Innovations and Challenges in Early Childhood Education for Sustainable Development

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Editor
Prof. Dr. Abdülkadir KABADAYI

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EARLY CHILDHOOD EDUCATION
FOR
SUSTAINABLE DEVELOPMENT

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FOREWORD

The theme of this year's book is ***Innovations and Challenges in Early Childhood Education for Sustainable Development*** with many types of research now taking on global dimensions; it is imperative to discuss innovations and challenges in early childhood education for sustainability including the best research integrity practices. I believe that this book could catalyze strengthening international cooperation on the transfer of innovative approaches towards early childhood education for sustainability.

The challenges and innovations in early childhood education are both difficult and interesting. Academicians are working on them with enthusiasm, tenacity, and dedication to develop new methods of analysis and provide new solutions to keep up with the ever-changing world. In this new age of global interconnectivity and interdependence, it is necessary to provide security practitioners, both professionals, and students, with state-of-the-art knowledge on the frontiers in early childhood education. This book is a good step in that direction.

This volume contains 9 of the chapters that were presented to editorial boards. In keeping with the formatting of the book, the papers are published in English. This year's book received a considerable number of submissions investigating a wide variety of fields in early childhood education topics.

This book provides a valuable window on early childhood education and covers the necessary components of early childhood education related to recent developments in this field. ***Innovations and Challenges in Early Childhood Education for Sustainable Development*** address

especially educators, researchers, academics, postgraduate, parents, students, pre-service teachers, teachers, and school leaders' development. It makes recommendations to educators, parents, researchers, academics, postgraduate students, pre-service teachers, teachers, school leaders, and policymakers, and so on.

The editor would like to thank all of the authors who made this book so interesting and enjoyable. Special thanks should also be extended to the reviewers who gave their time to evaluate and to give feedback to authors of the record number of submissions with tenacity and dedication. Especially to the LVRE DE LYON Publishing House, we owe a great debt as this book would not have been possible without their consent efforts.

At this juncture, I would like to thank the authors for all of their cooperation. We hope that all of those reading enjoy these chapters of the book as much as possible.

Editor

Prof. Dr. Abdülkadir KABADAYI

CONTENTS

Chapter I

SOCIAL MEDIA AND PARENTING A REVIEW ON THE PHENOMENAL PARENTS*

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1. Introduction

The human offspring is one of the most difficult infant to care for and develop among all living infants. Preparing this precious, fragile and weak pup for life is a very strenuous process that requires knowledge, effort and being a model. Parents shape their children's personalities, habits and future lives with many features such as their personalities, attitudes, values and belief judgments.

While parents shape the society with the children they raise, on the other hand, they are affected by the changes and developments in the society as well. So, there is mutual interaction and change process where family, parents, children and society change together. Especially technology and media have a pioneer role in this change.

Together with the internet, the new communication technologies that have been developed in information technologies have created virtual

* This paper was presented as an oral presentation at the VII. International TURKCESS Education Social Sciences Congress, 01-03 September 2021, Turkish Republic of Northern Cyprus.

communications and sharing environments called social media, and there has been changes in social life. The family institution, which is the most significant foundation of social life, has also been affected by this change and child, family and parenting structures have begun to be shared in social media environments. This new generation parenting is turning into a global communication and sharing channel, which is a phenomenon in the world and in Turkey.

Parents, who share pictures and videos about both their own lives and their children on social media, easily interact with their followers and create a continuous sharing area with feedback such as likes, shares and positive comments. Children are brought to the forefront in the posts made in these accounts belonging to parents, and by gaining popularity and followers, the phenomenon account feature is achieved and they use their accounts for advertising collaborations with brands. Parents, who use their social media accounts to share their private lives and children, display their own parental behaviors and relationships with their children through these accounts. With this form of sharing, social media is used by parents as a show channel.

By the development of the Internet and the application of web 2.0, social media users have gradually moved from the position of receiving and consuming information, to the position of producing information or content. This is an extremely significant trend that will radically change all media usage (Dijk, 2016). The user has the ability to be selective on the message, respond to the message and direct the process. Content sharing sites, which enable user-specific content creation, sharing and storage, are the most frequently used and most popular applications among today's social media applications (Berkap, 2016).

Social networks have an important educational potential with the interaction and communication tools they contain and their widespread use (Ekici, 2012). The social media environment has caused radical changes in the learning and sharing processes of motherhood and parenting roles, as well as changing the communication and interaction of individuals. Social media has shaped individual's communication styles, interactions, working styles, collaboration and as well as their learning processes (Öztürk ve Talas, 2015).

Parent; it is the name given to the family elders who raise and raise people, and it is generally used to talk about both mother

and father. The first environment in which children begin to experience social life is the communication channels they create with their families. As these channels and experiences increase, the child begins to take shape. The main factor in the relationship between children and their parents in the family is the behavior of the parents and their reactions to events. In order to bring healthy and well-behaved individuals to the society, first of all, parents need to behave in the right manner while communicating with their children. Children choose the most important role models from among family members (Okumuş, 2018).

The fact that individuals get closer to people they think they have in common on social media has also become valid for parents. Internet, which is one of the sources used to access information in today's technology; it also allowed parents to be aware of people who encounter common problems in child care and enabled different parents to meet at common points. In this context; It can be stated that parents who actively use the internet in matters such as home life and child care quickly become members of the sharing group in today's online world (Ammari & Schoenebeck, 2015).

Although social media is considered as a useful source of information for both mothers and fathers, mothers use social media as a source, more than fathers (Duggan et al., 2015). A study conducted in the United States (USA) revealed that a significant part of parents consider of social media as a useful source of information for parenting and that they receive social and emotional support for parenting through social media (Pew Research Center, 2015).

Parents can easily interact with their family and friends by sharing their children's lives on social media, and often receive positive feedbacks (like, share, positive comment). The good mood which creates prompts parents to share again, almost creating a sharing cycle. It is considered that the sharing of parents about their children is mostly made with good intentions (Steinberg, 2017).

There are different classifications in the literature on parental attitudes. Parental attitudes in different sources can be summarized as shown in the table below;

Table 1. Attitudes of Parents

Parental Attitude	Definition
Democratic Attitude	Parents are tolerant towards their children and accept them as they are. By supporting their children, they give them the freedom to define their selves (Yavuzer, 2007).
Unstable and Unstable Parental Attitude	It consists of the reactions of parents to their children in the face of events according to their psychological state. There are rules, but it is unclear when they will be applied (Okumuş, 2018).
Overprotective Parental Attitude	It is a type of parent in which the parents always try to keep the child under control and direct their whole life (Kaya, 1997).
Neglecting Parental Attitude	It is usually the type of parent in which parents prioritize their own priorities over the child (Okumuş, 2018).
Extremely Repressive and Authoritarian Parental Attitude	The attitude of the parent towards the child is very strict and disciplined. Children are not allowed to take responsibility and are expected to obey the rules without question (Ceyhan, 2008).
Perfectionist Parental Attitude	It is the parental attitude in which children are expected to do the best in everything, children are compared with other children (Okumuş, 2018), and the child is not given sufficient opportunity to make their own decisions (Örgün, 2000).
Permissive Parental Attitude	Parents program their lives according to the wishes of the child and establish excessive emotional bonds. No restrictions are imposed on children's behaviors (Yavuzer, 2007).
Indifferent and Passive Parental Attitude	Parents with this attitude are indifferent and careless to their children's behaviors, and they usually turn a blind eye to their children's actions (Yavuzer, 2007).

Parental Attitude	Definition
Rejecting Parental Attitude	It is generally seen in family types that are not very attentive to meeting the basic needs of their children and make them feel that they do not want to take this responsibility (Demirdöven, 2011).
Discriminating Parental Attitude	It is an attitude that develops in the form of parents making a choice among their children or being more attentive to one than the other (Demiröz, 2016).
Inconsistent Parental Attitude	In inconsistent parental attitudes, there are usually no rules and there are temporary solutions in the face of events (Sevinç, 2003: 462).
Tolerant and Reassuring Parental Attitude	The child grows up in the family environment by doing what she/he wants, apart from the basic rules, and being aware of her/his responsibilities (Yavuzer, 2007).
Positive and Healthy Parental Attitude	The child is accepted in all aspects. Parents are guides and guide the child, but they leave him/her free in the decisions he/she will make (Okumuş, 2018).

Parenting styles and practices of parents have also changed in parallel with the change in family structure, improvements in women's rights, higher female labor force participation and increase in working hours. This new form of parenting is referred to as "next generation parenting". The features of the new generation parents are explained by Dönmez (2019) as follows:

- Inability to control time (out of time)
- Desire to do more than one job at the same time
- Being too controlled and controller
- Being too interfering
- Being tired
- Being loaded with stress and anxiety
- Being torn between constantly

- The quest to be the perfect mother
- Indecision
- Feeling of inadequacy
- Social media addiction
- Absolutely blogger mother follow-up

New generation parenting is the changing parenting style of the current century. New generation children or new generation parents; it is very different from the parents of the past, that is to say, from the parents who grew up in traditional families. Their clothes, food cultures, ways of speaking, and expectations are both different and endlessly insatiable (Dönmez, 2019). The prominent approaches in new generation parenting are summarized in Table 2.

Table 2. New Generation Parent Approaches

Parental Approach	**Definition**
Helicopter Parenting	It is a parenting approach that plans every step of its children in advance, does not give them the opportunity to breathe, and always tries to keep their children under control (Duygulu, 2018).
Hand-in-Hand Parenting with Children	Instead of threats, compulsion and pressure, the bond of heart is parenting with love rather than fear. It includes two sub-approaches. The first is authoritarian parenting, which raises on the child's fear of losing the love of his parents. The other is permissive parenting; it rises on the parent's fear of losing the child's love (Leo, 2017).
Parenting without being Stubborn	The important thing is the role of captain in parenting without obedience. This approach says that parents should be the captain of their children (Stiffelman, 2018).
Natural Parenting	In this approach, there is not teaching the child a certain behavior, but giving the child willpower. The important thing is that the child accepts a certain behavior voluntarily, not by force or pressure (Dönmez, 2019).

Parental Approach	Definition
Positive Parenting	It refers to an approach in which parents try to solve situations with positive methods such as their children's problems with school or friends or studying. (Dönmez, 2019).
Slow Parenting	It is a parenting approach that is free of financial concerns, that is to avoid external environment-oriented living, that is to care about inner peace of mind and family integrity. (Dönmez, 2019).
E–Parenting (Internet Parenting)	E-parenting is internet parenting. It is parenting that takes its source and purpose from the internet. Most of the mothers shape their own private parenting lives by referencing blogger mothers. This wannabe, which starts with pregnancy, continues while raising the baby and shaping the child (Dönmez, 2019).

Source: Dönmez (2019).

2. Method

The research is a qualitative study and was planned in a case study pattern. Case study; the researcher examines one or a few situations limited in time with data collection tools (observations, interviews, audio-visuals, documents, reports) that include multiple sources. In the scope of the research; the social media accounts of the phenomenon parents were examined in accordance with the scientific research methodology.

2.1. Study Grup

The study group of the research consisted of 10 phenomenal parents who have a high level of followers in the social media application called Instagram. Accounts subject to the research are numbered from 1 to 10 with the code "PP" in accordance with the abbreviation of "Phenomenal Parent". In the process of examining social media accounts of phenomenal parents and reporting the results, confidentiality rules were observed and no data on identity information or private life was

shared. The criterion sampling technique, which is a type of purposeful sampling method, which is one of the non-random sampling methods, was taken as a reference in the formation of the study group. Criterion sampling; it is the creation of the sample from people, events, objects or situations with the characteristics determined in relation to the problem. The criterion determined here is to have 15,000 or more followers for phenomenon parenting and to have regular sharing about parenting. General information about the phenomenon parent accounts that make up the study group are given in Table 3.

Table 3. Findings Regarding Social Media Accounts of Phenomenal Parents

Account Name	Number of Followers	Number of Posts	Number of Follow	Education Level	Field of Study	Status of Having Children	Number of Children
PP1	1,2 M	4839	353	Phd	Child Development	Yes	1
PP2	318 K	5401	393	Unspecified	Unspecified	Yes	2
PP3	284 K	5.485	3273	University	Child Development	Yes	3
PP4	240 K	3261	413	Unspecified	Unspecified	Yes	3
PP5	206 K	2823	253	Unspecified	Unspecified	Unspecified	Unspecified
PP6	156 K	1099	387	Unspecified	Unspecified	Yes	2
PP7	100 K	1302	618	Unspecified	Unspecified	Yes	1
PP8	49,4 K	1892	258	Unspecified	Unspecified	Yes	2
PP9	32,9 K	1200	482	Master	Architect	Unspecified	Unspecified
PP10	17,5 K	1870	2703	Unspecified	Unspecified	Yes	2

Table 3 shows the findings related to the social media accounts of the phenomenon parents that make up the study group. Phenomenon parent accounts are ranked according to the number of followers, and the number of followers varies between 1.1 million and 17.5 thousand followers. In terms of education level and Field of Study, the information of 7 accounts is not included in their pages. In the context of Having a Child and Number of Children features, the information of 2 accounts is not included in their pages. However, it is seen that 8 phenomenal parents have children.

2.2. Data Collection Tools

The research data were collected through the demographic information form prepared by the researchers and the data registration form developed to examine the shares made from social media accounts. In the preparation of data collection tools, firstly the literature on the research subject was examined and then expert opinion was sought. After the expert opinion, the data collection tools were finalized.

2.3. Research Data Collection

The research data were collected through the demographic information form prepared by the researches and the data registration form developed to examine the shares made from social media accounts. Phenomen parent accounts, which constitute the research materials, were examined in terms of features such as frequency of sharing, type of sharing, content of sharing, interaction with followers, parental attitude to which sharing is related, and parenting approach to which sharing is related, covering the dates 15.11.2020-15.12.2020.

2.4. Analysis of Data

In the analysis of the research data, the content analysis method, which is one of the data analysis methods specific to the qualitative research approach, was used. Content analysis is to interpret similar data by bringing them together within the framework of certain concepts and themes. Triangulation technique was used for the validity and reliability of the obtained data. There are basically four types of triangulation techniques. These; method triangulation, source triangulation, analyst triangulation, and theory/perspective triangulation. Analyst triangulation technique was used in this study. The percentage of agreement between the coders was determined as 98%.

3. Findings

Findings obtained during the research process; It has been presented by interpreting under tables and figures under the headings of ‘’Type of Shares, Content of Shares, Parental Attitudes Related to Shares and New Generation Parental Approaches Related to Shares’’.

Table 4. Findings Regarding the Type of Social Media Sharing of Phenomenal Parents

Share type	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	Total
Photograph	21	1	8	12	42	4	4	13	25	10	150
Video	7	3	8	2	5	2	0	18	4	5	54
Article	5	3	4	7	21	3	0	1	6	4	54
Comment/ Opinions	5	0	1	0	16	0	0	8	31	0	51
Total	38	7	21	21	84	9	4	40	66	19	309

Table 4 shows the findings regarding the type of sharing of phenomenal parents on their social media accounts. Accordingly, the parent account with the PP5 code shared the most, and the parent account with the PP5 code shared the least. The most photos and articles were shared from PP5, the most video sharing was from PP8, the most personal comments were shared from PP9 accounts. In addition, when all the phenomenon parents' accounts are taken into account, the most photos (n=150) and the least comments/opinions (n=51) were shared from these accounts.

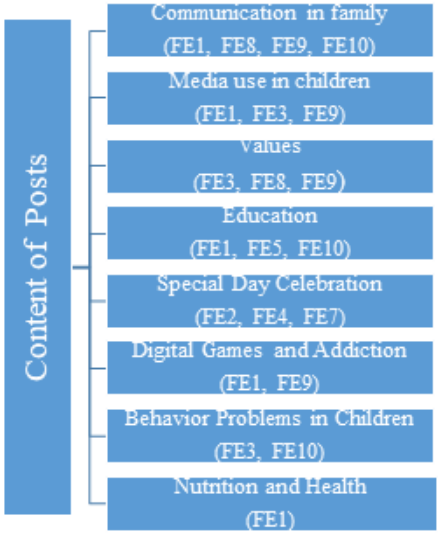

Figure 1. Findings Regarding the Content of Phenomenal Parents Sharing

In Figure 1, there are themes related to the sharing of phenomenal parents. Accordingly, the themes related to the social media accounts of

the phenomenon parents are communication within the family (n=4), Media use in children (n=3), Values (n=3), Education (n=3), Celebrating a special day (n= 3), Digital games and addiction (n=2), Behavioral problems in children (n=2), Nutrition and health. While the theme with the most shares was "Communication in family", the theme with the least share was determined as "Nutrition and Health".

Table 5. Examination of Phenomenal Parents' Sharing According to Parental Attitudes

Parent Attitudes	**PP1**	**PP2**	**PP3**	**PP4**	**PP5**	**PP6**	**PP7**	**PP8**	**PP9**	**PP10**
Democratic Attitude	0	0	0	0	0	0	0	0	0	0
Unstable and Unbalanced Parental Attitude	0	0	0	0	0	0	0	0	0	0
Overprotective Parental Attitude	0	0	0	0	0	0	0	0	0	0
Neglecting Parental Attitude	0	0	0	0	0	0	0	0	0	0
Extremely Repressive and Authoritarian Parental Attitude	0	0	0	0	0	0	0	0	0	0
Perfectionist Parental Attitude	0	0	0	0	0	0	0	0	0	0
Permissive Parental Attitude	0	0	0	0	0	0	0	0	0	0
Indifferent and Passive Parental Attitude	0	0	0	0	0	0	0	0	0	0
Rejecting Parental Attitude	0	0	0	0	0	0	0	0	0	0
Discriminating Parental Attitude	0	0	0	0	0	0	0	0	0	0
Inconsistent Parental Attitude	0	0	0	0	0	0	0	0	0	0
Tolerant and Reassuring Parental Attitude	0	0	0	0	0	0	0	0	0	0
Positive and Healthy Family Attitude	0	1	0	0	0	0	1	0	0	2

Table 5 shows the findings regarding the analysis of the phenomenon parents sharing according to their parental attitudes. As a result of the data obtained, it was determined that only posts containing "Positive and Healthy Family Attitudes" were made from the relevant accounts, and no posts were made about other attitudes. Posts containing "Positive and

Healthy Family Attitude" were made from PP2, PP7 and PP10 accounts. The most shares were made by the PP10 account.

Table 6. Examination of Phenomenal Parents' Sharing According to New Generation Parental Approaches

New Generation Parenting Approach	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10
Helicopter Parenting	0	0	0	0	0	0	0	0	0	0
Hand in hand Parenting with Children	7	0	1	1	1	0	0	1	2	0
Parenting without being Stubborn	0	0	0	0	0	0	0	0	0	0
Natural Parenting	1	0	0	0	0	0	0	0	0	0
Positive Parenting	1	0	0	0	0	0	0	0	0	0
Slow Parenting	0	0	0	0	0	0	0	0	0	0
E–Parenting (Internet Parenting)	21	0	2	0	11	0	0	1	16	10

Table 6 shows the findings regarding the analysis of the phenomenon parents sharing according to the new generation parenting approaches. As a result of the data obtained, it is seen that from the new generation parenting approaches, "Hand in Hand Parenting with Children, Positive Parenting, Natural Parenting and E-parenting" are shared, and there is no sharing about other approaches. Shares involving Hand-in-Hand Parenting with children approach were made from PP1, PP3, PP4, PP5, PP8 and PP9 accounts. Positive Parenting, Natural Parenting approaches were made from PP1 account with only 1 share. Shares that include an e-parenting approach are; it is made from the calculations of PP1, PP3, PP5, PP8, PP9 and PP10. E-parenting has been the most shared approach among the new generation parenting approaches.

4. Conclusion, Discussion and Recommendations

In this research, the type, content, prominent parental attitudes and new generation parenting approaches on parent pages with a high number of followers on the Instagram platform, which is one of the social media applications, were examined. The research was structured according to the case study pattern, which is one of the qualitative research designs. Criterion sampling technique, one of the non-random sampling methods, was used to determine the study group. In this context, 10 phenomenon

parent accounts have 15,000 or more followers on Instagram formed the working group. Content analysis method was used in the analysis of the research data. The results obtained at the end of the research are summarized below and discussed within the framework of the relevant literature.

When the analyzed according to the type of shares in the social media accounts of the parents, it was seen that the most photos (n=150) and the least comments/opinions (n=51) were shared. The main reason for this situation is thought to be related to the fact that user shares in the Instagram application are mostly in the form of photos and videos. Instagram is an application for free photo and video sharing on social media (Wikipedia, 2021).

When the themes related to the content that stand out in the sharing of phenomenal parents are examined, the themes related to the shares are determined as "Intra-Family Communication, Media Consumption In Children, Values, Education, Celebrating Special Days, Digital Games and Addiction, Behavioral Problems In Children, Nutrition And Health". While the theme with the most shares is "Internal Communication", the theme with the least sharing is determined as "Nutrition and Health". Communication is defined as the process of understanding the other person and creating meaning between two or more people (Tubbs & Moss, 1991). Depending on the development of technology, the form of communication has also changed. Social media has become a tool that affects daily life and interpersonal communication, regulates communication and ensures its maintenance (Elitaş, 2015). Due to the increase in the use of social media, there are significant problems in family communication and parent-child communication (Güleç, 2018). Children who can easily communicate with their families can explain their problems to their parents more easily and cope with some of their problems more easily (Şahin & Aral, 2012). Communication within the family is directly related to many issues such as children's behavior problems, value perceptions, nutrition styles, and media consumption and today, one of the most important problems affecting the family is lack of communication.

When the shares of the phenomenal parents were analyzed according to their parental attitudes, it was seen that only "Positive and Healthy Family Attitude" was shared from the related accounts, and no posts were

made about other attitudes. When the sharing of phenomenal parents is analyzed according to the new generation parenting approaches, it is seen that there are shares that include the approaches of "Hand in Hand with Children, Positive Parenting, Natural Parenting and E-parenting" from the new generation parenting approaches, but not about other approaches. It is thought that the main reason for this situation is the desire of the phenomenon parents to support their followers' parenting skills by supporting their followers in terms of ideal parenting styles. Another reason for this is the changing parenting with technology. Technology can be used as an effective method in parent education. Technology-based parent education methods such as computer programs, mobile phones or smartphones, video conferencing and DVDs are available (Jones 2014). Technology-supported parenting interventions make positive contributions to the family relationships of normally developing children (Nieuwboer, Fukkink, & Hermanns, 2013). According to a study, 79% of parents using social media stated that they received useful information through their networks, while 59% stated that they encountered useful information about parenting in the last 30 days (Pew, 2015).

Changing technology and widespread use of social media have fundamentally changed parenting. In the process; pressure, fear, punishment and authority titles, which are frequently seen in traditional attitudes are applied as a more positive child approach, which respects the rights of the child, is free from fear and punishment, and is shared with family life. Alongside this positive change, there were also negative changes. Except for the posts containing parental attitudes on the relevant social media accounts, the inclusion of shares for commercial advertising purposes can be given as an example to this situation. In these posts, it is not considered ethically correct for the parents in their parent accounts to use their children in these contents. In addition to the fact that the posts of parents with high followers and academic education on child education are more about information sharing and exemplary attitudes, the excellent attitude images of parents with much higher followers actually show only the bright and unreal side of social media. Considering that it is follower and influence-oriented, it is recommended and expected that the relevant accounts should be more useful and rich in terms of parental representation.

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Chapter II

THE EFFECT OF REWARD STRATEGIES IMPLEMENTED BY PARENTS ON THE SELF-REGULATION SKILLS OF 5-6 YEARS OLD CHILDREN

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1. Introduction

Self-regulation is considered one of the most important developmental tasks in early childhood. Therefore, self-regulation is the center of attention of study for decades (Blair, 2002; Smith Donald, Raver, Hayes and Richardson, 2007; Koole et al., 2011). Although different researchers have conceptualized self-regulation in various ways, there is a consensus on managing and modulating the mechanisms of emotion, cognition, and behavior (Carlson, 2003; Denham et al., 2003; Eisenberg, Smith and Spinrad, 2011). Some researchers conceptualized behavioral regulation concerning self-regulation (McClelland et al., 2007), others conceptualized self-regulation-related executive function (Blair, 2002; Espy, et al., 2004). Managing emotions is also an important component of self-regulation in early childhood (Raver et al., 2011). Although these differences, there is a consensus among the researchers for the fact that self-regulation has a multidimensional structure of cognitive, emotional, and behavioral components (Kochanska, Coy, and Murray, 2001; Liew,

2012; Ponitz, McClelland, Matthews and Morrison, 2008; Raver, 2012). These overlapping components work together to manage emotions, gather attention, and prevent behavior (Smith-Donald et al., 2007).

Executive functions are a structure that has an effect on all sub-dimensions of self-regulation and represents the cognitive processes of self-regulation. Executive functions refer to interdependent cognitive abilities to plan, focus and change attention related to existing stimuli (Blair & Ursache, 2011). The working memory consists of cognitive abilities such as attention flexibility and preventive control that require higher cognitive processes and planning (Blair, 2002; Liew, 2012; Smith-Donald et al., 2007). Early childhood is an important period of life when significant developmental improvement occurs in executive function (EF) (Carlson, 2005; Fay-Stammbach et al., 2014). Learning executive function skills, such as changing the focus between tasks and preventing off-duty behavior and attention in early childhood is very important for their future success (Becker, McClelland, Loprinzi and Trost, 2014; Blair, 2002).

Behavior regulation, on the other hand, refers to the ability of a person to control, manage and maintain their responses to requests in a particular context (Williford et al., 2013). In this process, children are expected to think before performing their behavior, to plan their behavior, not to act impulsively, and to control their emotions and reactions (Smith-Donald et al., 2007). It is necessary for the individual to voluntarily face appropriate behavior and to control him-/herself in a way that requires effort, to reveal the behavior suitable for the purpose. In the process of regulating behavior, it is stated that this demanding control, which is effective in preventing inappropriate behavior by the individual to demonstrate appropriate behavior, is also effective in the process of delaying gratification. Delaying gratification is defined as "an individual's effort to display a purposeful behavior by delaying a momentary pleasure" (Carver & Scheier, 2011).

The dramatic development of behavioral regulation in the early years (Bridgett, Burt, Edwards, and Deater-Deckard, 2015; Putnam, Spritz and Stifter, 2002) and the fact that children rely heavily on external parent guidance to regulate behavior during their toddler childhood and their early pre-school years (Kochanska and Aksan, 2006; Putnam et al., 2002) shows that parents are effective in the development of self-regulation skills. In addition, it has been found that parenting behaviors are the basis for the

development of executive functions (Fay-Stammbach et al., 2014; Hendry et al., 2016; Moriguchi, 2014) and that maternal sensitivity (Kochanska, Murray, and Harlan, 2000; Kiss, Fechete, Pop and Susa, 2014; Lengua, Honorado and Bush, 2007), the quality of parental responses (Meuwissen, 2017; Valiente et al., 2007) and parent-child interactions (Landry et al., 2002; Meuwissen, 2017; Noble, McCandliss and Farah, 2007; Noble, Norman and Farah, 2005; Smith, Landry and Swank, 2000) are effective on executive functions. The findings of this study reveal the necessity to consider which role parenting can play in shaping these abilities while examining the development of self-regulation in children.

There are four main dimensions of parenting linked to individual differences in children's self-regulation: scaffolding, positive and negative control, stimulation, and sensitivity/responsiveness to hostility/rejection (Günap & Kabadayı, 2017; Fay-Stammbach, Hawes and Meredith, 2014). Parental scaffolding includes verbal and non-verbal actions used to motivate children to complete a difficult task (Lewis and Carpendale, 2009). Examples of this parenting behavior include support for autonomy and the encouragement of children's opinions, decisions, and actions (Matte-Gagné and Bernier, 2011). Thus, studies are showing that scaffolding offered by mothers through open-ended questions, encouragement, and the use of praise, positively affects the children's subsequent executive functioning ability (Hammond, et al., 2012; Hughes et al., 2010; McClelland et al., 2014)

While the importance of the reward strategy of the parents in the process of shaping behavior is known (Ching, 2012; Covington, 2000; Pintrich, 2000), findings are pointing out the negative effects of specially conditioned rewards (Aypay, 2015). On the other hand, some studies reveal that behavior-specific praise is an example of an experimental intervention that is effective in improving both social and academic behavior (Conroy, et al., 2009; Sutherland, Wehby, and Copeland, 2000; Sutherland, Wehby, and Yoder, 2002). In this process, the parent explains that he approves the children's behavior with detailed verbal expressions and rewards him/her with verbal praise. So, the parent undertakes the executive function skill of the child through the scaffold. In other words, the scaffolding process offered by the parent is conceptually parallel to the executive function in terms of the cognitive and functional resources it provides to children. In both cases, a caretaker (either cognitive functions in the case of EF or a teacher in the case

of scaffolding) helps children organize and plan their targeted activities. So, in both cases, children have access to higher-level cognitive resources that help them regulate their behavior. Therefore, educators perform most of the functional roles associated with executive functions (EF) on behalf of children. Eventually, parents and caregivers facilitate children's EF development by creating a context in which children can become skilled in these functions on their own (Landry, Smith, Swank, 2009). In the light of this information, it is thought that parents rewarding the children's behavior with praise may have a positive effect on the executive function and behavioral regulation.

