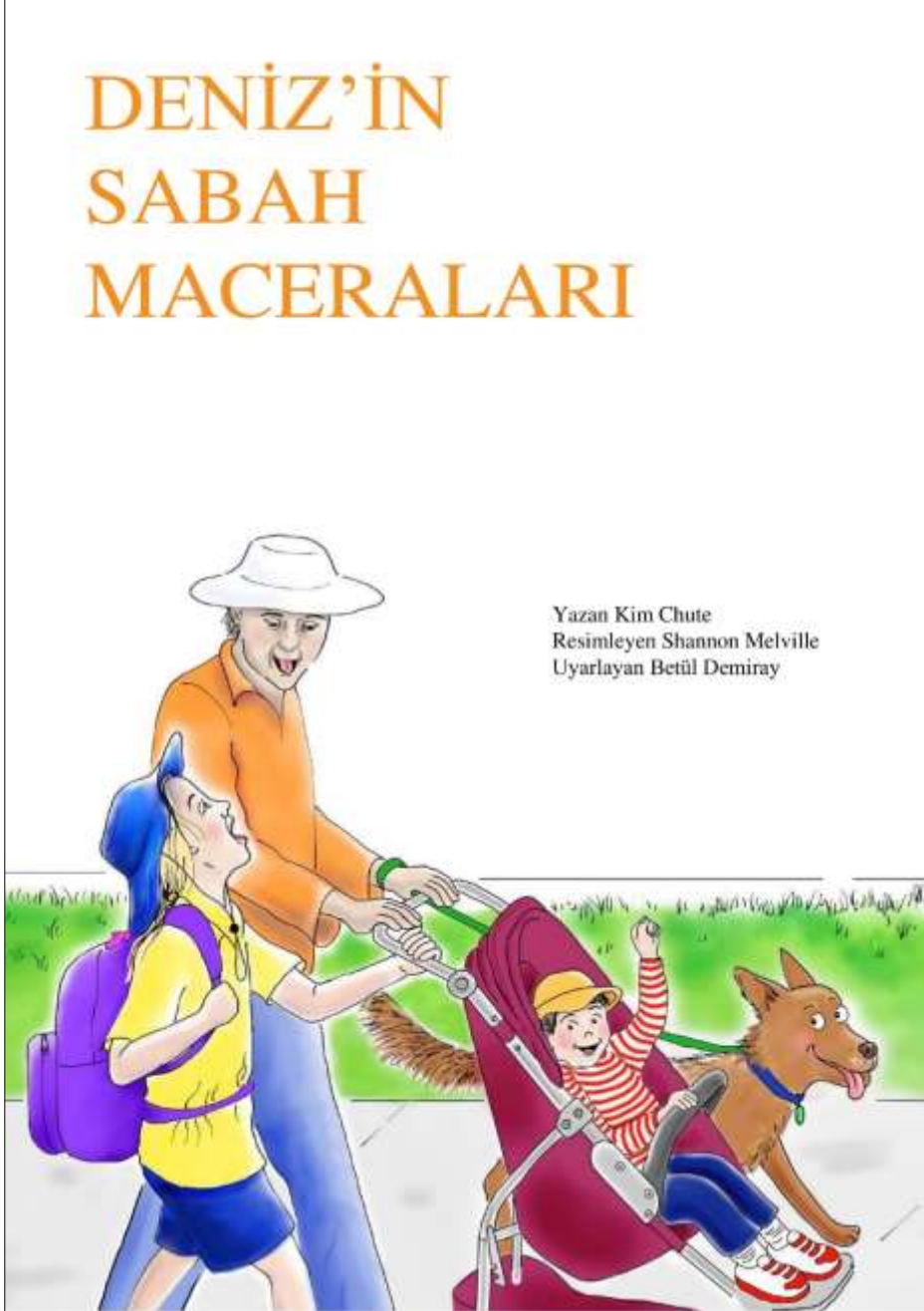
Çocuğun adı-soyadı ve doğum tarihi: _____

(Formu doldurup imzaladıktan sonra araştırmacıya ulaştırınız).

G. OBSERVATION FORM

GÖZLEM FORMU		
Gözlemci: Tarih:	Yer:	
	Durum, davranış, tutum	Gözlemci yorumu
Çocukların gözlemleri		
Çocukların yaptıkları gözlemlerle ilgili yorumları		
Çocukların etkinlik akışındaki davranışları		
Çocukların değerlendirme bölümündeki cevapları		
Etkinlik sürecinde dikkat çeken diğer durumlar		

**H. CHILDREN’S ROAD SAFETY AWARENESS INTERVIEW
SCHEDULE**



Bir Pazar sabahı Deniz'in annesi, 'her sabah okula giderken birbirinden farklı maceralar yaşayacağız' demiş Deniz'e.

'Ne tür bir macera?' diye sormuş Deniz.

'Bekle ve gör' diyerek gülümsemiş annesi.

'Çok merak ettim. Yarına kadar beklemek benim için zor olacak' demiş Deniz.



Pazartesi sabahı Deniz okula, annesi, kardeři ve kpeęiyle beraber yryerek gitmiř.

Yol boyunca yrrken, Deniz sence nelere dikkat etmiřtir?



Yoldan karşıya geçmeleri gerektiğinde Deniz'in annesi 'yoldan karşıya geçerken ne yapmalıyız?' diye sormuş Deniz'e.

Bu soruya Deniz sence nasıl cevap vermiştir?



Karşıya geçtiklerinde okula varmışlar. Deniz ailesiyle vedalaşıp sınıfına gitmiş.

Sence ertesi gün Deniz okula nasıl gitmiş olabilir?



Salı sabahı Deniz, annesi ve kardeři okula bisikletle gitmiřler.

Deniz bisiklet sürerken sence nelere dikkat etmiştir?



Bisiklet yolunun sonuna geldiğimizde karşıdan karşıya geçmek için ne yapmalıyız? diye sormuş Deniz'in annesi.



Bu soruya Deniz'in cevabı sence ne olmuştur?



Okula vardıklarında Deniz ailesiyle vedalaştıktan sonra bisikletini bisikletler için ayrılmış olan park alanına zincirleyip sınıfına gitmiş.



Çarşamba sabahı Deniz okula yaşadıkları mahalledeki diğer çocuklarla beraber yürüyerek gitmiş.



Öğretmeni Deniz'e, 'sokakta toplu halde yürürken neden büyüklerin arasında yürümelisiniz?' diye sormuş.

Bunun sebebi sence ne olabilir?

Okulun bahçesine geldiklerinde herkes kendi sınıfına gitmiş.



Perşembe günü Deniz okula babası, kardeşi ve köpeğiyle birlikte gitmiş. Arabalarına ulaşmak için kısa bir mesafe yürüdükten sonra herkes arabadaki yerine oturmuş.

Sence arabada Deniz, Deniz'in babası, kardeşi ve köpeği nereye oturmuştur?

Deniz'in babası, arabayı çalıştırmadan önce herkesin yerine oturduğundan emin olmuş ve Deniz'e 'yolculuk boyunca nelere dikkat etmeliyiz?' diye sormuş.

