

Investigation of the Way Kindergarten Teachers Handle Time Concepts

Ozlem Dogan-Temur*
Hatice Zeynep Inan**

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Abstract

Problem Statement: Although time concepts are abstract, teachers think that it is necessary for children to understand some concepts related to time. In order to continue daily life and accomplish their work at school, children need to acquire some time-related concepts and behave accordingly.

Purpose of Study: The aim of the current research is to examine teachers' experiences with teaching children time concepts in a kindergarten classroom. The study focuses on, more specifically, what concepts they teach, what concepts are easy or difficult for children, in what order they teach future, present and past tense, what instructional strategies they use, what other concepts they relate to temporal knowledge, and what materials they use in teaching time concepts.

Methods: The study was conducted in several different kindergarten classes in public/private elementary schools and pre-school education centers in central Kutahya, and involved 16 kindergarten teachers working in central Kutahya, Turkey. The researchers utilized a qualitative research method, namely phenomenography, to collect in-depth data and to analyze the data.

Findings: The results of the research showed that teachers teach 19 different categories of time concepts. They stated that they teach developmentally appropriate units of time. On the other hand, there are also some teachers who have lower or higher expectations for kindergartners. Moreover, teachers think that the easiest time concepts for kindergartners are morning, noon and evening and the present tense. On the other hand, the teachers stated that there are some concepts that

* Ph.D., Dumlupinar University, Faculty of Education, TURKEY, ozlemdt@yahoo.com

** Corresponding author, Ph.D., Dumlupinar University, Faculty of Education, TURKEY, haticezeynep@hotmail.com

children have difficulty in learning, especially past tense and future tense. Furthermore, the research shows that teachers mostly use the technique of asking questions in time-concept teaching. The research also shows that the teachers had difficulty in answering the question “What other concepts do you use in teaching time concepts?” In terms of the materials teachers use, the research shows that teachers use a variety of materials, but do not make much use of technology in teaching time concepts.

Conclusions: The current research shows that teachers are cognizant of the importance of teaching time concepts, what kinds of difficulties children might have, and what concepts are easier for them to learn. The study shows that teachers teach their children time concepts and work on the following goal, the 17th Turkish language objective – “They can use time concepts/language of time properly.” However, they do not mention much about the array of objectives and gains related to time-concept education for kindergartners.

Keywords: Time concepts, kindergarten, teacher, qualitative, phenomenography

Time is one of the essential concepts that needs to be learned in the early years. Although time concepts are abstract, children need to acquire some time-related concepts to continue daily life and accomplish their work at school. For example, children need to understand time concepts when their mothers leave them on the first schoolday, saying, “See you this afternoon, honey!” Many children cry because they do not know when their mothers will come back, or even if their mothers will ever come back. The child may think, “Afternoon? What is afternoon? Will my mother ever come back?”

Beneke, Ostrosky and Katz (2008) state, “a true understanding of dates and the calendar comes with maturity” (p.13). As children get older and as their mental development reaches the stage of symbolic thinking, time concepts will be easy for children to comprehend. However, before this, teachers should use time language and integrate time concepts into the curriculum, teaching children some skills so that they can understand time-related concepts and have a sense of the daily routines, sequence, and duration.

Many distinguished researchers and theorists have become interested in children’s understanding of time-related concepts, or temporal understanding. The research shows that a lack of temporal knowledge might negatively affect children’s everyday functioning (Flores, 2007). Therefore, temporal knowledge should be taught and reinforced in early childhood education centers. ODE (2004) states, “Preschool children focus on the here and now and are developing their understanding of chronological time” and continue, “They learn about time in relation to themselves, including the sequence and order of their daily routines and schedule, what they did yesterday and what they will do tomorrow” (p.45). Even

though many researchers believe that a true understanding of time, in terms of date and calendar, comes with maturity (Beneke et al., 2008; Piaget, 1969), some dimensions of temporal understanding can be achieved in the early years, such as sequence and duration (Charlesworth & Radeloff, 1991; Piaget, 1969).

There is an important distinction made by Dickson, Brown, and Gibson (1990) between the “telling of time” and time concepts. They indicate that children can be taught to tell the time before they develop a real understanding of time concepts. Moreover, sequence (series of events occurring in a temporal order) and duration (length of intervals between those events), which are emphasized by Piaget (1969), can be achieved in early years so that children can have better daily functioning. Based on Ames’ research (1946), Dickson et al. state that 5-year-old children can tell what day it is, can name the days of the week in correct order, can tell what day follows Monday, and can tell how old s/he will be at his/her next birthday. Six-year-olds can understand the four seasons and have a better understanding of duration.

Dickson et al. (1990) state that teaching children the clock time before the concrete operational state (age 7-11, Atkinson, Atkinson, Smith, & Bem, 1993) might be detrimental to children’s understanding of time. They can be trained in the telling of time, but cannot grasp time concepts in fact. Dickson et al. interpret Piaget’s ideas on temporal knowledge and children’s mental development by stating “the ordering of a time sequence requires the ability to reverse an operation, and that thus, like the ordering of objects by length, it is not achieved until the start of the concrete operations period” (p.147).