Based on this information, it was decided to focus on the effect of the conditioned reward, that is, the reward given to ensure that the behavior is done before the behavior and the reward given to reinforce after the behavior on children's self-regulation skills. It is thought that the results of the study will provide important information about how parents should use the reward strategy in the process of supporting children's self-regulation skills. Therefore, the purpose of this study is to examine the effect of the reward strategies used by families on the self-regulation skills of 5-6-year-old children.

2. Method

2.1. Working Group

The sample of the study consists of 147 children and their mothers attending pre-school education institutions in the central districts of Niğde during the 2019-2020 academic year. 47,61% (n=70) of the children participating in the study are girls and 52.38% (n=77) of them are boys. While the monthly average age of girls is 65,12 (± 1,04), the average monthly age of boys is 67,02 (± 1,13). 26,53% (n=39) of the mothers of the children participating in the study were graduated from primary school, 21,76% (n=32) were graduated from high school and 51,70% (n=76) were graduated from university. 51,03% (75) of the parents have a medium socio-economic level, 48,97% (n=72) of them have an upper socio-economic level.

2.2 Data Collection Tool:

The Questionnaire Form and the Preschool Self-Regulation Assessment Tool were used as the data collection tools in the study.

2.2.1. Questionnaire Form: In the questionnaire prepared by the researchers, the families were asked to write down five examples in which they would express the conditions and how they award their children to determine the reward strategies applied by the families.

2.2.2. ***Self-regulation assessment:*** The Pre-school Self-Regulation Assessment adapted by Fındık Tanrıbuyurdu and Güler Yıldız (2014) includes 10 tasks that assess the self-regulation performance of children. These tasks are; Toy Packaging, Waiting for Toys, Hiding the Candy and Keeping the Candy on Your Tongue to determine the delay levels of children's gratification; Balance Board, Tower Building and Pencil Tapping to measure the executive controls that indicate children's ability to follow instructions and Tower Collection, Toy Separation and Toy Return to evaluate the social adaptation skills of children. A Practitioner Assessment Form also finds a place on the scale, allowing the researcher to evaluate the emotions, attention level, and behaviors of the children. The Practitioner Assessment Form is a rubric-type instrument comprised of items scored from 0 to 3. An adaptation study conducted in Turkey found that the scale demonstrated the same factor validity in Turkey as the original version. In addition, the reliability coefficient in the Attention/Impulse Control subscale was determined at (α).88; the Positive Emotion in the sub-dimension was computed at.80 and.83 throughout the scale.

2.2.3. Data Analysis

Strategies for using awards were determined by evaluating five examples requested from families in terms of in which situations and how families reward their children. If the family uses the conditioned reward to encourage children to demonstrate positive behavior, for example, "If you finish the food on your plate, I'll bring you to the park", it is called the "incentive" strategy. If the family uses terms such as "I am very happy that you collected the toys in your room" to increase the frequency of showing the behavior after the child shows the desired behavior, it is called the "reinforcement" strategy. If families wrote more incentive award sample sentences on the questionnaire form it will be coded as 1; if they wrote more reinforcement award example sentences, it will

be coded as 2. The self-regulation scales were divided into two groups after the collected questionnaires were examined one by one in terms of the families' reward usage strategies. To determine whether the total scores obtained from the scale in line with the purposes of the study differ according to the independent variables, the t-test was applied for samples independent from the parametric analysis techniques.

3. Findings

Table 1. T-Test Results for the Self-regulation Scale Scores of children according to the variable of the intended parental reward-punishment purposes

	Age	N		Ss	t-test	p-value
Balance Board	**Incentive**	72	10,38	3,42	-1,94	**0,05**
	Reinforcement	75	11,70	4,65		
Pen Clicking	**Incentive**	72	12,86	3,36	-2,49	**0,01**
	Reinforcement	75	14,04	2,28		
Tower Mission	**Incentive**	72	1,81	0,42	-0,71	0,47
	Reinforcement	75	1,86	0,37		
Tower Collection	**Incentive**	72	29,88	28,47	-0,09	0,92
	Reinforcement	75	30,30	27,72		
Toy Separation	**Incentive**	72	55,79	37,45	2,46	**0,01**
	Reinforcement	75	42,28	28,52		
Toy Packaging	**Incentive**	72	44,91	22,17	0,90	0,36
	Reinforcement	75	41,54	22,86		
Returning the Toy	**Incentive**	72	52,13	39,65	1,92	**0,05**
	Reinforcement	75	38,08	48,13		
Hiding the Candy	**Incentive**	72	3,62	0,54	1,16	0,24
	Reinforcement	75	3,52	0,55		
Keeping the Candy on Your Tongue	**Incentive**	72	32,77	10,03	1,40	0,16
	Reinforcement	75	30,16	12,44		

When Table 1 is examined, there is a statistically significant difference in favor of the reinforcement reward strategy in the Balance Board (t=-1,94; p <0,05) and the Pen Clicking (t=-2,49; p <0,01) tasks, which measure the executive controls indicating the processes of following the instructions by children. There is no significant difference in the tower building task (t= -0,71; p> 0,05), but it is seen that the reinforcement strategy value is higher. According to the results, it can be said that children's executive controls are better in children raised using the reinforcement reward strategy.

It was determined that there is a statistically significant difference in favor of the incentive reward strategy in the Toy Separation (t=2,46; p <0,01) and the Returning the Toy (t=1,92; p <0,05) tasks, which are applied to measure children's social adaptation skills. According to these results, it can be said that the social adaptation skills, which is a sub-dimension of children's self-regulation skills, are better in children raised using the incentive reward strategy.

There was no difference detected in the Toy Packaging, (t=0,90; p> 0,05), the Hiding the Candy (t=1,16; p> 0,05), the Keeping the Candy on Your Tongue (t=1,40; p> 0,05) tasks, which are applied to determine the levels of delaying gratification of children; and there was no difference detected in the Tower Task (t=-0,71; p> 0,05) and the Tower Collection (t=-0,09; p> 0,05) task, which are among the tasks of following the instructions and social adaptation.

4. Discussion

In this study, which examined the effect of reward strategies used by families on the self-regulation skills of 5-6-year-old children, it has been determined that the use of awards for reinforcement after the behavior of children is more effective on the self-regulation skills executive controls. It is seen that the children of parents who prefer the incentive reward have lower executive controls. Executive function (EF) is a hypernym that encompasses high-level processes (such as inhibitory control, working memory, attention flexibility) that govern targeted action and adaptive responses to new, complex, or uncertain situations (Hughes, Graham, & Grayson, 2005). The parent-child interaction

is very important in the process of the child's goal-directed action. In this interaction process, thanks to increased learning when children are provided with an emotionally and cognitively supportive social scaffold, children can finally develop the skills necessary to perform the desired behavior independently. It reveals the effect of the individual differences of mothers in the degree of encouragement of their four-year-old children with open-ended questions and praise on children's executive functions during a structured activity. It was found that children whose mothers used open-ended questions and praise during their interactions with their children had better executive function skills (Meeuwissen, 2017). Other study results (Hammond, et al. 2012; Hughes et al., 2010; McClelland et al., 2014), showing that the scaffold presented by mothers through open-ended questions, encouragement, and the use of praise, positively affected children's later executive functioning ability is similar to our findings.

In the literature, it is seen that behavior-specific praise with scaffolding support provided in the parent-child interaction process is shown as an example of an experimental intervention that improves both social and academic behaviors and is effective in increasing intrinsic motivation (Conroy, et al., 2009; Sutherland, Wehby, and Copeland, 2000; Sutherland, Wehby and Yoder, 2002 Corpus & Lepper, 2007; Cimpian, Arce, Markman & Dweck, 2007; Gunderson, et al., 2013; Zentall & Morris, 2010; Henderlong, ve diğerleri, 2007). The more specific descriptive praise is, the better it is when applying behavioral praise. For example, a statement of praise specific to the behavior, such as ''You did a great job completing your homework on time!'' is more effective than general praise, which does not indicate the desired behavior (Sutherland et al., 2000). The cognitive evaluation theory, concerning the effect of rewards and praise on motivation, claims that the informative aspect facilitates the internal perceived causality focus and perceived competence, so increases the intrinsic motivation; while the controlling aspect weakens intrinsic motivation by facilitating an externally perceived focus of causality (Cameron, Banko ve Pierce, 2001; Henderlong ve Lepper, 2002; Kelley, Brownell ve Campbell, 2000; Schwinger ve diğerleri, 2016). Expressions of praise differ not only in their knowledge and controlling characteristics but also in terms of focusing on the person and performance. Studies on motivation have

argued that praising a person is more harmful than praising that person's performance and process while praising performance and process helps further motivation (Henderlong, 2000; Cimpian, Arce, Markman ve Dweck, 2007; Gunderson et all., 2013; Zentall ve Morris, 2010).

In terms of the intimacy variable, praising is considered to be detrimental to motivation for a person while it is more general than performance and process praise. (Kanouse et al., 1981). It has been found that non-general praise is associated with higher motivation, while general praise reduces motivation and increases performance anxiety (Cimpian, 2009, Cimpian, Arce, Markman ve Dweck, 2007; Dweck, 2006; Zentall & Morris, 2010;). General praise causes a child to feel pressured to conform to unrealistic standards and to overlap their sense of being with judgments about who they should be. The praise, based on these value judgments, teaches children that being good is equal to the satisfaction of others and that being bad is equal to disturbing others (Bailey, 2014). For this reason, it can be said that it is important to praise the child's effort to increase his internal motivation and positive self-perception, that is, to prefer process and performance praise. The findings of this study support our findings of the positive effect of the use of a reward or praise on the executive function skills by describing the behavior of the children by the parents (e.g., I am glad you did …….).

In their study, Ma et al. (2020), gave a second sticker award to one group and gave a second package of cookies to another group. The children have been informed that they will receive the prize immediately or, if they wait for a while, they will be entitled to two prizes. Unlike the Marshmallow experiment, the teachers of the children in the first group, the peers of the children in the second group; would hear the waiting time of the child. The third group was a standard conditional group and everything was like the Marshmallow experiment. In the sticker award-winning experiment, 60% of the children in the teacher conditional group, 40% of the children with peer condition, and 16% of the children with standard conditionals waited for a second sticker. In the cookie award-winning experiment, there was only the teacher condition and the standard condition. While 58% of the children in the teacher conditional group were waiting for the second pack of cookies, only 23% of the children in the other group were waiting. The relationship

between children's environmental expectation perceptions and self-control was emphasized based on the cookie experiment. Even when the children did not receive any emphasis on the necessity of behavior from their environment, the teacher tended more towards the rewarded waiting behavior that was valued by their environment in conditional and peer-conditioned situations (Ma and et al. 2020). The results of this study reveal that children care about the praise they receive from someone who cares about their thoughts after their behavior. When the results of our study and the study results mentioned above are considered together, it can be said that the reward, praise, or appreciation received by the parents after the child's behavior affects the child's self-regulation skill.

The second finding obtained in our study is that the incentive reward (For example; We will go to the park if you make up your bed!) used to ensure that the child gains a behavior, is more effective on the self-regulation skill social adaptation.

So that the individual voluntarily faces appropriate behavior and exhibits this behavior during the social adaptation process, which includes the behavior regulation dimension of the self-regulation skill, it is expected that the individual controls himself in an effortless way and demonstrates appropriate behavior. The behavioral theory, which sees self-regulation as "learned self-control," emphasizes that it is mostly related to external factors such as unexpected rewards and punishment processes in the environment. The development of self-regulation requires processes such as evaluating various rewards, choosing appropriate goals, giving effective instructions or following instructions on their own, monitoring their activities, and self-rewarding for behaviors that will be rewarded (or punished) in the environment (Bronson, 2000). Behavioral theorists are defending that as a result of Skinner's laboratory studies, the effect of reward and punishment on the behavior has the same effect on people in creating desired behavior; that people can be curious about exhibiting behavior by giving intrinsic or extrinsic reinforcements and that motivation can be provided (Smith et al., 2015). This literature information supports our study results that reveal the positive effect of the self-regulation skill of the incentive reward, which is used to ensure that the child gains a behavior on the social cohesion sub-dimension.

Landry, Smith, Swank, and Miller-Loncar (2000) examined the relationship between the expressions used by mothers when children were two and a half years old and the social and cognitive abilities of children at the age of four and a half. Maintaining verbal or non-verbal expressive behaviors that offer children options (questions, suggestions, or comments) directly related to their current or previous activities, statements that give children less opportunity to choose and highlight expected activities or behaviors are also defined as directive behavior. The results showed that, although the guidance of the mother had a positive effect on development in the toddler childhood, guidance predicted lower developmental outcomes in children aged four and a half. Landry et al. concluded that the directionality of parental expressions should decrease in the same way as children have increased their developmental competence. The results of this study reveal that mothers' controlling their behaviors by giving direct instructions in their interactions with their children at an early age is effective in shaping children's behavior, but directive expressions should be preferred after the child develops behavior. The results of this study show parallelism with our study results, which show that statements about the behavior desired to be done by the child by giving direct instructions before the child performs the behavior and that it will be approved by the parents if it is done (e.g., I will be very happy if you collect their toys) support social adaptation skills.

According to Reeve (2014), the rewarding behavior causes a decrease in the intrinsic motivation towards the target behavior or activity, a decrease in the quality of learning, and a weakening of the student's self-regulation (self-control) ability, Yavuzer (2015) and Gordon (2015), stated that the prolonged use of reward and punishment would harm the student's self-control although the shape and amount are suitable. Some findings point to the destructive and negative effects of specially conditioned rewards such as impairing the intrinsic motivation, causing a weakening in the perception of control of the individual, decreasing the quality of the work done in terms of quality and creativity (Assor, Roht, Deci, 2004; Aypay, 2015). It is revealed that the individual will further increase the lack of self-control by continuing the need for external controls of these and similar applications. These study results do not coincide with our study

findings which reveal the positive effects of incentive or reinforcement reward strategies on children's self-regulation skills.

Both the behavioral approach and other approaches emphasize the correct use of the reward to show the desired result (Smith et al., 2015). It can be said that the factors such as the way the award is given, the time it is given, the availability of the person or persons awarded, the balanced use, etc., are included in the expression "correct use". In the light of this information, our study's conclusion that the use of the reward strategy is effective in supporting the self-regulation skill of the individual can be explained by the fact that it is affected by criteria such as the way and time of the award. In addition, it is emphasized that encouragement with praise and guiding expressions have a positive effect on the parent-child interaction at an early age and that these interaction processes change with the child's developmental progress (Hammond, et al., 2012; Hughes et al., 2010; Landry, Smith, Swank and Miller-Loncar, 2000; McClelland et al., 2014; Meuwissen, 2017). Based on this information, it is thought that the study sample consisting of children between the ages of 5-6 is an important criterion in the positive effect of reward strategy on self-regulation skills. Therefore, it is recommended to examine also the effect of this positive effect obtained in our study, in the later ages too.

The last finding obtained in the study is that both incentive and reinforcement reward strategies are ineffective on the self-regulation gratification delaying skill.

In a study where pre-schoolers had to decide between eating a single cookie right away or waiting about 15 minutes for an additional cookie, the children were re-evaluated ten years later and it was determined that the ability to wait for a second cookie at the age of 4 predicts the characteristics related to impulsivity and self-control at the age of 14. Impressively, these correlations between the cookie task performance and the behavioral measures of impulsivity and self-control were found to persist even 40 years after the first test (Casey et al., 2011). Regarding the neural mechanisms underlying this ability, Gianotti, Figner, Ebstein, and Knoch (2011) found that the individuals' perceptions of future rewards are associated with the lower levels of baseline activity in the higher beta frequency band of EEG. Thanks to the source localization, this effect has been associated with the left dorsolateral prefrontal cortex, an important

brain region in self-control. McClure et al. found that the limbic brain regions are sensitive to immediate rewards, while the lateral prefrontal cortex is associated with the ability to delay gratification (McClure, Ericson, Laibson, Loewenstein and Cohen, 2007; McClure, Laibson, Loewenstein and Cohen, 2004). In addition, Ballard and Knutson (2009) found that the prefrontal cortex plays a role in reducing the value of delayed rewards and that regions responded specifically to the reward size and the delay. This and further studies show that prefrontal brain structures play a central role in self-control in excessively impulsive behavior and that it is reflected in the ability to delay immediate gratification for a delayed but ultimately more valuable result (Kim and Lee, 2011). The results of this study reveal that the skill of delaying gratification is not related to external (parent-teacher) factors, but the individual's temperament and neural mechanisms. Similarly, in our study, it is seen that parental reward strategies do not create differentiation on delaying gratification.

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Chapter III

PERCEPTIONS OF THE PRESCHOOLERS ON THE CONCEPT OF THE "ROBOT"

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1. Introduction

The concept of technology has existed with humans. However, the 20th century and the 21st century are the centuries in which technology has become widespread and diversified rapidly. This situation affects the lives of both societies and individuals. Due to the widespread use of technology in their environment, children encounter technology and technological products at a very early age. When the software of these technological products is examined, it is seen that they are robots programmed to do a job or various jobs. Robots are used in many different areas in human life, from industry, health, agriculture, home, office, education, and research to entertainment and transportation. Determination of children's robot perceptions will contribute to their awareness of the robots they see around them and to educational activities involving robotic coding. The concept of the robot, which can be used in all areas of life, is defined by TDK (2021) as "an automatic vehicle that can be used to perform various tasks with magnetism to perform a certain job". The use of robots in the field of education, which helps to make life easier, is becoming more common day by day. From pencils to electronic

pens, to mobile phones and digital cameras, technology emerges. When we go to the toilet to wash our hands and the taps know when to start giving water, the elevator does not turn off when someone's hands are between the doors, our mobile phones have the features of taking photos, sending e-mails, and alarm clocks (Bers & Horn, 2010). Programming appears in all areas of life and is frequently used in the software of technological products (Gershenfeld, 2000). However, in preschool classrooms, children learn very little about it. For decades, early childhood curricula have focused on science, particularly literacy and cognitive aspects, with an emphasis on the natural world. Although it is important to understand the natural world, it is also necessary to develop children's knowledge of the human world (Bers, 2008). Just as it is important to start a beginner science education based on children's curiosity about the natural world in the first years of the medical world, it is also important to start developing engineering education and technological literacy to design, disassemble and build things for children to see how things work (Resnick, 2007). Unlike computers or interactive surfaces, three-dimensional toys, and robots; can comprehend, therefore it is effective in concretizing abstract concepts (Tanaka, Cicourel & Movellan, 2007). Research with robotics in early childhood settings has shown that children starting in the preschool period can learn basic programming concepts of sequencing, logical sequencing, cause-effect relationships, and engineering design skills (Bers, Ponte, Juelich, Viera & Schenker, 2002; Odacı & Uzun, 2017; Bers). , 2008; Kazakoff & Bers, 2011; Fessakis, Gouli & Mavroudi, 2013). In addition, preschool and primary school teachers who have robots placed in their classrooms have claimed that socialization between young children and robots is possible for a long time and that humanoid robots can maintain long-term relationships with humans (Kanda et. all, 2007). Moriguchia et all., (2011) examined how well children can learn words from a robot compared to a human. Web of Science, ERIC, YOK National Thesis Center, YOK Academic, databases were searched with the keywords "robot perception" and "preschool" on 16.02.2021, and no study was found on the topic of "perceptions of 36-72-month-old children regarding the concept of robot". However, a study conducted by Han, Jo, Hyun, and So (2015) was determined to reveal the perceptions of young children towards augmented reality-supported dramatic play. In addition,

Web of Science, ERIC, YOK National Thesis Center, YOK Academic databases were searched with the keywords "robot" and "preschool" on 16.02.2021, regarding children's understanding of robots (Somanader, Saylor, & Levin, 2011). Robot development studies that will contribute to the development of robots (Keren & Fridin, 2014; Warren, Zheng, Das, Young, Swanson Weitlauf & Sarkar, 2015; Ioannou, Andreou & Christofi, 2015; Mazzoni & Benvenuti, 2015; Hsiao, Chang, Lin & Hsu, 2015); Sullivan & Bers, 2017) on the relationship and harmony of children and robots (Moriguchi, Kanda, Ishiguro, & Itakura 2010; Toh, Poh, Causo, Tzuo, Chen & Yeo, 2016; Vollmer, Read, Trippas, & Belpaeme, 2018) studies have been found. The research, which brings together the keywords "Robot", "Robot Perception", "Preschool" and studies the robot perceptions of 36-72 months old children, shows originality in this aspect and is thought to contribute to the related field. By examining the pictures that give important clues about the development and learning experiences of pre-schema children, it will be possible to evaluate their perceptions of the concept of 'robot' in their pictures. There are research examples in the literature that children express themselves in different ways such as games, pictures, and drama due to the lack of vocabulary (Hsiao & Chen, 2015, Dağlıoğlu, 2011, Knobe & Roedder, 2009). It can be determined whether the children, whose perceptions of the concept of the robot are evaluated, perceive the electronic devices they encounter in daily life-like robots, whether they have a tendency towards robots, and how they visualize robots in their minds. In addition, determining the data that children associate with the concept of robots in their minds will provide an idea about the design of educational robots used in preschool education today and will contribute to the research to be done. The main purpose of this study is to examine the perceptions of 36-72 month-old children regarding the concept of "robot".

2. Method

2.1. Research Model

In the study, phenomenology design, one of the qualitative research methods, was used. Phenomenology is a research design that takes its source from psychology and philosophy, focuses on how individuals

describe their experiences, how individuals understand, describe, judge, remember and make sense of a phenomenon (Patton, 2014; Giorgi, 2009). It is used to reveal the essence of individuals' experiences (Yıldırım & Şimşek, 2013).

2.2. Study Group

The study group of the research consists of 80 children aged 36-72 months who are studying in Gazi University practice kindergarten in the 2018-2019 academic year. All of the children participating in the study consist of children with normal development. The study group was constructed by homogeneous sampling method (Büyüköztürk et al., 2017) as purposive sampling methods, which is the method of determining a homogeneous subgroup in the universe regarding the purpose of the research.

2.3. Data Collection Process

In the research, the data were collected by providing the children to draw pictures in line with the instructions on the concept of "robot" and by employing a child interview form. While the child interview form was being created, the opinions of 3 field experts and 1 Turkish language expert were taken and the questions were re-constructed and finalized.

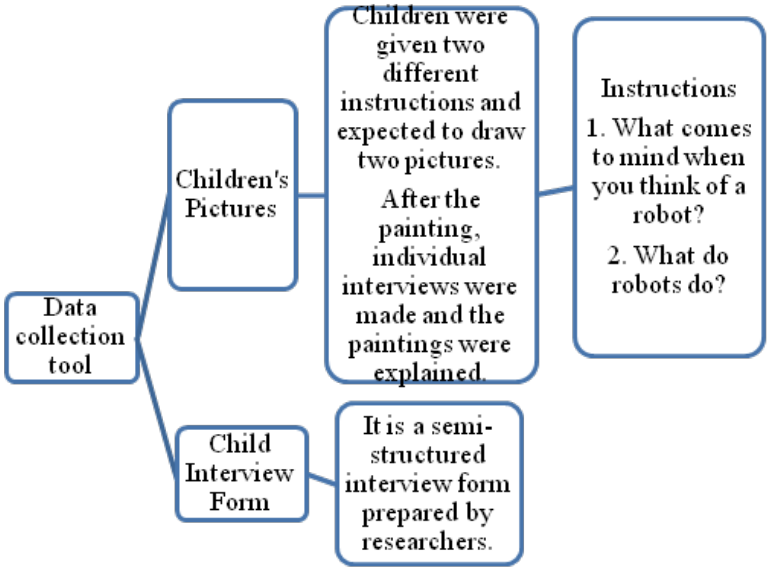


Fig. 1. Flow-chart of the research

Before having the children draw pictures, care was taken to ensure that th e children were seated in such a way that they would not affect each other. A3 size papers and crayons were distributed to the children. While giving instructions to the children, attention was paid to not being a guide, and no time limit was set for the children to draw pictures. After the children completed their pictures, they were asked to come to the stimulant-free section next to the classroom, and asked about the figures in the picture, and were asked to describe their pictures. The children's narrations were recorded with a voice recorder and then transcribed. In addition, open-ended questions in the child interview form prepared by the researcher were asked to the children, and their answers were recorded.

2.4. Data Analysis

In the study, the pictures made by the children and the data recorded using the voice recorder in the interviews were analyzed according to the content analysis method. Content analysis; categorizing and reaching concepts by bringing together similar data, and interpreting these concepts by arranging them in a meaningful and understandable way (Yıldırım & Şimşek, 2013). The analyst/research triangulation technique was used to determine the validity and reliability of the analyzes. Researcher triangulation technique; The qualitative data obtained is given to two different people and analyzed independently of each other and the findings are compared (Patton, 2014). In the study, the data were analyzed by two different researchers; Separate categories and sub-categories were determined and coded. The consensus was calculated by using the Miles and Huberman (1994) formula Reliability=Agreement/Disagreement+Disagreement x 100) of the findings. The consensus among researchers was calculated as 92%. This reliability ratio was determined to be sufficient according to Miles and Hubeman's (1994) criteria. In addition, direct quotations were made while giving the opinions of the children in the study. Children's opinions were presented by giving a code (Participant 1: P1; Participant 2: P2).

3. Findings

In this section, the findings obtained from children regarding the concept of "robot" are given. The data obtained are grouped under 4 themes: "*the*

things that robots do", "the features they would like to have if they were a robot", "*where they see robots" and "living and objects that they liken robots to*".

The findings obtained as a result of the coding of the data of the preschool children regarding the work done by the robots are given in Table 1.

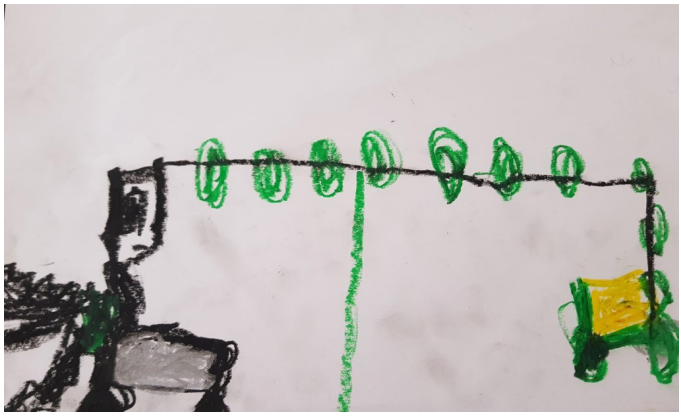
Table 1. Children's views on the work done by robots

Sub Themes	n
Carrying weights	35
Saving the World from evil	18
Repair	14
Collect toys	14
Doing housework (Kitchen Cleaning)	13
Environmental cleaning	10
Helping people	4
Doing construction works	2
Other (Saving life, feeding animals, turning on the light, watering trees, fire-fighting, producing water for the poor, cooking eggs, putting hats on people, makes Money, pulls out trees, a robot that takes paint from papers and paints walls, builder, police officer, luminous, makes people run around, cuts grass)	10

When the children's views on the work of robots are examined it was observed that they mostly thought that robots were used to carry heavy objects (n=35). "P1" drew a picture about it and described his picture as follows:

Robots lift things that are too heavy for some construction jobs. For example, there is a huge rock, the rope is broken while the crane is lifting it. It also removes boxes in factories (K1)

In addition, children often stated that robots can save the world from evil (n=18). "P12," said his opinion on this subject, "*King Sarkırda had a baby robot, his father was saving the world. And when it got scary on TV, I saw robot dinosaurs*." (P12) expressed as. In addition, the children stated that robots could be used to save lives, water trees, operate cars with the sun, and recycle the paint inside the walls. He drew a picture of the "P45" robot, which provides tree watering and has different functions, and expressed it verbally as follows:



*"There is a tree watering robot here. When the fire breaks out, he waters the trees with the water in his tank. After the trees grow, they make paper. This is the warehouse, the water goes to the tree-like this (pointing with his hand). When the water in the tank is low, it also fills the tank."(P45*In addition, 'P4' drew a picture expressing that robots can run cars with the energy they get from the sun and explained the picture:

"Its hand reaches for the sun, puts it on the engine of the car, takes it from the sun and does not start. And ıts hand can go to the sun. This also tied the sun with a rope". (P4).

"P57", one of the participants who participated in the research, stated that robots can contribute to recycling, paints obtained from waste paper can be used in construction works, and drew the following robot:

This robot draws the paints from the papers and fills them there. You can paint walls with these too. He's doing some construction. (P57).

"P79", on the other hand, stated that the robots could carry heavy boxes and also stated that they could rescue children who fell into the sea. His picture and view on this are as follows:

"Here robot carries boxes from the factory. Here too, if we have a life preserver or something, or if a child falls from child's father's lap without anything, robots like this will save a child (P79)"

Table 2: Opinions of the children on the question "*What kind of characteristics would you like to have if you were a robot*"

Sub Themes	n
Robot collecting toys	32
Robot helping children	15
Male robot	14
I'd be a girly robot	11
Robot repairing cars	9
Robot playing game	8
Cooking robot	7
The robot that does all	7
Robot attached to the car	4
Robot cleaning around	2
Floating robot	2

When the opinions of the children on the question of "*what kind of features would you want if you were a robot*" are examined; it was observed that they mostly wanted to be the robot that collects toys (n=32). "P22" expressed his opinion on this issue as follows:

"I would like to be a robot that works at night. I would like to be a robot working at night when everyone is sleeping. For example, I used to prepare meals. I used to collect toys. I would place the things in case the guests would come." (P22).

