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Teachers' Views on the Preparedness of Primary School 1st Year Pupils with Preschool Education on Learning Mathematics Subjects

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Abstract

The study examines the views of classroom teachers on the preparedness of primary school first year pupils with preschool education on learning mathematics subjects. The sample of the study consists of 15 classroom teachers teaching first year of primary school. Qualitative data obtained by using semi-structured qualitative interview technique was interpreted by data content analysis method. The data obtained from the interview was analysed, categories were established and interpreted with findings and under five topics. Children with preschool education are more prepared to learn mathematics subjects in primary school than the children who don't have preschool education. Their preparedness for recognizing figures, writing, rhythmic counting, spatial relations, geometrical shapes and patterns are better than the children who don't have preschool education.

Keywords: Preparedness; mathematics subjects; preschool education.

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1. Introduction

During preschool period, pupils start to acquire concepts on mathematics and science. While they acquire these concepts, there are activities for them to internalize and expand these concepts and reach to new ones. This reveals the importance of pre-school education in reinforcing the concepts of mathematics and science [2]. According to by [11] can count in the preschool period by imitating adults and then comprehend numbers by comparing, grouping and matching.

Ideas related to mathematics develop in children before starting pre-school education and obtain mathematical experiences through some information and discoveries in their lives. These experiences don't include mathematics subjects in the academic sense as they cannot perceive abstract aspect of mathematics. They start counting in younger ages and perhaps can carry out simple addition and subtraction but they cannot write it down. Educators regard mathematics as an integral part of the early childhood period. Mathematical skills to instil in the preschool education will form the infrastructure in the primary school period while the mathematical skills and concepts will form the infrastructure of their future education [1].

By [10] states that children give meaning to the events around them through mathematics and the role of mathematics in pre-school period is inevitable.

Universal standards regarding the mathematical skills to be acquired in preschool education are defined as number concept, doing and associating by looking at a model, geometry, measurement, information collection, organization and expression [12].

Mathematics related objective in cognitive development qualities of the preschool education program includes counting and writing from 1 to 10, rhythmical counting in ones, learning spatial relations (small-big, long-short, heavy-light etc), recognizing geometrical shapes and completing patterns [15]. The objective of mathematical education in the first year of primary school is to develop mathematical concepts and skills of pupils and to instil natural numbers, spatial relations, geometrical objects, patterns and decorations, measurement of lengths, our money, time and weighting [14].

The term preparedness is defined as the reading maturity. Learning preparedness refers to the period when pupils can learn easily and sufficiently. That is, it refers to easy accomplishment of knowledge and skills which are difficult to acquire before that period [9].

In many countries, preparedness tests are carried out before starting school and the maturity of children is examined. In addition, it is attempted to ensure school preparedness in order to increase school achievement of children and to remove some inequalities. Starts without good level of preparedness of children cause underachievement of them and complicates the subsequent measures. Researches demonstrated the importance of preschool education in cognitive, social, affective and motor development. Therefore, constant works are carried out in developed countries to ensure that preschool education is mainstreamed and benefitted by every segments of society [6].

By [4] stated that children with preschool education are more successful than those without preschool education in working with peers and completing the assigned tasks.

In a study with first grade pupils, those with preschool education are found to be more successful than those without [7].

By [3] stated in their study that children in inconvenient socio-economic and environmental conditions were able to show, if supported by preschool education and programs, the same or almost the same achievement with peers in better conditions.

In his "Study on preparedness of preschool children for primary education with respect to mathematical skills", by [16] states that children with preschool education are more prepared for mathematical skills compared to those without preschool education. The study examined the preparedness of 180 pupils with preschool education and 120 pupils without preschool education. Findings showed that gender didn't create any significant difference with respect to mathematical skills while socio economic level, age and preschool education had significant contribution to the development of children.

By [6] stated that pupils with preschool education were more prepared for primary school than the pupils without preschool education. The study included 170 first grade pupils in primary schools. Findings of the study showed that gender of pupils with or without preschool education was not statistically significant for preparedness to primary school but the preparedness increased in parallel to the increase of parent education level.

Preschool education is very important in the development concept and skill and it is essential to consider it with respect to preparation of pupils to school and its contribution to the development of them [5].