In addition to the factors of maturity and education, materials, tools, toys, and technology also play an important role in children’s understanding of time and time concepts. For example, Eden and Passig (2007) state that virtual reality technology (3D audio-visual and immersive environment) is an effective mode with which children can express time concepts. Chao, Stigler and Woodward (2000) state, “as children become proficient with a certain kind of representation, they form the mental image of a specific material and use it to guide and constrain their thinking for problem solving” (p.285). Accordingly, teachers should use concrete materials when teaching time concepts because time is an abstract concept and is based on representational thinking (Eden & Passig, 2007). Using concrete materials (i.e., clocks, calendars, and photos of the daily activities like sequence of events) helps children form a mental image of time concepts and use it to deal with problems related to time concepts. Moreover, it is essential to make proper use of materials/technology and time language in daily life by linking it to children’s experiences or to stories that are meaningful to the children (Church, 2006).

Beneke et al. (2008) state that focusing on the calendar is not an appropriate way to introduce young children to time concepts at group time. They state, “it is difficult for teachers to individualize instruction to meet the diverse needs of young learners during a large group activity such as calendar time” (p.14). However, there are better ways to teach time concepts during group time, such as picture schedules illustrating

the schedule of class activities, a classroom journal that includes photographs of classroom events, field trips, games, project work, and documentation displays.

The Turkish Ministry of National Education (2006a & 2006b) Early Childhood Education Program (for the 36–72 Months-old Children), sets out time-related objectives and gains for kindergarten children. The 17th objective in the cognitive area, which makes a connection among the concepts related to time, states that: Concepts related to time (i.e., 1. before-now-after; 2. day-evening; 3. morning-noon-night; 4. yesterday, today, tomorrow; 5. year) should be used in relevant activities; and functions of the clock and calendar should be taught by using their representations in the context of play. The 17th objective indicates three ideal gains for children:

- 1- They can tell events according to the order in which events happened;
- 2- They can use time concepts/language of time properly;
- 3- They can tell the function of time equipment (Turkish Ministry of National Education, 2006a & 2006b).

As stated above, many research studies have been conducted to examine and explore children's understanding of time concepts in different cultures and countries, but there is a lack of research on teachers' experiences related to teaching children time concepts in Turkey. The current research aims to contribute to filling this gap, and to examine teachers' experiences and applications related to the teaching of time concepts, by utilizing phenomenography. More specifically, the study focuses on teachers' language and instructional methods in teaching time concepts, and the role of physical materials in kindergartners' learning of time concepts.

Method

Context and Participants

This phenomenographic study was conducted in the kindergarten classes of several different public and private elementary schools and pre-school education centers in central Kutahya, Turkey. The study involved 16 kindergarten teachers who work with children around 5 to 6 years of age in those schools. All of those teachers were female except one teacher, who was male. All of the teachers graduated from 4-year programs of education at universities in Turkey and held a BA degree. The names of the teachers and the schools they worked at are disguised to ensure confidentiality for all participants in the study. To choose the research sites, the researcher relied on what Patton (1990) calls the "Purposeful Sampling" method, which involves selecting information-rich cases for in-depth research. The sites were information-rich for the researchers to pursue their inquiries and also convenient places to access and conduct the current research.

Research Design

The current study utilized a qualitative research method, namely phenomenography. Phenomenography is defined by Marton (1994) as the empirical study of the differing ways in which people experience, apprehend, perceive, conceptualise, and understand various phenomena and aspects of the world around us. The terms experience, apprehend, perceive, conceptualise, and understand are used interchangeably. Since the current research mainly focuses on perceptions of teachers of the phenomenon of time concept education, it was appropriate to utilize phenomenography to investigate the perceptions of teachers regarding time concept education in kindergarten classes.

Marton (1994) states that the researcher in phenomenography should focus on awareness and reflection of his/her participants, but not that of his/her own. Accordingly, the researchers in the current study examined the participants' perspectives and used their own awareness and reflection on the topic of interest. Moreover, as advised by Marton, the researchers constructed an interview protocol using half-structured questions to give the researchers and the participants the freedom to spontaneously shape the conversation.

Data Collection

The study utilized a semi-structured interview data collection method, which is consistent with the phenomenographic research and utilized the phenomenographic data analysis method to analyze the data and to create the categories. The researchers collected data by conducting face-to-face half-structured interviews and obtained information on teachers' experiences and viewpoints on time concepts education in kindergarten. They utilized an interview protocol that consisted of 7 questions. The interview protocol was revised after getting feedback from teachers about the interview questions they had been asked. Moreover, an experts' view was solicited to test the validity of the interview questions. Three experts from the early childhood education field – one expert holding a PhD and two working towards an MA – mostly commented on items that are understood differently than they were meant; however, they did find the content and the number of questions satisfying.

Data Analysis

Consistent with the phenomenographic data analysis, the data was listed three times. The meaning categories in the last version of the list was analyzed. The main meanings were labeled, the concepts were grouped into categories, and then those categories were labeled. In the tables, the term "intended" stands for the categories that emerged from the data, and the term "expressed" stands for the example excerpts from the interviews with teachers. The sixteen teachers who participated in the study were given a number from 1 to 16 without considering the school they work at. In the tables, the numbers close to the categories and the example sentences belong to those teachers. It is essential to state that only the answers which are related to the topic are cited in the tables. Accordingly, if the number of a teacher is not found on the table, it means that either the teacher did not give an answer to the question or the answer was not related to the question.