"P41", on the other hand, stated that he could help his mother in the kitchen and drew a sketch for this:

"I used to be a robot sweeping the kitchen when I spilled bread on the floor. When you pour milk and when you pour chips. My mother would also help sometimes." (P41)

It is also seen that there are children who want to be robots helping people (n=15). Children stated that they can help individuals in many issues such as kitchen work, traffic, meeting the water needs of individuals. On this subject, the "P23" view is "*I would like people everywhere to use me. For example, I would like to help with difficult tasks with transport, in kitchen work*." while "P37" said, "*If I were a robot, I would like to be a robot that produces water for people. Because sometimes people get thirsty. You know, some poor people can't buy water. I could produce and give them water*". In addition to these, "P42" stated that it can help individuals in regulating the traffic and illustrated the robot as follows.

"I am a robot attached to a car. I regulate the traffic, and if the cars are left in the wrong places, I remove them." (K42)

The findings obtained as a result of the coding of the answers given by the preschool children regarding the place where they saw the robots are given in Table 3.

Table 3: Children's Views on Where They Saw the Robots

Sub Themes	n
In the mall	32
In the cartoon	24
In the toys	13
At the amusement park	4
In advertisements	4
In the kitchen	5

When the places where preschool children have encountered or noticed robots before are examined, it has been seen that they mostly encounter them in shopping malls (n=32). "P80", "*I went to "A…. (Shopping mall name)" tomorrow with my mom. There was a huge robot there. It was made of iron. He had yellow-red eyes*." expressed as. In addition to this, they also stated that they saw in the cartoons they watched (n=24) and they also stated that they had robot toys (n=13).

The findings obtained as a result of the coding of the answers given by the preschool children to the creatures and objects they liken to robots are given in Table 4.

Table 4: Children's views on the creatures and objects they liken robots to

Sub Themes	n
Similar to humans	54
Similar to car	12
Similar to metal toys	8
Other	8

When the data was obtained as a result of the coding of the answers given by the children in the preschool period to the creatures and objects that they likened to robots, it was seen that the children mostly compared the robots to humans (n=54). "P24" expressed his opinion on this situation as follows:

The robot is like a human because ıt has arms and person has arms. The robot has legs, we have legs too. (P24).

In addition, it was observed that children compared robots to cars (n=12) and metal toys (n=8).

4. Discussion and Conclusion

In the study conducted to determine the perceptions of preschool children about the concept of "robot"; When the views of the children on the work done by the robots were examined, it was determined that they mostly thought that the robots were used to carry heavy objects (n=35) (Table 1). Beran et all., (2011) stated in their study that children attribute life features to the robot and have high expectations from them. In the study, it can be said that children may think that they can lift heavy objects because they believe that they are stronger than humans. In addition to this, when the opinions of the children on the question of "*what kind of features would you want if you were a robot"* are examined; it was determined that they wanted to be the robot that collects toys the most (n=32) (Table 2). It has been observed that children want to be robots who do the jobs they have to do in their environment. This can be thought to show that robots want to take advantage of the facilitating effect of human life (Evans-Pughe, 2017). In addition, in the studies of Katayama et all., (2010), it was concluded that children aged 5 and 6 tend to attribute biological and psychological characteristics to robots. In addition, when the places where children have encountered robots before or noticed when they encounter them are examined, it is seen that they encounter robots mostly in shopping malls (n=32) and later in cartoons (Table 3). It is thought that the fact that the robots in the shopping malls where children go with their parents have many stimulants in the form of models and are large, making it easier for children to notice the robots. In addition, it is seen that robots take place in many cartoons such as "Wall-E", "Jetgiller" and "Transformers" that children watch (Alıcı, 2021). However, the fact that very few children stated that they saw them in the kitchen (n=5) may show that they have difficulties in seeing robots as hardware and that they resemble robots in terms of form. In addition, it was concluded that the children mostly compared the robots to human beings (n=54) (Table 4). Kompatsiari et all., (2017) in their study on humans' perception of the robot showed that making eye contact with the robot facilitates the attribution of human-like features to the robot. Moreover, Tielman, Neerincx, Meyer & Looije (2014) concluded that they enjoy interacting with a robot that expresses itself with emotions and

gestures. Saylor, Somanader, Levin, and Kawamura (2010), who used a robot to help children aged 3-4 years relate conflicts between living and non-living objects, found a similar study. This may indicate that children can more easily recognize robots in this form, which are more similar to themselves. Furthermore, a 5-month long-term study conducted in a kindergarten examined children's attitudes towards robots and found that they could adapt more easily than adults (Tanaka, Cicourel & Movellan, 2007).

P.S.: It is a re-organized, re-constructed, revised, improved, and re-designed form of the presentation at the 6th International Preschool Education Congress held in Kars on October 2-5, 2019.

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Chapter IV

MEMORY EDUCATION IN EARLY CHILDHOOD

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1. Introduction

Early childhood; It is very important because it is the fastest period of development after infancy and contains many critical periods. The most important basic cognitive function in this period is thinking activity. In fact, this enables the child to connect with his past, experiences, learnings and current situation, organize information and develop and shape his memory by establishing better organization and coordination each time (Korkmaz & Mahiroğlu, 2007). Memory development and education also enables the child to acquire skills that will affect his/her life, academic learning and her whole life.

2. Memory

It is possible to see many definitions of memory in different sources. Memory can be defined as a mental system that holds and stores personal information and controls these mechanisms (Ashcraft, 2002). At the same time, memory is the ability to record, combine and store information from every sense, thought, movement and the like in order to remember it when it is wanted or needed. It is a function of the nervous system, which is made up of billions of nerve cells in the brain (Fielding, 2004).

Considering the concepts related to memory and the classification of memory, it is necessary to mention the works of Ebbinghaus, who made the first experimental studies on memory. In these studies, he found

the forgetting curve by concentrating on the relationship of time with memory and it was stated that the learning material was forgotten faster in the first few hours following the learning activity, and then much slower thereafter (Schultz & Schultz, 2002). In 1890, a distinction was made between primary and secondary memory. It was stated that the content in the primary memory is transferred to the secondary memory, which contains all the acquired information permanently, and that the secondary memory, unlike the primary memory, can find and retrieve the information when necessary (Kilitçi, 2012). In 1949, short-term memory based on the temporary electrical activity of the brain and long-term memory based on neurochemical processes were defined (Baddaley, 2007); In 1968, sensory recording, short-term memory and long-term memory systems were explained by Atkinson and Shiffrin, and the multi-store memory model was put forward (Cangöz, 2005). In 1974, the concept of Working Memory was proposed, stating that short-term memory does not hold information passively, but processes it. Working memory initially consists of three parts: the central executive, the phonological loop, and the visual/spatial sketchpad. In 2000, the working memory model was revised and an episodic buffer system was added (Baddeley, 2003). A hierarchical memory model was then created based on the content of the stored information. (Cangöz, 2005). Long-term memory is divided into three systems: episodic memory, semantic memory, and procedural memory. In 1985, term memory was classified as explicit and implicit memory. Implicit memory is defined as previous experiences affecting behavior without a conscious and voluntary recollection of them; explicit memory involves the conscious retrieval of past experiences (Graf & Schacter, 1985).

3. Memory development in children

Memory development in early childhood begins at birth. A three-month-old baby can remember frequently used objects such as rattles, while at eight-twelve months he can recognize things that look like a human face. At the age of three, he can remember things he has experienced directly, but at the age of four he remembers three or four of the 12 object pictures (Healy, 1999). A four-year-old uses his/her attention in a planned way and systematically tries to find her lost toys in the playground by looking

at the last place she saw them (Öztürk, 1999). When five-year-olds are shown some pictures and asked how many they can remember, they may overestimate their capacity and guess that they will remember them all. But when the same thing is asked of an eleven-year-old boy, his guess is more plausible. It is thought that the ability to remember increases with age. As children gain proficiency, they not only learn how to keep certain things in their memory, but also begin to act more realistically in their estimations and evaluations of their own memory (Wood, 2003). Preschool children seem to be more unsuccessful when detailed pictures and written texts are given. While preschool children do not pay as much attention to the environment as school-age children; they are not as picky as school-age children about what to pay attention to (Öztürk, 1999). In the development chronology of memory, visual and spatial areas take the first place. Child memory begins to develop depending on the general state of alertness and physiological-psychological conditions. With this beginning, memory will begin to provide perceptual and motor continuity and in this case; It is one of the most important functions that emerge as a result of the basic functions of memory at the adult level (Korkmaz & Mahiroğlu, 2007). A six-year-old child gradually begins to develop memory strategies that form the basis of recall (Healy, 1999). It is noteworthy that as children grow up, they have an increasing ability to select stimuli and focus their attention. While school-age children have conscious strategies to pay attention and know that they need to be selective, preschool children do not have the strategy to consciously control and direct their attention (Öztürk, 1999). Child memory develops in direct proportion to both age and the relationship with the environment. To be explained in more detail; In young children, the memory capacity is not developed enough to present an idea or concept without an object. However, this memory capacity and organization of information increase and gain momentum with age, experience, and the relationship they enter with the environment. E.g; While a three-year-old child can remember 3 units of information, this can increase as the age factor increases, for example, from 5 to 9. In addition, we can clearly see this situation in remembering up to 5 units at the age of 7, and up to 9 units after puberty. Thus, when an inference is made in general terms, memory development progresses in direct proportion with age, and we can see that there is a

better storage, retrieval and information organization when transitioning from childhood to adulthood (Korkmaz & Mahiroğlu, 2007).

4. Memory strategies in early childhood

Various strategies such as repetition, association, grouping can be used to keep the information coming from the outside world in memory for a longer period of time or to make it permanent information and encode it in the long-term memory. Memory strategies can be defined as activities used to increase cognitive performance. While young children know what it means to remember, they seem to learn more effective strategies with age (Wood, 2003).

For preschool children, forming new material meaningfully, organizing, categorizing, rehearsing, animating and repeating, using visual memory and using the material in relation to previous information are clues to help remembering by developing memory strategies (Healy, 1999).

When a child is asked not to remember an object but to do something with it, the result is different. Touching and using objects enables the child to focus on the material and the activity and interact. The child's interaction with the object is effective in coding and remembering it and occurs spontaneously (Wood, 2003).

It's important to rehearse future initiatives and review past events, building and consolidating things. These gain strength with repetition, helping to store and retain information (Fielding, 2004).

If a young child is helped to group objects and collects what he wants to remember into a model or whole, the success rate increases. Young children need someone with mental knowledge and ability to help them remember and concentrate (Wood, 2003).

Associating new information with previously learned information is another method that facilitates recall (Winstead, 2004). In addition, memory can be supported with both visual and sensory presentations such as graphics, tables, diagrams, using overhead projectors, and projections. It seems possible to support children's memory skills with memory training programs to be prepared using memory strategies in early childhood.

5. Memory education

Shortly after the birth of a baby, the final number and connections of neurons in various parts of the brain are determined according to the "use it or lose it" principle. This ability of the nervous system to form early in life shows how important it is to provide children with a rich learning experience in the early period (Guyton & Hall, 2001). Working memory plays an important role in the learning experience.

Working memory is also associated with complex cognitive behaviors such as understanding, reaching conclusions, and problem solving (Eangle, 2002). In order to develop working memory, which is responsible for complex cognitive activities such as language processing, visuospatial thinking, reasoning, problem solving and decision making (Miyake, 2001), it is necessary to organize activities to cover these areas.

Working memory has an important role in supporting children's learning during the school years, as well as their learning in adulthood. The point that the experts who make researches about working memory emphasize is that working memory is necessary to store information while learning activities that require complex skills and knowledge in the classroom are mentally controlled. In such activities, the student who has problems in working memory fails and learning becomes slow and distorted (Alloway, 2006).

Working memory, which is an indicator of cognitive development at a young age, is the ability to retain information in order to perform a future action. Working memory is defined by Baddeley (2000) as the ability to retain verbal or non-verbal stimuli while manipulating information while performing purposeful behavior (Baddaley A. , 2000). Working memory also plays a very important role in the learning of mathematical knowledge. Verbal working memory in processes such as learning numbers, transitioning to the previous or next step; spatial working memory is also important in forming mental schemas of knowledge such as geometry and acquisition of spatial concepts (Harvey & Miller, 2017). Children with poor early childhood math skills were found to differ in their working memory performance, such as language skills and nonverbal fluency, compared to their peers (Kytta, Aunıo, & Hautama, 2010).

Visual working memory development, which occurs around six months of age, increases until early adulthood. It is stated that the separation anxiety experienced by babies around 17 months is recorded in the memory of separation from the mother, which is an indication that the working memory has started to develop (Şenbil, 2018). Children's storage and control of information in short-term memory begins in school years. In studies, it has been determined that children who perform poorly in central executive tasks that require simultaneous storage and processing of information have problems in reading, mathematics and reading comprehension (Leana, 2009). It is also seen that working memory measurements made at the age of four-five before starting school are a good predictor of students' academic achievement (Gathercole, Brown, & Pickering, 2003).

It has been stated that visual working memory in preschool years predicts mathematics performance in elementary school third grade problems involving simple and complex arithmetic, number sequencing, and graphic representation of data (Bull, Espy, & Wiebe, 2008). When the relationships between early math skills and working memory were examined, it was seen that all working memory sub-components except early math skills and visual short-term memory were low and moderately correlated in the study group (Çakır R. , 2019).

The phonological loop, which is an important component of working memory, is important for learning the sound patterns of new words that are necessary to improve vocabulary. Children who have problems in the phonological cycle have difficulty in learning new words both in their mother tongue and in foreign language education (Gathercole & Baddeley, 1990).

In semantic memory, verbal and visual information are tightly linked and stored. Many psychologists also agree that coding information, both visually and verbally, facilitates recall (Yıldız, 2013). Accordingly, coding information by semantically associating information and using phonological and visual inputs together in memory education programs can improve children's memory skills.

Research reveals that there is a difference between remembering a word as a picture, in writing or by reading it orally. Words presented in pictures or verbally are remembered better than words presented in writing

because attention can be focused less on words presented in writing (Foos & Goolkasian, 2005). Accordingly, it is seen that including materials and activities designed to attract children's attention can increase children's memory skills.

It has been determined that children remember more important experiences such as falling in school, their natural environment, creating something with different materials, being a part of society (Burrington, 2006). Accordingly, it is thought that preparing educational activities and environments that offer interesting experiences to children can be effective in improving children's memory skills. In addition, it has been revealed that the experiences in the first years of life affect attention and memory performance, and the experiences in the first three years of life have a significant effect on the attention and memory performance of children (NICHD, 2005). Accordingly, providing children with experiences and a rich environment in their first year may have an impact on memory development.

It has been observed by children that memories with emotional impact are significantly easier to recall than memories without emotional impact (Bergen & Salmon, 2010). It is thought that training, preparing the environment and materials, taking into account the emotions of children in the activities organized according to this, will affect remembering. In addition, it has been seen that the description and explanation of the visual target that is expected to be remembered positively affects visual working memory (Vales & Smith, 2015). It is thought that it will be useful to use descriptions and explanations while preparing memory training programs.

Many studies have focused on the effect of age on memory development. The structural organization of memory can be reliably evaluated from the age of four (Alloway, Gathercole, & Pickering, 2006), there is a great increase in working memory capacity from early childhood in parallel with the increase in age (Gathercole, Pickering, Ambrıdge, & Wearing, 2004), performance increases with age. It has been stated that visual working memory capacity doubles between the ages of five and ten, and reaches approximately three-quarters of the adult level at the age of ten (Riggs, McTaggart, Simpson, & Freeman, 2006). It can be said that memory training programs should be prepared by taking into account the changes that occur with age.

According to the results of the research, different effects emerged with the effect of age. Girls outperformed boys in some questions and private school students had higher scores. Boys whose parents had a high education level scored higher than boys whose parents had a low education level. These results show that environmental conditions are effective in attention and memory development (Matute vd, 2009). While children's ages, duration of attending kindergarten, receptive language skills, and children's perceptual sensitivity are associated with executive function skills; rural-urban poverty is associated with visual working memory and mental flexibility skills, interacting with mothers' positive parenting (Okur, 2020). It was observed that children who received family education and pre-school education outperformed those who did not, and also communicating with oral language and receiving early family or preschool education supported working memory performance (Doğan, 2011). It is seen that it is important to expand preschool education and to include memory education activities in plans, to carry out studies at home to improve memory skills with family education, and to consider environmental conditions while planning these activities.

Both the numeracy and phonological awareness skills of children with low phonological working memory capacity in preschool were found to be weak, and it was concluded that the limitations in the visual working memory of preschool children affected their numerical competence (Prebler, Krajewski, & Hasselhorn, 2013). Accordingly, education programs that will develop memory skills gain importance in order to increase the success of children in their entire lives.

There are also studies showing that visual working memory is more effective than verbal working memory on early math skills. Some researchers believe that young children, especially preschoolers, use mental models when solving mathematical tasks. A mental model is a mental representation of a problem and is therefore useful for visually presented problems (e.g. you took three yellow blocks and four red blocks, how many blocks in total?) (Rasmussen & Bisanz, 2005). It seems that the contribution of visual memory to mathematics achievement differs depending on age, and this contribution may be particularly important in the early stages of mathematics learning.

Working memory is important for making sense of anything that occurs over time because it always involves associating what came before with what came later (Diamond, 2016). It is therefore necessary to make sense of written or spoken language, such as reading and speaking to others, because once you focus on the next sentence, the previous sentence is no longer present. Mindful doing any math, mentally rearranging items (e.g. rearranging to-do lists), thinking about alternatives, understanding cause-effect relationships also require working memory because it involves keeping pieces of information in mind and seeing how they relate (Diamond, 2016). In the preschool classroom setting, children must direct their attention to important information and remember the order in which things should be done while participating in activities, working at a center, and tracking their progress (Nguyen & Duncan, 2019), which requires working memory. Examples of working memory skills of children in the preschool classroom environment are independently following multi-step instructions, remembering what needs to be done, knowing the routine throughout the day, and staying relevant while speaking.

Considering that the experiences provided to children in early childhood are effective in the development of children's memory, it is thought that providing children with rich stimulating environment opportunities and effective education programs significantly affects this development process. Attention, perception and memory skills need to be developed in order to raise individuals who think, understand, question, learn and solve problems. For this reason, it is thought that memory education programs that support these skills of children, teach them to pay attention to the right stimuli, to properly encode and store this information obtained through their sense organs, and to call them appropriately when necessary, will contribute to children's becoming more competent individuals in the coming years (Temel, Kurtulmuş, & Kaynak, 2016).

Early childhood education software using photographs, sound and animation in preschool education can contribute to children's learning and development (Nikolopoulou, 2007). The use of computer programs in pre-school education has gradually increased, and it has been stated that children provide more permanent learning by using sounds and pictures. In addition, it has been seen that it is important for children to access

these trainings whenever they want and to provide more interactive and permanent learning among children (Vernadakis, Avgerinos, Tsitskari, & Zachoppoulou, 2005). It is also known that graphics, animation and cartoon characters used in multimedia increase the motivation of students (Nusir, Alsmadi, Al-Kabi, & Sharadgah, 2013). Accordingly, animations and interactive applications are seen as effective tools that can be used in memory training.

Animation is defined as creating many still images that show an object in motion and playing these images in rapid succession to make one think that the object is actually moving (Arıcı & Dalkılıç, 2006). Three features of animations can be mentioned. These are expressed as picture, representation of certain movements and simulation (simulation-animation) features. Decoration, attention, motivation, over-information, and classification of complex information and events can be listed as some of the roles of animations (Weis, Knowlton, & Morrison, 2002). With animation, it is easier to analyze an event very well, to clarify it with simple symbols and to make complex information understandable. Animations, combined with color and movement features, increase memorability and provide an effective learning by appealing to the eye and ear (Çakır H. , 1999).

The use of animations in the education process as an effective way, such as explaining experiments and events in a computer environment, and animating stories for children, helps to increase the efficiency in education. Educational software developed using animation enables children to grasp concretely better. An effective learning environment can be created by animating these applications with the help of animation in accordance with their real functioning (Arıcı & Dalkılıç, 2006). Thanks to the educational software in which animations are used, the problems of concretizing and visualizing the abstract events or entities that are desired to be taught to children can be eliminated. Thus, it is possible to create a rich learning environment for children (Erişen, Kılıç, Pelit, & Vural, 2002).

Animation can convey a large amount of information in a very short time and can be a powerful way to reinforce concepts and topics introduced to children through text, discussion or other media. It can suggest new and powerful ways to comprehend complex events for

visual learners and those with special needs. For all children, animation can increase understanding by depicting real objects slowing down or speeding up action. Children can also create animations to demonstrate their knowledge of more complex concepts and structures. In scientific applications, this approach allows the teacher to be a direct window into a student's understanding. Many topics can be animated very effectively, and the process of creating the animation forces students to confront their preconceptions about how things work. Processes such as the phases of the moon, the solar system, volcanoes or the movement of tectonic plates provide rich avenues for student animation. After students are given topics to explore, they may be asked to create their own animations (Doyle, 2001).

Research has shown that the use of animation in language learning is effective in attracting children's attention, although they generally have a positive view of animation (Parette, Hourcade, & Blum, 2011). In addition, it was stated that with animations, children learn knowledge and skills faster in interactive environments by using visual and auditory learning materials (Islam vd, 2014). It is seen that using animations can support children's memory skills in order to attract children's attention, to activate the coding and recall mechanisms through the activity they concentrate on, and to ensure that the information is stored in the memory for a longer period of time. In the light of this information, it is thought that it will be useful to use animations while preparing education programs that improve memory skills for preschool children.

It is seen that the education program applied on the attention, memory and perception development of children has a positive effect (Temel, Kurtulmuş, & Kaynak, 2016). In studies, it is stated that the performance of children who are given working memory training in working memory tasks such as recall and word testing increases significantly, and the child's temperament also affects the results of the training given (Studer-Luethi, Bauer, & Perrig, 2015). Regardless of the gender of the children and the educational status of the parents, it has been revealed that the applied memory training program has a positive effect on the memory development of the children (Özyürek, 2009). Children who have problems with working memory may have problems in literacy, mathematics and language. These deficiencies negatively affect pre-school children's ability to have

the skills necessary to start primary school. However, by determining the source of children's problems, appropriate education programs can be organized to support their cognitive development and lifelong failures can be prevented (Rezzagil, 2018). In general, low working memory capacity is associated with academic failure. It has been stated that the potential benefit of this situation is that if the working memory capacity can be increased, there may be an increase in academic achievement independent of the intelligence factor in neurodevelopmental problems (Türkoğlu, Çetin, Tanır, & Karatoprak, 2019). It has been observed that executive functions including memory skills of children in the preschool period can be shaped, educational environments have an important role in supporting the development of children's executive function skills, and they can be developed through structured play activities that can be easily applied in the classroom environment for young children (Çiftçi, 2020). In addition, it has been shown that intervention programs that take into account the social-emotional and physical development of children are more beneficial, unlike computer-based education programs that only target specific executive function skills (Diamond & Lee, 2011). In order to develop long-term memory and use it in a functional way, it is important to make a program starting from preschool education. Thus, from an early age, it seems possible for the child to acquire skills from coding information to remembering. On the other hand; It is thought that the learning gains of the child who develops verbal and non-verbal memory will also increase (Usta, 2016). Computerized adaptive working memory training was applied to children; According to the results, children's working memory performance increased. In addition, it was observed that children's reading performance improved significantly after the education (Loosli, Buschkuehl, Perrig, & Jaeggi, 2012).

Today, technological developments have also affected education, and technology has become an indispensable part of education. The content of the trainings can be presented to children in a wide variety of ways with technological methods. In early childhood, computer education is effective in the development of mental, language, verbal and nonverbal abilities, concept development, problem solving skills, long-term recall and manual skills. Thanks to the computer, children's creativity and critical thinking develop, and they can work together with other children to

reach the goal. Memory training, which is planned by taking into account the stages of choosing a good content and an interactive tool, integrating with the program and evaluation within the framework of international development, can help the development of memory skills of children. In the education programs prepared to improve the memory skills of pre-school children, words can be used by taking into account their various characteristics such as being frequently used words, their length, being in a certain category or classification, and being abstract and concrete. Words and letters can be presented to children both verbally and visually. Visual materials can be in the form of pictures, shapes, faces, motor skills, smell and movements. Activities can be prepared in such a way that children can store a visually presented material by transforming it into verbal and tactile codes as well as visual codes. In addition, the use of different learning methods and applications in memory training programs can increase the quality of memory training programs. Animations and interactive applications can help children achieve permanent learning in this sense.

Early childhood developmental characteristics and individual differences should be taken into account while preparing memory trainings. While preparing the activities in education, the principles of children from the immediate to the far environment, from the known to the unknown, from the simple to the complex, from the concrete to the abstract should be taken into consideration. In addition, care should be taken to ensure that the activities are integrated activities, to ensure the active-passive balance in the activities, and to diversify them as games, movement, music, Turkish, drama, art, preparation for literacy, mathematics and science activities in accordance with the Pre-School Education Program. Transitions between activities should be prepared in conjunction to facilitate the transition of children from one activity to another. In order to facilitate children's participation in activities, concrete materials that can make a difference in the educational environment and attract attention should be prepared; For the active participation of children in activities, various learning methods such as interactive-computerized teaching, question-answer, demonstration and learning by doing should be used. For the post-event evaluation stage, open-ended questions should be created in order for children to express their thoughts

clearly, and attention should be paid to the flexibility of the activities to be changed according to the interests of the children.

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Chapter V

METAPHORS OF PRESCHOOL TEACHERS ON DISTANCE EDUCATION CONCEPT*

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1. Introduction

There have been many changes in several areas such as health, education and social life due to the COVID-19 pandemic which has affected the world. To prevent the pandemic, both individual and social measures are taken and governments endeavor to keep it under control through laws and regulations. Precautions like keeping social distance and arrangement of human activities in communal living spaces are important. One of the precautions taken is to pause physical education and replace it by distance education (Mustafa, 2020).

Uşun (2006) defines distance education as education technology with individuality, flexibility and independence features, in which the source and receiver are in remote environments, and through which communication and interaction are ensured with technical tools. According to Ağaoğlu, İmer and Kurubacak (2002), distance education is a type of education, in which learners and instructors are far from each other and which provides educational opportunities at anytime, anywhere and to everyone at any age. Distance education is an updateable, contemporary and effective

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learning method which can be provided independent of time and space and includes such facilities as structuring educational materials in electronic environment conveniently and flexibly, adding different technologies into learning process and using them 24/7 (Yamamoto & Altun, 2020).

The studies on distance education indicate that this method has both advantages and disadvantages. Traxler (2018, p.4), discussing it from the economy and accessibility viewpoint, points that distance education is advantageous. However, Anderson (2020) has asserted that conveying students into the Internet may lead to deep inequalities in education system (lack of devices or safe Internet connection, dominance and privilege of parents, etc.). Besides many advantages of distance education, compulsory distance education for students in all education levels due to the COVID-19 pandemic may also bring disadvantages due to inequalities in access to devices and the Internet.

Right after the first COVID-19 case in Turkey on March 11, 2020 due to the rapid spread of the pandemic, the Ministry of National Education (MEB) made a statement about the measures against coronavirus (MEB, 2020). Distance education was switched at all education levels throughout the country within the scope of these measures. Due to the unsuitability of preschool children to spend much time in front of the monitor or the lack of distance education infrastructure for preschool children, this group became the last to switch to distance education. While some teachers continued face-to-face education at that period, some switched to distance education using online platforms such as education information network (EBA), WhatsApp, and Zoom. The idea that technological devices (TV, computer, tablet, mobile phone, etc.) enter more in daily life of children and affect their cognitive, emotional and social development day by day (Tüzün, 2002). Community-based research has shown that the excessive use of technology in early childhood is related to retardation in cognitive, linguistic, social, emotional and motor development of children (Pagani, Fitzpatrick, Barnett & Dubow, 2010). Various studies indicated that the excessive use of technological devices prevents children's cooperation and sharing abilities, decreases their motivation, and affects their responsibility taking skills, thus their emotional development is under risk (Plowman, McPake & Stephen, 2010; cited in Mustafaoğlu, R., Zirek, E., Yasacı, Z. & Razak Özdinçler, A., 2018). The World Health Organization

advises that physical activities, sedentary activities and regular sleep help children aged 0-5 years to grow healthily, and that motionless screen time should not be more than one hour a day for children aged up to 5 years, whereas it is not recommended for children younger than two years old (Detnakarintra, Trairatvorakul, Pruksananonda, Chonchaiya, Positive, 2020). Besides the negativities of the distance education for preschool children, other effects of the coronavirus (Covid-19) pandemic on education are problems in accessing technology-based learning, suspense of school and exam calendars, inability to carry out teacher training, children and the young in disadvantaged areas being deprived of regular meals at their school, distance or home education putting a burden on parents and caregivers and causing social isolation by reducing the social interaction of children and young people (Chang & Satako, 2020).

Under the light of this information, education workers' perceptions of the process, an important factor of distance education, are also very important. There are many ways to discover teachers' perceptions. One of them is to identify perceptions through metaphors. Metaphors are connotations oriented to understand how the analyzed concept is perceived. Metaphor has been interpreted in different ways by many people. Morgan (1993) defined it as "a way of thinking and seeing", while Saban and Koçbeker (2006) defined it as "a powerful mental tool setting someone to work in understanding and explaining a highly abstract, complex or theoretical phenomenon". As defined by Aydın (2010), it is a person's expressing a concept or phenomenon as he/she perceives it, by using similes. Yıldırım and Şimşek (2011) defined it as a tool allowing people to understand the nature and environment and adding meaning to their experiences. When an individual interprets and uses metaphors, he/she acts based on the current knowledge, skills, habits and attitudes. Therefore, metaphors are influenced by individual's previous experiences, prior learning and social circle that constitute the metaphor. From this point of view, metaphors used in educational environment are important (Oğuz, 2009). In education field, researchers deemed metaphor as a powerful tool to understand the current situation of education applications (Balcı, 1999).