It is important to study and reveal the differences between the preparedness of the same classroom pupils with or without preschool education with respect to determination and organization of education policies. In addition these studies are important for determining the measures to be taken by society and educators. The objective of this study is to reveal the difference between the pupils with or without preschool education with respect to preparedness to learn primary school mathematics subjects.

2. Method

This study is a qualitative one. Qualitative studies are used to collect detailed information on a subject and to measure objective opinions of people on events [13]. Semi-structured interview technique was used in obtaining qualitative data. Semi structured interview technique is a method that is commonly used due to its flexibility and standardization. It provides systematic data as it is maintained with compliance with a drafted interview form [17]. Data obtained from interview with 15 classroom teachers of primary school first grade pupils was studied by using content analysis method. The findings were divided into categories. The themes of categories were interpreted under separate headings.

2.1 Sample

The sample of this study consists of 15 classroom teachers of primary school 1st grade pupils in the education year of 2013-2014. Attention was paid in determining the teachers to ensure that at least 30% of their pupils had preschool education. The average experience length of teachers is 12 years. The shortest seniority in classroom teaching is 8 years while the longest one is 17 years. Semi-structured interviews were held with these classroom teachers.

2.2 Data Collection Means

Semi-structured interview technique was used as the data collection means. An interview form of 6 questions was drafted for the semi-structured interview. This study examines the preparedness of pupils with preschool education for the mathematics subjects of first grade in primary school and the questions were prepared in a comparison of common attainments included in the mathematics programs of first grade and pre-school [14,15]. The questions were asked in comparison of pupils with or without preschool education with respect to common subjects in mathematics education in the first grade and pre-school years like recognition and writing numbers, rhythmical counting, spatial relations, comprehending geometrical objects and patterns.

2.3 Data Analysis

Interviews with teachers were recorded. Recorded interviews were analysed and combined in a single file. Content analysis method among the qualitative data analysis methods was used in the analysis of data. In the content analysis method, first data are encoded and codes are examined to make categories where categories are grouped to reach themes [8]. In order to ensure security in encoding data, two researchers encoded the data independently. It was decided to encode within the framework of common views by comparing two encodings. Categories were examined and five themes were created in the study.

3. Findings

This section will deal with the obtained data under the topics of recognizing and writing numbers, rhythmical counting from 1 to 100, comprehending spatial relations, comprehending geometrical shapes and instruction of patterns.

3.1 Recognizing and writing numbers

Table 1 one includes the views of teachers on the difference in learning and comprehending between pupils with or without preschool education with respect to recognizing and writing numbers.

When we study Table 1, we see that pupils with preschool education are better in comprehending the numbers in a shorter time (9 persons=60%), they are advantageous as they have preliminary knowledge on the subject (8 persons=54%) and they are better in recognizing and reading numbers (6 persons=%40). They are more successful in writing as they know the writing directions of numbers, drawing and holding pencils (7

persons=47%). In addition, teachers stated that pupils without preschool education have difficulty in comprehending the subject (6 persons=40%). Some samples of the teachers views obtained from the semi structured interview are given below:

Teacher 1: "Pupils with preschool education are one step ahead in every aspect."

Please describe how ahead are they?

Teacher 1: "Pupils with preschool education are better stimulated. The pupils without preschool education have difficulty in recognizing numbers."

Teacher 2: "Pupils with preschool education are able to recognize, read and write numbers while others have difficulty in reading and writing as they don't know the numbers".

What is the result of this difference?

Teacher 2: "They comprehend the numbers late which increases the difference with the pupils with preschool education. This makes them to be behind the other pupils which also cause late comprehending of other subjects of mathematics."

Teacher 3: "Hand muscles are more developed in pupils with preschool education."

What is the importance of it?

Teacher 3: "They can easily paint and draw. They also write the numbers properly as they already know the direction and shape of numbers. Exercises are carried out in preschool with respect to reading and writing. However, if numbers are not learned properly in preschool, then pupils are not or hardly able to correct their mistakes."

Table 1: Difference of pupils with preschool education in the instruction of numbers

Categories	F
They comprehend the numbers subject in a shorter time and in a better manner	9
They have preliminary knowledge on numbers	8
Knowledge of writing directions of numbers, line drawing, pencil holding and writing	7
They are better in recognizing and reading numbers	6
Their hand muscles are more developed	6
Pupils without preschool education have difficulty in comprehending and start behind the other pupils	6
Pupils without preschool education learn the subject later and have difficulty in recognizing numbers	5

3.2 Rhythmical Counting from 1 to 100

Table 2 includes the views of teachers on differences of comprehending and achievement among pupils with or without preschool education with respect to rhythmical counting from 1 to 100.