Deniz bu soruya sence nasıl vermiştir?



Arabayı okulun yakınındaki otoparka park edip arabadan inmişler.
Deniz'in babası, 'otoparktayken nasıl hareket etmeliyiz?' diye sormuş.

Deniz'in bu soruya cevabı sence ne olmuştur?



Okula vardıklarında Deniz, ailesiyle vedalaşmış ve sınıfına gitmiş.



Cuma sabahı Deniz, büyükannesyle
birlikte otobüse binerek okula gitmiş.

*Deniz, yol boyunca neler görmüş
olabilir?*



Otobüsten inerlerken büyükannesi Deniz'e, 'otobüsten indiğimizde ne yapmalıyız?' diye sormuş.

Bu soruya Deniz'in cevabı sence ne olmuştur?



Okula geldiklerinde Deniz, büyükannesiyle vedalaşıp sınıfına gitmiş.

Deniz, bir hafta boyunca okula her gün farklı bir şekilde giderek sabah maceralarını tamamlamış.



Cumartesi sabahı Deniz'in annesi, 'sabah maceralarımızı nasıl buldun Deniz?' diye sormuş.

Peki ya sen Deniz'in sabah maceralarını nasıl buldun?



G. CHILDREN’S PRE AND POST-INTERVIEW QUESTIONS

Ön Görüşme Soruları

1. Yol boyunca yürürken Deniz sence nelere dikkat etmiştir?
2. Yoldan geçen bir şeylere dikkat etmiş midir?
3. Yoldan karşıya geçerken ne yapmalısınız?
4. Ertesi gün Deniz okula nasıl gitmiştir?
5. Deniz bisiklet sürerken nelere dikkat etmiştir?
6. Bisiklet sürerken özellikle giydikleri/taktıkları bir şeyler var mı?
7. Kaskı neden takmış olabilirler?
8. Bisiklet yolunun sonunda karşıdan karşıya nasıl geçmeliyiz?
9. Ertesi gün Deniz okula nasıl gitmiştir?
10. Sıranın başındaki ve sonundaki kişiler kim olabilir?
11. Sokakta yürürken neden büyüklerin arasında gitmelisiniz?
12. Sonraki gün Deniz okula nasıl gitmiş olabilir?
13. Sence arabada Deniz, Deniz’in babası kardeşi ve köpeği nereye oturmuştur?
14. Neden arkaya oturmuş olabilirler?
15. Arabayı kim sürmüştür?
16. Yolculuk boyunca arabada giderken nelere dikkat etmeliyiz?
17. Otoparktayken nasıl hareket etmeliyiz?
18. Bir sonraki gün Deniz okula nasıl gitmiş olabilir?
19. Deniz yol boyunca neler görmüş olabilir?
20. Yoldan giden bir şeyler görmüş olabilir mi?
21. Otobüsten inerken/indiğimizde ne yapmalısınız?
22. Deniz’in sabah maceralarını nasıl buldun?
23. Sen okula nasıl gelip gidiyorsun?
24. Seni okula kim getiriyor?

Son Görüşme Soruları

1. Yol boyunca yürürken Deniz sence nelere dikkat etmiştir?
2. Yoldan geçen bir şeylere dikkat etmiş midir?
3. Yoldan karşıya geçerken ne yapmalısınız?
4. Ertesi gün Deniz okula nasıl gitmiştir?
5. Deniz bisiklet sürerken nelere dikkat etmiştir?
6. Bisiklet sürerken özellikle giydikleri/taktıkları bir şeyler var mı?
7. Kaskı neden takmış olabilirler?
8. Bisiklet yolunun sonunda karşıdan karşıya nasıl geçmeliyiz?
9. Ertesi gün Deniz okula nasıl gitmiştir?
10. Sıranın başındaki ve sonundaki kişiler kim olabilir?
11. Sokakta yürürken neden büyüklerin arasında gitmelisiniz?
12. Sonraki gün Deniz okula nasıl gitmiş olabilir?
13. Sence arabada Deniz, Deniz'in babası kardeşi ve köpeği nereye oturmuştur?
14. Neden arkaya oturmuş olabilirler?
15. Arabayı kim sürmüştür?
16. Yolculuk boyunca arabada giderken nelere dikkat etmeliyiz?
17. Otoparktayken nasıl hareket etmeliyiz?
18. Bir sonraki gün Deniz okula nasıl gitmiş olabilir?
19. Deniz yol boyunca neler görmüş olabilir?
20. Yoldan giden bir şeyler görmüş olabilir mi?
21. Otobüsten inerken/indiğimizde ne yapmalısınız?
22. Trafik sence ne demektir? Trafik diyince aklına neler geliyor?
23. Trafikteki tehlikeli davranışlar neler olabilir?
24. Karşıdan karşıya geçmek için uygun yerler nerelerdir?
25. Trafik işaretleri ve ışıkları olmasaydı sence araçlar ve yayalar nasıl hareket ederlerdi?
26. Bugüne kadar yaptığımız etkinliklerde en sevdiğin hangisiydi? Neden?
27. Etkinliklerde sevmediğin bir şey oldu mu? Nedir?

I. TURKISH SUMMARY / TRKE ZET

Trafik, modern hayatın ayrılmaz bir parçasıdır. Henz dođmamıř bireyler bile trafiđe maruz kalırlar; ancak insan, ara ve yol kaynaklı sebeplerden dolayı trafikte gvenli olmayan durumlar yařanmaktadır. Dnya Sađlık rgt’nn 2018 yılında yayınladıđı rapora gre trafik kazalarından kaynaklı yaralanma ve kayıplar her geen gn artmaktadır ve her 26 saniyede bir insan trafik kazasından dolayı hayatını kaybetmektedir. Bu durum, dnya genelinde gnde 3400’den fazla insanın, bir yılda ise 1.35 milyon insanın trafik kazasında hayatını kaybettiđi anlamına gelmektedir (WHO, 2018). Ayrıca, lkeler sadece vatandaşlarını deđil, aynı zamanda gayri safi yurt ii hasıllarının yaklařık olarak %3’n kaybetmektedirler.

Trafik kazalarından en ok etkilenen risk gruplarından biri trafikle ilgili durumlarda yeterli olmayan biliřsel, fiziksel, sosyal ve duygusal geliřim seviyeleri nedeniyle ocuklardır (Meir, Oron-Gilad & Parmet, 2015; WHO, 2018). Dnya Sađlık rgt (2014) 5-9 yař arasındaki ocukların lm nedenleri arasında trafik kazalarının 4. sırada olduđunu tespit etmiřtir. Ek olarak, trafik kazaları 5-29 yař arasındaki bireylerin kayıp sebeplerinde ilk sırada yer almaktadır (WHO, 2018).