This study aimed to examine preschool teachers' perceptions on distance education. Deep thoughts of individuals regarding a concept can

be understood thanks to metaphors. While determining a metaphor, an explanation of that concept is asked in general. For example, it is used as "Distance education is like ..... . This is because .....". The part starting with causality, which is expected following the concept, explains the reason of the connotation arising in mind. Thus, individual's perceptions on a certain concept can be identified. In this sense, metaphor can be used as an effective method to determine perceptions.

2. Aim of The Study

How preschool teachers perceive "distance education" concept during distance education period due to the pandemic and their mental images on distance education are very important. The literature reviewed has shown there are many studies on the perception of distance education of the primary school students, teacher candidates and lecturers. However, no study has been found on preschool teachers' perceptions on distance education. This study was conducted with the intent of examining the metaphor perceptions of preschool teachers on distance learning and gathering these metaphors under conceptual categories according to their common features. Thus, answers to the following questions were sought to examine distance education perceptions of preschool teachers on metaphors.

1. What are the metaphors of preschool teachers on distance education concept?
2. What conceptual categories can be used for these metaphors in terms of common features?

3. Research Method

The phenomenological method was used to determine distance education perceptions of preschool teachers through metaphors. Since it focuses on phenomena, of which we are aware but do not have an in-depth and detailed understanding (Yıldırım & Şimşek, 2011), we preferred using the phenomenological method.

The study group consisted of 95 preschool teachers working actively in Şehitkamil and Şahinbey central districts of Gaziantep province of Turkey in the 2020-2021 academic year.

The data were collected using an online form. The data collection tool included gender, age, educational background, type of education, institution worked, professional experience, current grade, age group and whether having any prior experience on distance education. Teachers gave their informed consent that they voluntarily took part in the data collection process.

Saban (2009) states that the concept of "like" is generally used to connotate the connection between the subject of the metaphor and the source of the metaphor more clearly; and the concept of "because" is used so that participants can provide a justification (or rationale) for their own metaphors in the studies where metaphors are used as data collection tools (p.285). From this point of view, the teachers were asked to complete the sentence "Distance education is like ....., because ..... ." to their wish.

After the online forms were collected from the participants, the metaphor samples with their justification for distance education concept were transferred to the computer. The data were analyzed through the steps given below and used in the study of Saban (2008).

a) Coding and Elimination Step: The metaphors formed at this step are arranged in an alphabetical order. The metaphors with their justification were analyzed.
b) Developing a Category: The metaphors with their justification developed by the teachers were contextualized and conceptual categories were formed based on their relationships.
c) Ensuring Validity and Reliability: Expert opinion was asked to determine the distribution appropriateness of conceptual categories and metaphors by categories. The formula of Miles and Huberman (1984) was used and the reliability between coders was calculated as 95%.
d) Providing Distribution of Category and Metaphor: The frequencies and percentages of the metaphors classified under the categories formed for the related concepts are given in tables.

4. Findings

This part provides analyses of the data obtained. The metaphors collected through a data collection tool have been analyzed under seven categories. Descriptions and frequency values of the categories are given below.

Table 1: Categories and Frequencies of Preschool Teachers' Metaphor Perceptions

Name of Category		**f**	**%**
Distance Education As an Inadequate Period	sugar-free jam (1), licking a candy from its package (1), missing training (1), unideal training environment (1), imagination (1), missing description (1), mockup (1), table with a broken leg (1), distanced (1), letters that we cannot touch (1), close to formal education (1), touchless communication (1), uncertainty (1), it is not as effective as formal education (1), artificial (1), temporary troubleshooter (1), medication (1), theater (1), demonstration (1), wiping the window (1), half school (1), lock (1), sailless vessel (1), seasonless strawberry (1), infertile (1)	25	26.32
Distance Education As a Difficult Period	difficult (3), distant love (1), homesickness (1), ill-communication (1), filter (1), music made by a hearing impaired person (1), miracle (1), uninoculated tree (1), a difficult trip (1), a ray of hope (1), sinking a well with a needle (1), working two times more (1), a difficult process (1), humped (1), compelling (1), unshelled pistachio (1), whistle in the wind (1), clown (1), condensed mainstream education (1)	21	22.11
Distance Education As a Positive Period	boon (1), better than nothing (1), light (1), in-class family involvement (1), the top of technology (1), a basic need (1), reinforcing acquisitions of children (1), rescuer mediator system (1), necessary (1), trip (1), family meeting (1), mirror of the school (1), lifeguard (1), phone call (1), succeeding by overcoming the obstacles (1), comfortable (1), plausible (1), gas mask (1), flower (1)	19	20.00

Name of Category		**f**	**%**
Distance Education As an Infertile Period	infertile (2), not fitting puzzle piece (1), deceiving (1), inefficient (1), decreasing water in the dams of Turkey (1), warm water (1), non-filling glass (1), arid land (1), aimless video (1), eating vegan meat (1), burned out lamp (1), a meal stuck to the pan and burned (1), balloon (1)	14	14.74
Distance Education As an Obligation	obligation (1), meal dined compulsorily (1), least-worst (1), forced education method (1), difficult but necessary (1), effort (1), railway wagon (1)	7	7.37
Distance Education As Inequality	inequality of opportunity (1), useless (1), a high life (1), impractical (1), jacuzzi (1)	5	5.26
Other	living in a country you do not know its language (1), welcoming guests in the living room (1), road (1), land (1)	4	4.21
Total		**95**	**100**

Table 1 indicates preschool teachers' metaphor categories and frequencies. According to Table 1, metaphor perceptions of preschool teachers are gathered under seven categories which are "Distance Education As an Inadequate Period", "Distance Education As a Difficult Period", "Distance Education As a Positive Period", "Distance Education As an Infertile Period", "Distance Education As an Obligation", "Distance Education As Inequality", and "Other". Considering the frequencies of the categories, the metaphors are gathered mostly under the "Distance Education As an Inadequate Period" category (26.32%). On the other hand, the least metaphors are in the "Other" category (4.21%).

Table 2: Metaphor Perceptions and Frequencies of Preschool Teachers

Metaphors	Description	N	%f
Distance Education As an Inadequate Period			
sugar-free jam	"there is no materials and infrastructure needed"	1	1.05
licking a candy from its package	"there is nothing like receiving education in the classroom"	1	1.05
missing training	"it is not right to call out from the screen when trying to keep away from the screen"	1	1.05
unideal training environment	"attention span of children is very short and home environment negatively affects courses"	1	1.05
imagination	"because children are not offered with home environment they need"	1	1.05
missing description	"children are exposed to various distracters on screen"	1	1.05
mockup	"distance education does not reflect reality just like mockup"	1	1.05
infertile	"it is indispensable for us to make eye contact with and be close to children"	1	1.05
table with a broken leg	"it is incomplete without having one to one contact"	1	1.05
distanced	"you can see and talk but cannot touch"	1	1.05
letters that we cannot touch	"teachers cannot express themselves as they wish"	1	1.05
close to formal education	"there are no teachers present"	1	1.05
touchless communication	"physical verbal communication with children is very limited"	1	1.05
uncertainty	"you do not know what you have taught to children and how much they have learned"	1	1.05

Metaphors	Description	N	%f
it is not as effective as formal education	"face-to-face education is more effective and permanent"	1	1.05
artificial	"asocial"	1	1.05
temporary troubleshooter	"it cannot replace face-to-face education"	1	1.05
medication	"it heals but does not regenerate"	1	1.05
theater	"children and teachers watch each other but cannot exactly be together"	1	1.05
demonstration	"you do but do not know whether reached to the students"	1	1.05
wiping the window	"no matter how much you endeavor, there are points not reaching to students"	1	1.05
half school	"no full efficiency"	1	1.05
lock	"it does not open without the correct key"	1	1.05
sailless vessel	"it is very difficult for students to achieve their targets through distance education"	1	1.05
seasonless strawberry	"every child has different reinforcing environment and family attitudes, even if believed to come from education, it is not enough"	1	1.05
Distance Education As a Difficult Period			
difficult	"it is not possible to reach all students" "there is lack of attention in front of the monitor" "it is difficult to keep young children in front of the monitor"	3	3.15
distant love	"you love but cannot touch"	1	1.05
homesickness	"out of sight out of mind"	1	1.05
ill-communication	"it is difficult to convey this on screen in a group where gestures and facial expressions are very important"	1	1.05
filter	"it is difficult to do this in distance education in a group educated through touches and motions"	1	1.05

Metaphors	Description	N	%f
music made by a hearing impaired person	"proceeding without feeling is very difficult but valuable"	1	1.05
miracle	"it is very difficult to reach a miracle"	1	1.05
uninoculated tree	"it is very difficult to get efficiency and have rapid progression at a short time"	1	1.05
a difficult trip	"it is difficult due to the age group"	1	1.05
a ray of hope	"we keep providing education to the children though it is compelling"	1	1.05
whistle in the wind	"we endeavor to do this remotely even when we have difficulty in face-to-face education"	1	1.05
clown	"you should address to every child"	1	1.05
sinking a well with a needle	"it is difficult to transfer something to individuals without eye contact"	1	1.05
condensed mainstream education	"all acquisitions are provided at a short time"	1	1.05
working two times more	"it is difficult to do activities from the screen and to receive feedback from the parents"	1	1.05
a difficult process	"education on online platform is not very successful"	1	1.05
humped	"it a burden to not only students and teachers but parents too"	1	1.05
compelling	"it is difficult in the age group where there is much socialization"	1	1.05
unshelled pistachio	"either you broke the nut or your tooth trying to open it"	1	1.05
Distance Education As a Positive Period			
boon	"it is better remotely"	1	1.05
better than nothing	"education is a must!"	1	1.05

Metaphors	Description	N	%f
light	"it can reach the students at the longest distance"	1	1.05
in-class family involvement	"our students carry out instructions together with their parents during the class"	1	1.05
the top of technology	"the technology was used productively"	1	1.05
a basic need	"everything must be integrated with virtual environment"	1	1.05
reinforcing acquisitions of children	"one-to-one education is not available, repetitions help students to learn better"	1	1.05
rescuer mediator system	"it continues communication between teachers and students at inappropriate times"	1	1.05
necessary	"the students lag behind in education due to the pandemic"	1	1.05
trip	"facing various difficulties during the trip, we can have experience and fast change and transformation"	1	1.05
family meeting	"during the class, you visit the students and they visit you"	1	1.05
mirror of the school	"educational process continues and is followed up by this mirror"	1	1.05
lifeguard	"it became breath for education system during the pandemic"	1	1.05
phone call	"we establish communication mutually"	1	1.05
succeeding by overcoming the obstacles	"it is the most enjoyable side of succeeding"	1	1.05
comfortable	"saving time"	1	1.05
plausible	"health is the most important"	1	1.05
gas mask	"breathing is a need"	1	1.05
flower	"people become happier seeing flowers"	1	1.05

Metaphors	Description	N	%f
Distance Education As an Infertile Period			
infertile	"face-to-face education is more effective"	2	2.1
	"it is important for children to go to school and experience school atmosphere"		
not fitting puzzle piece	"face-to-face education is more effective in every way"	1	1.05
deceiving	"efficiency is rare"	1	1.05
inefficient	"nursery class requires more interaction due to the age group"	1	1.05
decreasing water in the dams of Turkey	"looks like drought in education"	1	1.05
warm water	"does not cut heat"	1	1.05
non-filling glass	"we cannot get efficiency despite our effort"	1	1.05
arid land	"you want to plant and green seeds but fail as the soil is not productive"	1	1.05
aimless video	"no social environment"	1	1.05
eating vegan meat	"you take courses but no productivity"	1	1.05
burned out lamp	"it does not radiate so there in no illumination"	1	1.05
a meal stuck to the pan and burned	"it has missing and neglect as there is no sufficient participation, so it does not flavor"	1	1.05
balloon	"it seems to be effective but it is a hollow"	1	1.05
Distance Education As an Obligation			
obligation	"it is applied obligatorily"	1	1.05
meal dined compulsorily	"it is a dilemma no matter what you do"	1	1.05
least-worst	"no alternative"	1	1.05
forced education method	"a risk free method by which you can reach the children and their parents during the pandemic"	1	1.05

Metaphors	Description	N	%f
difficult but necessary	"continuity is essential in education and should be maintained"	1	1.05
effort	"Participation and acquisition of the students and communication with parents require effort"	1	1.05
railway wagon	"it is a part of wagons going in the same direction"	1	1.05
Distance Education As Inequality			
inequality of opportunity	"children who do not have certain facilities and conscious parents are deprived"	1	1.05
useless	"distance education has deepened inequality of opportunity"	1	1.05
a high life	"only those with adequate facilities can live"	1	1.05
impractical	"not everyone has a tablet"	1	1.05
jacuzzi	"those who have it can use it only"	1	1.05
Other			
living in a country you do not know its language	"one can have knowledge of it over time"	1	1.05
welcoming guests in the living room	"a visit for a certain period"	1	1.05
road	"our destination is uncertain"	1	1.05
land	"we will plant something and wait for harvest"	1	1.05

Table 2 indicates preschool teachers' metaphor perceptions and their categories. Descriptions of these categories are given below.

4.1. Distance Education As an Inadequate Period

Considering metaphoric descriptions in this category, preschool teachers do not find distance education as adequate as face-to-face education. Metaphors such as table with a broken leg: "*it is incomplete without having one to one contact* (S_{36})", distanced: "*you can see and talk but cannot touch* (S_{38})", letters that we cannot touch: "*teachers cannot express themselves as they wish* (S_{45})" have led the way in creating this category.

4.2. Distance Education As a Difficult Period

Considering metaphoric descriptions in this category, preschool teachers find distance education as adequate as face-to-face education. Metaphors such as difficult: "*it is not possible to reach all students* (S_4)", "*there is lack of attention in front of the monitor* (S_5)", "*it is difficult to keep young children in front of the monitor* (S_{47})", sinking a well with a needle: "*it is difficult to transfer something to individuals without eye contact* (S_{41})" have led the way in creating this category.

4.3. Distance Education As a Positive Period

Considering metaphoric descriptions in this category, preschool teachers have positive perceptions on distance education. Metaphors such as boon: "*it is better remotely* (S_{14})", light: "*it can reach the students at the longest distance* (S_{24})", mirror of the school: "*educational process continues and is followed up by this mirror* (S_{60})" have led the way in creating this category.

4.4. Distance Education As an Infertile Period

Considering metaphoric descriptions in this category, preschool teachers have defined distance education as infertile for students; that is, the students have not learned through distance education. Metaphors such as infertile: "*face-to-face education is more effective in every way* (S_6)", *it is important for children to go to school and experience school atmosphere* (S_{28}), deceiving: "*efficiency is rare* (S_{11})", eating vegan meat: "*you take courses but no productivity* (S_{73})" have led the way in creating this category.

4.5. Distance Education As an Obligation

Considering metaphoric descriptions in this category, preschool teachers do distance education obligatorily. Metaphors such as obligation: "*it is applied obligatorily* (S_{39})", meal dined compulsorily: "*it is a dilemma no matter what you do* (S_{52})", least-worst: "*no alternative* (S_{53})" have led the way in creating this category.

4.6. Distance Education As Inequality

Considering metaphoric descriptions in this category, preschool teachers state that distance education process has made inequality of opportunity among students more apparent. Metaphors such as inequality of opportunity: "*children who do not have certain facilities and conscious parents are deprived* (S_8)" useless: "*distance education has deepened inequality of opportunity* (S_{13})", a high life: "*only those with adequate facilities can live* (S_{19})" have led the way in creating this category.

4.7. Other

The metaphoric descriptions in this category have not been gathered under a common category, so they are given in the "Other" category. Metaphors such as living in a country you do not know its language: "*one can have knowledge of it over time* (S_{40})", welcoming guests in the living room: "*a visit for a certain period* (S_{74})", road: "*our destination is uncertain* (S_{90})" and land: "*we will plant something and wait for harvest* (S_{91})" have led the way in creating this category.

5. Results and Discussion

In the light of the findings, preschool teachers have a general view on distance education as inadequate, difficult and infertile. Besides, they have signified distance education as a situation causing inequality of opportunity among students. The study by Salman (2020b) has shown that distance education increases inequality of opportunity among students. Distance education which is implemented due to the pandemic focuses on children who have natural development, has usage problem besides accessing problems (Salman, 2020a), inequality in accessing information technology and utilization ability affect learning, and domestic facilities

and learning differences become more visible during distance education (Salman, 2020b). From this point of view, teachers have negative attitudes in general towards distance education.

Although teachers have negative perceptions regarding distance education in general, the study results have shown there are other teachers who have positive attitudes. Teachers have stated that technologies used during distance education offer students an infinite learning domain. There are also teachers who point that distance education is easier. Students having the opportunity to study from the resources uploaded to the system as much as and whenever they want, the system giving the opportunity to teach the course in different time zones and places, and the students becoming more active in the learning process are some positive sides of distance education (Kurnaz & Serçemeli, 2020).

Besides, some of the teachers have stated that distance education is essential even though it is impractical, difficult or a process which causes inequality. Some have perceptions that the most appropriate education can be ensured by distance education during the pandemic.

Overall, the study indicates that teachers have some problems with distance education. Distance education and open learning made through TV fall short in feedback, measuring academic achievement and evaluation (Can, 2020). These problems should be solved to carry out distance education healthily. Teachers' perceptions may alter by solving these problems.

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Chapter VI

INFORMATION LITERACY STANDARDS IN EARLY CHILDHOOD

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Introduction

It is known that since the beginning of humanity the accumulated knowledge is transferred to the next generations first through verbals and gestures and then through symbols that were created on different materials with the discovery of writing. For many years, very few people have benefited from all kinds of knowledge that have been revealed in different ways in different places through experiences since the first ages. Therefore, the spread of knowledge to people has been little and slow. Recording the findings and information obtained through experimental studies after the discovery of the manuscript has cumulatively expanded the field of knowledge. The recent spread of formal education has contributed to the delivery of information to more people in a more systematic and written form.

At the beginning of human life, the individual is born without any experience, and their movements are only based on reflexes. The individual, who makes sense of stimuli such as objects, developing

events, situations and phenomena over time, organizes the information by recording them in memory and using them. According to Yılmaz (2009), one of the most important characteristics of human beings is the urge to reveal, acquire and use in order to adapt to the environment, satisfy their curiosity and meet various needs that make their life easier.

Modern learning and knowledge acquisition approaches have gradually differentiated and now learning, which is based on lifelong learning, has been replaced by the understanding of self-directed, self-controlled and strategic learning (Adıgüzel, 2011). Knowing what kind of information they need, scanning the sources, finding the right information, selecting from the obtained data, evaluating, organizing and sharing effectively have become indispensable skills not only for researchers and academics, but also for ordinary people. It can be said that equipping all segments of society with these skills is one of the important factors in shaping the future of a country. According to Önal (2010), the Republic of Turkey presents an integrated rapidly progressing structure thanks to lifelong learning, and it is on the way to becoming an information society. In this context, some public and private institutions and non-governmental organizations, especially the Ministry of National Education, universities, municipalities, carry out various programs within the scope of lifelong learning.

It is argued that modern people should have certain skills in order to survive, adapt to nature and changing conditions, be successful and stay safe in the presence of competition. As of the 2000s, it has become impossible for a person to follow, receive and learn the rapid changes in information, technology and all other fields. It can be said that people must have the skills called "21st Century Skills" in order to use the needed information, technology and other opportunities in the most efficient way. From this point of view, as Anagün et al. (2016) stated these skills should be included in education programs so these individuals can acquire 21st-century skills in formal education. In this context, generally individuals who are with 21st century skills, can gain skills such as having inquiring and questioning structures, thinking critically and productively, producing solutions suitable for different and changing conditions and making the right decisions. Based on the fact that these skills can be acquired in a process, it is clear that this process should start

with a quality preschool education that are given in the early childhood years. It would be appropriate to establish early childhood education programs which cover 21st century skills.

The basic principles of the latest pre-school education program, which has been updated and created in Turkey, are inclusive of 21st century skills. In the table below, skills belonging to different classifications that can be associated with the basic principles specified in the Ministry of National Education (MEB) 2013 Pre-School Education Program are compared (MEB, 2013). From this point of view, it can be concluded that the MEB 2013 pre-school education program, when implemented properly, supports the skills within the scope of 21st century skills.

Table 5: Basic Principles of MEB 2013 Pre-School Education Program – Matching 21st Century Skills

MEB 2013 Basic Principles of Preschool Education	**Related 21st Century Skill**
It must be suitable for individual differences	personal development
It must support all areas of development	All skill categories
Democratic education approach must be adopted	Personal, social and civic responsibility
Individual interests and environmental opportunities must be taken into account.	Adaptation - Coping with challenges
Learning by doing and experiencing is essential.	Entrepreneurship and Self-Management
It must be given importance to speak Turkish correctly and beautifully.	Communication skills
Positive behaviors based on values must be developed.	Personal, social and civic responsibility
Education must give the child self-control.	Self-management – Self-regulation
All activities must be game based	Life skills – Cooperation and interpersonal relationships
Family and environment must be taken into consideration.	Cultural sensitivity - Social skills

MEB 2013 Basic Principles of Preschool Education	Related 21st Century Skill
Children and families must actively participate in the education process.	Interactive communication/ Collaboration, interpersonal relations
Guidance services must be integrated with the education process.	Teamwork - Planning and consequence management
Harmful behavior must be avoided in communication.	Interactive communication
Entrepreneurship must be supported with a reassuring approach.	Entrepreneurship and Self-Management
Individual must be aware of his/her own and others' feelings.	Compatibleness – Personal and social responsibility
The child's development/program must be evaluated continuously.	Planning and consequence management
Evaluation results must be used for the development of the children, teacher and program.	Lifelong learning – self-regulation
Children's imagination, creative and critical thinking skills, communication and expressing their feelings must be developed.	Critical thinking - Problem Solving - Creativity - Interactive communication - Curiosity, creativity and risk taking

It is seen that the classifications of 21st century skills in many literature studies include similar skills. In addition, it can be said that the presence of similar expressions regarding these skills, especially in the basic principles of the pre-school education program in Turkey, allow early childhood educators to provide children with 21st century skills. This period is also extremely important in terms of the rapid acquisition of many types of literacy in various fields by children.

Literature

According to Kress (2003) there is an expansion in the definition of literacy in the 21st century in the face of technological advances. He holds that literacy, which is a conceptual output of the Anglo-Saxon understanding,

covers the body of literature in the 2000s. Literacy is generally defined as the ability to effectively use communicative symbols that are meaningful to society (Kress, 2003; Kellner, 2001). Based on this definition, although it is not possible to read and write through the alphabet in the old sense, it is possible for children, as well as by all individuals to demand, research and use vital symbols in all areas of life.

Information literacy is defined in different ways by many researchers and institutions. Two basic classifications are formed by the concepts of "information literacy" and "information literate". Kurbanoğlu and many researchers consider Zurkowski as the father of the concept and include a definition that is focused on people with information literacy skills. According to this definition, a person, who uses information resources and applies the necessary skills and techniques to produce information-based solutions for the problems that he/she encounters in business and management, is called information literate (Kurbanoğlu, 2010; Zurkowski, 1974). In another definition, an information literate individual is defined as a person who has the skills required to find and use the information needed to solve problems and make decisions (Burchial, 1976).

Looking at the definitions focusing on the concept of "information literacy", the United States University and Research Libraries Association defined information literacy as "the ability to find, obtain, analyze and use information" (ACRL, 2000). Another definition done by the Chartered Institute of Library and Information Professionals (CILIP, 2004) in England has expressed information literacy as "knowing when and why information is needed, where it can be found, how to evaluate it and how to communicate it ethically". In a broader definition, information literacy is defined as the ability of individuals to effectively seek, evaluate, use and create information in all areas and times of life in order to achieve their personal, social, professional and educational goals (IFLA, 2005).

The amount of information produced in modern times has increased so much that more information has begun to be revealed in four or five years than the entire information produced until that time. This situation causes information piles and pollution in both academic and social environments. As Heider (2009) indicates, the rapid increase

in the knowledge produced in the last 30-40 years, is a situation that educators cannot ignore. Information literacy has key importance in terms of effective school and collective teacher competencies (Uğurlu, Beycioğlu, & Abdurrezak, 2017). In this context, it is important that all individuals with the qualifications of educators be aware of this situation, raise awareness of both themselves and the target audience to acquire information literacy skills, provide the necessary environment and equipment and encourage them.

It is foreseeable that the transformation into an information society is a process. In order to achieve this goal twenty-first century skills, especially information literacy skills, should be acquired by children in different ways. Some countries came together at the World Summit on the Information Society by taking action especially on information and communication technologies and types of e-literacy. In the content of this summit, which supports information literacy, the ways of using information and communication Technologies were discussed in order to transform into an information society (State Planning Organization, 2008). From this point of view, it can be said that individuals with information literacy skills are more likely than other people to quickly reach the right information they need through this information pollution.

Early childhood has a critical importance for the concept of literacy, whose meaning is expanding day by day in the modern world. Children are now laying the foundation for media literacy, mathematical literacy, technology literacy, visual literacy and similar literacy skills at an early age. As the information surrounding life increases, information literacy becomes more important than other skills for the healthy development of the cognitive structure. Because, with today's conceptual structure, reading, writing and basic life skills are not sufficient and individuals who can continuously improve themselves in all professional fields are needed in society (Taşar, 2003). For this reason, the literacy of all kinds of information can be productive and permanent with the laid foundation at an early age. In order to reveal the necessity of literacy skills in early childhood, attention should be paid to the following items. They also reveal the differences between the concepts of literate and literacy:

1. Literate is based on decoding and literacy is based on meaning.
2. Literate indicates a category and literacy indicates a degree.
3. The symbol system of literate is the letters in print media; the symbol system of literacy is the "things".
4. Static definition of literate has been done; Static definition of literacy continues. (Kurudayıoğlu and Tüzel, 2010).

Information literacy is a skill area that is becoming increasingly necessary in the modern world where the knowledge and innovations produced are becoming more complex and differentiated. The information literacy skill area forms the basis for lifelong education. Whether the current era is called the information age or another name, accessing and using accurate and useful information, the production of new and correct information is of vital importance. Information literacy is a sub-dimension in the work of many researchers who make 21st century skills classifications. It is important for a healthier future to be accepted by political authorities, educational organizations and society and to bring it to children. While libraries containing written sources, which were the main source of information in previous centuries, and were the center of access to information, today these libraries have turned into only one of many dimensions of information literacy. For this reason, libraries must develop new tools and methods in the face of changing information concepts and resources. Because, besides the increase in other types of information, the amount of printed information is doubled every five years (Bundy, 1999). However, it should bear in mind that digital environments are more likely to disappear than libraries. The development that affected the understanding of the importance of information literacy was the emergence of new information technologies in the last quarter of the twentieth century (Rader, 2002). This development has brought more digital information environments to the fore. This situation shows that it is inevitable that libraries should host digital resources as well as printed publications.

As the value of information literacy gains more importance, theoretical and applied researches are also increasing. According to the study conducted in the USA, it was determined that the rate of cited

publications on information literacy increased 6 times between 1996 - 2005 (Pinto, Cordon, & Diaz, 2010). Information literacy studies on early childhood education are few in the body of literature. In this context more research is focused on higher education and secondary education. In a report published by the American Library Association towards the end of the twentieth century, primary and preschool education is not mentioned at all under the title of "Opportunities to Improve Information Literacy" and a library-centered development is foreseen (ALA, 1989). However, since the 2000s, In the USA, many institutions have made a call such as The Association for Supervision and Curriculum Development (ASCD) suggested integrating information literacy into all learning environments from early childhood to university (Bawden, 2001). Based on this call, it is necessary to give enough importance to information literacy in the early childhood period, when the foundation of life is laid. And in this way, it is more likely to become effective information literate in the following years.

An examination of theoretical and applied studies on information literacy shows that most research in this regard is done in the United States (Tokarz & Bucy, 2019). According to Eisenberg and Johnson (2002), information literacy is a six-stage process. These are listed such as; identifying information needs, searching for information, finding information sources, using information sources, obtaining and transmitting information, and evaluating information. Kurbanoğlu and Akkoyunlu (2002) state that in the modern sense information literacy is to reach information and to use the technology effectively in accessing, evaluating, organizing and sharing that information. In other words information literacy is comprehensive, including being information literate. Çepni (2015), on the other hand, basically states that information literacy has three dimensions. These are; accessing resources (ethical and legal ways), managing and evaluating information, and using information efficiently.

In Turkey Erdem and Akkoyunlu (2002) examined the information literacy steps in three categories and expressed them as collecting information, organizing information and presenting the information. It can be said that this classification mostly appeals to adults or secondary

education levels and above. The sub-steps of these categories are shown in Table 6.