Table 2: Difference of pupils with preschool education in rhythmical counting from 1 to 100.

Categories	F
They can rhythmically count easily and faster as they already know number	12
They are prepared for the lesson as they have knowledge on the subject	7
Pupils without preschool have difficulty in rhythmical counting and in starting new decimals (29-30, 49-50).	6
I don't think there is a difference	1

When Table 2 is studied, majority of teachers (12 persons=80%) said that pupils with preschool education already know numbers and counting so that they can rhythmically count in ones easily and faster from 1 to 100. In addition, they state that they are more prepared and don' have difficulty in starting new decimals like 29-30 and 49-50 as they have preliminary knowledge. However, one teacher said that there is no difference in rhythmical counting and students can easily comprehend this subject. Some views of teachers on rhythmical counting are as follows:

Teacher 1: "Mathematical skills gained in pre-school are a beginning for learning the mathematical skills in following grades."

Can you exemplify this beginning?

Teacher 1: "counting is one of the examples. Pupils who learn counting can easily more advanced skills. Pupils with preschool education get to primary school with knowledge of counting and other mathematical skills which facilitate their improvement".

Teacher 2: "A pupil without preschool education has difficulty in starting new decimals like 29-30, 39-40, 49-50 when counting rhythmically while pupils with preschool education can gain rhythmical counting skills in a shorter period."

Teacher 3: "Pupils with preschool education can easily learn counting as they are prepared."

Do the pupils without preschool education have much difficulty?"

Teacher 3: "This may differ among students. Difficulty is almost none for pupils with preschool education.

However, if pupil is supported by his/her family, then there is no problem in comprehending the subject. Preschool education provides this support."

3.3 Comprehending Spatial Relations

Table 3 includes the views of teachers on differences among pupils with or without preschool education with respect to comprehending spatial relations like small-big, down-up, under-on, long-short, heavy-light.

Table 3: Difference of pupils with preschool education in comprehending spatial relations

Categories	f
No difference among pupils as the concepts are used in daily life	8
They learn the subjects easily and faster and don't confuse as they already know these concepts.	5
Pupils without preschool education may confuse and have difficulty as they just learn the concepts	3

Looking at the Table 3, we see that more than half of the pupils (8 teachers=54%) believe that there is no difference among pupils with or without preschool education with respect to understanding and comprehending spatial relations as these are used in daily life. There are teachers who state that pupils learn faster and don't confuse the subject as they already know (5 teachers=30%) and that pupils without preschool education may confuse the spatial relations they just learn (3 teachers=20%). The followings are some of the teacher views with respect to spatial relations.

Teacher 1: "there is no difference among pupils with or without preschool education with respect to spatial relations".

Why isn't there any difference?

Teacher 1: "Pupils don't have difficulty in learning as they use these concepts in daily life."

Teacher 2: "There is no difference among pupils with or without preschool education in understanding spatial relations. I believe that the subject is comprehended by the pupils without preschool education."

Teacher 3: "The pupil with preschool education doesn't have any difficulty in school period as he/she already know the spatial relations subject from preschool. They don't have any difficulty as they have practices in preschool regarding the concepts like big-small and up-down."

Teacher 4: "I believe that primary school education is greatly affected by the good monitoring of pupils in preschool and guidance of them for proper and complete conduct of activities. I think preschool education has

positive effect in every subjects."

3.4 Comprehending Geometrical Subjects

Table 4 includes the teacher views on the differences between pupils with or without preschool education with respect to the instruction of geometric shapes (sphere, prism).

Table 4: Difference of pupils with preschool education in comprehending geometric shapes.

Categories	f
They learn and comprehend easier and faster as they already know these concepts.	7
Pupils without preschool education have difficulty in learning and comprehending geometric shapes as they hear about them for the first time	4
I don't think there is a difference between pupils as these subjects are taught in the first grade	4
Depends on pupil	1

Table 4 indicates that half of the teachers (7 teachers=47%) say that pupils learn and comprehend faster as they heard the names of geometric shapes and saw them by visuals during preschool education. At the same time, some teachers (4 teachers=27%) say that pupils without preschool education have difficulty in learning and comprehending the geometric shapes as they hear about them for the first time. Some teachers (4 teachers=27%) stated that there is no difference among pupils or it depends on the particular pupil (1 teacher=7%) as geometrical shapes are new concepts taught in the first year of primary school. Followings are some of the teacher views on teaching geometric shapes.