Findings

In the present study, teachers were asked 7 questions in the face to face interviews. For each question, the related table is below. These tables show the categories of the teachers' answers and example sentences. The comments about the findings are included at the end of each table.

Table 1

The Concepts Of Time That Teachers Teach In Kindergarten

Intended	Expressed
Morning (1,2,5,6,7,10,15)	Morning - evening - now - today: children learn morning and evening concepts more quickly than sun and moon, as they learn them with concrete examples. (1)
Evening (1,2,5,6,7,10,15)	
Yesterday (1,3,4,7,8,9,10,12,13)	We teach the concepts of yesterday, today, tomorrow, weekend, future and past. (8)
Today (1,2,3,4,7,8,9,10,12,13)	
Tomorrow (1,2,3,4,5,7,9,10,13)	We give concepts such as hours (o'clock and half-hours), day, month, year, now, later, tomorrow, future, past, early, late, morning, noon, evening, seasons, week, weekend, before. (5)
Now (1,2,4,5,7,9,10,13)	
Later (1,2,4,5,10,13,16)	Before - now - later, night - daylight, morning -noon - evening, yesterday - today - tomorrow and day - week - month - year. (2)
Night - daytime (2,6,7,12,15)	
Noon (2,6,7,10,15)	We teach that one year is twelve months. One month is thirty days. One week is seven days. However, children easily forget. (7)
Year (2,4,5,7)	
Day (2,13)	
Week (2,4,5,8)	
Soon/in a minute (1,4)	
O'clock (4,5,13,16)	
Weekend (4)	
Half-hours (5,15)	
Early-late (5)	
Seasons (5,6,13)	
A year, twelve months (7)	

Nineteen categories were formed depending on the results given kindergarten teachers, when they were asked which concepts of time they taught. Teachers decide these categories depending on their own experiences and the development levels of children. For example, as teacher number six says, "We do not often use the concepts yesterday, tomorrow and today. This is because abstract thought has not developed before they come to school. For example, when you asked a child why he/she did not come to school yesterday, he/she could answer 'I was ill today, that is why I could not come.'" With this answer, the teacher states that they pay attention to the thinking levels of children while determining these concepts. Moreover, the categories that emerged from the interview data show that concepts related to time are being used in relevant activities, as this is one of the objectives of the program (Turkish Ministry of National Education, 2006a & 2006b).

Table 2
The Concepts Of Time That Kindergarten Children Learn More Easily

Intended	Expressed
Morning - noon - evening (1,10,15)	They learn the concepts of morning, noon, and evening most easily. This is because they correspond to what they often do. For example, meal times. (10)
Present time (3,4,5,9,11,12)	
Before - later (2)	It is easier for them to learn present tense because they learn the period they live in. (11)
First - last (2)	
Always - sometimes - never (2)	They learn concepts such as before, later, first, last, always, sometimes and never more easily. (2)
Yesterday, today, tomorrow (3,6)	
O'clock (5,15)	They learn concepts such as morning, noon, evening, now, night, daylight, o'clock and half-hours easily. (15)
Half - hours (15)	
Days (5)	
Seasons (6)	
Night, daylight (6,15)	
Hour (16)	

Kindergarten teachers state that children often learn the concepts related to the present tense more easily. Teacher 5 expressed that *"They learn the concept of o'clock easily. But this changes depending on the ages, thinking levels and maturity levels of the children in a group. They also learn days easily. What they learn most easily is present tense because they live in the present time. Therefore, "today and tomorrow" are more meaningful than 'yesterday.'"* With this statement, we can conclude that children are more aware of the time in which they live. When the expressions are analyzed, it is seen that teachers have high expectations. For example, Teacher 15 stated that *"They learn the concepts of morning, noon, evening, now, night, daylight, o'clock and half-hours easily. They learn them easily, as we associate these concepts with some work related to the times at which they do them."* The teacher expresses that children can easily learn even the concept of half-hours. The key point here is that the teacher is aware of the importance of associating education with real life.

When teachers are asked which concepts are more difficult to learn at the kindergarten level and when the categories formed are analyzed, it can be seen that children often have difficulty in learning the concepts related to past and future tenses. Kindergarten children also have difficulty in learning the concepts of time with big numerical values. *"My children have difficulty in learning the concepts of yesterday and tomorrow. They realize that something done yesterday was done before, but they do not realize that it was done a day before, yesterday. Moreover, they make mistakes while expressing these ideas. They make mistakes using these concepts. For example; 'We played ball tomorrow.' or 'We will paint yesterday.' They have difficulties as they have not lived "tomorrow" yet and they cannot exactly understand the meaning of "yesterday." Briefly, they know "yesterday" at the word level but they do not know it at the conceptual level. In addition, they have difficulty in learning half-hours and quarter-hours. In fact, this is not valid for all children because there are some children who learn half-hours and quarter hours much more easily. Mathematical intelligence starts to appear beginning at this period. Children whose mathematical intelligence has improved learn the concept of hours more*