Table 6: Information Literacy Steps (Erdem and Akkoyunlu, 2002)

Steps	Sub-steps
Collecting information	Identifying the problem based on the needed information
	Determining the needed information to solve the problem
	Accessing the information from different information sources (printed, electronic)
	Evaluating the accessed information
	Gathering reliable and accurate information
Organizing information	Choosing the collected information to fit the problem
	Organizing the selected information in the most appropriate format
	Integrating the information with previous information
	Organizing information in a way that responds to the problem and paying attention to the integrity of meaning
	Reporting the work
Presenting information	Reviewing information
	Identifying the characteristics of the target audience
	Determining the presentation strategy
	Summarizing information without compromising the integrity of meaning
	Presenting with technology support

Considering the development of information literacy skills, Sheehy (2001) and Eisenberg & Berkowitz (1998) introduced a six-step development process by. These steps, which are similar to each other are given in Table 7.

Table 7: Two Different Steps of Information Literacy (Cited by: Polat, 2005)

Source	Steps of Information Literacy
Eisenberg and Berkowitz (1998)	1. Identifying the information needs 2. Searching the information 3. Finding information sources 4. Using information sources 5. Transmitting information 6. Evaluating information
Sheehy (2001)	1. Identifying information and meaning 2. Information collection and storage 3. Editing information 4. Analysing and evaluating information 5. Interpreting and presenting information 6. Delivering information and collaboration

However, the increasing fund of knowledge, resources, transmission ways and differentiating methods have now led to questioning of these stages. Individuals, who develop information literacy skills, acquire a key skill by learning how to identify the information needed throughout their lives, how to reach that information, how to use the information, and how to create new information by establishing relations between pieces of information. In this respect, programs and approaches must develop information literacy skills by introducing them to children, especially in early childhood, when a large part of learning about life skills takes place.

In early childhood, children interact with their environment as much as possible and try to recognize and make sense of the objects, situations, events or phenomena around them through their sense organs. In this process, as Ünal and Akman (2006) state, children acquire their knowledge of the world by observing events, following their research instincts, measuring the results of the games they play, and briefly using scientific processes. According to Piaget, children cannot use these scientific process skills consciously in early childhood (Çepni et al., 2006; Günçe, 1971). In this respect, children try to acquire knowledge systematically, whether they are aware of it or not.

The use of information technologies in order to access information, which is one of the dimensions of information literacy, is increasing day by day. From this point of view, it can be said that the rate of including the dynamics of information literacy in the education process is increasing gradually with the use of tools such as smart boards, tablets, computers, internet and mobile phones, and in addition to those access to resources accelerates as well. However, in the report of the London School of Economics (LSE) about the usage of digital media by children across Europe, it is underlined that this situation has risks in many areas, especially basic habits such as sleep disorders and eating disorders (LSE, 2014). Since preschool children are curious and open to discovery, these risks should be turned into opportunities and technological opportunities should be used for equal and educational purposes. At the beginning of the twenty-first century, in the technology literacy research, Akkoyunlu and Tuğrul (2002) conducted a study with children 4-6 years old in Turkey and found that 54% of the participants were technology literate at a high level. These findings reveal that technology must be used carefully in terms of information literacy skills.

Information literacy skill is a requirement not only for students but also for all segments of society (Kakırman-Yıldız, 2016). Improving the "information literacy" level of children or students at different education levels, starting from early childhood, is a prerequisite for participatory democracy, social participation, lifelong learning, production of new knowledge and concepts and increasing the national, social and personal welfare. For this reason, "information literacy" awareness should be risen first for the pre-school children, who are in the first step of life and education and increase their skill level in this area. According to Kılıç (2018), individuals should not be expected to go to universities for this skill, and that information literacy skills should be gained from the pre-school period. From this point of view, information literacy from an early age is a skilled field that can contribute directly to cognitive development, language development and social-emotional development, and indirectly to motor development and self-care skills.

Aldemir (2003) stated that the first theoretical study on information literacy in Turkey was done by Gürdal in 1998 and the first applied study was conducted by Kurbanoğlu and Akkoyunlu in 2001. Information

literacy skills, which are increasing day by day, are also of critical importance in terms of forming the basis and supporting other twenty-first century skills. Bruce (1997) stated that seven different understandings of information literacy can be developed and they can be adopted singularly or relationally. These are knowledge process understanding, knowledge resources understanding, information technology understanding, knowledge control understanding, knowledge diffusion understanding, knowledge construction understanding, and wisdom understandings. Thanks to the holistic understanding and modular approach of the education programs, it can be claimed that ideal information literacy can be developed when these understandings are used together. In this study, the cyclical process of information literacy has been defined for early childhood. In this context, the cyclical process revealed the stages that researchers go through during the process and the skills that contribute to these steps as shown in Table 8.

Table 8: The cyclical process related to the information literacy process

Steps of the Information Literacy Process	Circular Skills in the Process
Recognizing and identifying information needs	Awareness Problem-solving Definition
Inclining to research	Active participation Cooperation Social skills
Doing research	Accessing the resource Ability to use technology
Checking the accuracy of the obtained information	Critical thinking Comparison
Expressing and asking questions	Communication Questioning
Sharing information	Awareness of society and the environment Sensitivity
Producing new information	Creativity Analysis Synthesis

The process aimed to educate individuals to have high information literacy and level of awareness, and become capable of researching information about all aspects of life critically, questioning and using (using what? information?) by editing, sharing the obtained information and producing new knowledge from those pieces of information, keeping up with the era in which they live and contributing to this period. In order to achieve these goals, some standards should be established and used in information literacy skills programs that are suitable for all education levels especially pre-school education. This study was carried out to draw attention to this important need of early childhood and to produce a solution.

Method

Qualitative research designs are used in this study. Yıldırım and Şimşek (2013) state that qualitative research is a type of research that uses methods such as observation, interview and document analysis and it is also used to reveal perceptions and events in their natural environment. According to Gay, Mills & Airasian (2009), the basic qualitative research is conducted on a purposefully selected small study group and the data collected from this group do not include numerical interpretation.

Different research designs such as phenomenology, case study, theory building, cultural analysis, and action research can be used in qualitative research. Since being suitable for the subject of this study, the grounded theory approach is used in this research. Yıldırım and Şimşek (2013) state that the purpose of the grounded theory method is to develop a theory about an event or phenomenon and to reveal the concepts and stages that explain the process. According to Strauss and Corbin (1994), the grounded theory is a qualitative research method that uses systematic steps to constructed inductively a phenomenon. The general methodology of grounded theory is to analyze systematically the collected information that is embedded in the data. According to Charmaz (2009), a researcher, who develops a theory, is aware that his/her work is not entirely objective.

The grounded theory approach, which is also named Grounded Theory Methodology and Grounded Theory, is based on the process of combining and defining categories obtained from meaningful data and

putting forward a theory as a product (Arık & Arık, 2016). According to Willig (2013), theoretical products are formed as a product as a result of defining categories, establishing connections between these categories and establishing relations in the theory-building strategy. In this process, key strategies such as comparative analysis, descriptive analysis, theoretical sampling, and theoretical coding can be used. The main purpose of this approach is to develop theories based on the data obtained in social research. In this study, using the grounded theory approach, the resources containing the research studies on information literacy in the context of the standards, dimensions and practices that have been created beforehand regarding literacy skills in the context of the basic elements (wh questions) that should be present in a program or system, were scanned by considering the developmental characteristics and educational programs of early childhood. Based on the data obtained, dimensions and standards (objectives and indicators) of information literacy skills in early childhood are created.

Basic Data Sources

The research resources consist of all kinds of documents (book, article, report, project, application article) related to information literacy. In research with the sampling grounded theory strategy, a specialized group of scientific research is used, which is following the theoretical sampling method and consists of standards, and scientific reports. In this approach, the samples of the research are selected based on their contribution to the development process of the theory by researchers who are using the theory-building method. For this purpose, sampling is included until the documents in the literature related to all aspects or any part of the subject repeat each other according to their content (Yıldırım & Şimşek, 2013). Theoretical satisfaction occurs when the newly found data fits into the previously found and determined categories, and this situation indicates that the data collection process is completed (Ilgar & Ilgar, 2013). Documents on information literacy skills are studied until they respond to elements of a program or system in order to establish information literacy standards for early childhood, and then the relationship and hierarchy of

these elements with each other are designed. A holistic examination of the entire structure, as well as an examination of each item, is done. The examination process continues until the sources are repetitive. The table of the considered standards in this study is given below.

Table 9: Information literacy standards considered in this study

No	Yıl	Standart Kaynağının Adı	Üreten kurum/kuruluş veya kişi
S1	1996	Rubrics for the Assessment of Information Literacy	Denver State Library and Adult Education Office
S2	1998	Information Literacy Standards for Student Learning	American Library Association (ALA) & AECT
S3	1999	Information skills in higher education	Society for College, National and University Libraries (SCONUL)
S4	2000	Information Literacy Compentency Standards for Higher Education	Association of College & Research Libraries (ACRL)
S5	2004	Australian and New Zealand information literacy framework	Australian and New Zealand Institute for Information Literacy (ANZIIL) & CAUL
S6	2006	Gudelınes On Informatıon Lıteracy For Lıfelong Learnıng	International Federation of Library Associations (IFLA)
S7	2006	Achieving Information Literacy Standards	Canadian Association for School Libraries (CASL)
S8	2008	Information literacy: essential skills for the information age (Big6)	Michael B. Eisenberg
S9	2009	Standards for the 21st Century Learner	American Association of School Librarians (ASSL)
S10	2009	Information Literacy Standards	Albemarle County Public School

Year Name of Standard Resource Producing institution/organization or person

Standards, which are related to information literacy, have been used for a long time. Since 2000s the changes have accelerated and the standards have been updated. The oldest of these standards in the directive is the one prepared by the Denver State Library and Adult Education Office in 1996. The next standards are prepared by following institutions in order: American Library Association (ALA) and Association for Educational Communications and Technology (AECT) in 1998, Society of College, National and University Libraries (SCONUL) in 1999, Association of College & Research Libraries (ACRL) in 2000, Council of Australian University Librarians (CAUL) & Australian and New Zealand Institute for Information Literacy (ANZIIL) in 2004, International Federation of Library Associations (IFLA) in 2006, Canadian Association for School Libraries (CASL) in 2006, Eisenberg's Big6 model in 2008, American Association of School Librarians (AASL) in 2009, and Albemarle County Public School (ACPS) in 2009. This scope consists of seven national standards, one model prepared by researchers and two local and target group standards.

It is stated that the guidelines and standards in the document called Rubrics for the Assessment of Information Literacy prepared in 1996

by the Denver State Library and Adult Education Office affiliated to the Colorado Education Unit, were prepared for students, teachers and library professionals. In addition, in the rubric part, each indicator was evaluated at 4 levels (in progress, essential, proficient, advanced) (Denver State Library and Adult Education Office, 1996).

Information literacy standards for all learning individuals were established in 1998 by the American Library Association (ALA) and Association for Educational Communications and Technology (AECT). Three levels of information literacy standards are, information literacy, independent learning and social responsibility, and their sub-levels are defined Standards focus on defining information needs, identifying relevant sources of information, evaluating information, determining the accuracy, relevance and comprehensiveness of information, organizing information, and using information creatively (ALA & AECT, 1998).

Society of College, National and University Libraries (SCONUL) established the standards in order to improve the information literacy skills under seven headings. These standards for higher education are a part of the larger structure called the Information Skills Model, which includes library skills and information technology skills (SCONUL, 1999).

The standards, which are developed by the Association of College & Research Libraries (ACRL) in 2000, consist of five titles and different numbers of performance indicators. The output content is also explained for each indicator of the standards established for the higher education level (ACRL, 2000).

The standards defined in 2004 by the Australian and New Zealand Institute for Information Literacy (ANZIIL) and the Council of Australian University Librarians (CAUL) consist of 6 steps. It is stated that the standards, which are focusing on literate individuals, are adapted by the standards of ALA & AECT. In addition, learning outcomes are supported with examples (ANZIIL, 2004).

The standards prepared by the International Federation of Library Associations (IFLA) in 2006 are developed by building on the previous standards. Standards are consisting of access, evaluation and usage components and their subcomponents (IFLA, 2006)

Eight standards prepared by the Canadian Association for School Libraries (CASL) in 2006 focus on the learning outcomes of information

literate students. There are different numbers of indicators under these standards (CASL, 2006).

Big6, a model produced by Eisenberg, (2008), is also included in this scope because of containing definitions close to standards. This model consists of six stages: identifying the need of information, developing a search strategy, resources and access, using, synthesizing and evaluating information. Super3, which is obtained by simplifying the first four of these stages, is structured for children up to eight years old.

Standards for skills, resources and tools have been established for the information for 21st Century students which is first updated in 2007 by the American Association of School Librarians (AASL), then in 2009. Performative skills, tendencies, responsibilities and evaluation dimensions are defined relating to each of the four standards (AASL, 2009).

As a narrower example, the standards which are created by the Albemarle County Public School in 2009, a district administration in Virginia, the USA with approximately 14,000 students, are also included in this study. The standards which are accompanied by learning, thinking, studying skills and keywords, are divided into levels for the kindergarten to 5th grade children. Based on ALA standards, 14 library-centered learning outcomes are created for kindergarten students (ACPS, 2009).

In addition to these standards, doctoral theses on information literacy skills are also used to support the theoretical background of the study. In addition, it is seen that the inferences made from the theses are similar to those extracted from the standards. Those selected among the postgraduate theses done in Turkey for this study are shown in Appendix-1. Apart from the postgraduate theses, the doctorate theses made in different countries, that are used in this study, are shown in Appendix-2. Apart from these sources, no Turkish books were found that deal with information literacy independently. The list of books published in other countries in this field, which are used in this study, is given in Appendix-3.

A descriptive survey technique based on document scanning is used in the collection of data. Within the framework of this technique, the documents are examined by grouping and associating within the framework of the four main themes. These themes are information awareness, access to information, using information and knowledge production themes.

Thus, for early childhood children, suitable information literacy standards are defined and detailed within the scope of these themes.

Validity and Reliability

Yıldırım and Şimşek (2013) state that Lincoln and Guba have formed certain strategies in order to increase the quality of qualitative research. In these strategies, researchers propose new concepts suitable for the nature of qualitative research, such as persuasiveness instead of internal validity, transferability instead of external validity, consistency instead of internal reliability, and confirmability instead of external reliability, as an alternative to the concepts of validity and reliability in quantitative research.

In this study, opinions are obtained from information and records management and preschool education experts regarding the dimensions and codes obtained from the collected data and comments made about these data in order to provide the credibility criterion. In order to ensure external validity, some related statements in the sources are given by direct quotation. Regarding the transferability feature, the data, results and comments are presented to the experts who were in the field of child development, education programs, teaching, information and document management, pre-school education, child development and education programs and. There are a total of eight academicians in this research, all are faculty members. They are listed as follows: one professor and one associate professor in the field of information and document management, one professor and two associate professors in the field of pre-school education, one professor and one doctor associate professor in the field of child development, and a doctor associate professor from the field of education programs and teaching. The final sources discussed as a result of the literature review for confirmability are presented in tables.

The situation that provides validity in the qualitative research method is an opportunity to have a predisposition to the research field, to gather detailed information through face-to-face interview method, to collect additional information by going back to the area to verify the collected information (Yıldırım & Şimşek, 2013). Within the scope of this study,

direct data are collected and analyzed by using the descriptive scanning method from the literature and standards previously created for students at different education levels. Dimensions to support the information literacy skills of early childhood children obtained from the sources are created and the expressions related to these dimensions are quoted by giving a code name. As Patton (2014) stated that these processes are carried out with the technique of triangulation, in which two or more experts analyze the obtained qualitative data.

Analysis of Data

The descriptive analysis technique is used to analyze the obtained data in this research. The purpose of the descriptive analysis technique is to transform the raw data into a form that will make it easier for the reader to understand and use if desired. In descriptive analysis, the collected data is summarized and interpreted by taking into consideration the predetermined themes. In this method, the direct quotations are frequently used to reflect the tendencies of the interviewees or observed people (Altunışık, Coşkun, Yıldırım & Bayraktaroğlu, 2001; Yıldırım & Şimşek, 2013). The basic structure of the descriptive analysis is to organize and interpret in a way that the beneficiaries can understand by framing the similar elements and codes in the obtained data for the first time or within the framework of the themes determined from the field. These processes consist of four steps: forming the themes, coding the data, defining the findings from the theme and codes and predicting the findings. Codes are generated according to the expressions extracted from the sources relating to each information literacy theme that is created during this study, afterwards the obtained findings from the codes are interpreted by tabulating. The dimensions, achievements and indicators that were obtained from these interpretations and were emerged as a product of the study have been shaped by the information obtained from the sources including all kinds of studies on information literacy skills, formerly known as library skills.

In this study, obtained facts and skills are grouped, analyzed, adapted and transferred for the first time by scanning the dimensions, standards and practices that were previously created for children of different age groups

and education levels in the literature with the theoretical information under each question ("Why do we acquire knowledge?", "What is the obtained information?", "How is the information obtained/used/produced/shared?", "Where is the information obtained from?", "How much/time is needed for information?", "From/via whom is the information obtained?") and area representing the basic dynamics of a program or system. A certain systematic program is created by transforming the facts and skills that were grouped, analyzed, adapted and transferred for the first time into gains and indicators under each dimension (information literacy skill dimension) in order to construct the information literacy standards of early childhood (forming the theory). Finally, the outcome indicators under each dimension reveal the skill development steps by forming from simple to complex, from easy to difficult, and building on top of each other.

Findings

Considering that it is the basic principle to move forward with simpler and smaller steps in early childhood education, which is the first educational step of human life, a ten-step development is revealed for the development of information literacy targeting early childhood students.

The steps of information literacy skills for early childhood students are expressed by the researchers as follows:

1. Realising the need for information
2. Identifying the need for information
3. Learning information resources/information centers
4. Learning and using information access tools
5. Learning information research methods
6. Reading and writing information
7. Obtaining and saving information
8. Checking the accuracy of the obtained information
9. Organizing the correct obtained information as desired
10. Using the edited information
11. Sharing the information by specifying its source
12. Generating new information/s

As a result of examining the studies carried out in the context of information literacy and its dimensions and the studies containing the developmental characteristics of early childhood children and also taking into account the views of the instructors, four dimensions are revealed as follows; the need for information, accessing to information, usage of information and producing information for the early childhood, An analysis has emerged in which these dimensions are used as themes. Steps and themes of information literacy created for early childhood are shown in Table 10. After this stage, appropriate inferences will be done for preschool children by analyzing the information literacy standards previously established in the literature.

Table 10: Steps and themes of early childhood information literacy

Step	Theme (dimension)
Realizing the need for information. Identifying the need for information	Need for information
Learning information resources/information centers Learning and using information access tools Learning information research methods Reading and writing information	Accessing information
Obtaining and saving information Checking the accuracy of the obtained information Organizing the correct obtained information as desired Using the edited information Sharing the information by specifying its source	Using information
Generating new information/s	Producing information

Need for Information Theme

Erdem and Akkoyunlu (2002) start the information literacy process with "purposive information seeking" without specifying age. However, unlike teenagers and adults, children in early childhood are often unaware of what information they need. For this reason, awareness of needs and interests in information literacy skills should be prioritized by taking into account the cognitive structure of children who are perceiving the stimuli coming from the environment.

In early childhood, individuals form their first experiences about many concepts. Areas of interest are not clear. Existing interests may change in a very short time and new ones may come in their place. The knowledge of all the basic life skills that individual needs to continue his/her life, especially the information about the fields they are directed to in line with their interests and wishes is found in the dimension of information need. In this dimension, the individual first becomes aware of the need for information. Then he/she decides what information will meet those needs.

Accessing to Information Theme

This dimension evaluates how children access all kinds of information by asking where, how, with whom and what tool questions. Within the scope of this dimension, there are channels of access to information, sources of information and methods of accessing information. In the early childhood period, individuals can consider "everything" as a source of information, starting from the closest. With a skill such as imitation, individuals can learn a method of accessing information from many "things". Although there is no alphabet learning in early childhood, children can learn to read symbols of information related to different fields. In addition, children can learn to write this information with the method of illustration. Children must record the information first in order to use this information. The recording process includes text, sound, image, etc.

Using Information Theme

This dimension evaluates where, when, with whom or against whom/what, how and how much children will use the obtained information.

Comparing the information and confirming its accuracy, the need for adaptation in the use of knowledge, and how information should be shared with others in all kinds of environments are available within the scope of this dimension.

Producing Information Theme

In early childhood, individuals usually receive information made available to them by others, but what is permanent in learning is when children discover the information on their own. Discovered information can play an important role in understanding the relations between information later on.

Knowledge production in children, which is not given enough space in the literature, can be seen as an important skill for the development of creativity and scientific research. Two situations can be evaluated in this dimension; children can produce new information using the former information that they have learned or they nominalize the new objects, events or situations they have created. This dimension also includes knowledge production through metacognitive skills, differentiated or manufactured objects, conceptual expression of events or situations.

In the development of information literacy programs, four basic components can be mentioned: target group, objectives (achievements), methods and tools. In the focus of this study, the standards correspond to the objectives (gains) in the related programs. In this study, suitable standards for different education levels are examined and outcome indicators are created for early childhood children. The common expressions are coded within the framework of the above-mentioned themes of the need for information, accessing to information, usage of information and producing information. These codes are shown in Table 11.

Table 11: Codes created from the themes of information literacy

Theme(dimension)	Resources	Codes
Need for information (NI)	S1,S2,S3,S5,S6,S7 S1, S2, S4, S5, S6, S8, S9, S10	NI. 1. Distinguishing the need for information NI. 2. Knowing what kind of information is needed
Accessing Information (AI)	S2, S3, S5, S6, S7, S8 S1, S3, S4, S6, S7, S8, S9, S10 S1, S4, S5, S6, S7, S8, S9, S10	AI.1. Knowing information sources AI. 2. Knowing how to get the information AI. 3. Being literate about the obtained information
Using Information (UI)	S1, S4, S5, S7, S8, S9, S10 S1,S2,S3, S4, S5, S6, S7, S9, S10 S1,S2,S3, S4, S5, S6, S7, S9, S10	UI. 1. Researching whether the obtained information is correct UI. 2. Knowing how to use the obtained information UI. 3. Sharing the obtained information
Producing Information (PI)	S1,S2,S3, S4, S5, S7, S9, S10	PI. 1. Producing new information by using the obtained information

As can be seen in Table 11, the codes are produced under the theme of information need, which is expressed as “recognizing the need for information” and “knowing what kind of information is needed”. The first of these codes are produced based on the expressions in the six standards and the second in the eight standards. Some of the expressions belonging to these codes are as follows:

NI.1.: Needs the information about various dimensions of personal well-being, such as career interests, community involvement, health concerns, and recreation. (S2)

NI.1.: Ability to recognize the need for information (S3)

NI.1.: Recognizes the need for information (S5)

NI.1.: Discover the topics that you're interested in (S1)

NI.2.: Determines the qualification and scope of the needed information (S5)

NI.2.: Participates actively in groups to obtain and produce information (S10)

NI.2.: Decides what kind of information is needed (S1)

NI.2.: Identifies or recognizes the need for information (S6)

Under the theme of accessing information, the codes are produced and expressed as "knowing information sources", "knowing how to access information" and "reading and writing the obtained information". The first of these codes is produced based on the expressions in the six standards, the second and the third in the eight standards. Some of the expressions belonging to these codes are as follows:

AI.1.: Displays cultural resources such as galleries, museums, and libraries (S7)

AI.1.: Indicator 4. Identifies various potential sources of information. (S2)

AI.1.: Identifies all possible sources (S8)

AI.1.: Information on available types of resources, both print and non-print (S3)

AI.2.: Access to the selected information sources (S6)

AI.2.: Developing appropriate search techniques (S3)

AI.2.: Find resources (mentally and physically) (S8)

AI.2.: Look for answers to questions (S1)

AI.3.: Copying information (S1)

AI.3.: Selects and retrieves the found information (S6)

AI.3.: Uses writing and speaking skills to effectively communicate new insights (S9)

AI.3.: Use the writing process, media and visual literacy, and technology skills in order to create products that express new insights (S9)

Under the theme of usage of information, the codes are produced and expressed as "researching whether the obtained information is correct", "knowing how to use the gained information " and "sharing the obtained information". The first of these codes is produced based on the expressions in the seven standards, the second and the third in the nine standards. Some of the expressions belonging to these codes are as follows:

UI.1.: Confirms the information from its source. (S7)

UI.1.: The information literate student confirms the understanding and interpreting of information by discoursing with other individuals, subject matter experts, and/or practitioners. (S4)

UI.1.: Connect the ideas to your interests, previous knowledge and experience (S9)

UI.1.: Take a critical stance by questioning the validity and accuracy of all information (S9)

UI.2.: Classifies and organizes the received information (S6)

UI.2.: Accepts that resources are created for various purposes (S9)

UI.2.: Determines how you will use the information (accept, reject, change it) (S9)

UI.2.: Applies knowledge to solve a wide range of learning and personal questions (S7)

UI.3.: Respects to intellectual property rights. (S2)

UI.3.: Transmits the information and new understandings effectively (S5)

UI.3.: Provides useful information to the group (S1)

UI.3.: The information literate student accepts the usage of information sources in transmitting the product or performance. (S4)

Under the theme of producing information, a code is produced and expressed as "producing new information by using the former obtained

information". This code is produced based on the expressions that are found in eight standards. Some of the expressions belonging to this code are as follows:

PI.1.: Creates new information with balanced and different perspectives. (S7)

PI.1.: Create quality products (S1)

PI.1. Ability to synthesize and enhance existing information by contributing to the creation of new information (S3)

PI.1.: Expresses familiar stories (beginning, middle, and ending) in different ways. (S10)

In general, a total of nine codes are produced, two of them are related to the theme of the need for information, three related to accessing information, three related to the usage of information and one related to producing information. The average rate of these codes, in the ten standards that are considered as a source, is 7.6.

Discussion and Conclusions

Common concepts that can be used in information literacy definitions are expressed as; the need for information, information sources, accessing to information, evaluating the information, using the information, sharing the information and producing the information with ethical aspects (Lubans, 1981; Snavely & Cooper, 1997; Spitzer, Eisenberg & Lowe 1998;ALA, 2000; Kapitzke 2001; Neely, 2002; Houff 2002; Owusu-Ansah 2003; Rader, 2002; Polat, 2005). These dimensions include general skills that all-ages group of people perform at different levels. For groups that are differentiated due to many factors such as age, level of development, culture in which they live and education level, specific levels should be established by determining the objectives suitable for the characteristics of that group. In some groups, some dimensions may be absent due to the developmental characteristics of the group. In addition, there should be leveling between groups in line with educational principles such as from easy to difficult, from close to far and from simple to complex. Since there is no standard related to information literacy or its sub-dimensions regarding the early childhood period in the literature, sizing and then

creating a standard for these dimensions are required by considering the developmental level of the children of this period.

There are many researchers working on the need for information dimension (e.g., Kuhlthau, 1990; Eisenberg & Berkowitz, 1998; Marchionini, 2004). The most notable of these is Kuhlthau's Information Search Process Model. Kuhlthau predicts a six-stage process: initiation or detection of an information need, topic selection or approach to obtaining information, using the necessary information to gain a better understanding, creating a focused information need, collecting the relevant information, and ending the information search. However, early childhood children should be expected to realize their needs for information in simpler and fewer steps and somehow to express this consciously. Simply, it is expected that children carry out with inquisitiveness emotional and intellectual, physical actions and strategies by being open to interaction with the five senses. Therefore, as Bruce states (1997), it may be more productive to bring the relational approach to the fore in information literacy learning in terms of responding to the various ways in which children experience and use information for different needs. From this point of view, some acquirements are produced such as from the code of "to notice the need for information" to "recognizing the need for information" from the code of "to know what kind of information is needed" to code of " knowing what kind of information is needed". Indicators of these acquirements are defined in Table 12.

Table 12: Acquirements and indicators related to the need for information dimension

Dimension	**Acquirements**	**Indicators**
Need for information	Recognizes the need for information	Expresses the extraordinary situation in a given situation
		Expresses what to do in a given situation
	Knows what kind of information is needed	Expresses the needed information
		Asks questions about the needed information

Today in terms of access to information, media tools surround the children from their infantility. As Bradley (2013) points out, much of our modern access to and usage of information has come to involve technology, with the tools themselves becoming the center of attention. According to Heil (2005), secondary school students generally use the internet as their first information option. In the face of this hegemonic situation, young children should be able to interact with professionals who have different sources of information, natural environments, institutions, and environments with printed materials. In this context, Polat (2005) reveals that even postgraduate students sometimes have difficulties finding the right information source. It is considered important for children to experience the search methods of these sources repeatedly in order to access information. Child-media interaction has increasingly led to the unhealthy development of children in many ways (LSE, 2014). Literacy, which is an important skill, stands in front of the children who access to the information through the resources or methods that are listed here before using the information. In this regard, teachers should be aware of how these children learn in order to improve the teaching approaches that they use for their children. In other words, teachers need to realize the learning styles of children.

Children can learn and read the symbols of many kinds of information in social life thanks to their curiosity. For example, information such as numbers, symbols of the health sector, on/off symbols in electronic tools is learned through imitation. In the field of writing, thanks to their pen-holding skills in early childhood, it is possible for children to copy the information as it is and to record it with the unique symbols that they produce. Moreover, taking a photo, video or audio recording with media tools is now among the skills that children can learn quickly. From this point of view, some acquirements are produced such as from the code of "knowing the information sources" to code of "knows the information sources", from the code of "knowing how to access information", to "knows how to access information" and from the code of "reading and writing the obtained information " to code of "reads and writes the obtained information". Indicators of these acquirements are defined in Table 13.