Trafik kazalarından etkilenme oranı genellikle lkelerin refah seviyelerine gre deđiřmektedir. Trafik kazalarından dolayı lm oranı dřk gelirli lkelerde yksek gelirli lkelerdekisinin  katıdır. Bu durum, lkelerin trafikle ilgili durumları ele alıřındaki farklılıklardan kaynaklanmaktadır. Trafik, dinamik bir sre olduđu iin multisidipliner bir yaklařımla ele alınması gerekmektedir. Yol gvenliđi, trafikteki durumlardan kaynaklanan hasarların en aza indirgenmesi iin uygulanması gereken stratejilerdir (Cambridge Dictionary, 2019). Yol gvenliđinin 7 E’si disiplinler arası yaklařımı gstermektedir ve bahsi geen terimlerin İngilizce’de ilk harfleri e ile bařladıđı iin 7 E ismi verilmiřtir. 7 E, eđitim, mhendislik, yasal dzenlemeler ve yaptırımlar, trafik ortamlarına maruz

kalma, acil durum müdahalesi, yeterlilik ve uygunluk ile değerlendirmeden oluşmaktadır (Groeger, 2011). Eğitim, okullar, çeşitli etkinlikler, görsel ve işitsel medya aracılığıyla insanlarda yol güvenliği farkındalığı oluşturmayı içermektedir. Sürücü eğitimi de bu kategoridedir. Yasal düzenlemeler ve yaptırımlar, trafikte yasaların uygulanmasını ve trafikle ilgili verilerin toplanmasını içermektedir. Yollar ve trafikle ilgili bütün düzenlemeler mühendislik tarafından yapılmaktadır. Kaza anında olay yerine en etkili desteğin sağlanması için yapılması gerekenler acil durum müdahalesi faktörünün altında toplanmıştır (U.S. Department of Transportation, 2009). Trafik ortamlarına maruz kalma, yol güvenliği istatistiklerini içermektedir. Sürücü ehliyetleriyle ilgili işlemler, yeterlilik ve uygunluk incelemesi kategorisini oluşturmaktadır. Son olarak, bütün süreçlerin gözden geçirilip gerekli düzenlemelerin yapılması için değerlendirme faktörü bulunmaktadır (State of Vermont, 2018).

Türkiye’de trafik kazalarından kaynaklı her 100 bin kişiye düşen kayıp oranı %12.3’tür ve bu oran gelişmiş ülkelerin oranlarına göre oldukça yüksektir (WHO, 2018). Örneğin, aynı oran Kanada’da %5.8, Avustralya’da %5.6, İspanya’da %4.1, Almanya’da %4.1, Birleşik Krallık’ta %3.1 ve İsveç’te %2.8’dir. Kaza oranlarının düşük olduğu gelişmiş ülkelerdeki uygulamalarda ortak bir nokta göze çarpmaktadır. Yol güvenliği farkındalığı eğitimi okul öncesi dönemde başlamaktadır ve ilerleyen yıllarda da sistematik bir şekilde devam etmektedir. Ayrıca, devlet kurumları, sivil toplum örgütleri ve eğitim kurumları arasındaki iş birliği gözlemlenmektedir. Örneğin, “THINK!”, Birleşik Krallık Ulaştırma Bakanlığı tarafından yayınlanan yol güvenliği kampanyası serisidir (THINK!, n.d.). Benzer bir şekilde, Kidsafe çocuklardaki yaralanmaları en aza indirmeyi hedefleyen Avustralya merkezli bir organizasyondur (Kidsafe, 2017). New York Eğitim Dairesi (2020), okul öncesi yaş grubu çocuklar için bir ulaşım ünitesi hazırlamıştır.

Türkiye’de ise okul öncesi dönemden başlayan sistematik bir trafik eğitiminin ve kurumlar arasındaki iş birliğinin eksikliği görülmektedir. Üstelik, yayalar %23.4’lük bir oranla trafik kazalarında en sık kaybedilen grubu

oluşturmaktadır ve çocuklar, yaya olarak en savunmasız gruplardan biridir (WHO, 2018). Türkiye, OECD ülkeleri içinde 0-14 yaş grubunda trafik kazalarındaki en yüksek kayıp oranına sahiptir (WHO, 2018). Türkiye’deki kayıpların %10.6’sını çocuklar oluşturmaktadır ve bu kayıpların 40’ından fazlası 0-9 yaş grubundaki çocuklardandır (TÜİK, 2019). Bu sebeple, Türkiye’de okul öncesi dönemden başlanarak çocuklara trafik eğitimi verilmesi gereklidir. Alınan eğitim sayesinde, çocuklar trafik kurallarını ve trafikteki uygun davranışları benimseyip hayatlarının bir parçası haline getirebilirler (Hatipoğlu, 2011). Ancak, Trafik Güvenliği dersi sadece dördüncü sınıfta zorunlu derstir ve birinci, ikinci, üçüncü sınıflarda trafik eğitimiyle ilgili iki kazanım bulunmaktadır (MoNE, 2018b). Okul öncesi eğitim programında ise yol güvenliğine yönelik spesifik bir kazanım bulunmamaktadır (MoNE, 2013). Bir diğer deyişle, yol güvenliğiyle ilgili etkinlikleri uygulamak öğretmenlere bağlıdır ve bu konuyla ilgili etkinlikler genellikle Trafik ve İlk Yardım Haftası’nda uygulanmaktadır (Çelik, et al., 2018). Bu nedenle, okul öncesi dönemden başlayarak yol güvenliği eğitimi programlarının uygulanmasına, sağlıklı bir trafik kültürü oluşturabilmek için ihtiyaç vardır.

Bu çalışmanın amacı, okul öncesi sınıflarında trafik eğitimi ile ilgili yapılan uygulamaları tespit etmek ve bu bilgiler ışığında geliştirilmiş olan yol güvenliği eğitimi ünitesinin okul öncesi yaş grubu çocuklarının bilgi, tutum ve davranışlarına olan etkilerini incelemektir. Bu amaçlar doğrultusunda çalışmada cevaplanmaya çalışılan iki araştırma sorusu bulunmaktadır:

1. Okul öncesi sınıflarında yol güvenli eğitimiyle ilgili yapılan uygulamalar nelerdir?
2. Yaşantısal öğrenmeye dayalı olarak geliştirilmiş yol güvenliği ünitesinin okul öncesi yaş grubu çocuklarının bilgi, tutum ve davranışlarına katkıları nelerdir?

Bu çalışma, Türkiye’de trafik eğitimine yönelik geliştirilen materyalleri veya programları içeren (Çakır, 2006; Öztürk, 2014) özellikle okul öncesi dönemi kapsayan (Gürsoy et al., 2015) az sayıdaki araştırmadan biridir. Alandaki araştırmacılar tarafından belirtilen, ana sınıflarında trafik eğitimi ihtiyacını

karşılamaya yönelik çalışmalar için bir başlangıç noktası olabilir (Hatipoğlu, 2011; Özdemir, 2010; Yelmen, 2010). Bu çalışma, bütün okullarda uygulanabilecek yaşantısal öğrenme modeline dayalı trafik eğitimi programlarının geliştirilmesine katkı sağlayabilir. Ayrıca, okul öncesi öğretmenlerine, sınıflarındaki çocukların ihtiyaçlarına yönelik olarak adapte edebilecekleri bir yol güvenliği ünitesi sunulmaktadır. Geleceğin araç sürücüleri olan çocukların küçük yaşlardan başlanarak eğitilmeleriyle trafik kurallarını bir alışkanlık haline getirmeleri ve bu sayede daha sağlıklı ve ılımlı bir trafik ortamının oluşturulmasının sağlanması beklenmektedir.