Teacher 1: "Pupils with preschool education comprehend geometric shapes more easily".

Why do they understand more easily?

Teacher 1: "They can easily understand geometric shapes as they use visuals in the preschool education. Visuals allow more permanent learning. Therefore, preschool education is very useful".

Teacher 2: "A pupil with preschool education can comprehend the geometric shapes more easily than a pupil without preschool education."

Teacher 3: "Pupils are able to learn these concepts from TV in addition to preschool education. Square, triangle, rectangle and circle are easier to learn while globe and prism are difficult."

3.5 Comprehending the Subject of Patterns

Table 5 includes the difference between pupils with or without preschool education with respect to learning the subject and completing a pattern.

Table 5: Difference of pupils with preschool education in comprehending patterns.

Categories	f
Pupils with knowledge of shape patterns in preschool can learn the number pattern easier and faster.	9
Pupil without preschool education has difficulty in comprehending the subject	3
As the subject of patterns is not difficult, I believe it depends on pupils	3

The subject of patterns is taught by shapes in preschool education. Shape patterns are introduced to pupils in classroom as a play activity. Majority of teachers (9 teachers=60%) stated in a semi structured interview that pupils who learned shapes patterns in preschool education can learn number patterns easier. Teachers stated that pupils without preschool education have difficulty as they are supposed to learn first shape patterns and then number patterns. However, some teachers (3 teachers=20%) say that it depends on the pupil to learn the patterns subject which is not a difficult one. Followings are the views of some teachers on teaching the patterns subject.

Teacher 1: “With respect to shape patterns and object patterns, pupils who have basic learning in the preschool education can learn the number patterns easier.”

Teacher 2: “Having learned the patterns subject in the preschool education allows these children to start one step ahead. However, a pupil without preschool education can also understand and comprehend the subject easily.”

Teacher 3: “A pupil without preschool education has difficulty in creating pattern as he/she doesn’t know the patterns subject. As a pupil with preschool education knows the patterns concept and has high preparedness, he/she may create different patterns.”

Teacher 4: “Patterns subject is not a matter which challenge pupils so hard. There is no difficulty in this subject as there are usually dual patterns. I didn’t observe any difference in both groups.”

4. Discussion

Preschool education takes an important part in the development of cognitive skills of children. The participating teachers believe that children with preschool education are more prepared to primary school than those without preschool education and their learning are higher than peers without education. Several researches reveal the importance of preschool education and positive effects on children [1, 2, 10].

School preparedness in every level is an important factor in pupils' achievement and in fulfilling the assigned tasks. Starts with poor school preparedness are among the factors that cause underachievement and lack of self-confidence of pupils. Recovering pupils stuck in a spiral of underachievement by subsequent measures becomes more difficult [4, 6]. The views of participant teachers support the literature. Teachers stated that children without preschool education will suffer the negative consequences of failing to comprehend mathematics issues.

Studies on preparedness of children with preschool education to primary school, mathematic skills and mathematics subjects revealed that preschool education provided important contributions to the preparedness [7, 3, 16, 6]. This study obtained findings according to the socio-economic conditions, parents' education level, age, gender and having or not having pre-school education of children. Preparedness level of pupils with preschool education to primary school was shown high in all of the findings. The findings of this study support the literature. However, the preparedness in this study was determined by teachers' views. The difference of this study from other studies is that it deals with the experiences of teachers who try to teach in the same classroom children with or without preschool education.

5. Conclusion

The results of the study are given below:

- Pupils with preschool education are more successful in recognition and writing of numbers. They comprehend easily and become more successful as they see and know numbers, their hand muscles are developed, they learned flat, horizontal and curved lines and practiced counting works.
- In comprehending spatial relations and geometric objects, the comprehension of pupils with preschool education is better. The fact that children also face both spatial relations and geometric objects in daily life helps the pupils without preschool education in comprehending these subjects.
- All children are generally successful in comprehending patterns subject. However, pupils with preschool education can learn the number subjects faster as they already learned shape patterns.
- The preparedness level of children with preschool education for learning mathematics subjects for primary education is better than the children without preschool education.

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