Table 13: Acquirements and indicators related to the accessing to information dimension

Dimension	Acquirements	Indicators
Accessing to information	Knows the information sources	Tells the printed materials in order to search for needed information
		Tells the media tools in order to search for needed information
		Tells the institutions or organizations in order to search for needed information
		Tells the members of the profession that can be asked for needed information
		Tells the natural environments that can be searched the needed information
	Knows how to access information	Searches for information through search engines (sound, image, barcode reading
		Searches for the information by asking the relevant people
		Searches for the information by going to the relevant institution or organization
		Searches for the information by the sense organs in the relevant place and location
	Reads and writes the obtained information	Reads symbols relating to the obtained information
		Draws symbols relating to the obtained information
		Saves the obtained information when accesses to it

The using information theme should be evaluated from a very broad perspective. The contribution to daily life, storage and value of the learned information should also be taken into account in terms of helping to obtain subsequent information, to associate with those and to methodize in use. Librarians advocate that individuals should have a deeper understanding and consideration about the nature and use of information independently of other types of literacy (Bradley, 2013). In this context, the Australian Library and Information Association (ALIA) emphasizes the importance of using and producing information in order to achieve economic, democratic and cultural values in the society as well as achieving personal, social, professional and educational goals (ALIA, 2001). In addition to the importance of using information, it is also important to know how to follow the path. Kasowitz-Scheer and Pasqualoni (2002) advocate that critical and analytical thinking skills should be taught to children in order to use information. Currently, these thinking skills may not be needed to be given separately since they are among the approaches of many education programs. Also these thinking skills are expected to lay on the foundation of information literacy in a simpler structure, especially in early childhood. In addition, as Bowler, Large & Rejskind, (2001) state, ethical rules should be adopted from an early age so there will not be that kind of students who try to produce and share the information with copy-paste behaviors and without giving a reference even in primary school.

Piaget states that from an early age, children organize and cognitively use many concepts following the schema metaphor of information (Piaget, 1952). Therefore, questioning the accuracy of the information regardless of its field, to use information in all aspects and areas of life, to instrumentalize it for other information, and to share it concerning its source abilities should be developed in children. In addition, it can be said that usage of behaviorist, constructivist and relational approaches separately, which are defined as different pedagogical approaches to information literacy by Bruce (1997), will further develop children's skills of using information. Thus, the following achievements are accomplished: from the code of "researching the accuracy of the obtained information" to "to examine the accuracy of the obtained information is correct", from the code of "knowing how to use the obtained information" to "knows how to

use the information" From the code of "sharing the obtained information" to "shares the obtained information". Indicators of this achievement are defined in Table 14.

Table 14: Acquirements and indicators related to the user information dimension

Dimension	Acquirements	Indicators
Using information	Tests the accuracy of information	Asks from the relevant people about the accuracy of the information
		Compares the accuracy of the information with another source
		Tests the information by experiencing different qualifications
	Knows how to use information	Tells how to use the acquired information in school
		Tells how to use the acquired information at home
		Tells where/how to use information in daily life outside of home and school
	Shares the obtained information	Shares the obtained information by specifying its source at the relevant place and time
		Shares the obtained information by stating its source in media tools

The producing information dimension is a structure that can be discussed for children. Because it is clear that individual differences of children are affected by many factors directly relating to their cognitive capacities such as abilities, skills and productivity. Despite all these differences and factors and as Mokhtar et al. (2010) state children can generate many ideas and products from their interactions when they are involved in seeking, sharing and creating information individually or as a group. From this point of view, with the potential of curiosity, discovery and creativity in children, it can be ensured that they produce new information from their previous knowledge by natural manipulations such as analogy, association, articulation and arrangement. Especially with

many game materials and imagination, including real objects, children can produce new information in simple terms. As Grant (2002) states that in the development of information literacy skills, project-based teaching can be effective in creating personally meaningful products in children who become autonomous in early childhood. Thus, the following achievements are accomplished: from the code of " producing new information by using former information" to "produces new information by using former information". Indicators of this achievement are defined in Table 15.

Table 15: Acquirements and indicators related to the producing information dimension

Dimension	**Acquirements**	**Indicators**
Producing information	Produces new information by using former information	Produces other information from two obtained information
		Gives a name to a new object by creating from two different objects
		Gives a name to unfamiliar objects, situations or events by observing his/her surroundings

Educational organizations and different educational institutions are at the forefront of the institutions and these organizations support individuals to gain information literacy skills. Mokhtar et al. (2008) emphasize that there are schools equipped with modern and advanced technological infrastructure and prepared for information literacy skills in many parts of the world, but the benefits cannot be at the desired level unless there is relevant training and sufficient interaction. Apart from all these, libraries and other cultural institutions, local and social institutions, non-governmental organizations and media organs can be counted as institutions that will contribute to the development of information literacy skills. So far, many and different initiatives and strategies are implemented in the USA, Europe, Australia, South Africa, England and New Zealand (Moore, 2005; Virkus, 2003; Rader, 2002). Thanks to achievements and indicators that are created here, "information literate" individuals can be educated by organizing activities or lessons for early childhood education starting with even 1st and 2nd grade students in elementary schools.

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Appendices

Appendix 1. Some theses on information literacy in Turkey

Date	Thesis Name	Author	University
2019	Lise öğrencilerine bilgi okuryazarlığı becerilerinin kazandırılmasında okul kütüphanelerinin rolü	DUYGU D. DARDAĞAN	Çankırı Karatekin
2019	Öğrencilerin istihdam edilebilirlik ve bilgi okuryazarlığı becerileri: Hacettepe Üniversitesi örneği	TUBA YILDIRIM	Hacettepe
2019	Ortaokul döneminde bilgi okuryazarlığı becerilerinin önemi: Özel final okulları 6. sınıf öğrencilerine yönelik bir uygulama	SERPİL FIRAT	Çankırı Karatekin
2019	Öğrencilerin bilgi okuryazarlığı becerilerini geliştirmede kullanıcı eğitiminin rolü: Çanakkale Onsekiz Mart Üniversitesi örneği	ÜLKÜ ÖZGÜVEN	Çankırı Karatekin
2019	Sosyal bilgilerde bilgi okuryazarlığı: Öğrenci görüşlerine yönelik bir durum çalışması	MERAL ÖZGÜN	Bolu A. İzzet Baysal
2018	Öğretmen adaylarının yaşam boyu öğrenme eğilimleri ile bilgi okuryazarlığı becerileri arasındaki ilişkinin değerlendirilmesi	HAVVA DUYGU YASA	Bartın
2018	Öğretmen adaylarının bilgi okuryazarlığı becerilerindeki zorlanma düzeylerinin farklı değişkenler açısından incelenmesi	ALİ KAVAK	Atatürk

Date	Thesis Name	Author	University
2018	Üniversite öğrencilerinin bilgi okuryazarlığı becerilerinin değerlendirilmesi: İran örneği	JAHANGİR GHOLİPOUR	Hacettepe
2018	Türk milli eğitim sisteminde bilgi okuryazarlığı gereksinimlerinin karşılanması	ÖZLEM ŞENYURT	Hacettepe
2016	Üniversite kütüphanelerinde bilgi okuryazarlığı eğitiminin verilmesinde kütüphanecilerin yetkinlik ve sorumlulukları	FADİME TAŞÇI	Marmara
2016	Öğrencilerin bilgi okuryazarlığı özyeterlik algılarının çeşitli değişkenler açısından incelenmesi	MELTEM GÜLNAR	Gazi
2015	Ortaokul öğrencileri için bilgi arama stratejileri öğretim programının geliştirilmesi ve etkisinin değerlendirilmesi	HALİSE Ş. HENKOĞLU	Gazi
2013	Okul kütüphanelerinin bilgi okuryazarlığına etkileri	SAMİYE EROL ALKAN	Marmara
2011	Okul kütüphanelerinde bilgi okuryazarlığı eğitimi ve bir örnek: Marmara Eğitim Kurumları İlköğretim Okulu	FİLİZ YÜKSEL İLERİ	Marmara
2008	Web tabanlı çoklu öğrenme ortamlarının öğrencilerin bilgi okuryazarlığı performansı üzerine etkisi	GÖZDE OCAK	Hacettepe
2008	Öğretmen adaylarının bilgi ve iletişim teknolojilerini kullanımları açısından bilgi okuryazarlığı öz-yeterlik algılarının değerlendirilmesi	RAZİYE DEMİRALAY	Gazi

Date	Thesis Name	Author	University
2007	Yükseköğrenimde bilgi okuryazarlığı: Selçuk Üniversitesi örneği	MUHAMMET KIZIL	Selçuk
2007	Bilgi okuryazarlığı ve Üniversite kütüphaneleri: Bilgi okuryazarlığı planı hazırlama unsurları	DUYGU KIZILASLAN	İstanbul
2005	Üniversitelerde kütüphane merkezli bilgi okuryazarlığı programlarının geliştirilmesi: Hacettepe Üniversitesi örneği	COŞKUN POLAT	Hacettepe
2004	Öğretmen adaylarının bilgi okuryazarlığı düzeyleri üzerine bir araştırma: Sakarya Üniversitesi örneği	AHMET ALDEMİR	Hacettepe

Appendix 2. Some theses on information literacy in World

Date	Thesis Name	Author	Country	University
2019	A Study of Graduate Students' Information Literacy Needs in the Electronic Resource Environment	Shuzhen Zhao	Canada	Windsor University
2018	Information Literacy Self-Efficacy within a Medical Curriculum	Ann De Meulemeester	Belgium	University of Antwerp
2017	Examining the practice of information literacy teaching and learning in upper secondary schools in Vietnam	Ngo Thi Huyen	England	Northumbria University
2016	Informatıon Lıteracy Learnıng Experıences Of Fourth-Year Psychology Students In Kenyan Unıversıtıes	Ephraim Mudave Kanguha	S. Africa	University of KwaZulu-Natal
2016	Exploring Information Literacy (IL) Practices in Primary Schools: A case of Pakistan	Syeda Hina Shahid	England	The University of Sheffield

Date	Thesis Name	Author	Country	University
2013	Conversation and Change: Integrating Information Literacy to Support Learning in the New Zealand Tertiary Context	Angela Feekery	N. Zeland	Massey University
2012	The road to information literacy: primary school children and their information seeking behaviour	W. Beautyman	England	Northumbria University
2012	The impact of information literacy instruction on the library anxiety and information competency of graduate students.	R. G. Birch	USA	Olivet Nazarene University
2009	Developing a new blended approach to fostering information literacy	Geoffrey L. Walton	England	Loughborough University
2009	Development of information literacy of elementary school students in Thailand	P. Saorayawiset	Thailand	Khon Kaen University
2006	Developing Information Literacy Programmes Fo Public University Libraries in Tanzania : A Case Study of the University of Dar Es Salaam	Evans F. Wema	England	Loughborough University
2005	Development And Validation Of The Beile Test Of Information Literacy For Education (b-tiled)	Penny Beile O'Neil	USA	University of Central Florida
2000	Informatievaardig worden in het onderwijs, een informatiewetenschappelijk perspectief: een vergelijkende gevallenstudie in Nederland en Zuid-Afrika	A. K. Boekhorst	S. Africa	University of Pretoria
1998	Att söka information för att lära. En studie av samspel mellan informationssökning och lärande	Louise Limberg	Sverige	Göteborgs universitet
1996	Information literacy: A phenomenography	C. S. Bruce	Australia	University of New England

Appendix 3. Some books on information literacy in World

Publishing Date	Book Name	Author	Publisher
2020	The Information Literacy Framework: Case Studies of Successful Implementation	Heidi Julien, (Ed.)	Rowman & Littlefield Publishers
2019	Motivating Students on a Time Budget: Pedagogical Frames and Lesson Plans for In-Person and Online IL Instruction	Sarah Steiner; Miriam Rigby	American Library Association
2019	Critical Approaches to Credit-Bearing Information Literacy Courses	Angela Pashia; Jessica Critten	American Library Association
2018	Information Literacy and Libraries in the Age of Fake News	Denise E. Agosto (Ed.)	Libraries Unlimited
2017	Introduction to Information Literacy for Students	Michael C. Alewine; Mark Canada	Wiley-Blackwell
2017	Concise Guide to Information Literacy	Scott Lanning	Libraries Unlimited
2016	Teaching Information Literacy Reframed: 50+ Framework-Based Exercises for Creating Information-Literate Learners	Joanna M. Burkhardt	ALA Neal-Schuman
2016	Critical Information Literacy: Foundations, Inspiration, and Ideas	Annie Downey	Library Juice Press

Publishing Date	Book Name	Author	Publisher
2015	Teaching Information Literacy Threshold Concepts: Lesson Plans for Librarians	Patricia Bravender; Hazel McClure; Gayle Schaub	American Library Association
2014	Designing Information Literacy Instruction: The Teaching Tripod Approach	Joan R. Kaplowitz	Rowman & Littlefield
2014	Metaliteracy: Reinventing Information Literacy to Empower Learners	Thomas P. Mackey; Trudi E. Jacobson	ALA Neal-Schuman
2011	Transforming Information Literacy Instruction Using Learner-Centered Teaching	Joan R. Kaplowitz	ALA Neal-Schuman
2011	Information Literacy and Information Skills Instruction: Applying Research to Practice in the 21st Century School Library	Nancy Pickering Thomas	Libraries Unlimited
2009	Information Literacy Instruction: Theory and Practice, Second Edition (Information Literacy Sourcebooks)	Esther S. Grassian; Joan R. Kaplowitz	Neal-Schuman Publishers, Inc.
2008	Information Literacy Instruction Handbook	Christopher N. Cox; Elizabeth Blakesley Lindsay	American Library Association

Chapter VII

THE PSYCHOLOGICAL RESILIENCE OF THE PARENTS OF PRE-SCHOOL STUDENTS: ITS RELATIONSHIP WITH STRATEGIES TO COPE WITH COVID-19 AND HAPPINESS INCREASING STRATEGIES*

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1. Introduction

Cases with symptoms similar to the symptoms of pneumonia, began to appear, and then a new coronavirus was identified on December 31, 2019. Scientists have named this virus, which affected the whole world and humanity in a short time like and turned into a pandemic, as Covid-19 (WHO, 2020). According to Depoux et al (2020) common physical symptoms of Covid-19 such as fever, dry cough and fatigue, fear of getting infected caused psychological problems that might be more permanent and harmful than the virus itself in the long run. These concerns led to various difficulties for people of all ages. The pandemic is becoming a challenging process due to job losses experienced by parents, financial difficulties, separation of children and adults from the social support system, distance education process and the

* This study has been taken from the first author's master's thesis.

limitations it brings. For children in the preschool education period, on the other hand, because their cognitive capacities are still in the process of development, the Covid 19 pandemic may become a difficult concept to understand (Çaykuş & Mutlu-Çaykuş, 2020). In this difficult process, the relationship of parents with their children in the preschool period and the behaviours they will display as role models are important.

Research has shown that the pandemic causes many pessimistic thoughts such as fear of getting infected and infecting other family members, anger, confusion, frustration, loneliness, denial, anxiety, depression, insomnia and hopelessness (Brooks et al., 2020). It is extremely important for individuals to cope with these negative psychological effects in a healthy manner for their mental health (Ungar, 2008). When individuals encounter traumatic and strong stressors, their ability to adapt to the events and situations they experience is defined as psychological resilience. (APA, 2018).

In the literature, the concept of resilience is defined as a dynamic concept that includes not only the resilience shown against stressful events, on the other hand the capacity of the individual to return to their state before the stressful event (Garmezy, 1991). Fraser, Richman, and Galinsky (1999) consider resilience not as a static concept, but as an individual's ability to achieve positive results in the face of difficulties and successfully adapt to stress and other risk factors that cannot be foreseen. In order to evaluate psychological resilience, the individual must be exposed to a challenging life event or risk factor and be able to adapt by coping with it successfully. Although the individual's psychological resilience appears to be an individual structure, the ability to adapt develops interaction between certain personal characteristics and environmental factors. The agreed definition of resilience is "to adapt successfully to life tasks despite the negative conditions and social disadvantages" (Windle, 1999, p.163; Rutter, 1987).

While the stressful experiences that the individual is exposed to are considered as risk factors for psychological resilience, the factors that reduce the negative effects of risks and stressful experiences are defined as protective factors (Fraser, Richman, & Galinsky, 1999; Rutter, 1987). Many protective factors that reduce the negative effects of risks within the the concept of psychological resilience are valued by the society. These protective factors include having a good sense of humor, having

a positive family climate and socioeconomic advantages, living in a safe society, having educated parents (Masten & Reed, 2002), self-efficacy and self-esteem (Arslan, 2015), positive childhood experiences (Doğan & Yavuz, 2020), problem-solving skills (Durmuş & Okanlı, 2018) and an internal locus of control (Karaırmak & Siviş-Çetinkaya, 2011). Risk factors include premature birth (Bradley et al., 1994), divorce of parents (Hetherington & Stanley-Hagan, 1999), parental attitudes (Çiftçi Arıdağ & Ünsal Seydooğulları, 2019), age and number of siblings (Aydın, & Egemberdiyeva, 2018), hopelessness (Karataş and Çakar, 2011), social traumas such as war and natural disasters (Agabi and Wilson, 2005), homelessness (Reed-Victorve Stronge, 2002) and exposure to social violence (O'Donnell, SchwabSton & Muyeed, 2002).

In the Covid 19 process, individuals face stress factors such as the unknown nature of the disease, the fear of catching Covid 19, increasing home working, economic concerns, and long-term quarantines and panic due to fear of losing a job (Lima et al., 2020; Rao & Andrade, 2020). It is seen that the stressful life experiences have effect on pessimism. Eryılmaz (2015) concluded that physiological/physical diseases that are likely to harm the integrity of life of individuals produce pessimistic feelings and thoughts in individuals.

Pessimism in the processes of coping with stressful life events and suppression of thoughts lead to the use of strategies such as distraction, giving up, denial, and cognitive avoidance. No matter how difficult the conditions are, choosing inaction instead of solving problems can cause the individual to experience problems in interpersonal relations and withdraw from social activities (Scheier, Carver & Bridges, 2001; Carver, Scheier & Segerstrom, 2010). In addition, pessimism is known to cause low levels of life satisfaction and self-esteem (Scheier and Carver 1993; Chang and Farrehi 2001) and gets worse after substance abuse and addiction treatment (Strack, Carver & Blaney, 1987; Park et al., 1997). Especially when individuals experience health problems, they experience pessimistic feelings, thoughts and reactions (Eryılmaz & Şiraz, 2020; Eryılmaz & Başal, 2021). While there are many studies emphasizing the pathological aspect such as fear of Covid-19 in the literature (Doshi et al., 2020; Fitzpatrick, Harris and Drawve, 2020; Pakpour and Griffiths, 2020), studies about coping with this process is very few. Despite the

relationship between the strategies to cope with events that cause pessimism and happiness has been investigated in different studies conducted on adolescents and teachers (Eryılmaz & Şiraz, 2020; Eryılmaz & Başal, 2021), studies conducted on the parents of preschool children is very low. When all these negative effects and the Covid 19 epidemic are considered, it is necessary to find the strategies that the parents of preschool children use to cope with situations that cause pessimism.

The Covid 19 process affects the subjective well-being of individuals; in other words, their happiness (Eryılmaz & Şiraz, 2020; Eryılmaz & Başal, 2021). In the pandemic process, the strategies that individuals use to increase their happiness in their lives gain importance. Strategies to increase happiness in the literature were first examined by Fordyce (1983) and he identified strategies such as thinking optimistically, being extroverted, tending to be involved in social activities, having an active life and being interested in new activities as strategies that individuals use to increase their happiness in their lives. Tkach and Lyubomirsky (2006) consider strategies such as setting goals and achieving them, performing mental control, acting directly towards happiness, fulfilling the requirements of religious belief, engaging in active and passive activities and establishing close relationships as strategies to increase happiness. Eryılmaz (2017) also proposed some strategies to increase happiness mental control, including reacting positively to the environment, exhibiting happiness oriented behaviors, resting the body, participating in religious activity and satisfaction of desires.

The relationship of strategies to increase happiness with variables such as subjective well-being (Al Nima, Archer, & Garcia, 2012) and personality traits (Žganec, Grgas & Petak, 2017) was examined, and studies were also conducted on the reasons for happiness and the strategies to increase happiness used by adults in daily life (Eryılmaz, 2014). Studies on happiness have revealed that socioeconomic level, gender, education level, marital status or religious affiliation have temporary effects on happiness and that the main predictor of happiness is adaptation to good or bad life events (Lykken & Tellegen, 1996). In the studies carried out during the Covid-19 pandemic process, it has been seen that Covid-19 has a negative effect on happiness or subjective well-being levels (Eryılmaz & Şiraz, 2020; Eryılmaz & Başal, 2021). To resilience, using strategies

to increase happiness positively affects the resilience of individuals. Although there are studies on adolescents on this subject (Çetinkaya & Sarıcı-Bulut, 2019), it seems that any study has not been examined on parents having pre-school children. The concept of happiness seems to be associated with other concepts such as gaining more financial income (Pinquart & Sörensen, 2000), getting satisfaction from marriage (Ruvolo, 1998), physical health (Røysamb et al., 2003), being considered more physically attractive and successful by friends (Diener, Wolsic & Fujita, 1995) and establishing social relations (Berry & Hansen, 1996). Happy individuals by friends and family members; they are characterized as more socially capable, good-natured, self-confident and assertive, having close friends, strong romantic relationships, and more family support (Diener & Fujita, 1995). Psychological resilience helps individuals to protect their subjective happiness by preventing them from developing a fear of Covid-19 (Seller et al., 2020). Doğan and Yavuz (2020) conducted a study with 968 adult participants and revealed the relationship between resilience and happiness. There are many studies reporting similar results (Burns, Anstey, & Windsor, 2011; Cohn et al., 2009) in the literature. Despite this information and findings, there are few studies about examining the relationship between the strategies to cope with Covid-19 and the strategies to increase happiness and psychological resilience in the literature. As a result this study may contribute to the literature.

2. Method

2.1. Research Model

It was examined to what extent the strategies of coping with Covid-19 and increasing happiness used by the parents of pre-school students predicted the psychological resilience of the parents in the study. In this model, the existence or degree of co-variance between at least two variables is tried to be determined (Karasar, 2013). The data met the normality condition as the values remained between +1.5 and -1.5 (Tabachnick & Fidell, 2013). Mahalanobis test and chi-square analysis were used to examine whether there were outliers, and 8 outliers were excluded from the analysis. In this study T-test and one-way ANOVA were used. “Multiple linear regression” analyzes were used to determine whether coping with Covid-19 and

increasing happiness strategies predict psychological resilience. In the multiple linear regression analysis, it was checked whether the correlation values greater than .70 between the independent variables formed multicollinearity and whether there were VIF values less than .10 and more than 10 in the linearity diagnosis process (Field, 2009). Data were preserved because tolerance and VIF values were within the specified range.

2.2. Study Group

Data were collected from 386 parents whose children attend pre-school education in regions with low socioeconomic status in the study. Purposive sampling is preferred when rather than taking the representative sample of the population, just any part of the population is desired to be involved in a study (Büyüköztürk et al., 2010). The sample group consisted of 269 female (70.1%) and 115 male (29.9%) participants, aged 20-45+, who were the parents of students attending kindergarten education in Batman city center in the 2020-2021 academic year. Twenty-eight (7.2%) of the participants have one child, 108 (28.1%) have two children, 116 (30.2%) have three children, 69 have four (18%) and 63 have five or more (16.4%). 168 participants have a low-income level (43.8%) and 216 participants have a middle income level (56.3%). Of the participants, 61 (15.9%) are uneducated, 175 (45.6%) hold primary school, 77 (20.1%) high school, 65 (16.9%) undergraduate and 6 (1.6%) graduate degrees. While 380 participants are married (99%), 4 participants are separated from their spouses (1%). 253 participants do not work in any job (65.9%), 90 participants (23.4%) work as employee and 41 participants (10.7%) work as civil servants. Of the sample group, 55 were previously diagnosed with Covid-19 (14.3%), and 329 were not diagnosed with Covid-19 disease (85.7%). There are 205 (53.4%) participants who think that they are most affected economically during the Covid-19 process, 77 (20.1%) who think that they are most affected socially, and 102 (20.6%) who think that they are most affected in the psychologically.

2.3. Instruments

In the current study, the "Resilience Scale for Adults", "Adults' Happiness Increasing Strategies Scale", "Scale for Coping with Events-Situations that Activate Pessimism" were used.

2.3.1. Resilience Scale for Adults

In order to measure the resilience levels of adults, the Resilience Scale for Adults developed by Fribog et al. (2005) was adapted into Turkish by Basım and Çetin (2011). The reliability of the sub-dimensions were found to be between 0.68 and 0.79; The reliability coefficient in the current study was recalculated and found to be .85.

2.3.2. The Scale of Coping with Events and Situations that Activate Pessimism

The Scale for Coping with Events-Situations that Activate Pessimism was developed by Eryılmaz and Başal (2020). The sub-dimensions are self-control, coping with spirituality, problem solving, optimistic thinking, social support, denial, putting distance and protecting self-value. The reliability coefficients are between .82 and .89.

2.3.3. Strategies to Increase Happiness Scale for Adults

The Adults' Happiness Increasing Strategies Scale was developed by Eryılmaz (2017). The sub-dimensions are taking a rest, mental control, exhibiting happiness oriented behaviours, participating in a religious activity, reacting positively to the environment and satisfaction of desires. The reliability of the scale is 0.89. The validity of the Happiness Increasing Strategies Scale was examined with the Pearson Product Moments Correlation coefficient through a comparison with the Oxford Happiness Scale.

2.3.4. Personal Information Form

The demographic variables were collected with the Personal Information Form. In the Personal Information Form, there are questions aimed at obtaining information about the participants' gender, age, education level, income level, whether they have had Covid-19, their marital status, total number of children, their profession and in which area Covid-19 affects them the most.

3. Findings

The descriptive statistics about the resilience of the parents participating in the research, the strategies of coping with the events-situations that

cause pessimism in the context of Covid-19 and increasing happiness are presented in Table.

Table 1: Descriptive Statistics

Variables	n	Mean	Standard deviation	Skewness	Kurtosis
Resilience Scale Total Score	384	3.84	0.58.	-.176	-.840
The Scale of Coping with Events-Situations that Activate Pessimism Total Score	384	3.91	0.39	-.007	.135
Self-control	384	4.07	0.65	-.899	1.07
Coping with spirituality	384	4.44	0.59	-.879	-.007
Problem solving	384	4.22	0.54	-.621	.604
Optimistic thinking	384	4.11	0.67	-.809	1.01
Social support	384	3.85	0.71	-.641	.629
Denial	384	2.84	1.06	.049	-.768
Protecting self-value	384	3.67	0.91	-.494	-.121
Putting distance	384	3.90	0.73	-.516	-097
Happiness Increasing Strategies Scale Total Score	384	3.28	0.59	-.102	-.398
Reacting positively to the environment	384	3.40	0.87	-.635	.182
Resting the body	384	3.19	0.93	-.189	-.562
Satisfaction of desires	384	2.70	0.99	.160	-.704
Exhibiting happiness oriented behaviours	384	3.01	0.97	.037	-.572
Mental control	384	3.66	0.79	-.451	-129
Participating in a religious activity	384	3.64	0.93	-.311	-.669

Table 2: Descriptive Statistics of Parents' Psychological Resilience

Education level	n	$\bar{x}$	Sd
Uneducated	61	3.69	.51
Primary school	175	3.80	.60
High school	77	3.85	.60
Undergraduate	65	4.01	.51
Graduate	6	4.15	.23

Table 3: One-Way Analysis of Variance Results of Parents' Psychological Resilience

Education Level	Sum of Squares	Sd	Mean of Squares	F	p
Between-groups	4.16	4	1.04	3.20	.01
Within-groups	123.08	379	.32		
Total	127.24	383			

According to Table 3, the mean scores of psychological resilience of the parents vary significantly depending on their education level ($F(383)= 3.20$, $p<0.05$). Tukey test was used to understand between which groups the difference was and the psychological resilience of the parents with undergraduate education ($\bar{x}=4.01$) was found higher than parents who did not receive any education ($\bar{x}=3.69$). The t-Test for Independent Samples was applied to determine whether the mean scores of the parents' psychological resilience vary significantly depending on the economic status. The results are given in Table 4.

Table 4: t-Test Results for Resilience Scores According to Economic Status

Economic Status	n	$\bar{x}$	Sd	df	t	p
Low	168	3.74	.577	382	-2.97	.003
Middle	216	3.92	.566			

Mean scores of psychological resilience of the parents vary significantly depending on the economic status ($t_{(382)=-}2.97$, $p <0.05$). This difference stems from the mean score of the parents with middle income level ($\bar{x}=3.92$, $sd=.577$) is higher than the score of parents with low-income level ($\bar{x}=3.74$, $sd=.566$). One-Way Analysis of Variance was

applied. The mean score and standard deviations obtained for different Covid 19 domains are given in Table.