Literatür taraması, yol güvenliği eğitimiyle ilgili 1980'den beri birçok ülkede araştırma yapıldığını göstermiştir. Gelişmiş ülkelerde üniversiteler, sivil toplum kuruluşları, belediyeler, okullar, eğitim bakanlıkları gibi kurumların trafikte can kaybını azaltmak amacıyla yol güvenliği eğitimi verilmesi için ortak çabaları saptanmıştır. Ayrıca, çocukların yol güvenliği farkındalıklarının ve uygulanan müdahalelerin etkililiklerinin tespiti için çeşitli çalışmalar yapılmaktadır. Ancak, az gelişmiş ve gelişmekte olan ülkelerde, yol güvenliği farkındalığıyla ilgili çalışmalar son yıllarda yapılmaya başlanmıştır. Bu ülkeler, önceden yapılan araştırmaları ve uygulamaları örnek olarak almalı ve çeşitli eylem planları geliştirmelilerdir.

Türkiye, trafik kazalarındaki kayıpları azaltmaya yönelik bilimsel temele dayalı uzun süreli projelerin eksikliğinin gözlemlenebileceği ülkelerden biridir. Küçük yaş gruplarından başlanarak yol güvenliği farkındalığını iyileştirmeye yönelik çalışmaların yapılmasının gerekliliği açıkça görülmektedir. Yol güvenliği eğitim programlarının Türkiye çapında yaygınlaştırılması ve bu programların etkilerinin bilimsel çalışmalarla tespit edilmesi için paydaşların ortak çalışmalarına ihtiyaç vardır.

Dünya genelinde yol güvenliği eğitimi kapsamında çeşitli eğitim programları ve eğitsel materyaller geliştirilerek, bunların katılımcılar üzerindeki etkililikleri tespit edilmiştir (Ahmad et al., 2018; Hotz et al., 2004; Miller et al., 2004; Nirmala & Padmaja, 2012; Renaud & Suissa, 1989; Salmon & Eckersley,

2010; Schwebel et al., 2014; Thomson & Whelan, 1997; Zeedyk et al., 2001). Çalışmaların süreleri, veri toplama ve analiz etme yöntemleri, hedef yaş grupları ve örneklem boyutları farklılıklar göstermektedir. Müdahalelerin süreleri tek seferden bir yıla kadar uzayabilmektedir. Katılımcıların sayısı 50 ile 6460 arasındadır ve yaşları 4 ile 18 arasında değişmektedir. Veri toplama yöntemleri, katılımcıların yaş grubuna bağlı olarak değişkenlik göstermektedir. Küçük yaş grubundaki katılımcılara yönelik veriler, araştırmacılar, öğretmenler veya ebeveynler aracılığıyla gözlem ve anket yoluyla toplanmıştır. Daha büyük yaş gruplarında ise veriler katılımcılardan anket yoluyla toplanmıştır. Genellikle, içerik analizi yerine istatistiksel analizle sonuçlara ulaşılmıştır. Türkiye’de araştırmacılar tarafından hazırlanan yol güvenliği programının okul öncesi yaş grubundaki etkililiğinin nicel araştırma yöntemiyle incelendiği bir çalışma bulunmuştur (Gürsoy, et al., 2015).

Deneyime dayalı öğrenme modeliyle ilgili yapılan çalışmalar, bu modelin bireylerin yeni bilgi ve beceri kazanmaları için etkili bir öğrenme stratejisi olduğunu göstermiştir (Borman et al., 2009; Jose et al., 2017; Loman, 1998; Parmer, 2006; Vines-Curbow, 2001). Erken çocukluk döneminde duyu ve pratik yapma yoluyla öğrenme sağlandığı için, özellikle okul öncesi yaş grubundaki çocuklar deneyime dayalı öğrenmeden en çok faydalanan gruplardandır.

Yol güvenliğiyle ilgili yapılan çalışmalarda çoğunlukla nicel yöntemler kullanılmıştır. Çalışmaya katılan çocukların yaş grubu göz önünde bulundurularak veriler nitel yöntemlerle toplanmıştır ve hazırlanan üniteye deneyime dayalı öğrenme modeli teorik temeli oluşturmuştur. Ayrıca, önceki araştırmalarda yapılmamış olan, çalışmanın yürütüldüğü sınıfın öğretmeniyle uygulama tamamlandıktan sonra görüşme yapılarak öğretmenin gözlemleri ve görüşleri bulgulara dahil edilmiştir.

Çalışma, araştırmacı tarafından 5-6 yaş grubundaki çocuklar için hazırlanmış olan yol güvenliği ünitesinin katılımcılara olan etkilerini tespit etmek amacıyla tasarlanmıştır. Eylem araştırmasının basamakları araştırmanın doğasıyla örtüştüğü için; çalışma, eylem araştırması olarak yürütülmüştür (McNiff, 2014).

Eylem arařtırmasında öncelikle çözüm bulunması gereken bir durum tespit edilir (Johnson, 2012). Ardından, bu durumun neden önemli olduđu açıklanır ve varolan durum tespit edilir. Olası bir çözüm ya da strateji geliřtirilir ve uygulanır. Son olarak süreç deęerlendirilir ve gerekirse uygulanan müdahaleyle ilgili bazı deęiřiklikler yapılabilir. (Yıldırım & řimřek, 2016). Arařtırmacıların belirttiđi üzere (Çelik et al., 2018; Gürsoy et al., 2015; Hatipođlu, 2011) Türkiye’deki trafik kazalarının, sayılarının ve řiddetlerinin azalması için okul öncesi dönemden başlayarak bireylerin yol güvenliđi farkındalıklarının iyileřmesi gerektiđinden katılımcıların küçük yařları göz önünde bulundurularak nitel yöntemlerle yürütölen bir eylem arařtırması tasarlanmıřtır.