Table 3

The Concepts Of Time That Kindergarten Children Have Difficulty In Learning

Intended	Expressed
Yesterday (past tense) (1,4,7,10, 14, 15)	My children have difficulty in learning the concepts of yesterday and tomorrow. They realize that something done yesterday was done before, but they do not realize that it was done a day before, namely yesterday. Moreover, they make mistakes while expressing these ideas. (4)
Tomorrow-later (future tense) (1,4,8,9,11,14,15)	
Month (2,13)	
Year (2,16)	What they have the most difficulty in learning are the concepts of future tense and tomorrow. They mistake the concepts of tomorrow and yesterday. They use these two instead of each other; however, they learn "yesterday" more easily than "tomorrow." (9)
Half - hours (5)	
Quarter - hours (4,12)	
Yesterday, today, tomorrow (6, 7,10, 16)	
Hours (10)	As the subject gets more detailed, it gets more difficult. Since one week is 7 days and one month is 30 days, they learn the concept of a week more easily. This is because they associate everything with numbers. (13)

easily." With this statement, Teacher 4 states that it is difficult to teach children the concepts of time and that children can make mistakes while using them. The categories of half-hours and quarter-hours show that kindergarten teachers have high expectations. It is also essential to point out that the Teacher 6 states "yesterday, today, tomorrow" as difficult concepts for kindergarten children to grasp in question 3, although she states them as easy concepts for them to understand in question 2.

Table 4

The Order of The Concepts of 'Past Tense, Future Tense and Present Tense,' from the First To Be Learnt To The Last To Be Learnt By Kindergarten Children

Intended	Expressed
Present-past-future tenses (1,3,4,7,8,9,10,11,12,13,15)	They learn "Present, past and future tenses" respectively. (10)
Present-future-past tenses (2,5,6,14)	We can put them in order as present tense, past tense and future tense. (8)
Past-future-present tenses (16)	Children learn these three tenses in the order of Present tense, past tense, future tense. (1) Present tense, future tense, past tense. (6) Present tense, future tense, past tense. (5)

When Table 4 is analyzed, fifteen out of sixteen teachers said that children learned present tense first and more easily; eleven teachers put past tense second in the order and four teachers put future tense second. Teacher 16 stated that children learned the past tense most easily. *"They learn past tense more easily as they experienced it. Children find the future tense more abstract."* Teacher 3 expressed that *"They learn present tense more easily; they have difficulty in past and future tenses. This is because the present tense is the time they live in; past tense is the time they lived in and they find future tense to be abstract,"* and mentioned that children found future tense abstract because it had not been experienced yet. Teacher 5 said, *"When we say, 'we went to a museum yesterday,' children might think that it happened a long time ago. It is more difficult to explain dates that are farther away. When we say, 'we are going to go for a picnic tomorrow,' children cannot understand how far away tomorrow is."*

Table 5
The Way Teachers Teach The Concepts Of Yesterday, Today And Tomorrow

Intended	Expressed
Asking questions (2,5,6,7,8,10,16)	I teach children using activities. I ask some questions such as "What did you do to children in the art activity at the weekend (yesterday)? Can you explain it to me using pictures?" and I make them practice.
Arousing curiosity (1,5)	(2)
Showing pictures (2,3)	In teaching concepts, if a suitable experiment is available, they are taught using experiments. (6)
Acting drama (2,3,5)	Suitable games, songs, dramas etc. can be used.
Making children do an experiment (3,13)	Children should be personally involved in the activity. They are expected to find answers to questions. They should be encouraged to accomplish their targets by arousing curiosity. (5)
Conducting conversation (4,5,7,13)	I explain the concepts with concrete examples by animating them. I choose a point for explaining "before and later." I try to use these terms frequently.
Making children watch a video (4)	I give examples from my own life. (14)
Studying one to one (5)	We prepared a calendar and we aim to explain these concepts using the method of sleeping and waking up. (11)
Playing games (5,13,14)	
Singing a song (5,13)	
Presenting concrete examples (5,14)	
Using in a sentence (6,9,14)	
Using a reference point (8,14)	
Preparing a calendar (11)	
Making associations (15)	
Making children play with playing cards (13,16)	
Making children prepare graphics (15)	

When they were asked which method they used in teaching the concept of time, eleven teachers mentioned the importance of asking questions and conversation; only three teachers mentioned games. Teacher 1 stated that they taught the students using questions and phrases that put emphasis on the time, saying *"We can teach the concept of today with questions that increase the awareness of children, such as 'How is the weather today? What are you wearing today? What are we going to eat today?'; we can teach 'yesterday' with questions that make the children look forward to tomorrow such as 'Bring this/that tomorrow, tomorrow I have a surprise for you' and we can teach 'yesterday' with questions such as 'What did we do yesterday?, Do you remember what we ate yesterday?'"* It is seen that, consistent with the gain of the program objectives, teachers help children use time concepts/language of time properly (Turkish Ministry of National Education, 2006a & 2006b).

