



Reverse Tullip Education

## Pre-School Teachers' Views About Lifting Force Of Water

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### Abstract

The research was conducted to examine the opinions of preschool teachers about buoyancy of water. 16 preschool teachers participated in the study. Two semi-structured forms were used as data collection tools in the study which was conducted by using special case method. According to the research, the participants were not fully informed about the buoyancy force of the water or they were forgotten due to the fact that the information they learned was not used and they fell into generalizations and misconceptions.

**Keywords:**PRE-SCHOOL, force of water.

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## INTRODUCTION

Preschool education, which is accepted as the first step of our education system, covers the years from the birth of the child to the day it starts primary education (Demiriz, Karadağ & Ulutaş, 2003). Preschool education involves many tasks such as managing, encouraging and developing a child who is motivated by the environment, learning and thinking (Senemoğlu, 1994). In this period, it is stated that basic science concepts are formed (Kalley ve Psillos, 2001). The aim of science teaching in preschool period is to gain basic life skills, to protect the child against dangerous situations, to gain skills to understand the environment can be expressed. Thus, it is aimed to gain the ability to bring solutions to the problems that will be faced in the following years (Şahin, 2000). For these reasons, science teaching is of great importance in preschool period. Again, in this period, while gaining the concepts of science, children gain various skills such as problem solving, scientific, critical and multi-faceted thinking (Güler ve Bıkmaz, 2002). Undoubtedly, the most important task in the acquisition of these and other gains and skills belongs to the preschool teachers. The person who is described as a teacher; knowledge, skills, attitudes and behaviors as a role model for children with many features and allows them to grow up as individuals who exhibit the behavior accepted. Ne The more qualified the teacher's behaviors in the classroom, the more qualified the student's behaviors will be. " (Parlakııldız, 1998). It is undeniable that the level and quality of teachers' knowledge and various mental and behavioral capacities affect children's development. Teachers need to have the right information and the right concepts in order to present their knowledge and various concepts correctly and effectively. The main reason why pre-school teachers do not devote sufficient time to teach various scientific concepts is that they do not have sufficient field knowledge about scientific concepts (Cho, Kim ve Choi, 2003). According to the literature studies, it is stated that the teacher's inability to perform effective teaching while teaching the concept and reflecting the misconceptions he has on his students as the reason of misconceptions and misunderstandings about basic science concepts (Hadzigeorgiou, 2001). Concepts; entities, events, people and thoughts are divided into groups according to similar characteristics and are common names given to these groups (Kaptan, 1999). When the concept is mentioned, it refers to the abstract units that cover the entities in a certain group. Concepts are in our mental world. Concepts enable us to group the information we have and easily transfer it to someone else (Kaptan, 1999). It is stated that the studies about the concepts started by Piaget in 1920 (Meriç & Sarıkaya, 2002). Many concepts which are basic since childhood are gradually learned, classifications and groupings are made and relationships between them are discovered. This discovery and classification configuration continues throughout life. It can be said that people can make connections between a new concept and the other concept that they have previously classified.

It can be said that it causes people to form misconceptions and misconceptions. Such misleading is described differently by many researchers. For example, alternative concepts (misconceptions), misunderstandings, children science, preconceptions and naive conceptions are mentioned. An in-depth analysis reveals that each one is different (Hewson & Hewson, 1984; Palmer, 1999; Nakiboğlu, 2006; Skelly & Hall, 1993; Yağbasan & Gülçiçek, 2003). When the literature is examined, it is seen that the term "misconception sık has been frequently used recently. If the concepts cannot be taken into mind by coding correctly for various reasons, the brain cannot code correctly and as a result misconceptions arise. Misconceptions; It is expressed as a situation that arises as a result of individual experiences, does not comply with scientific facts and prevents the teaching of concepts (Yürük, Çakır & Geban, 2000). Again, misconception refers to the difference from the universally accepted scientific meaning of the way an individual perceives any concept (Yağbasan, 2003).

In this study, preschool teachers were explained with sinking surface test materials to determine whether there were misconceptions about the buoyancy force of water and their opinions about why sinking materials used in the experiment were sunk. Thus, it was tried to understand whether preschool teachers had misconceptions about the subject.

## METHOD

This research has been carried out by using the special case method which enables to conduct in-depth detailed research on a subject that has been delimited (Cohen & Manion, 1994; Çepni, 2007).

### Sample

The population of this research consists of pre-school teachers in Amasya, Taşova district center. The sample was composed of 16 preschool teachers from three schools in the district center.

## Data Collection Tools

In the study, a semi-structured form consisting of two parts was used to determine the teachers' views on demographic characteristics and buoyancy of water. In the first part of the form, there is a section about gender and years of professional experience of the participating teachers. In the second part, there are experiments related to buoyancy of water, test materials, conducting the experiment and two questions. First question ; It is related to which materials sink in the test materials. The second question is the open-ended question about why these materials sink. The questions in the form are asked by the researcher and processed on an interview basis. The answers to the second question on a voluntary basis were also recorded as sound recording.