Arařtırmada öđretmenler ve öđrencilerden oluřan iki katılımcı grubu bulunmaktadır. Maksimum çeřitlilik örnekleme yöntemiyle farklı řehirlerde, farklı yař gruplarıyla çalıřan ve deneyim süreleri birbirinden farklı olan dört öđretmen sečilmiřtir. Öđrenciler, arařtırmanın ana katılımcılarını oluřtırmaktadırlar. Katılımcılar, kolay ulařılabilir durum örnekleme metoduyla bağımsız bir ana okulunda eğitim gören bir sınıf olarak sečilmiřtir. Çocuklar, iki öđretmen tarafından tam zamanlı eğitim almaktadırlar. Onu kız, dokuzu ođlan çocuđu olmak üzere toplam 19 çocuk katılımcı bulunmaktadır. Ünitenin uygulanmasına bařlanmadan önce her çocukla görüşme odasında birebir görüşme yapılmıřtır. Çocukların tamamı bütün öğrenme etkinliklerine düzenli olarak katılamamıřlardır. Ön görüşme yapılan çocukların katıldıkları ortalama etkinlik sayısı 6 üzerinden 4,7’dir. Uygulama bittikten sonra bütün çocuklarla tekrar görüşme yapılması gerekiyordu; fakat koronavirüs pandemisi nedeniyle 10 katılımcıya ulařılabilmıřtir. Son görüşmeye katılan çocukların altısı kız, dördü ođlan çocuđudur. Son görüşme grubu tarafından bulunulan ortalama etkinlik sayısı 4.4 iken, son görüşmeye katılamayan çocukların bulunduđu ortalama etkinlik sayısı 5’tir. Çocukların yařları 5-6 yař aralıđındadır ve sınıf öđretmeninin söylediđi üzere ailelerin sosyoekonomik düzeyleri birbirine yakındır. Her ailede en az bir ebeveyn çalıřmaktadır ve ebeveynlerin çoğunun lisans derecesi vardır. Lisansüstü eğitimini tamamlamıř olan ya da eğitimine devam eden ebeveynler de bulunmaktadır.

Müdahale, üç aşamadan oluşmaktadır. Hazırlık aşaması, ana sınıflarında varolan trafik eğitiminin durumuyla ilgili ilk araştırma sorusunun cevaplanma sürecini içermektedir. Bu soruyu cevaplamak için detaylı bir literatür taraması yapılarak okul öncesi yaş grubundan yol güvenliği farkındalığı açısından neler beklenmelidir ve ne şekildeki müdahaleler farkındalıklarını geliştirmeye destek olur sorularının yanıtları bulunmuştur. Ardından, dört okul öncesi öğretmeniyile yarı yapılandırılmış görüşmeler yapılarak ana sınıflarındaki durumla ilgili bilgi edinilmiştir. Elde edilen bulgular ışığında altı etkinlikten oluşan bir yol güvenliği ünitesi araştırmacı tarafından geliştirilmiştir. Uygulamadan önce ve sonra, bir hikaye kitabı aracılığıyla katılımcılarla birebir görüşme yapılmıştır. Süreç boyunca araştırmacı aynı zamanda uygulayıcı olmuştur ve dört veri toplama aracı kullanılmıştır. Öğretmenlerle yapılan yarı yapılandırılmış görüşmelerde kullanılmak üzere iki görüşme formu hazırlanmıştır. İlk soru seti bütün öğretmenlerle yapılan görüşmelerde kullanılırken, ikinci soru seti sadece katılımcı sınıfın öğretmeniyle yapılan görüşmede kullanılmıştır. Etkinlikler sırasında araştırmacının yaptığı gözlemlerini aktarabilmesi için bir gözlem formu hazırlanmıştır. Çocuklarla yapılan ön ve son görüşmelerde kullanılan soru seti bir hikaye kitabına entegre edilmiştir. Görüşmelerde kullanılan hikayeye Deniz'in Sabah Maceraları (Ek B) ismi verilmiştir. Hikaye, Chute, Melville ve Batı Avustralya Fiziksel Aktivite Komitesi (2011) tarafından hazırlanmış olan bir resimli çocuk kitabından uyarlanmıştır. Veri toplama araçlarının hazırlanma sürecinde uzman görüşleri alınmıştır ve bu görüşler doğrultusunda araçlardaki gerekli düzenlemeler yapılmıştır. Uygulanacak öğrenme etkinlikleri ve kullanılacak veri toplama araçları hazırlandıktan sonra gerekli izinler alınmıştır. Ardından, dört haftalık süre zarfında çocuklarla etkinlikler yapılmış, ön ve son görüşmeler tamamlanmıştır. Öğretmenler aracılığıyla elde edilen veriler betimsel analiz yöntemiyle incelenmiştir. Çocuk katılımcılardan elde edilen veriler ise içerik analizi yoluyla araştırmanın amacına yönelik tema, kategori ve kodlara dönüştürülerek analiz edilmiştir.

Çalışmanın geçerlik ve güvenirliğini sağlamak için inandırıcılık, aktarılabilirlik, tutarlık ve teyit edilebilirlik alanlarında çeşitli stratejiler

uygulanmıştır. İnandırıcılık için çeşitli veri toplama araçlarıyla farklı gruplardan veri toplanmıştır. Ayrıca, uygulanan programın ilk etkinliği, araştırmacı ve çocukların birbirlerine alışmaları için tanışma etkinliği şeklinde gerçekleştirilmiştir. Ardından, çocuk katılımcılarla ön görüşmeler yapılmıştır. Çalışmadaki bütün süreçler detaylı bir şekilde okuyucuya sunulurken aktarılabilmek için sağlanmıştır. Teyit edilebilirlik için katılımcılarla yapılan görüşmelerin transkripsiyonları çalışmanın yürütücüsüne ek olarak iki araştırmacı tarafından daha kodlanmış ve kodlayıcılar arasında tutarlılık sağlanmıştır. Veri toplama araçlarının geliştirilmesi, verilerin toplanması ve analiz edilmesini kapsayan bütün süreç, araştırmacının danışmanı tarafından takip edilerek tutarlılık sağlanmıştır.

Araştırmada çeşitli sınırlamalar bulunmaktadır. Örneklem boyutu küçüktür ve öğrenme etkinliklerine düzenli katılım bütün çocuklar tarafından sağlanamamıştır. Ayrıca, koronavirüs pandemisi nedeniyle son görüşmede 10 katılımcıya ulaşılabilmektedir.

Araştırmanın bulguları, ilgili araştırma sorularının altında toplanarak sunulmuştur. Okul öncesi sınıflarında yol güvenliği eğitimiyle ilgili varolan durumla ilgili olan ilk araştırma sorusu öğretmenlerle yapılan görüşmeler aracılığıyla cevaplanmıştır. Öğretmenlerin okul öncesi dönemde çocuklara trafikle ilgili öğretilmesini gerektikleri konseptler konusunda ortak bir görüşe sahip oldukları tespit edilmiştir. Karşıya geçme kuralı, trafik ışıklarının ve işaretlerinin anlamları, yaya ve yolcu olarak trafikteki uygun davranışlar öğretmenler tarafından söylenen konulardır. Öğretmenler, trafik eğitiminin ailede başlayıp okulda devam ettiğini düşüncesine sahiptiler; fakat özellikle kırsal kesimde eğitim veren öğretmenler aile katılımı için uygun ortamın bulunmadığını belirtmişlerdir. Ayrıca, öğrenme etkinliklerinde şarkı, hikaye gibi materyallerin kullanılmasının ve çocukların deneyimlerinin öğrenme sürecine dahil edilmesinin öneminden bahsetmişlerdir. Büyük şehirde yaşayan öğretmenlerin, öğrencilerine daha çeşitli deneyimler, örneğin trafik parklarını ziyaret etme, sunabildikleri tespit edilmiştir. Son olarak, bazı öğretmenler dönem içerisinde trafik konusunu ele aldıklarını

belirtseler de, öğretmenler genellikle Trafik ve İlk Yardım Haftası'nda yol güvenliği etkinliklerine odaklandıklarını söylemişlerdir.