Table 6
Other Concepts Used by Teachers in the Process of Teaching the Concepts of Time

Intended	Expressed
In the coming days, suddenly, abruptly, all of a sudden, immediately, right now, just a minute, now (1)	Former, next, in the coming days..., suddenly, abruptly, all of a sudden, later, immediately, right now, just a minute, 5 minutes, one second, now. (1)
Later, once, later on, before (1, 16)	I use the concepts of before, later, later on, before, later on. (16)
Concepts of measurement (weight, area, volume, length) (2)	The way I teach the concepts of weight, area, volume and length depends on the learning levels of the children. (2)
Hours (3,7,13)	The concept of hours, seasons, morning, noon, evening, night, daylight and calendar. (3)
Seasons (3,9,13)	Big- small, long - short, young - old. (13)
Numbers (5,6,10)	We use the concept of color. For example, leaf-yellowing in autumn, the sun is yellow in spring; the sun is yellower in summer. (6)
Fast, slow (5)	
Colors (6)	
Animals (6)	What did Zeynep do yesterday? She was dirty yesterday, she is clean today. She was fat last year, she is slim now. In this age group, they could not learn hours; however, they can learn the concept of o'clock to a certain degree. (10)
Figure (11)	
Contrast concepts (big-small, near-far away, soft-hard, clean-dirty, fat-slim, short-long, young-old) (11, 10, 13)	

Teachers had great difficulty in answering this question, and they mentioned the associations related to time concepts. Many of them stated they had used associations; however, they could not explain how they did so. Teacher 5 aimed to show the importance of teaching with associations, by stating that *"It is not appropriate to talk only about a single concept. The concepts can be taught by associating them with various concepts. In particular, numbers and the concepts of fast and slow."*

When Table 7 is examined, it is seen that Teacher 1 does not need to use any materials; Teacher 4 has difficulty in providing materials. Four teachers stated that they would use CD-ROMs if they could find them; however, they could not explain how they would use them. Teachers said that they often used sequencing cards, calendars and season boards. Only one teacher stated that s/he made use of the Internet. Teacher 13 expressed that s/he made use of the Internet by stating that *"Concept maps, figures, educational CD-ROMs, an overhead projector and wooden toys are used in sequencing. Event sequencing cards, experiments, songs and finger games are also used."*

Table 7

The Materials Used by Teachers in the Teaching Process of Concepts of Time

Intended	Expressed
I do not use (1)	I do not use. I do not need. (1)
Calendar (2,5,7,14,15,16)	
Sequencing cards (3,4,10,16)	We make calendars with the children; they paint and we stick numbers and these paintings on the calendars. Later on, I want them to cross the days and numbers that pass. Hence, they strengthen their concept of time. (2)
A slide show (3,6,9,15)	
A clock (4,5,7,8,14,15,16)	
Lacking material (4)	
Toys (5,13)	We use concrete visuals. For example, season pictures that show seasons We use pictures of night, daylight, moon and the sun, educational CD-ROMs, slide shows etc. This is because this age group learns concrete concepts more easily through visual materials. (6)
Jigsaw puzzle (5,12)	
Season board (5,6,9,10,14)	
CD-ROM (5,6,13,14)	
Concept maps (9,13)	Table toys are possible tools. Jigsaw puzzles. You can make a concept map to teach your concept.
Raising plants (9)	You can prepare a season board. You can make a new year calendar together with children. You can use CD-ROMs, tapes and etc. and some audial materials. Wooden toys that show the hours. Painting cards. Calendar. Various clocks. Paintings, Scissors, Glue. (5)
Forming a book (9)	
Completing a story (11)	
Cutting and folding (11)	
Visual materials (6,10)	
Concept cards (15)	
Table and graphics (15)	
Internet (13)	

Conclusions

Nelson (1996) indicates that the concept of time is itself a social construction and it is conveyed to children through language. Accordingly, teachers should include time concepts in their daily life and daily language. Parallel to Nelson's research, Turkish Ministry of National Education (2006a & 2006b) Early Childhood Education Program (for the 36-72 Months-old Children) states that teachers should use time concepts in relevant activities and help children use time concepts/language of time properly. The results of this research showed that teachers teach 19 different categories of time concepts successfully, namely, morning, evening, yesterday, today, tomorrow, now, later, night/day, noon, year, day, week, soon/in a minute, whole hours, weekend, half-hour, early-late, seasons, and one year/12 months.

Beneke et al. (2008) state that maturity plays an important role in children's understanding of time and time concepts. Parallel to the literature, the teachers stated that they teach developmentally appropriate units of time. Although they

claimed they did so, some of the examples they gave were either overly easy or sophisticated time concepts for kindergartners. While some teachers stated lower expectations for kindergartners, claiming that children are not yet ready developmentally, some stated higher expectations which are developmentally appropriate. Teachers should check their knowledge about developmentally appropriate practices.