## Analysis Of Data

The data obtained from the study regarding gender and years of professional experience were tabulated and presented as frequency (f) and percentage (%). The open-ended questions were grouped in a similar, common way.

## RESULTS

The findings of the data collected in the research were examined under the following headings:

### Findings Related to Sample Group

Table 1. Gender, Year of Professional Experience and Bachelor's Degree

<b>Sex</b>	<b>F</b>	<b>%</b>
Women	14	%87,5
Man	2	%12,5
Total	16	%100

  

<b>Year of Professional Experience</b>	<b>F</b>	<b>%</b>
1-3 year	3	%18,75
4-7 year	6	%37,5
7-11 year	4	%25
12- over year	3	%18,75
Total	16	%100

  

<b>Bachelor's Degree</b>	<b>F</b>	<b>%</b>
Preschool teaching( formal)	8	%50
Preschool teaching(open education)	6	%37,5
Child development (open education)	2	%12,5

According to the study according to Table 1, 14 out of 16 preschool teachers were 87.5%,It is seen that 2 of them are male with 12,5%.Again according to Table 1, 18.75% with 3 to 3 years, 37.5% with 6 to 4-7 years, 25% with 4 to 7-11 years, 18.75% with 3 ' ü 12 years of professional experience.In addition, as of undergraduate graduation, it is seen that 8 participants with 50% are preschool teachers (formal), 37,5% with 6 participants Preschool teachers (Open education) and 12.5% with 2 participants Child Development (open education) graduates.

## Findings Related to Lifting Force of Water

Table 2. Which of the materials used in the experiment do you think would sink in water?

Materials	F	%
ping-pong	0	%100
iron spoon	16	%100
coin	16	%100
Marble	16	%100
Plastic spoon	0	%100
Plastic plate	0	%100
Stone	16	%100
Board	0	%100
Abeslang (mouth stick)	0	%100
Paper ship	0	%100

According to Table 2, all the preschool teachers who participated in the research stated that iron spoon, coin, marble, stone would sink in water, the remaining ping-pong ball, plastic spoon, plastic plate, wood, abeslang (mouth stick) and paper ship would not sink in water.

Table 3. What do you think it sinks and why does it sink?

Cause of Sinking	Participant	Answers
Weight	4. Participant	Because weights are different
	5. Participant	Because they are not light
	7. Participant	Because they are heavier than other materials
	9. Participant	Others swam because they are lighter, they are heavier.
	10. Participant	Because they are heavier than others
	11. Participant	Because they are heavy and small objects
	15. Participant	Because they are heavy
	16. Participant	Most of them are heavy, so they sink.
Metal	2. Participant	Because they are metal
	16. Participant	Most of them are heavy, so they sink.
Density	1. Participant	Because their density is more
	13. Participant	Iron spoon, stone, coins and marbles sink. Because their density is higher than the density of water
Small and narrow water contact	6. Participant	Because the parts in contact with water are narrow
	14. Participant	Because the parts that touch the water are less
Small volume	8. Participant	Because they are small volume
Because there is no air in them	12. Participant	Because there is no air in them
Because they can't swim	3. Participant	Because they can't swim

According to Table 3, preschool teachers gave various answers about the sinking reasons of sinking materials in buoyancy test of water. One of the points that draw attention to the answers is to put forward the issues related to the weight of the sinking materials. Among the participants 4, 5, 7, 9, 10, 11, 15, 16, the participants related the sinking reasons of the experimental materials with the weight; Participants 2. and 16. attribute the sinking of the materials to the fact that they are metal; 1. and 13. participants consider the density of the materials as a reason for sinking; 6. and 14. The participants attributed the sinking of the materials to the smaller and narrower portions of the water-contacting parts; 12. The participant stated that there is no air in the sinking materials; 8. Participant should have small volume materials; Finally, the 3. participant connects them to the fact that they cannot swim.

Table 3. When a child watches you do the floating floating experiment, when you ask the question, im Why doesn't my teacher sank the big ships but the little money sinks right away? Ne 'What is your answer?