Table 5: Descriptive Statistics of Parents' Psychological Resilience Scores According to Covid 19 Domain

Covid 19 Domain	n	$\bar{x}$	Sd
Economic	205	3.81	.59
Social	77	4.02	.54
Psychological	102	3.75	.56

Table 6: One-Way Analysis of Variance Results of Parents' Psychological Resilience Scores According to Covid 19 Domain

Covid 19 Domain	Sum of Squares	Sd	Mean of Squares	F	p
Between-groups	3.54	2	1.77	5.46	.00
Within-groups	123.70	381	.32		
Total	127.24	383			

The mean scores of psychological resilience of the parents vary significantly depending on the Covid 19 domain ($F_{(383)}$= 5.46, $p<0.05$). Tukey test was performed to understand between which groups the difference was and the psychological resilience of parents who think that they are most negatively affected in the social domain ($\bar{x}$=4.02) during the Covid 19 process was found higher than parents who think that they are most negatively affected in the economic domain ($\bar{x}$=3.81) or in the psychological domain ($\bar{x}$=3.75).

Table 7: Tolerance and VIF Values of the Independent Variables

Variables	Tolerance	VIF
The Scale of Coping with Events-Situations		
Activating Pessimism		
Self-control	.85	1.17
Coping with spirituality	.78	1.28
Problem solving	.63	1.58
Optimistic thinking	.66	1.52
Social support	.83	1.21

Variables	Tolerance	VIF
Protecting self-value	.77	1.30
Putting distance	.80	1.24
Happiness Increasing Strategies Scale		
Reacting positively to the environment	.84	1.19
Resting the body	.68	1.47
Satisfaction of desires	.54	1.84
Exhibiting happiness oriented behaviors	.56	1.78
Mental control	.67	1.49
Participating in a religious activity	.71	1.40

Table 8: Pearson Correlation Matrix between Strategies and Sub-Dimensions of Coping with Events-Situations Activating Pessimism in the Context of Resilience and Covid-19

Variables	1	2	3	4	5	6	7	8	9	10
1. Psychological resilience	1									
2. Coping with events-situations that acivate pessimism	.28**	1								
3. Self-control	.16**	.44**	1							
4. Coping with spirituality	.22**	.40**	.15**	1						
5. Problem solving	.31**	.65**	.31**	.30**	1					
6. Optimistic thinking	.24**	.70**	.18**	.26**	.47**	1				
7. Social support	.17**	.55**	.12**	.16**	.29**	.31**	1			
8. Denial	-.07	.46**	-.04	-.07	-.01	.19**	.18**	1		
9. Protecting self-value	.17**	.55**	.09	.12**	.35**	.33**	.06	.16**	1	
10. Putting distance	.13*	.59**	.17**	.14**	.29**	.33**	.20**	.27**	.21**	1
Mean	3.84	3.91	4.08	4.44	4.22	4.12	3.87	2.84	3.68	3.90
Standard deviation	.57	.38	.62	.59	.53	.64	.68	1.06	.91	.74

* p <.05, ** p <.01

Low, positive relationships were found between psychological resilience of the parents and the sub-dimensions of self-control (r=.16; p<.01), coping with spirituality (r=.22; p<.01), problem solving (r=.31; p<.01), optimistic thinking (r=.24; p<.01), social support (r=.17; p<.01), protecting self-value (r=.17; p<.01) and putting distance (r=.13; p<.05).

Table 9: Pearson Correlation Matrix between Psychological Resilience and Happiness Increasing Strategies and Sub-Dimensions

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Psychological Resilience	1							
2. Strategies to Increase Happiness	.29**	1						
3. Reacting positively to the environment	.17**	.57**	1					
4. Resting the body	.15**	.69**	.17**	1				
5. Satisfaction of desires	.19**	.73**	.23**	.51**	1			
6. Exhibiting happiness oriented behaviors	.23**	.74**	.30**	.41**	.58**	1		
7. Mental control	.28**	.63**	.27**	.27**	.25**	.33**	1	
8. Participating in a religious activity	.13**	.55**	.26**	.24**	.24**	.16**	.38**	1
Mean	3.84	3.28	3.42	3.18	2.70	3.00	3.68	3.65
Standard deviation	.57	.59	.84	.94	.99	.96	.77	.92

** p <.01

Positive correlations were found between the psychological resilience of the parents and the sub-dimensions of reacting positively to

the environment (r=.17; p<.01), resting the body (r=.15; p<.01), satisfying desires (r=.19; p<.01), exhibiting happiness oriented behaviors (r=.23; p<.01), mental control (r=.28; p<.01) and participating in a religious activity (r=.13; p<.01).

Table 10: Results of the Multiple Regression Analysis

Variables	B	SeB	β	t	p
(Constant)	1.48	.31		4.76	.00
Self-control	.04	.05	.05	.94	.35
Coping with spirituality	.11	.05	.12	2.20	.02
Problem solving	.18	.06	.17	2.77	.00
Optimistic thinking	.05	.05	.06	1.03	.30
Social support	.03	.04	.03	.67	.50
Protecting self-value	.00	.03	.00	.14	.89
Putting distance	-.02	.04	-.03	.52	.60
Reacting positively to the environment	.04	.03	.07	1.32	.19
Resting the body	-.00	.03	-.00	-.03	.97
Satisfaction of desires	.04	.04	.08	1.18	.24
Exhibiting happiness oriented behaviours	.04	.04	.07	1.10	.27
Mental control	.10	.04	.13	2.31	.02
Participating in a religious activity	-.03	.03	-.05	-.92	.36
R= .42	$R^{2=}$.18				
$F_{(13,362)}$= 5.95	p= .00				

**p<.01

The regression model obtained was significant ($F_{(13,362)}$= 5.95, p<.01). Strategies used to cope with events-situations that activate pessimism and increase happiness, which are independent variables, together explain 18% of the variance in predicting the resilience variable [R= .42; R2 = .18]. Sub-dimensions of the scale of coping with events-situations that activate pessimism, the sub-dimensions of coping with spirituality [t=2.20; p<.00] and problem solving [t=2.77; p<.00] were found to significantly predict psychological resilience. Similarly, from among the sub-dimensions of the strategies to increase happiness, the sub-dimension of mental

control was found to [t=2.31; p<.00] significantly predict psychological resilience. The strongest predictor variable is problem solving (β=.17). It was found that the variables of self-control, optimistic thinking, social support, protecting self-value, putting distance, reacting positively to the environment, resting the body, satisfaction of desires, exhibiting happiness oriented behaviours and participating in a religious activity were found to be not significantly predict psychological resilience (p> .05).

4. Discussion, Conclusion and Recommendations

Research has shown that Covid-19 causes negative psychological effects for instance fear of infecting family members, anger, loneliness, denial, anxiety, depression, insomnia and hopelessness (Brooks et al., 2020). Ability of an individual to return to their pre-crisis functionality after encountering negative psychological effects and stressful life events is evaluate with the concept of psychological resilience in the literature (Garmezy, 1991). Psychological resilience is argued to be related to many other concepts such as self-efficacy, self-esteem and positive emotions (Arslan, 2015), well-being (Korkut-Owen, Demirbaş-Çelik, & Doğan, 2017), self-understanding and life satisfaction (Alibekiroğlu, 2018) and optimism (Lee et al., 2008). Thus, psychological resilience has an effective role in human health. Therefore, the psychological resilience of the individual becomes extremely important in difficult and stressful life events, and the factors affecting resilience are discussed today and are of interest to researchers (Karaırmak and Siviş Çetinkaya, 2011). It is thought that examining these factors is extremely important.

In the study, a significant relationship was found between the psychological resilience levels of the parents and their education level. This finding is similar to previous studies results showing that resilience varies depending on education level (Bonanno et al., 2007; Bonanno & Mancin, 2008; Guinn, Vincent, & Dugas, 2009). Since educational experiences have important functions in terms of enriching the social life of individuals and improving their interests and abilities, it is thought that they affect psychological resilience positively. Some researchers have reached similar conclusions with the findings of this study (Deniz, Çimen, & Yüksel, 2020; Karal & Biçer, 2020; Kimter, 2020). The reason for this difference in the literature is thought to be the sample groups studied.

In the study, a significant relationship was found between the psychological resilience levels of the parents and their economic status. This finding is similar to previous research results showing that resilience varies depending on economic status (Bonanno et al., 2007; Lee, Shen, & Tran, 2009). Some researchers have reached similar conclusions with the findings of this study (Kul, Demir, & Katmer, 2020; Özyedek, 2020). Studies in the literature consider economic difficulties and poverty as risk factors for psychological resilience (Buckner, Mezzacappa & Beardslee, 2003; Jenson & Fraser, 2006; Schoon, Parsons & Sacker, 2004). Thus, the relationship found between the economic status and psychological resilience in the current study concurs with the theoretical structure.

In the study, a significant relationship was found between the psychological resilience levels of the parents and the Covid-19 impact domains (social, economic or psychological). It has been found that individuals who think that they are most negatively affected in the economic or psychological domain during the Covid-19 pandemic have a lower psychological resilience score than those who think that they are most negatively affected in the social domain. It is claimed that psychological resilience, which emerges as a result of the interaction of different factors rather than being a skill on its own, is affected by individual characteristics and familial environmental factors (Fraser, Richman, & Galinsky, 1999). Low socio-economic level, economic difficulties and poverty are considered as risk factors for resilience in the literature (Buckner, Mezzacappa, & Beardslee, 2003; Jenson & Fraser, 2006; Schoon, Parsons & Sacker, 2004). According to Kımter (2020), there is a negative relationship between the frequency of experiencing thoughts such as "feeling tension and anger in relationships with people," "feeling lonely, worthless, and unloved," "feeling great stress and anxiety because of the virus", "being under great stress and not sleeping for days", "fearing and worrying about getting sick", "when thinking about the virus heart pounding", "his/her hands trembling and sweat pouring out of his/her body", "fear of death when thinking about the virus", "fearing that he/she will become infected despite the mask and distance", "not leaving the house for fear of the virus" and "when infected with a virus I can't get over the disease" during the Covid-19 pandemic and the levels of psychological resilience. It is thought that individuals who have

such thoughts during the Covid-19 pandemic will perceive the conditions they are in more stressful. Studies show that psychological resilience is associated with perceived stress (Armata & Baldwin, 2008). For this reason, it is thought that the establishing the psychological resilience of individuals who think that they are more negatively affected in the economic and psychological domains during the Covid-19 pandemic is lower than those who think that they are more negatively affected in the social domain.

In the current study, it was found that the strategies used by the parents of preschool students to cope with Covid 19 and to increase happiness together explain 18% of the variance in resilience. It is understood that coping with Covid-19 is a significant predictor of psychological resilience and makes the most important contribution. When the literature is examined, no research results have been found that examine the strategies of, coping with Covid-19 and increasing happiness and psychological resilience together. However, Covid-19 and psychological resilience are among the topics that have recently attracted attention in the literature. Bilge and Bilge (2020) found that psychological resilience has a protective effect on the negative psychological symptoms of Covid-19. Individuals with a high level of psychological resilience have a high level of tolerance for uncertainty, and their anxiety levels are low in general and thus they can cope with Covid-19 more effectively (Kasapoğlu, 2020). As the level of resilience increases, fears of Covid-19 decrease and functional coping strategies are used more effectively (Lin et al., 2020; Tutal and Efe, 2020). In their study conducted on 1004 adults in the USA, Killgore et al. (2020) determined that a decrease in the level of psychological resilience was associated with higher depression and anxiety levels and an increase in suicidal ideation. Those with low psychological resilience state that they have more difficulty in coping with the stress of Covid-19 with pessimistic thoughts such as “I am afraid we will never recover from COVID-19”, “I am afraid of the future due to the epidemic”. Similar findings Bilge and Bilge (2020), low psychological resilience level; It has been concluded that the anxiety of contagion in the Covid-19 process is related to the negative impact of staying at home, boredom and dysfunctional coping strategies.

In the current study, it was found that the strategy of coping with spirituality used by parents to cope with Covid-19 is a significant predictor of psychological resilience. Spirituality is thought to affect the resilience of individuals due to reasons such as reducing anxiety (Chaves et al., 2015), being associated with happiness (Sharma & Singh, 2019), and increasing life satisfaction and self-esteem (Chen & VanderWeele, 2018). In the literature, spirituality is accepted as one of the main sources of resilience (Kim & Esquivel, 2011; Reutter & Bigatti, 2014) and it is seen that resilience is related to coping with spirituality (Agın, 2021; Counted et al., 2020; Pirutinsky, Cherniak, & Rosmarin, 2020).

In the current study, it was found that problem solving skill, which is another strategy parents use to cope with Covid-19, is a significant predictor of resilience. Özyedek (2020) found a relationship between problem-solving skills and psychological resilience as a result of the study he conducted on 180 parents having children in the 0-6 age group. In the literature, it has also been reported that problem solving, and resilience are related concepts (Dumont & Provost, 1999; Pınar, Yıldırım & Sayın, 2018; Steinhardt & Dolbier, 2008

According to the results of the current study, mental control of parents to increase their happiness during the Covid-19 pandemic significantly predicts psychological resilience. Mental control means protecting the happiness (subjective well-being) of the individual. Individuals perform mental control by keeping a distance from negative events and situations, establishing controlled relationships, optimistic thinking, positive time orientation, wanting to exhibit behaviours towards happiness directly, solving problems and participating in religious activities (Eryılmaz, 2012). In Eastern societies, happiness or extreme happiness is associated with selfishness, making others unhappy with one's own happiness, and disrupting social harmony by making other people jealous. It is thought that happiness alienates people from their creators and leaves them morally and spiritually deficient (Joshanloo & Weijers, 2014). Happiness will lead to negative consequences and therefore should be avoided.

Belief is also more common in Eastern societies, which are characterized as collectivist/collective cultures (Joshanloo & Weijers, 2014; Lambert D'raven & Pasha-Zaidi, 2015). The study conducted by Kim-Prieto and Diener (2009) on religiosity and emotions in 49 countries

reveals that Muslims report less happiness and more sadness. Therefore, it is thought that repressing happiness rather than exhibiting direct behaviors to be happy due to both their religious beliefs and the cultural beliefs predicts psychological resilience in the sample studied.

Preschool period is a important period for physical, mental, social, and emotional development. In the new life order that emerged during the Covid-19 pandemic, it has become very important to understand the reactions and emotions of children correctly and to meet their needs. Parents who are overwhelmed by the stress brought about by the pandemic can negatively affect the mental health of the child, who is in a more emotionally sensitive period, and may trigger depression, anxiety, or other psychiatric disorders. Since the interactions and relationships of parents with their children are important in the preschool period, it is thought that the studies to be carried out with the parents of preschool students during the Covid-19 will be preventive. For example, experimental studies can be conducted to increase resilience, which requires strategies to increase happiness and strategies to cope with the pessimism created by the Covid-19 pandemic on the parents of preschool students.

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Chapter VIII

INTEGRATING DIGITAL TECHNOLOGY IN EARLY CHILDHOOD SETTINGS

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1. Introduction

Advances in technology are increasing opportunities in education and changing the teaching and learning process with digital and web-based tools (Murcia et al., 2018). *Victoria State Government defines digital technology* as «electronic tools, systems, devices and resources that generate, store or process data» (2018). In this frame, digital technology includes digital games, social media, applications, web 2.0 tools, learning management systems, and mobile technologies. Another term that needs to be emphasized about digital technology in education is digital learning, which means facilitating learning through technology or instructional practice (Murcia et al., 2018). So the main question is here «How can ‹things of learning› best be employed to promote learning?» (Gagné, 1974, pg.3) with digital technology in education. When digital technology is appropriately applied in the learning and teaching process, it makes learning easy for children and supports their academic success (Lei, 2010). Additionally, digital technology usage in education makes children more active and meaningful in schoolwork, enhances personal competencies, and reduces behavioral problems in class (Shapley et al., 2011). As a result, learners will have positive attitudes towards learning.

Digital technology and learning have potential benefits in education, which is why governments have put digital technology on their agenda.

The Australian government declared the "Digital Education Revolution" in 2008. The Digital Education Revolution (DER) aims to change teaching and learning and prepare children for the future digital world (ANAO, 2011). The government has invested a massive $2.4 billion in the Project. This budget is allocated to primary school (9-12 years) students' computer equipment, high-speed broadband connection purchases, and expenses for the training of teachers and school administrators. Turkey, on the other hand, has started the "Movement to Increase Opportunities and Improve Technology" (FATIH) project in order to increase technology integration in education since 2010. The FATIH project aims to provide equality and sensory integration in education. Turkey has invested $1.4 billion in the development of technology infrastructure in schools in 2013. The FATIH project supports e-content, in-service seminars, provides valid, reliable, and measurable ICT usage, hardware and software infrastructure, and effectively integrates technology into education (MEB, 2012). Although technology infrastructures have been established in the classrooms, there are different conditions necessary for integrating technology into education, such as curriculum, child-teachers' competencies of technology use (Yıldız et al., 2013). In other words, only having the technology is not adequate for effective digital technology integration (Atabek, 2020).

It should be noted that although governments are investing in integrating technology into education, teachers are critical to the effective use of digital technologies. Nevertheless, the technology training of teachers is limited to the introduction to information technology in the education college (Foulger vd., 2016). Therefore, teachers should have digital competencies like information and data literacy, digital content creation, communication, creative problem solving, and safety (Reisoğlu & Çebi, 2020). In this way, teachers could increase the awareness of combining the subject and technology. Besides digital competence, teachers need to know how to combine these competencies with pedagogy and content (Romeo et al., 2012). To explain the combination of content, pedagogy, and technology knowledge, Mishra and Koehler explained "Technological Pedagogical Content Knowledge (TPACK)," which is necessary for teachers to integrate digital technology effectively (Koehler et al., 2014).

2. Technological and Pedagogical Content Knowledge

Technology can be used as an instructional material that is very suitable for constructivist education. In other words, the use of technology allows students to learn by doing or through hands-on experience. In this context, technology gives many opportunities to teachers for developing educational materials. However, knowing technology usage is not enough to integrate technology into education. Even teachers know how to manage Instagram, Facebook, blogs, wikis, GPS, iPads, YouTube, or podcasts, teachers need to consider how they can facilitate learning through this hardware or software. Teachers should also know how to use technology to take children's attention to the subject or combine pedagogical strategies with technology or how to represent content through technology. Misha and Koehler (2008) explained how technology is used pedagogically in education in the Technological and Pedagogical Content Knowledge (TPACK) model. Technological and Pedagogical Content Knowledge (TPACK) framework has significantly contributed to both theoretical and practical knowledge in educational technology (Koehler et al., 2014).

Technological and Pedagogical Content Knowledge (TPACK) covers the information that teachers need to integrate technology into education (Mishra & Koehler, 2008). There are three basic components of integrating technology into education: technology, pedagogy, and content knowledge (Mishra & Koehler, 2008). Mishra and Koehler (2008) stated that there is an interaction between these three components. They also showed the interaction as in figure 1.

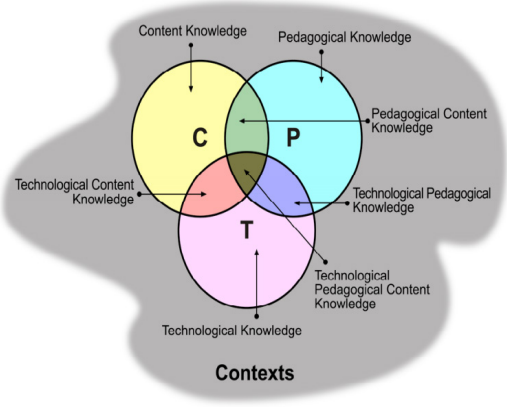

Figure 1. The TPCK framework and its knowledge components (Koehler & Mishra, 2008).

These knowledge components are explained by Mishra and Koehler (2008) as follows.

Technology Knowledge (T or TK): Technology knowledge includes both standard and advanced technology understanding. For example, teachers must know computer hardware and software and the operating system to operate certain technologies. Additionally, teachers must perform tasks such as installing and upgrading hardware and software, keeping programs up-to-date. Besides technical literacy, teachers should know information technology.

Content Knowledge (C or CK): Content information refers to the specific subject of a discipline. CK varies greatly between branches or levels of education. However, teachers are expected to be experts in content knowledge.

Pedagogical Knowledge (P or PK): Pedagogical knowledge includes processes, techniques or practices of teaching and learning. Student learning, classroom management, preparing activity plan, all these implications and evaluations are analyzed under the pedagogical knowledge. A teacher who has deep PK understand how children acquire skill and knowledge. Therefore, cognitive, social and learning theories and how to apply in classroom should be known.

Pedagogical Content Knowledge (PCK or PC): Pedagogical content knowledge is the intersection of pedagogy and content. PCK seeks to answer that all disciplines can or should be taught through the same instructional method. The answer is that teachers need to understand subject matter, and they found various ways of presenting it. Finally, teachers match the true instructional materials and the concepts based on children's prior knowledge.

Technological Content Knowledge (TCK or TC): Technological content knowledge is that combining technology and content. Teachers should know about the influence and restriction between technology and content. Teachers should consider the subject matter they teach and how to represent the subject matter through technology. The key point of the TC is deciding which particular technologies could best fit for addressing the subject matter.

Technological Pedagogical Knowledge (TPK or TP): Technological pedagogical content knowledge covers the understanding of how specific

technology usage changes teaching and learning. TPK includes integrating a range of technology by developmentally appropriate pedagogical strategies and designs.

Technological Pedagogical Content Knowledge (TPACK): Technological pedagogical content knowledge is the intersection of technology, content, and pedagogy knowledge. In order to teach through technology, teachers should know how to support subject matters, understand pedagogical technology usage in teaching, using technology to make learning easy. Accordingly, teachers are able to combine new and prior knowledge through technology.

Teachers may be insufficient to include technology in education due to environmental factors even teachers know TPACK as in marvelously. Porras-Hernandez and Salinas-Amescua (2013) argued that teachers' macro, meso, and micro levels should be considered corporate technology in education. In this context, the macrosystem, which covers social, economic, political, and technological conditions, is related to the need for teachers to learn continuously rapid technology development. Principals' leadership influences teachers' TPACK in the context of integrating technology throughout the school in the mesosystem. The micro level includes classroom conditions such as learning activities, norms, preferences, goals, and expectations (Porras-Hernandez & Salinas-Amescua, 2013). That is, TPACK requires specific contexts, so technology integration varies by teacher-student and school levels. To illustrate, teachers' attitudes toward technology to support children's learning are associated with TPACK at the teacher's level. Children's socio-economic status is at children's level in technology integration. Providing professional development for technology integration is at the school level (Blackwell et al., 2016). Therefore, TPACK can be affected by the environment, teachers, children, school and government policy, technical infrastructure, and economic situation. In order to popularize the use of technology in education, the roles of teachers and other layers should be taken into account.

TPACK guides teachers on how to present information using technology by integrating the three basic knowledge of education. Contrary to the traditional view that teachers are simply users or consumers, teachers are now technology producers or designers (Mishra

& Koehler, 2008). Early childhood teachers' TPACK could be increased with proper professional development, and they can use technology effectively in children's learning. A study shows that iPad affordance workshop increased early childhood teachers' technology skill level and their self-confidence in using digital technology. Regarding teachers' technological content knowledge (TCK), the study indicates that teachers used iPad to enhance math, butterflies, numbers, shapes, vocabulary building, and language development. Regarding technological pedagogical content knowledge (TPK), the teachers adjusted apps to children's developmentally appropriate level. For example, one teacher chose YouTube videos by their length, considering that attention spans vary by age. Another teacher was afraid to let children carry iPad in the classroom, however, after the implementation, the teacher set up an iPad station in class. In terms of TPACK, the study results indicate that the teachers were able to develop appropriate and context-specific activities (Park & Hargis, 2018). To sum up, a well-designed professional program, considering ecological perspective, increases early childhood teachers' TPACK. Thus, technology can be used as a teaching material to teach content intended in early childhood education settings.

3. Using Digital Technology in Early Childhood Education

Young children's lives have been surrounded by technology. Therefore, technology usage should be supported in early childhood education to prevent misuse of technology. Children need to learn to use technology to simplify and solve problems in daily life (Sundqvist & Nilsson, 2018). Accordingly, Utbildningsdepartementet (2010) suggest the advantages of integration technology as following,

- Children develop technical knowledge, as a result, creativity and problem-solving will be enhanced
- Children explore technology function, material, utility, construction, and design. Thereby, they can make their design and construction to find solutions in everyday life.
- Children experience perspective, proportion, breadth, and height through making plans, sketches, and models (as cited in Sundqvist& Nilsson, 2018).

- Children have the opportunity for many hands-on experiences in class, such as mixing, heating, cutting, and trying various ways to solve problems. Digital technology enriches early childhood education environments and enhances children's learning.

Many studies have been published on the advantages of using technology in young children. Studies on Sesame Street, a television program, are pioneering studies in this field. The program was created by a team of educational experts, television program specialists, and professional researchers to blend technology and entertainment with specific pedagogical aims. The target of this team is to embed cognitive curriculum into TV programs that have a significant impact on preschool children (Lesser, 1974). More recently, technology helps children while learning a foreign language (Yukselturk et al., 2018), science learning (Papadakis & Kalogiannakis, 2019), verbal, emotional-verbal, physical, and emotional-physical development as well (Wood et al., 2016).

Developing technology offers opportunities for them to create interactive materials, storybooks, games, animations and videos rather than passive content. Thereby, the teachers can effectively build their activities by considering content, pedagogy, and technology. Here some examples of creating materials via technology are presented.

3.1. Web 2.0 Tools

Web 2.0 tools are parts of new media (DePietro, 2013). The new media tools allow us to produce, share and access information. On the contrary to old media, Web 2.0 tools are interactive, meaning that users produce content, make comments, or share their ideas through web 2.0 tools. Thereby, Web 2.0 tool users are also producers instead of consumers. Websites, blogs, social networks, forums, learning management systems, mobile devices, and Youtube are some of the Web 2.0 tools.

Web 2.0 tools allow interaction between the child and the digital device, child-child, the child-teacher, and child-parent. While these interactions are established, children actively participate in activities, and they can control and plan their learning through Web 2.0 tools. Thus, Web 2.0 tools are a very effective tool used in the constructivist learning model

and early childhood teachers can engage and maintain children's attention to content. To conclude, when successfully incorporating technology into the classroom, children's learning could be facilitated (DePietro, 2013). There are vast amount of Web 2.0 tools for education, and you can find some examples below;

3.1.1 Podcast-Vodcasts: The Wikipedia definition of Podcast is that "A podcast (or netcast) is a series of digital media files (either audio or video) that are released episodically and often downloaded through web syndication." (Solomon & Schrum, 2010, pg.48). The vodcast is also defined by Solomon and Schrum (2010, pg.49) as "A vodcast is a video podcast; in essence, it is an on-demand production that contains video and audio information. These can be downloaded as a file, or received as streaming video, delivered live as they are being produced." Podcasts are friendly-user and flexible tools, thus, podcasts can be used from preschool to higher school education (Harris & Park, 2008).

Educators can use both prepared podcasts, or they can easily prepare podcasts themselves. There are many advantages of freely available prepared podcast-vodcast, such as Circle Round Boston (https://www.wbur.org/podcasts/circleround), and But Why: A Podcast For Curious Kids (https://www.npr.org/podcasts/474377890/but-why-a-podcast-for-curious-kids). Apart from these examples, there are also many podcasts or vodcast streams on YouTube or Spotify applications.

Teachers can plan funny activities with those pod-vodcasts. For example, podcasts or vodcast series could be listed in a specific topic such as wild forest life. For later, teachers can download podcasts on wildlife topics for free or easily create a podcast as educational material with a voice recorder. These multimedia materials will take children's attention to the topic and captivate children's interest. Besides classroom usage, teachers also can share these materials with parents. In this way, children's learning at home could be enhanced.

3.1.2 Visual Learning Tools: Today's children have been exposed to visual materials via television, mobile phones, tablets, and other technological devices, so the generation needs visual materials while learning. For this reason, early childhood teachers should enrich the education environment with visual materials. Thanks to technological devices and Web 2.0 tools, accessing or producing visual materials

such as photos, videos, digital stories, or video documentaries are not complicated with current technology.

Digital stories are one of the visual materials that can be used in early childhood education. Digital stories include both visual and audio media components, including a mixture of graphics, music, video, text, images, and audio recording through technology (O'Byrne, 2018). Thus, digital stories target not only visuals but also other senses. Moreover, digital stories support constructivist learning because early childhood teachers can create digital stories themselves and with children. Some software or websites are available to create digital stories practically. For instance, Windows Movie Maker, Microsoft Powerpoint, or Adobe Spark programs could be used to create digital stories.

Video documentaries are another attractive material for children because these videos are created to convey information (Solomon & Schrum, 2010). Although prepared video documents could be used for teaching a topic, children can make a video by themselves. When children have video cameras to create video documentaries, they produce knowledge and share it with others. Then, children can analyze the documentary and maybe brainstorm on it. Thus, children can both produce information and internalize knowledge. In this context, early childhood teachers can motivate children to use video cameras and produce video documentaries to provide deep learning on a topic.

Solomon and Schrum (2010) ordered the video documentaries steps like

1. conduct background research,
2. decide expectations and assessment of videos,
3. develop a topic through brainstorming,
4. script a storyboard or an outline,
5. decide to how a message can convey via video,
6. use filming technique,
7. record video on video camera,
8. use appropriate software to editing video,
9. enrich the video with sound, music, or voice-over,
10. save the movie on desktop or upload it on YouTube or any other video-sharing site.