Beneke et al. (2008) state that children can grasp time concepts such as later, before, and after better than extended periods of time like month, day, and year. They stress that the usage of those terms in the context of daily life helps children. In the current research, teachers think that the easiest time concepts for kindergartners are morning-noon-evening and the present tense. The teachers also agree that children learn time concepts, even whole-half hours, when they can make a connection with their daily lives and the current moment in which they live, such as eating times, like morning breakfast (“*sabah kahvaltısı*” in Turkish) and noon lunch (“*öğle yemeği*” in Turkish), or current time concepts like the present tense. They also mentioned that children can learn after-before, first-last, always-sometimes-never, yesterday-today-tomorrow, whole-half hours, days, seasons, day-night, and the clock time.

The research conducted by Zakay (1998; cited in Eden & Passig, 2007) found, “The young child lives in a world which has only one stage of time: the present. By the end of his fifth year, the child has learned the difference between past, future, and present, but has yet to acquire a complete perception of time. For example, ‘I’m four, my brother’s five, and next year we will be the same age.’ Time orientation is acquired about age seven” (p.52). The current study shows similar results. When the teachers in this study were asked to order the concepts that the kindergartners learned from the easiest to hardest, most of the teachers stated that present, past, and then future tense as the order.

Moreover, parallel to the findings of the research, conducted by Hudson (2002), which stated that “Talk about future events was temporally more complex than talk about the past” (p.63), the teachers in the current study stated that there are some concepts that children have difficulty in learning, especially past tense and future tense. The teachers stated that children learned past tense better than future tense. In the current research, there were also a few teachers who thought that children learn in the order of present-future-past tense more easily. Based on the teachers’ perspectives in the current research, it can be stated that the concepts which are further away from their current status are harder for children to learn than those that are closer. A few of the teachers stated that children also have difficulty in learning the concepts of yesterday/today/tomorrow, month, year, and clock time like quarter, half-hour, and an hour. The teachers thought that children get confused when using the terms yesterday and tomorrow. They do not know that yesterday is one day before, but they are aware that the past is something that is already done. Teachers gave examples of children’ errors like “I played ball tomorrow” and “we will paint yesterday.”

There are some different techniques cited in the literature that are effective for teaching time concepts. For example, Beneke et al. (2008) state, "Project work lends itself to planning future events and keeping a record of events that happen over time" (p.15). Accordingly, a project approach and routines can be used in teaching children time concepts. They stress the importance of creating meaningful contexts, such as drama and play/games, in which children can meaningfully learn time concepts. Turkish Ministry of National Education (2006a & 2006b) Early Childhood Education Program (for the 36-72 Months-old Children) encourages teachers' usage of different teaching and learning techniques, and play in particular. The current research showed that teachers mostly use the technique of asking questions when teaching time, such as "How is the weather today? What did you eat yesterday?" Teachers stated that they make use of the following techniques in teaching yesterday-today-tomorrow concepts, which are placed in order from the most frequent to the least frequent: 1- asking questions, 2- having a discussion, 3- acting drama, using concepts in a sentence, playing, 4- provoking inquiry, using pictures, making experiments, singing a song, using concrete examples, using a reference point, using game cards, 5- watching a video, working individually, creating a calendar, making connections, and preparing graphics. The teachers agreed that children learn time concepts easily when they are provided an opportunity to make a connection with their lives. However, the teachers could not give many examples of how they can do so in their classrooms.

Although the Turkish Ministry of National Education's (2006a & 2006b) Early Childhood Education Program (for the 36-72 Months-old Children) is based on play/games, in the current research, not many teachers mentioned teaching children time concepts in the context of play/games. ODE (2004) states "if these measuring tools [such as clocks] are made available to children, they will explore and use them in their play and investigations" (p.30). Accordingly, it is essential for teachers to provide children an opportunity (e.g., time, place, and material) to work on time concepts, and to create meaningful contexts, such as drama and play/games (Beneke et al., 2008). For example, in the context of a game, teachers can ask children to stick nonpopped corn kernels on the card on which "before" is written, and put popped corn kernels on the card on which "after" is written (Ari & Oncu, 2008).

A real understanding of time cannot be accomplished before "the concrete operations period," but children can gain time language and understand duration and sequence (Charlesworth & Radeloff, 1991). Since time is not a concrete concept, but a socially-constructed abstract concept, children need meaningful contexts in which they can develop a strong temporal understanding, and play/games is one of the contexts which is meaningful for children. Even though not many teachers mentioned play/games, the current study showed that Turkish teachers are cognizant of children starting to learn the concepts of time in the early years of their lives by associating it with the things in their lives. Children can learn about time from the daily predictable routines that are established, such as circle time after interest areas, as well as clocks, and darkness/brightness (ODE, 2004).

The teachers in this study had difficulty answering the question “What other concepts do you use in teaching time concepts, by associating them with time concepts?” Some teachers stated that they associate some other time concepts with the time concepts they teach, such as the seasons and clocks, which are both still time concepts. Some teachers claimed that they teach time concepts by making associations with other concepts, but could not give any examples. Only a few teachers said that they use concepts other than time to make an association with time concepts in time teaching, and gave examples other than time concepts, namely measurement concepts (e.g., weight, area, judge, length), numbers, speed (i.e., fast-slow), colors, animals, shapes, and contrast concepts (i.e., big/small, away/close, soft/hard, long-short, and young/old).