Reason not to sink	Participant	Answers
because there is air in the ships	1. Participant	I say there's air in the ships.
	4. Participant	Air on the ships
	10. Participant	ships have air in them
	12. Participant	because there is air inside
the air in these parts prevents the sinking	13. Participant	Ships are wide hull and hollow in shape
	5. Participant	Shapes prevent ships from sinking
	7. Participant	Shapes prevent ships from sinking
Ships do not sink due to their shape	9. Participant	Ships do not sink due to their shape
	11. Participant	They have large bodies but their shape is suitable for swimming
the air in these parts prevents the sinking	13. Participant	Ships are wide hull and hollow in shape
	15. Participant	Ships are too heavy, but I'd say they wouldn't sink shapes.
Large volume of ships	16. Participant	I say it doesn't sink because of their shape.
	8. Participant	Because they have large volumes
large surface ships in contact with water	6. Participant	I say the parts that come into contact with water are more than money
	14. Participant	water contact surface large
Because they do not know	2. Participant	I don't know we can investigate together
	3. Participant	I wonder

According to Table 3, pre-school teachers, children, "My teacher does not sink big ships, but why is the small money sinking immediately?" Questions to; 1st, 4., 10., 12., 13., participants replied that there was air in them. 5., 7., 9., 11., 13., 15., 16., The participants responded to the obstacles of the sinking of the shapes of the ships. Participants 2, 3. stated that they did not know and wondered why the participating ships did not sink. The 8th participant stated that the ships did not sink due to their large volume. 6., 14. again. The participant sees the fact that the parts of the vessels that touch the water are too high as the reason for not sinking.

## DISCUSSION, RESULT AND SUGGESTIONS

In this study, it is seen that preschool teachers who are interested in buoyancy force have misconceptions. The buoyancy of water has been clarified by a principle recognized and asserted by Archimedes. Water pushes the objects having density less than their density towards the surface. With the effect of pushing force resulting from density differences, the body starts to float "(URL-1). It can be said that the participants are not fully informed about the buoyancy force of the water, or that they are forgotten due to the fact that the information they have learned is not used.

When the graduation status of the participants in the study is examined, 4., 5.7., 9., 10., 15., Preschool teacher (Open Education with 37.5%) undergraduate degree, 1., 6., 8., 11., 12., 13., 14., 16., Preschool teacher (Formal education with 50%) language, 2nd and 3rd, the participants of the child development (12.5% Open education) graduates.

Participants 1 and 13 in the study linked the buoyancy force of water to the density. The other participants tried to explain the buoyancy force of the water in the experiment for different reasons. Therefore, it is seen that they have misconceptions.

Of the participants 4, 5.7, 9, 10, 11, 15, 16. Again, the 8th participant in the research has a generalization and lack of knowledge that small volume materials can sink.

The 6th and 14th participants attributed the sinking reasons of the experimental materials to the smaller and narrower portions of the water-contacting parts. The generalization of the participants (4., 5.7., 9., 10, 15, Preschool Teaching (Open Education)), weight, etc. It can be stated that they are caused. Therefore, it can be stated that various applied methods in misconceptions can reduce misconceptions compared to theoretical knowledge.

The 6th, 8th, 12th, 14th graduates of pre-school teaching (formal education) language, and the participants have insufficient knowledge about buoyancy. However, it is seen that the first, 13th, graduates of pre-school formal education graduates attributed the cause of the sting to the intensity. When all participants are taken into consideration, it is seen that teachers who are formal education graduates are misleading based on lack of knowledge according to their colleagues who are open education graduates, and teachers who are graduates of open education make generalized mistakes based on formal education graduates. In the 2nd and 3rd part, the participants are open education graduates of child development and they have general misconceptions.

In the study, it was seen that the children answered the question "My teacher, why do not the big ships sink, but why the little money sinks? In The participants 1, 4, 10, 12, 13. Replied that the ships did not sink because there was air in them; 5, 9, 11, 13, 15, 16. the participants responded that the shapes of the ships gave an obstacle response to sinking; second, third. stated that they did not know and wondered why the ships did not sink. The 8th participant responded that the ships did not sink due to their large volume, while the 14th participant responded to the children that the parts of the vessels touching the water were the reason for not sinking. Therefore, it is seen that teachers have difficulty in this curious question of children. One of the reasons for this is that the age group that the teachers are interested in can be thought to be more abstract in terms of density, volume and mass. Again, due to the lack of knowledge in the subject teachers, it can be thought that misconceptions in children can be prevented by showing that the same objects can float even if they are metal or heavy even with different applications. Causes of misconceptions; It is stated that the teachers are inadequate information, inadequacy of the textbooks, the language used in the subject expression, generalizations about the subject, symbols, diagrams and preliminary information (Ecevit, Özdemir Şimşek, 2017). Therefore, when the whole study is taken into consideration, the reason of the misconceptions of the participants can be stated as lack of information and having generalizations.

In this study, the floating floating experiment was designed to determine the opinions of preschool teachers about the buoyancy of water and the reasons for the sinking about the sinking objects were asked and whether there were misconceptions about the subject. In general, it is seen that teachers have misconceptions about buoyancy of water. In this context, the following suggestions can be made in order to eliminate the misconceptions of teachers about the subject;

Practical in-service trainings related to science applications in pre-school education can be given. Activities like coterie teacher practice, different activity monitoring in different classroom can be done.

During the seminar periods, the issues with which teachers misconceptions are mostly dealt with can be addressed in an applied manner and the lack of topics can be eliminated.

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