İkinci araştırma sorusunun kapsamındaki uygulanan müdahale çalışmasının çocuk katılımcıların yol güvenliği farkındalıklarına olan etkilerine dair bulgular ise bilgi, tutum, davranış ve hikayenin akışı şeklinde dört temaya ayrılmıştır. Tablo 1.'de müdahale öncesi, müdahale sonrası bulgular ve bulgular arasındaki nitel farklılıklar verilmiştir.

Tablo 1.

Katılımcıların Uygulama Öncesi ve Sonrasındaki Yol Güvenliği Farkındalıklarının Karşılaştırılması

BİLGİ		
Trafik Kuralları Hakkında Bilgi		
Uygulama Öncesi	Uygulama Sonrası	Nitel Farklılıklar
Yoldan Karşıya Geçme: Bazı katılımcılar tarafından karşıya geçme kuralının çeşitli adımları tanımlandı. Sadece bir çocuk bütün adımları listeledi. Bazı çocukların karşıya geçerken koşmak gerektiği konusunda kavram yanlışlığı vardı. Çocukların çoğu bisikletle karşıya geçme konseptine aşina değildiler.	Yoldan Karşıya Geçme: Katılımcıların çoğu yoldan karşıya geçme adımlarını hatırladılar ve bisikletle karşıya nasıl geçileceğini açıkladılar. Karşıya geçmek için güvenli yerleri yaya geçidi, kaldırım ve yaya yolu gibi terimler kullanarak söylediler. Fakat, iki çocuk karşıya koşarak geçmek ve bisikleti sürerek karşıya geçmek şeklinde yanlış cevaplar verdiler.	Yoldan Karşıya Geçme: Son görüşmede katılımcılar, karşıya geçme kuralının adımlarını açıklamada daha iyiydiler. Bisikletle karşıya geçme konusundaki farkındalıklarında artış gözlemlendi. Çocuklar cevaplarında trafikle ilgili terimlere daha çok yer verdiler. Ancak, karşıya geçmek için güvenli yerlerde alt geçit ve üst geçit söylenmedi. Kavram yanlışlığı olan çocuk sayısı azalsa da iki çocuk halen yetersiz bilgiye sahipti.

<p>Trafik Işıkları ve İşaretlerinin Anlamları: Çocuklar genellikle kırmızı ışığa odaklandılar. Trafik ışıklarındaki renkleri bilseler de yayalar ve araçlar için olan ışıkları anlamlarıyla eşleştiremediler. Bazı katılımcılar yaya ışığındaki insan figürünün farkındaydılar.</p>	<p>Trafik Işıkları ve İşaretlerinin Anlamları: Bazı çocuklar yayalar ve araçlar için ayrı olan trafik ışıklarının anlamlarını detaylı bir şekilde açıkladılar. Katılımcılar kırmızı ışığa odaklanmaya devam ettiler. Resimlerde çeşitli trafik işaretleri ve ışıkları çizerek anlamlarını açıkladılar.</p>	<p>Trafik Işıkları ve İşaretlerinin Anlamları: Yayalar ve araçlar için olan trafik ışıklarının ayırımının farkında olan çocuk sayısı artış gösterdi. Daha fazla resimde trafik ışıkları ve işaretleri anlamlarına uygun bir şekilde çizildi.</p>
<p>Ulaşım Araçlarıyla Yolculuk Yapma: Bisiklet sürerken dikkat edilmesi gereken durumlara çocuklar genellikle arabaları, yayaları ve trafik işaretlerini dahil ettiler. Bisiklet kaskı bütün çocuklar tarafından belirtilmese de beş farklı bisiklet ekipmanı çocukların dikkatini çekmiştir. Katılımcıların çoğu çocukların arabada arka koltukta oturması gerektiğini söylediği halde, bazıları çocukların önde oturabileceğini söylemiştir. Arabada giderken dikkat edilmesi gereken durumlar için çeşitli cevaplar verilmişken, otobüsle yolculuk konusunda çocukların cevapları sınırlı kalmıştır.</p>	<p>Ulaşım Araçlarıyla Yolculuk Yapma: Bisiklet sürerken dikkat edilmesi gereken durumlar hakkında benzer cevaplar verilse de son görüşmede bisiklet yolu cevaplara eklendi. Bisiklet sürerken kask takmanın gerekliliği bütün katılımcılar tarafından belirtildi. Dizlik ve kolluk da bazı katılımcılar tarafından söylendi. Bütün çocuklar arabada doğru oturma düzenini açıkladılar. Arabada yolculuk yaparken dikkat edilmesi gereken durumlara benzer cevaplar verildiği halde otobüsle yolculuk konusundaki cevaplar daha kapsamlı hale gelmiştir.</p>	<p>Ulaşım Araçlarıyla Yolculuk Yapma: Katılımcılar tarafından listelenen bisiklet ekipmanlarının sayısı azalsa da bütün katılımcılar kask takılması gerektiğini ifade ettiler. Ayrıca, ön görüşmede çocukların 1/3'ü bisiklet ekipmanlarıyla ilgili soruyu cevaplamamıştı. Verilen cevaplarda daha fazla terim kullanıldı ve detay verildi. Ayrıca, arabada oturma düzeniyle yanlış algılar ortadan kalktı ve otobüsle yolculuk konusunda katılımcıların farkındalıkları arttı.</p>
<p>Trafikteki Tehlikeli Davranışlar: Bu konuyla ilgili ekstra bir soru son görüşmede soruldu.</p>	<p>Trafikteki Tehlikeli Davranışlar: Hızlı araba sürmek, alkollü halde araç kullanmak, kazaya neden olmak, karşıya geçerken arabalara ve trafik</p>	<p>Trafikteki Tehlikeli Davranışlar: Katılımcılar tarafından çeşitli tehlikeli davranışlar ifade edildi; fakat belirtilen davranışların çoğunun</p>

ışıklarına bakmamak
çocuklar tarafından trafikte
tehlikeli olduğu belirtilen
davranışlardır.

arabalar üzerine
yoğunlaştığı görüldü.

Trafiğin Yorumlanması

Günlük Yaşamdaki Gözlemler: Katılımcıların çoğu ekstra bir soru sorulmadan yol hakkında konuşmadılar. Yolda gözlemlenebilecek dört çeşit ulaşım aracı çocuklar tarafından listelendi. Katılımcılar, araba, otobüs, bisiklet, scooter ve yürümenin hikayedeki karakterin okula gitmesi için olası yöntemler olduğunu söylediler. Çocuklar, ekstra soru sorulduğunda otobüsle yolculuk ederken gözlemlenebilecek çeşitli ulaşım araçlarını listelediler.