A great deal of research shows that materials are essential for children to comprehend abstract concepts such as time, because materials make can abstract time more concrete (Church, 2006; İnan, 2011). In terms of the materials teachers use in teaching time concepts, the research shows that teachers use the following materials, in order from most to least frequently used: Clock, calendar, seasons board, sequence card, PowerPoint presentation, CD-ROM, toys, concept map, visual material, plant growing, making a book, completing a story, cut&fold, concept cards, table/graphics, Internet. It is interesting to see that teachers do not make much use of technology in teaching time concepts. Only one teacher used the Internet, only four teachers used CD-ROMs, and again only four teachers presented PowerPoint presentations. There are also two teachers who did not use any materials in teaching time concepts. The research shows that although teachers believe in the importance of using concrete materials in teaching time concepts, they could not state many materials that they use in their classrooms.

As a conclusion, the current research shows that many of the kindergarten teachers in central Kutahya are cognizant of the importance of teaching time concepts, what kinds of difficulties children might have, and what concepts are easier for them to learn. The results of the study show that teachers teach their children time concepts and work on the following Turkish objective: “They can use time concepts/language of time properly.” They frequently stated that they were very interested in children’s learning and using time concepts/language of time properly, On the other hand, the research shows that they do not mention many of the goals published by the Turkish Ministry of National Education (2006a & 2006b) Early Childhood Education Program (for the 36–72 Months-old Children) related to time concept education for kindergartners. First, none of the teachers stated that s/he expected kindergartners to be able to tell events according to the order in which events happened. Second, none of them stated that s/he expects kindergartners to be able to name the functions of time equipment. It cannot be speculated that they do not teach functions of time equipment or that they do not teach sequence, but further research could be conducted to explore this issue.

Future research could also be done on teacher-child conversations and child-child conversations in the kindergarten classes in order to determine the frequency and variety of temporal references (e.g., tense, sequence terms, and time terminology)

that children hear, the time language children use, and the presentation modes they use to express time concepts.

Recommendations

Here are some recommendations for teachers to improve their practices in teaching time concepts in kindergarten:

1. Teachers should teach developmentally appropriate units of time, and they should not maintain expectations that are higher or lower than developmentally appropriate;
2. Teacher should teach children time concepts in more meaningful contexts, like play, games, and drama;
3. Teachers should use concepts other than time to make an association with time concepts in time teaching, namely measurement concepts;
4. Teachers should make use of technology and more concrete materials in teaching time concepts;
5. Teachers should teach kindergartners how to recount events according to the order in which events happened;
6. Teachers should teach kindergartners how to name the functions of time equipment.

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Anasınıfı Öğretmenlerin Zaman Kavramını Ele Alış Biçimlerinin İncelenmesi

(Özet)

Problem Durumu: “Zaman” kavramı soyut bir kavram olmasına rağmen, öğretmenler, bu kavramın erken yaşlarda kazanılması gerektiğine inanırlar. Günlük yaşama devam edebilmek ve okuldaki işleri başarabilmek için çocukların zamanla ilgili bazı kazanımlara sahip olması ve buna uygun olarak hareket etmesi gerekmektedir.

Araştırmanın Amacı: Bu çalışmanın amacı anasınıfı öğretmenlerinin zaman kavramını öğretimine ilişkin tecrübelerini incelemektir. Öğretmenlerin bu konudaki görüşlerine dayanan bu çalışmada şu başlıklara odaklanılmıştır: Öğretmenlerin zamana ilişkin hangi kavramları öğrettikleri, hangi kavramların kolay hangilerinin çocuklar için zor olduğu, gelecek-şimdiki-geçmiş zamanları hangi sırayla çocuklara verdikleri, hangi öğretim stratejilerinden yararlandıkları, zaman kavramlarını diğer hangi kavramlarla ilişkilendirdikleri ve zaman eğitiminde hangi materyalleri kullandıkları.

Araştırmanın Yöntemi: Bu çalışmaya Kütahya merkez ilköğretim okulları veya okulöncesi eğitim merkezlerinin anasınıflarında çalışmakta olan 16 anasınıfı öğretmeni katılmıştır. Araştırmacılar öğretmenlerin zaman kavramını öğretimine ilişkin deneyimleri hakkında detaylı veri toplamak ve bu veriyi analiz etmek için nitel araştırma metodlarından Fenomenografik araştırma metodundan yararlanmışlardır. Bu çalışmada Fenomenografik araştırmaya uygun olarak yarı-yapılandırılmış görüşme tekniği ile veriler toplanmıştır. Araştırmanın verileri Fenomenografi yönteminin analiz sürecine uygun olarak öncelikle görüşme kayıtları üç kez listelenmiştir. Ardından son metindeki anlam kategorileri analiz edilmiştir. Ana anlamlar etiketlenmiş, kavramlar gruplanıp kategorize edilmiş ve kategorilere isimler verilmiştir. Çalışmaya katılan 16 öğretmene isimlerine ve çalıştıkları kuruma bakılmaksızın birden onaltıya kadar numara verilmiştir. Tablolarda bulunan kategorilerin ve örnek konuşma cümlelerinin yanında bulunan numaralar öğretmenlere ait numaralardır. Bu çalışmada yüz yüze yürütülen görüşmelerde öğretmenlere 7 adet soru yöneltilmiştir. Bu sorular: 1-Anasınıfında hangi zaman kavramlarının öğretimini yapıyorsunuz? 2-Anasınıfı çocukları zaman kavramlarından hangilerini daha kolay öğreniyorlar? Açıklayınız. 3-Anasınıfı çocukları zaman kavramlarından hangilerini öğrenmede zorluk yaşıyorlar? Sebeplerini açıklayınız. 4-Anasınıfı çocuklarının ‘geçmiş zaman, gelecek zaman, şimdiki zaman’ bu üç zamanı öğrenmelerini önce öğrenilenden sonra öğrenilene doğru sıralayınız. 5-Dün, bugün ve yarın (zaman) kavramlarını nasıl öğretiyorsunuz? Anlatınız. 6-Zaman kavramlarının öğretimiyle ilişkili olarak başka hangi kavramları öğretim sürecinizde kullanırsınız? 7-Zaman kavramlarının öğretim sürecinde ne tür materyaller kullanıyorsunuz? Her soru için ilgili tablo vermiştir. Bu tablolar öğretmenlerin verdikleri cevapların kategorilerini ve örnek cümleleri yansıtmaktadır. Her tablodan sonra bulguların yorumuna yer verilmiştir.