Some video documentaries are also available on YouTube, so prepared videos could be reached via YouTube. However, YouTube access is not allowed in some class network connections. In this case, instead of Youtube, TeacherTube can be preferred (https://www.teachertube.com). Teachers can find related videos to learning objectives on the application. A study explained how "March of Penguins" film documentaries impact children's knowledge (Fingeret 2008). In the study, the teacher presented the film as episodes (like 20 minutes for a day). While watching the film, the teacher stopped to explain new words or discuss what happened. After watching the documentary, the teacher continued the subject by integrating the documentary into various activities. For instance, the teacher brought a penguin suit, and the children took turns wearing it. Then, the children practiced huddling together or transferring baby penguins. Additionally, during the penguin process, children were playing "penguin" in the center. It seemed as penguins took children's attention and captured their imaginations (Fingeret 2008). Likewise, in the study, video documentaries could be integrated into project-based activities. Teachers can sometimes use a section from the documentary as a launching point in the project. However, this should not be forgotten while watching documentaries, scaffolding should be provided to children when they meet with unknown words or events.

Besides video documentaries, animations are being able to be used as effective technological instructional tools in early childhood education. Teachers can prepare animations on any subject like math, science, music, or language activities. Some web tools are available to create animations. For instance, Moovly, Toon Boom, GoAnimate (Vyond), or Animoto are simple tools to create animations. Teachers can both use default visual or audio materials as well as they can upload themselves. However, copyright should be considered while using photos or other materials. For this, it should be checked whether its use is allowed or not. Some websites provide copyright-free pictures like Flickr or Freepik. Additionally, users have to cite the reference or get author permission to use visual materials. Ethical rules to be considered while using digital technology will be discussed later.

3.1.3 Augmented Reality: Augmented Reality offers attractive instruction by combining education, entertainment, and engineering

components. Zhou et al. (2008, pg.193) defined "Augmented Reality (AR) as a technology which allows computer-generated virtual imagery to exactly overlay physical objects in real-time." Thus, AR allows users to manipulate and control the virtual world in reality while combining the virtual world with the physical world. Surprising and fantastic elements support children's learning in the preschool period (Oranç & Küntay, 2019). Moreover, education activities are more attractive and effective as well as cheap and easy through AR. To illustrate, a teacher can invite any guests from the forest, wildlife, or submarine life to the classroom. Although AR studies have been limited in the early childhood period, children are more successful in learning the alphabet via AR technologies (Rambli et al., 2013).

There are some applications to bring AR to class. A teacher can integrate AR into any subject while using these applications. For example, Quiver is designed for mobile devices to create virtual 3D environments in the classroom easily. To use the application, teachers need to print any printable materials from the Quiver website as a first step. Secondly, children color and scan with a mobile device's camera. Finally, the colored picture is animated in the physical world. Another example is Catchy Words AR, this application aims to teach words to children. Children walk around scanning the environment with mobile devices. When finding a word, children try to catch it and complete the asking word. Finally, there is a more complex application like Curiscope, which aims to teach anatomy to children. The users need to wear a t-shirt to travel into a human or animal's body. To sum up, AR provides fantasy and attractive instruction for preschoolers, therefore, teachers could search about AR applications and integrate this technology into their classroom activities.

3.2. Digital Game

Digital games are a kind of play that provides fantastic and imaginary worlds while attracting children's attention. Digital games have been popular in the last few years because digital games enhance children's learning while providing for exploring and play opportunities (Stephen & Plowman, 2014). In addition, digital games provide attention, participation, retrieving and combining information, and immediate feedback, which

are the prerequisites for learning (Lamrani & Abdelwahed, 2020). Using digital games in education enriches the environment and increases hands-on experiences. That is, children can apply knowledge in the real world's problems, acquire knowledge, and be deeply engaged in learning by themselves (Jaypuriya, 2016).

Despite digital games offering new affordances in children's learning, many games in the market have neither pedagogical principles nor game features. Among the vast game market, serious games are mostly connected with educational purposes. Mitgutsh (2011) stated that serious games which aim to have an educational effect instead of only amusement goal design a play environment through fostering specific learning processes. Pierce (2013) stated that early childhood games should have different features not available in other sectors. He suggested that digital games preliminary consider the nature of various individuals and holistic development principles. Pierce (2013) also stated that developmental and pedagogical design considerations should be taken into account while developing play strategies in early childhood.

-Developmental Design Consideration: Digital games should be designed based on children's developmental characteristics.

Cognitive development; in the early childhood period, children are not literate, therefore games' interface components are designed simply instead of complicated and written directions. Culturally dependent visual symbols could be used in the digital games' interface. Children's language use should be prompted for discussion. Finally, designers should be aware that children's cognitive development pace is not the same among them.

Socio-Emotional Development; children are egocentric in the period; thus, they can have problems with getting alternatives. Moreover, because of their social-emotional development, competition is not a source of motivation for young children.

Psychomotor Development; the game's interface should be designed for limited fine motor skills and eye-hand coordination. Both boys and girls have the same psychomotor development, therefore, no need for discrimination for gender. Finally, children are not good at directional, spatial, and temporal awareness, a developmentally appropriate game should be designed to pay attention to children's developmental abilities (Pierce, 2013).

Developmental considerations are a very important point in the early childhood period because months, even weeks, are crucial. If game designers ignore children's developmental milestones, children do not prefer games, or games do not benefit children. Therefore, digital/serious games should be designed with a team that includes experts in child development.

-Pedagogical Consideration: Educators firstly must control what pedagogies are applied in a game.For example, a game might be based on Piaget's Constructivism or Vygotsky's Zone of Proximal Development theory. The pedagogical approach guides how the game is efficiently used by educators (Pierce, 2013).

In contrast to some resistance because of the negative impact of digital games on children's development, the more significant concerns are related to social-emotional and physical development. However, when digital games have the right game features and are appropriately integrated with children's lives, they contribute to children's development. To illustrate, a tablet game named *Empathy World* is designed for promoting empathic perception. The game was played in an early childhood education setting for three months. At the end of the study, researchers found that children can perceive empathy-worthy cues and associate with social context (Wu et al., 2020).

Children can do a tremendous amount of things while using digital games. In this scope, the positive impact of digital games in children's development gives many opportunities for early childhood teachers. For example, children can print 2D or 3D characters, draw, paint or photograph, design costumes, or record themselves digitally and share these digital products with others (Early Childhood Australia, 2018). Children use language skills during the sharing and producing process, communicate with others, or collaborate with peers. Therefore, children interact with each other, and their social-emotional skills are positively impacted.

Digital games enhance movement activities which help physical development. Movement activities could be boosted through digital robots or wearable technologies (Early Childhood Australia, 2018). Furthermore, screen-based and mobile devices can enhance children's physical activities by watching a tutorial video or recording

fundamental motor skills like jumping, catching, etc. (Early Childhood Australia, 2018). A study reveals that children's fundamental motor skills (FMS) were facilitated normally developed preschool children through video modeling. The study result also shows that children's performance was sustained two weeks after the last session (Obrusniskova & Cavalier, 2017). Besides the gross motor, fine motor skills could be improved thanks to digital games. For instance, through touch or motion, children can draw, pinch, or point in this way, their fine motor skills could be enhanced. Children also can play fine motor games such as Colors Live on Nintendo Switch. The game has a pencil as hardware, therefore children can draw or paint with the pen on the screen. That kind of digital technology supports children's fine motor skills.

Digital games positively impact children's creativity, problem solving, critical thinking, and concept learning, so they enhance children's cognitive development. To illustrate, the Minecraft game allows for various games and increases creativity and divergent thinking skills (Behnamnia et al., 2020). A study reveals that digital games can support preschoolers' mathematical skills (Can, 2020). Researchers analyzed the "ABCya" application in terms of mathematical skills in early childhood education. According to the findings of the research, the application mostly supports preschoolers' "recognition number and subitizing" and "verbal and object counting" (Can, 2020). Another study was conducted to analyze the impact of digital games on preschool children's working memory and basic mathematical skills (Alzubi et al., 2018). All children have 20 sessions with nine games. At the end of the study, preschoolers who attended digital game sessions got higher scores from working memory and basic mathematical skills than preschoolers who attended standard education sessions (Alzubi et al., 2018). Furthermore, children's spatial thinking ability could be supported through digital games. Kalmpourtzis' (2014) study showed that LadyBug Box digital games improve preschoolers' spatial thinking regarding navigation, mental presentations, and reading maps. Additionally, the LadyBug Box develops children's transformation and rotation skills (Kalmpourtzis, 2014). As a result, early childhood teachers can plan activities to improve children's cognitive skills through digital games. The important point

when integrating technology is selecting games suitable for the relevant content and developmentally appropriate. Teachers just need to search for digital games, bring them to class and explain how they are played. Then he builds scaffolding for the kids when they need it. The learning will appear with the gaming process.

4. Ethical Considerations While Using Technology

Developing technology gives opportunities to share information, digital products and any other written, visual or audio materials in digital platforms. This makes accessing information easily and quickly. However, using these materials brings some ethical regulations behind. Moore and Ellsworth (2014) mentions ethical issues in technology usage in education;

Developing technology allows sharing information, digital products, and written, visual or audio materials on digital platforms. This makes accessing information easy and quick. However, using these materials brings some ethical regulations behind. Moore and Ellsworth (2014) mentions ethical issues in technology usage in education;

Intellectual Property and Open Content: Intellectual Property Rights (IRP) must be obligated to protect ideas, simulate innovation and creative design, and contribute to the creation of technology (Lazariuc & Lozovanu, 2021). IPR is every creator or consumer's social responsibility and moral duty (Lazariuc & Lozovanu, 2021). The World Intellectual Property Organization (WIPO) defines *intellectual property* as any products belonging to someone such as literature and artwork, inventions, designs, images, symbols, or names used in commerce (2004). The intellectual property is shown in "open content" issues as well. *Open content* is defined as making intellectual content free for noncommercial purposes (Wiley, 2010).

People can reach artistic works like movies, music, paints, or poems, however, these belong to their creators. In some situations, the creators cannot resist spreading via the internet. Some people even do not know using it is legal or illegal, or creators allow public usage. To be clear about free usage, people try to reach items on the original website, pay for them, or check whether it is open content.

Access and Universal Design: Access issue covers physical access to software and hardware. The universal design also has a broader goal than accessibility which includes the diversity of learner populations. Universal design targets learning materials, environments, and systems for a broad set of learners (Moore, 2007).

A teacher should be sure that all children can reach digital technology when requested some technology-based duties. For instance, if making announcements via Whatsapp, the teacher should ensure that all parents have a Whatsapp account. In addition, technology-based activities should appeal to all children. To illustrate, all children should understand what they are speaking in the video.

Security and Privacy: Using the internet brings some security and privacy issues such as cyberbully, identity theft, and sexual abuse. Educational technology has an important mission in protecting the security of learners of all ages. Additionally, children's records and access to age-inappropriate content are other concerns in terms of security and privacy issues (Moore & Ellsworth, 2014).

Ethical issues are very sensitive in integrated technology into education. Ethical issues often could be ignored, however, to be role models and respect people's rights, all teachers need to obey ethical rules in digital worlds. Teachers use the original product and open content, moreover, teachers should not share children's photos or products in open-access areas and know legal-illegal behaviors in the digital world. Moreover, teachers must teach rules, response, roles, and safety to children as technology users.

5. Summary

Technology is changing our lives, and surprisingly, people now get things done quickly online. In the new world order, separating technology from education is inevitable. However, technology should be incorporated into education developmentally and pedagogically appropriate to enrich children's education environment and teach technology usage to children. Integration technology in education depends on teacher-children and their environmental interaction. In this context, teachers need to increase their technology usage skills, learn how to combine content, pedagogy,

and technology, search appropriate applications, and follow technology development.

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Chapter IX

INVESTIGATION OF PRESCHOOL TEACHERS' VIEWS AND QUALIFICATIONS ON ENVIRONMENTAL EDUCATION

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1. Introduction

The fact that the increase in environmental pollution in the world and our country has become a situation that threatens the future necessitated the importance of environmental education. It is known that the concept of environmental awareness has a wide range of uses. The aim of environmental awareness, as many scientists have emphasized, is considered as environmental knowledge, positive attitudes towards the environment, and environmentally beneficial behaviors. It means the environmental sensitivity to the environmental problems, solutions sought to these problems, developments in the ecological field, and all information about nature. It is all of the positive or negative attitudes and thoughts of people towards environmentally beneficial behaviors such as fears, anger, restlessness, value judgments, and readiness to solve environmental problems. They are real behaviors shown for the protection of the environment we have been living in.

2. Environmental Issues and Importance of Environmental Education

One of the reasons for the environmental problems our world is experiencing is the increase in the need for environmental resources (Koçak Tümer, 2015). The industrialization in the world, the plundering

of nature by human beings, and the ruthless use of nature for their interests form the basis of many environmental problems we face today. (De Haan, 1989; Fellenberg, 1985; Umweltbundesamt, 1996a). The unconscious use of environmental resources and the lack of attention to environmental pollution cause serious damage to both the environment and living things (Koçak Tümer, 2015). It has been stated that knowing the causes and consequences of these environmental problems will play a motivating role in our behavior towards environmental protection (De Haan, 1989; Fellenberg, 1985; Umweltbundesamt, 1996a). The biggest feature of environmental problems is that they are not local but global. Pollution of the environment causes climate change and the extinction of living things. Humans, who are the cause of environmental pollution, are also adversely affected by this pollution (Koçak Tümer, 2015). The environmental problems in question are seen as the common problem of everyone, regardless of religion, language, race, old-young, academician-farmer, science, or music teacher. Therefore, the protection of the environment should not be seen only as of the duty of environmentalists, and the provision of environmental education should not be seen as the duty of environmental educators alone. All these environmental problems threaten human existence and make our world uninhabitable. The way to prevent this disaster will be possible with the change in people's habitual thoughts and behaviors now and in the future. Environmental problems will not only be a problem that can be solved with technology or laws but will be possible with the change of individual behavior. The change in the behaviors of individuals necessitates the change of attitudes, knowledge, and value judgments. It is known that the formation of positive attitudes and value judgments towards the environment is possible with environmental education (Erten, 2000). The fact that man is an educable being is the most important feature that distinguishes him from other living things. Education begins in the family, continues at school and throughout life. The basic step of education is pre-school education in our world and our country. The concept of environmental education in the preschool period was first introduced by Jaus (1982). The importance of education given in early childhood in acquiring the concept of environmental education has been demonstrated by researchers (Safak, 2020). Preschool children appear curious, inquiring, and growing up with a sense of discovery.

Environmental education in the preschool period will enable children to get to know the environment and acquire positive attitudes and behaviors towards the environment (Karahan Aydın, 2019). It is also known that the positive attitudes and behaviors gained by individuals in the preschool period affect their attitudes towards the environment in adulthood (Erol, 2016). In the following periods, individuals will appear as individuals from different occupational groups who have developed environmental awareness, struggle with environmental problems, and exhibit environment-friendly behaviors (Bakar, 2019). The message that should be given to children with environmental education is to be aware of environmental problems and to develop their instincts to protect the environment (Yılmaz, 2019). The most important aim of environmental education is to enable individuals to gain accurate and consistent information about the environment and to improve their values and behaviors positively. Values gained about the environment at an early age are the most important factors in increasing empathy towards the environment and gaining a love of nature. It is considered as the effective goal of environmental education that individuals gain value and behavior towards the environment. At the same time, individuals' environmental literacy gaining is among the cognitive goals of environmental education (Sakçı, 2020). Nowadays, environmental education programs created by using different methods and techniques suitable for children's development areas have gained importance (Erdem, 2019). Kahriman Pamuk (2019) set 5 goals that children should gain from environmental education in summary. The first aim is to create environmental awareness. It is seen that there is a positive relationship between the ages of preschool children and their awareness levels. The second purpose is environmental information aiming to gain environmental gains and concepts. The third aim is skill acquisition after awareness and knowledge acquisition level. Children should not only be given environmental knowledge but also the acquisition of skills related to the environment should be included. Our fourth goal is to help children gain environmental attitudes. Attitude guides people's behavior. Our fifth and final goal is environmental participation. Environmental participation is explained as taking an active role against environmental problems and encouraging them. When we examine the period characteristics of preschool children, we see that

children take adults as role models. Therefore, it is not enough for only children to receive an education. When the researches are examined, it is seen that the teachers, who played an important role cannot be ignored in the child's life, are not sufficiently knowledgeable about environmental education. It is very important that together with the child, the adults and their teachers should receive training on environmental education (Özkan, 2017).

Today, children with big gains don't have many opportunities to interact with nature. S/he cannot be content with life as one of those who can grow in a natural world, away from the rat race of cities. S/he determines that s/she can get to know the environment and develop positive environmental behaviors. If future generations are to be better, pre-school education programs should be evaluated from an environmental perspective. Recently, many studies have been carried out on environmental education in the World. Most of the studies focused on primary, secondary and higher education students' knowledge levels about the environment and environmental problems, misconceptions, developing attitude scales about the environment and environmental problems, and applying and interpreting the developed attitude scales (Yılmaz et al., 2002; Şama, 2003; Yılmaz, Boone & Anderson, 2004; Ekici, 2005; Özmen, Çetinkaya, & Nehir, 2005; Uzun & Sağlam, 2006; Uluçınar, Aslan & Cansaran, 2008; Atasoy & Ertürk, 2008; Kahyaoğlu, 2009; Kaya, Smart & Sezek, 2009). However, studies on teacher views on environmental education are seen to be quite limited.

The general aim of the research is to reveal the importance of environmental education in preschool by determining the opinions of preschool teachers working in the center of Konya about environmental competencies. Within the framework of this general-purpose, answers to the following questions were sought:

What is the sensitivity of teachers to environmental education?
What is the adequacy of the activities in the school?
What is the effect of socioeconomic level on environmental education?
What is the level of school-parent cooperation on environmental education?

3. METHOD

This research was applied to the pre-school teachers of the Primary Education Department in state schools in Konya. 20 teachers are participating in the research. The questionnaires were administered in the classrooms and the applications took about 10 minutes. There were 9 questions in the form. These are questions that help teachers measure their environmental views and their competence. Among these, there are 9 questions including the importance of environmental education, the proportion in the inclusion of the programs, the activities implemented, the eco-school project, the relationship between socioeconomic status and the environment, school-parents cooperation in environmental education, their attitudes towards environmental education, practices outside of the school and their behaviors towards protecting the environment. These questions were developed by the researcher based on the environmental gains in the preschool program.

3.1. Study Group

This research was carried out with the participation of pre-school teachers aged 25-50 in Konya and its different districts. Based on the critical theory used in the research, the theoretical sample (purposive sampling) was taken as a basis, as stated by Glaser and Strauss. (Merriam, 1998, p.63). The sample consists of 17 female and 3 male teachers. Participation took place voluntarily within the knowledge of the teachers.

3.2. Data collection and Analysis

The data of the study were collected from pre-school teachers using the interview technique. In order to construct the open-ended questions used in the interviews, the scales used in studies examining teachers' opinions, self-efficacy, and attitudes about environmental education beforehand were analyzed and synthesized by the researcher (Doğan & Simsar, 2019; Güzelyurt & Özkan, 2018; Ağgül, et all., 2016; Tekgöz, et al., 2010; Taşkın & Şahin, 1996). Necessary corrections were made by taking the opinions of 2 experts who researched environmental education on the determined interview questions. Open-ended questions, which were finalized with expert opinions, were prepared to take the opinions

of the participants on environmental education and qualifications. Interviews were conducted and recorded in 10 minutes during the 1-month training period. In the analysis of the data, the answers of the participants were subjected to content analysis and divided into themes and sub-themes, and thus the data were classified. The data obtained were analyzed according to the research questions, and the research findings were determined.

4. Findings and Discussion

In this section, the findings obtained from the scale developed by the researchers, which are used to determine the environmental sensitivity of teachers, are divided into themes and sub-themes and the interpretations of these findings are given.

1. *Why is environmental education important for sustainability in preschool?*

Table-1: Sub-dimensions about the importance of environmental education

Sub dimensions	Frequency	Percent
For their development	**12**	**% 60**
For a livable world	**8**	**% 40**

According to Table 1, 60% of the teachers emphasized the importance of environmental education in the first question directed to them, and 40% stated that it is necessary for a livable world for the development of their children. Teacher A explained the sub-dimension for their development in this regard as follows: **'***This is a critical period for laying the foundations of environmental awareness in children.***'**

Regarding the sub-dimension of a livable worldview, teacher B commented: "*It is important for children to gain awareness of society and the environment".*

2) To what extent is the subject of environmental education included in the preschool curriculum?

Table-2: Sub-dimensions regarding whether environmental education is adequately included in the preschool education program

Sub dimensions	Frequency	Percent
Included	**3**	**% 11**
Included not sufficiently	**15**	**%80**
Included partially	**2**	**%9**

According to Table 2, in the second question, it was asked whether environmental education was adequately included in the programs, and 80% stated that "it was not sufficient", 11% did "sufficient", and 9 % commented as "partly sufficient". For the sub-dimension of giving enough space, teacher C gave the following opinion: "*There are enough activities in the program*." Teacher D thinks that there is not enough space, and said: "*I try to include it with extra programs. Not enough.*"

3) At what intervals do you include the concept of environmental education in your activity plans?

Table-3: sub-dimensions related to the frequency of including the concept of environmental education in activities

Sub dimensions	**Frequency**	**Percent**
Within the plans we have	**11**	**%55**
Once a week	**5**	**%25**
Once a month	**4**	**%20**

According to Table 3, in which the time intervals the teachers use in environmental education were asked in this question in their plans. Teacher F commented: "*I often place in the program as there are certain days and weeks*", Teacher G stated: "*We're going out for playing once a week*." Another view is once a month. Teacher H said, "*I teach it at least once a month.*"

4) What kind of activities do you implement in or out classroom settings about the environment?

Table 4. Distribution of the activities implemented on environmental education

Sub dimensions	Frequency	Percent
Science activity	**6**	**30**
Field trips	**8**	**40**
Recycling and hands-on activities	**2**	**10**
Planting trees	**4**	**20**

According to Table 4, the kind of activities was asked of the participants in the fourth question, 70% of them organized field trips and applied activities. The remaining part of the participants included environmental education as science-nature activities in their plans.

5) *Do you have any information about the eco-school project? What do you think about it?*

Table 5. Opinions of the participants about the eco-school Project

Sub dimensions	Frequency	Percentage
Useful work	**6**	**30**
Eco-friendly school	**4**	**20**
Being clean and tidy	**4**	**20**
Being sensitive to the environment	**3**	**15**
Not enough application	**1**	**5**
I have no idea	**2**	**10**

According to Table 5, in the fifth question, their opinions about the eco-school project were asked, though the name of the project was mostly heard, the purpose and content of the application could not be fully grasped. When teachers' opinions about the eco-school project were divided into sub-dimensions, 6 sub-dimensions emerged. 30% of the teachers said it was a useful study. Teacher K supported this by saying "*I think it is a very useful study*". Teacher L, who is in the 20% part, said that it is an environmentally friendly school and supported it by stating that "*It is an application designed to create an environmentally compatible school*". 20% of the teachers preferred being clean and tidy. Teacher B expressed the view that "*'It encourages the child to be clean*

and organized'. 15% of the teachers also talked about being sensitive to the environment, and teacher H said, "*It makes a great contribution to raising a more conscious and sensitive generation*." 5% of the teachers said that there is not enough practice and teacher D, who defended this view, and said, "*It is not enough to practice, it should be developed*". 10% of the teachers who said they did not have any information, and teacher F stated that "*I do not know anything about this project*".

6) *Do you think there is a relationship between children's sensitivity and their families' socioeconomic levels about environmental education?*

Table 6. Opinions of the participants on the relationship between environmental education and socioeconomic levels of families

Sub dimensions	**Frequency**	**Percent**
Yes, the family point of view is quite important	**18**	**90**
No, anything is possible with education	**2**	**10**

According to Table 6, in the sixth question, the relationship between socioeconomic status and environmental awareness was asked, and the answer was "yes" at the rate of 90%, and it was determined that the relationship was strong in the positive direction. Teacher C is one of the teachers who supports this view by saying, "*Families with high socioeconomic levels are educated, so they educate their children better on this subject*. Teacher D stated *"I don't think it is. The president's child and a shepherd's child can both sit in the same row and have the same consciousness with the same education."*

7) *How can school-parents cooperation be ensured in environmental education?*

Table-7: Sub-dimensions related to school-family cooperation in environmental education

Sub dimensions	**Frequency**	**Percent**
Plan-activity	**10**	**50**
Continuous meeting	**8**	**48**
Ask for leftover material	**2**	**2**

According to Table 7, in the seventh question, it was asked how school-family cooperation could be achieved through environmental education, 50% argued that it would be achieved through plans and activities, while 48% stated that continuous meetings should be held with parents. Regarding the plan-activity sub-dimension, teacher T made a statement as "*Preparing activities with families and organizing sightseeing trips*." Teacher V said, "*It is very important to have a strong exchange of ideas.*"

8) *If you were to organize a trip to raise environmental awareness for your students, what would be the institutions or organizations you would like to take?*

Table-8: Sub-dimensions of places where field trips can be made on the subject of environment

Sub dimensions	**Frequency**	**Percent**
Park, garden and forest	2	**10**
Tema Foundation	6	**30**
Museums and historical sites	4	**20**
The zoo and the land of butterflies	2	**10**
Recycling factories	6	**30**

According to Table 8, in the eighth question, the organizations that will organize a trip related to environmental education were asked, and the majority of the participants said it will be the right place to visit TEMA FOUNDATION and recycling factories. Some expressed the opinion that parks, museums, historical places, theatre, cinema, etc. would be beneficial to visit for children. Teacher Y offered "*The children should be taken to the forested area in the province*". Teacher Z commented on the sub-dimension of visiting museums and historical places by "*organizing trips to parks, museums and historical places near the school will be quite important*".

9) *What kind of experiences in environmental education can be offered to children outside the school environment?*

Table 9. Experiences that can be presented on environmental education outside the school environment

Sub dimensions	Frequency	Percent
Concrete experiences-observation	**14**	**70**
Planting trees-growing flowers	**5**	**25**
Recycling institutions	**1**	**5**

According to Table 9, in the ninth question, children's experiences that can be presented outside of school were asked, 70% of them stated that they should make observations by arguing that they should do activities by living and doing. 30% of them argued that they should plant trees and grow flowers. Teacher U commented "*Awareness can be created by asking the children to observe the places they visited*", and "*They can be asked to grow flowers*". Teacher U made a statement about the sub-dimension of recycling institutions as "*The children can be taken to the places where recycling wastes are collected*".

5. Conclusion and Recommendations

This research aims to reveal the opinions of teachers about environmental education in the preschool period. This study, it is aimed to examine the environmental knowledge, attitudes, and behaviors of teachers who educate preschool children, which is considered an important issue for environmental education. The sample of the study consists of 20 pre-school teachers working in independent kindergartens and primary schools affiliated with the Ministry of National Education in the city center of Konya. A total of 9 open-ended questions were prepared by the researchers to determine the environmental knowledge, attitudes, and behaviors of the teachers. The participants think that the environmental education title is not sufficiently included in the preschool curriculum. For this reason, expanding the scope of environmental education subjects in the programs and increasing the frequency of their inclusion will improve the quality and sustainability of education. Most of the teachers give place to environmental education by sticking to their plans. By using the flexibility feature of the preschool program teachers should give more space to environmental education.

Apart from the main activities implemented within the scope of environmental education, teachers should enrich the learning environment by including practices such as stories, poems, dramas, and projects aimed at instilling to the children environmental awareness. It is recommended that the projects developed on environmental education be better introduced to schools, and their objectives should be presented clearly in a way that teachers can understand. Participants should involve cooperating with families on environmental education within the scope of their plans. Increasing the frequency of these orientations and being in constant communication with the family will make education higher quality. To raise environmental awareness, teachers should have enough information about the places where trips can be organized. Experiences that can be offered outside the school environment will enrich the learning environment of the child. The permanence and sustainability of knowledge can be increased by providing children with a more concrete learning environment by doing and experiencing. As can be seen from the results, although the preschool teachers consider themselves competent in environmental education, they emphasized that it cannot be given at school alone and that the support of the family is necessary, and that family attitudes can be effective in the development of environmental awareness in children. The quality of the activities carried out has also been considered as an undeniable fact in terms of environmental awareness. Studies conducted to determine environmental awareness show that it is not the right approach to expect people to show environmentally sensitive behaviors based only on positive attitudes towards the environment or sufficient environmental information (Erten, 2003). However, it has been revealed that studies are showing that environmental education is easier and more permanent when the knowledge gained through field studies is carried out in nature (Erten, 2004; Ozaner, 2004; Farmer et al., 2007). Applied environmental education courses should be included in the curriculum of the Preschool Education Departments. Thus, teacher candidates who take this course in their undergraduate education can feel competent about environmental education when they become teachers and can give an effective environmental education. Excursions should be organized within the scope of Environmental Education courses. Thanks to these trips, the knowledge, and manners of the people participating in

the trips improve, and it is stated that the information learned through the trips will be easier and more permanent to transform into behavior (Eschenhagen, Kattmann and Rodi 1998). Teachers who have not received environmental education in undergraduate or associate degree education and who are currently on duty and other personnel working in these schools should receive in-service training to develop environmental awareness as soon as possible. Environmental education should start at an early age since the interests and attitudes of the children formed in preschool and school-age will form the basis of the desired behaviors in the future (De Haan, 1991, 1989; Oerter, 1987). Value judgments and attitudes formed especially in childhood and young ages are very important in the development of empathy and love for nature concerning nature at an early age. Their formation will cause the children to show environmentally friendly behaviors to protect the environment for the following years (De Haan, 1998). At an early age, children should play games that will make them love nature. Thanks to these games, children learn to behave environmentally friendly by gaining positive emotions (Cornell, 1979; 1989).

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