Trafiğin Tanımı: Uygulamanın başlangıcında çocuklar resimlerinde genellikle trafik ışığı, araba ve yaya çizdiler.

Günlük Yaşamdaki Gözlemler: Çocukların çoğu ekstra soru sorulmadan dikkatlerini direkt olarak trafik ile ilgili durumlara yönlendirdiler ve cevaplarında kaldırım, araba, yol, yaya yolu, kaldırım çizgisi gibi terimler kullandılar. Ayrıca, karşıya geçme adımlarını açıkladılar. Yolda gözlemlenebilecek ulaşım araçları listesi genişledi. Verdikleri cevaplarla trafik ışıklarının ve işaretlerinin araçlar ve yayalar için gerekliliğinin farkında olduklarını gösterdiler.

Trafiğin Tanımı: Uygulama sonundaki çizimlerde yaya geçidi, büyüklerin elini tutma ve trafik işaretleri gibi yeni konseptler resmedildi. Çocuklar trafik tanımlarına genellikle araba ve kalabalık yolları dahil ettiler.

Günlük Yaşamdaki Gözlemler: Son görüşmelerde katılımcılar sorulara cevap verirken dikkatlerini direkt olarak yola yönlendirdiler. Cevaplarda daha fazla terim ve ulaşım aracı çeşidi tespit edildi. Trafik ışıkları ve işaretleriyle ilgili gözlemleri bunların neden gerekli olduklarının bilincine sahip olduklarını işaret etti.

Trafiğin Tanımı: Uygulama sonunda çocukların resimleri daha fazla kavram içeren detaylı çizimler içerdi. Arabalar ve kalabalığı trafik ile eşleştirdiler.

TUTUM

Kendisinin Ve Diğer İnsanların Güvenliği İçin Sergilenen Tutum

Kendi Güvenliği: Çocukların bazıları bisiklete binerken dikkatli olunmasının sebebinin

Kendi Güvenliği: Katılımcıların yarısı kask takılmasının sebebinin bisikletten düşme anında

Kendi Güvenliği: Genel olarak çocuklar güvenlikleri için olumlu bir tutum sergilediler. Son

düşmemek olduğunu belirtti. Bazıları kask takmanın bisikletten düşerken insanları koruduğunu söylerken, bazıları da kask takmanın düşmemeyi sağladığını söyledi. Çocukların yetişkinlerin arasında yürümesinin kaybolmamak olduğu şeklinde trafikle bağlantısı olmayan bir açıklama yapıldı. Çocuklardan dördü küçüklerin arabada arka koltukta oturmasının sebebinin güvenliklerini sağlamak olduğunu söylerken, bazı katılımcılar da çocukların araba süremedikleri ya da küçük oldukları için arkada oturduklarını belirtti. Sadece iki katılımcı emniyet kemerinin güvenlik için takıldığını söyledi.	yaralanmamak olduğunu belirtti. Fakat, iki çocuk üşümek ve düşmemek için kask takıldığını söyledi. Katılımcıların dördü, yetişkinlerin arasında yürünmelerinin sebebini, büyüklerin arabalara dikkat edebiliyor olmaları şeklinde açıkladı. Çocukların tamamı arabada giderken arkada oturmak için istekliydiler.	görüşmelerde gelişmeler gözlemlense de bazı çocukların kask kullanımıyla ilgili yetersiz değerlendirmeleri tespit edildi. Ön görüşmede trafikle ilişkilendirilmeyen durumların son görüşmede trafikle ilişkilendirilmesi çocukların yol güvenliği farkındalıklarının geliştiğinin göstergesiydi.
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Diğer İnsanların Güvenliği: Katılımcılar, diğer insanları incitmek için arabalara, yollara, yayalara ve bisikletlere dikkat edilmesi için motiveydiler.	Diğer İnsanların Güvenliği: Bisikletlere, arabalara, yaya geçitlerine, ve yayalara, insanlara zarar vermemek ya da kazaya sebep olmamak için dikkat edilmesi gerektiği belirtildi.	Diğer İnsanların Güvenliği: Uygulama boyunca çocuklar diğer insanları korumak için trafikte dikkatli hareket etme konusunda olumlu tutum sergilediler.
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DAVRANIŞ

Günlük Yaşamdaki Deneyimler

Günlük Yaşamdaki Deneyimler: Ön görüşmede bazı çocuklar günlük hayattaki deneyimleri hakkında konuştular. Örneğin,	Günlük Yaşamdaki Deneyimler: Katılımcılardan biri scooter sürerken kask taktığını söyledi. Çocukların neredeyse tamamı grubun	Günlük Yaşamdaki Deneyimler: Çocuklar, süreç boyunca günlük hayattaki deneyimlerini yansıttılar. Büyüklerin arasında yürünmesi
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katılımcılardan biri bisiklet sürerken dikkatli olduğunu ve kaskını taktığını anlattı. Bazı katılımcılar okul gezilerindeki deneyimlerinden yola çıkarak hikayede grubun başında ve sonunda yürüyen kişilerin öğretmenler olduğunu söyledi. Çocukların arabada ön koltukta oturmalarının yasak ve tehlikeli olduğunu, bu durumun polisin ceza yazmasına sebep olacağını belirten katılımcılar oldu. Katılımcılardan biri sadece kendi emniyet kemerini değil, kardeşinin de emniyet kemerini takması gerektiğini söyledi.	başında ve sonunda yürüyen kişilerin öğretmenler ya da yetişkinler olduğunu belirtti. Kapıya yaslanmamak, pencereden dışarıya elini çıkarmamak gibi arabada yapılması gereken davranışlar ifade edildi. Çocuklardan biri eskiden yoldan karşıya koşarak geçtiğini anlattı. Ayrıca, katılımcıların ebeveynleri de çocukların bilgi ve davranışlarında olumlu gelişmeler olduğunu belirttiler.	gerektiğinin farkına varan çocuklar oldu. Ayrıca, kendilerine ait yanlış davranışları fark eden katılımcılar da oldu ve ebeveynler uygulamayla ilgili olarak sınıf öğretmenine olumlu geri dönütler verdiler.
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Hikayenin Akışı

Hikayenin Akışıyla Bağlantılı Cevaplar: Çocuklar, bazı sorulara hikayenin akışına ve resimlerde gördükleri durumlara bakarak cevap verdiler.	Hikayenin Akışıyla Bağlantılı Cevaplar: Son görüşmelerde hikayenin akışına göre verilen cevaplarda azalma görüldü. Katılımcılar cevap verirken trafikle ilgili durumlara dikkat etmeye daha yatkındılar. Hikayenin akışına dayanarak verilen cevaplar benzer olsa da, bu cevapları veren çocukların sayısında düşüş oldu.	Hikayenin Akışıyla Bağlantılı Cevaplar: Ön görüşmede bazı çocuklar cevaplarını sadece hikayenin akışına ve sayfalarda gördükleri resimlere dayanarak verdiler. Son görüşmelerde ise cevap verirken araçlar, yaya geçitleri, trafik işaretleri, trafik ışıkları, kaldırım gibi trafikle ilgili konulara daha fazla odaklanıldı.
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Çocuklardan elde edilen uygulama öncesi ve sonrası verilerin karşılaştırılması sonucu, katılımcıların bilgi, tutum ve davranışlarında olumlu

gelişmeler olduğu tespit edilmiştir. Bulgular, uygulama süresince yapılan gözlemlerden ve sınıf öğretmeniyle yapılan son görüşmeden elde edilen veriler ile desteklenmiştir.