Araştırmanın Bulguları: Bu araştırmanın sonuçlarına göre öğretmenler okuttukları anasınıflarında zamana ilişkin verdikleri konular 19 farklı kategoride toplanmıştır. Bunlar: Sabah, akşam, dün, bugün, yarın, şimdi, sonra, gece/gündüz, öğleden

sonra, yıl, gün, hafta, birazdan, tam saatler, hafta sonu, yarım saat, erken-geç, mevsimler, bir yıl/oniki ay. Öğretmenler bu kategorileri gerek kendi deneyimlerine göre gerekse çocukların gelişim düzeylerine göre belirlemektedirler. Öte yandan öğretmenlerin çocuklardan zamana ilişkin kavramların öğreniminde sahip oldukları düşük veya yüksek beklentileri de dikkati çekmektedir. Araştırmanın sonuçlarına göre anasınıfı öğretmenler çocukların genellikle şimdiki zamanı ve sabah-öğlen-akşam kavramlarını daha kolay öğrendiklerini düşünmektedirler. Öte yandan geçmiş ve gelecek zamanı ve ilgili kavramları daha zor öğrendiklerini düşünmektedirler. Araştırmanın bir diğer sonucu ise zamanla ilgili öğretim yaparken öğretmenlerin soru sormaya ve sohbet etmeye önem verdiklerini ortaya koymuştur. Öğretmenler "Zaman kavramlarının öğretimiyle ilişkili olarak başka hangi kavramları öğretim sürecinizde kullanırsınız?" sorusunu cevaplamakta hayli zorlanmışlar ve yaptıkları ilişkilendirmelerde yine zaman konusuna dahil olan kavramlarla ilişkilendirmelerden söz etmişlerdir. Birçoğu ilişkilendirme yaptıklarını söylemiş fakat nasıl yaptıklarını açıklayamamışlardır. Zaman öğretiminde kullanılan materyaller konusunda ise araştırma sonuçları anasınıfı öğretmenlerinin en sık kullanılan materyalden en seyrek kullanılan materyale doğru aşağıdaki materyalleri kullandığını ortaya koymuştur: Saat, takvim, mevsim panosu, sıralama kartı, slayt gösterisi, CD, oyuncak, kavram haritası, görsel materyaller, bitki yetiştirme, kitap oluşturma, hikaye tamamlama, kesme, katlama, kavram kartları, tablo ve grafikler ve İnternet. Çıkan kategoriler ve sıklık derecesi dikkate alındığında öğretmenlerin teknolojiden çok fazla yararlanmadıkları ortaya çıkmıştır.

Araştırmanın Sonuçları: Sonuç olarak, bu araştırma merkez Kütahya'da çalışan anasınıf öğretmenlerinin zaman kavramlarının öğretilmesinin öneminin farkında olduklarını bulmuş, çocukların hangi kavramlarda zorlandığı, hangi kavramların onlar için kolay öğrenilebilir olduğunu farkında olduğunu tespit etmiştir. Araştırma sonuçlarına göre öğretmenler anasınıfı çocuklarına zaman kavramlarıyla ilgili eğitim vermekte ve Milli Eğitim Bakanlığı Okulöncesi Eğitim Programında yer alan çocukların zamanla ilgili kavramların ve dilin doğru kullanımına yönelik amacı karşılamaktadırlar. Ancak öğretmenler programda öngörülen bütün amaçlardan bahsetmemişlerdir. Birincisi, öğretmenlerden hiçbiri anasınıfı çocuklarının olayları oluş sırasında göre söyleme hedefini dile getirmemişlerdir. İkincisi, yine öğretmenlerden hiçbiri çocukların zaman gösteren araçların fonksiyonunu söyleyebilmesi hedefini dile getirmemişlerdir.

Anahtar kelimeler: Zaman kavramları, anasınıfı, öğretmen, nitel, fenomenografi