Öğretmenlerle yapılan görüşmelerde göze çarpan ilk sonuç çocuklara sağlanabilen öğrenme olanakları arasındaki farklılıklardır. Kentsel bölgelerde çalışan öğretmenler öğrencilerini trafik parklarına ve trafik müzelerine götürüp deneyime dayalı öğrenme imkanı sağlayabilirken, kırsal kesimlerde eğitim veren öğretmenlerin böyle olanaklara erişemediği gözlemlenmiştir. Ayrıca, kırsal kesimlerdeki okullardaki çocukların trafikle olan etkileşimleri büyük şehirlerde yaşayan çocuklarınkine göre azdır. Araştırmacı tarafından hazırlanan trafik eğitimi ünitesinde bunlar göz önünde bulundurularak her yerde uygulanabilir öğrenme etkinlikleri hazırlanmıştır. Görüşülen öğretmenler trafik eğitiminde deneyimin önemini vurgulamışlardır ve sınıflarında trafik ışıklarının anlamları, karşıya geçme kuralı gibi ortak konulara değindikleri gözlemlenmiştir. Çeşitli ülkelerde uygulanan yol güvenliği programları da göz önünde bulundurularak çocukların gelişimsel düzeylerine uygun etkinlikler hazırlanmıştır. Türkiye’de, gelişmiş ülkelerdeki gibi çocukların yol güvenliği farkındalıklarını arttırmak için hazırlanan eğitim programları ve kampanyalar ile bu amaçla kurulan sivil toplum örgütlerinin ve devlet kurumlarının eksikliği gözlemlenmiştir. Okullarda öğrencilere sağlanabilen imkanları arttırmak amacıyla trafik parkları yaygınlaştırılmalıdır. Trafik parklarının olmadığı yerlerde ise sınıf içerisinde masa üstü modeller ve minyatürler ile çocukların deneyim kazanması sağlanmalıdır. Öğretmenlerin bazıları trafik eğitimiyle ilgili etkinlikleri dönem boyunca yapsalar da bu konuya Trafik ve İlk Yardım Haftası’nda odaklanılmaktadır. Ancak, yol güvenliği farkındalığına yönelik etkinlikler sene boyunca devam etmelidir.

Uygulanan programın katılımcıların yol güvenliği farkındalıklarına olumlu yönde katkı sağlaması, öğrencilerin yaya güvenliği becerilerini (Miller et al., 2004; Schwebel et al., 2014; Schwebel, 2016; Thomson & Whelan, 1997) ve yol güvenliği farkındalıklarını geliştirdiği tespit edilen çalışmaları destekler

niteliktedir. Ayrıca, yaşantısal öğrenme modelinin trafik eğitimi için uygun bir öğrenme stratejisi olduğu söylenebilir.

Hatipoğlu (2011) tarafından 804 katılımcı ile yapılan çalışmanın aksine çalışmada katılımcı olan çocukların trafikle ilgili temel düzeyde farkındalıklarının olmasının sebebinin ailelerin sosyoekonomik düzeyleri ve örneklem boyutları arasındaki farklılıklar olduğu düşünülmektedir. Çelik vd. (2018) tarafından yapılan çalışmada katılımcıların trafik farkındalıklarının babalarının eğitim düzeyiyle pozitif ilişkili olduğunun tespit edilmesi bu görüşü destekler niteliktedir. Ayrıca, düşük sosyoekonomik düzeydeki ailelerin çocuklarının daha fazla trafik kazası geçirme ihtimali olduğu bulunmuştur (Embree, Romanow, Djerboua, Morgunov, Bourdeaux, & Hagel, 2016; Hagel, Romanow, Enns, Williamson, & Rowe, 2015; Serinken & Özen, 2011). Katılımcıların ön görüşmelerdeki trafik farkındalıklarının seviyesi diğer çalışmalardaki bulgularla uyusmaktadır.

Çalışmanın daha büyük bir örneklem ile tekrarlanması, hazırlanan ünitenin etkililiğinin tespiti için faydalı olabilir. Ayrıca, ailelerin sosyoekonomik düzeyi, kentsel ve kırsal kesimlerde yaşamak gibi değişkenler eklenebilir. Müdahale yapılan ve yapılmayan grupların karşılaştırılması da etkinliklerin etkisini ortaya daha net çıkarabilir. Eylem araştırması yöntemi kullanılmaya devam edilirken araştırmacılar yerine öğretmenlerin uygulamayı yapması veri toplama sürecinin daha sağlıklı olmasını sağlayabilir. Ayrıca, okullarda varolan durumun tespiti için daha geniş bir öğretmen örneklemiyle görüşme yapılabilir. Nitel ve nicel yöntemlerle çocukların okul öncesi dönemde trafik farkındalıklarının tespiti yapılarak gelişimsel özelliklerine ve ihtiyaçlarına uygun programlar hazırlanmalıdır. Bu programların sadece çocuklar üzerindeki etkileri değil, aynı zamanda ebeveynler üzerindeki etkileri de test edilebilir.

Öğretmenler, ebeveynleri aile katılım etkinlikleri aracılığıyla çocuklarının trafik farkındalıklarını nasıl arttırabilecekleri yönünde bilgilendirebilirler. Ayrıca, okullarda deneyime dayalı öğrenme ile küçük çocukların farkındalıkları geliştirilebilir. Yaş grubuna uygun şarkılar, hikayeler, canlandırmalar ve oyunlar içeren etkinlikler hazırlanabilir. Eylem araştırması yöntemi okullar tarafından da

kullanılarak okul öncesi dönemden itibaren çocukların yol güvenliği farkındalıklarının nasıl arttırılabileceği ile ilgili bölgesel çalışmalar yapılabilir. Özetle, trafik güvenliği kültürü bireysel, bölgesel ve ülkesel düzeyde bir çaba ile geliştirilebilir (Özkan & Lajunen, 2015). Bu kültürün oluşmasında ailelerin, okulların, sivil toplum kuruluşlarının ve devlet kurumlarının ortak çabasına ihtiyaç vardır.

Bu çalışmada elde edilen sonuçlar, küçük yaş grubundaki yol kullanıcılarının trafik farkındalıklarının deneyime dayalı öğrenme modeliyle gelişim seviyelerine uygun öğrenme etkinlikleri sağlanarak iyileştirilebileceğini destekler niteliktedir. Ayrıca, Türkiye’de okul öncesi dönemden başlanarak bireylerin yol güvenliği farkındalıklarının geliştirilmesi için kapsamlı çalışmalara ihtiyaç olduğunu göstermiştir.

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