

The effect of preschool education on the academic achievement of first grade students in Hamadan Ganyh view of the academic year: 2002-2003

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ABSTRACT: ducation for preschool children is fundamental to the development and growth of children's talents. Since children are considered to be of high-value assets for society, conducting research in this field causes solving the problems and bottlenecks related to the development of their education. Therefore, this study can somehow raise the importance and value of preschool education and indicate that it should be seriously considered. Thus, considering the importance and necessity of preschool education and as for the rise of self-dimensions of children, this research is going to study the effect of preschool education on academic, cognitive and non-cognitive achievements of students.

Research Objective

A- To determine the effects of preschool education on cognitive and non-cognitive strategies of first-grade students, based on the Gagné¹ learning assumption. B- To provide further information about the effect of Preschool Education on the educational success of students and to compare their classroom grades; C- Comparison of motor skills, intellectual skills, verbal information, cognitive strategies and attitudes of students who passed the pre-school with the students who did not take this course.

Sampling Method for the P their Numbers and Gender and so on

Cluster sampling method was performed and individuals within each cluster were selected randomly. At the end, the number of samples was 360 of which 180 were boys, and 180 were girls.

METHOD OF RESEARCH

this research is ex-post facto. The purpose of this ex-post facto study is to compare the behavior of subjects who are treated with certain attributes or traits with the characteristics or behavior of the subjects who did not have them, because these events in this study are already happened. The Student t-Test and Mann-Whitney U-test statistical methods are used.

Measuring Instruments

a questionnaire inspired by the proposed evaluation method of Gagné has been developed as grading table for behavior.

RESULTS

There is a significant difference between the GPA of grades, cognitive strategies, verbal information, intellectual skills, motor skills and attitudes of students who have passed the pre-school course and students who have been deprived of this course with a confidence level of $\alpha=0.01$.

¹ Robert M. Gagné

CONCLUSION

This study found that pre-school education is very important for cognitive and non-cognitive strategies of students.

INTRODUCTION

The children are cultural foundation and credit of each family and society. The children are such as bud for the garden of the universe. They are the most valuable assets of our lives and society that had no boundaries. Therefore, we will be able to educate and enhance the future generation, when we can consider all of their needs. Since the ultimate objective of the education of children is to shape their personalities, and their personal developments are an essential part of school; thus, the establishment of preschool centers is strategically useful and positive in this regard². Nowadays, it is common in most countries to have preschool education. The advancement of science in general and psychology, in particular, provided a new vision of the world and people's awareness about the children and the importance of pre-school for children has been increased.

Kindergarten education is the first stage of formal education. It has its own objectives, programs, methods and tools, and it is an important foundation for next general-education courses. This stage of education is divided into two main courses. The initial one is for babies and young children, "the first year to the fourth year of life." In Iran, this period is under supervision of Welfare Organization that is the official responsible for growth and education of children. The second course is for 5 and six years-old children. The period of preparation for primary school in so-called preschool centers, this is principally under the supervision of Ministry of Education. Each one of these courses or sub-courses is mentioned under different names in various countries. They have their own special educational programs based on the needs and abilities of the children.³

So far, many studies on the effects of preschool education on the academic achievement of first grade students have been conducted by undergraduate students and students of Master's Degree Course. These researches are mostly concentrated on the impact of mentioned course on the academic achievement of the target group in various courses. Therefore, in these research the knowledge of students were mostly considered and the independent effect of this course on cognitive strategies, verbal information, motor skills and attitudes of students are not completely considered. Hence, it could be said that this study is somewhat new and original and therefore it can be a complementary work to the previous findings. It can help to some extent to increase the positive attitude toward the preschool centers and it can help the parents and teachers. Considering the importance of this course on the future achievements of students, the preschool courses will be taking seriously and will be implemented continuously. Since human character and behavior is founded in this course, it is a decisive and positive period during childhood.⁴

Problem

As mentioned, our children are the most precious and elegant gifts entrusted to us by God as the trustee, and we shall govern their fates. We also have duty and responsibility before God and society, and the future world that we've been meaning to head the ultimate goal through the best practices and humanitarian actions to convey. Since the development of physical, mental, emotional, and social and personality is taken place in the first six years of life, this period is really important and sensitive. If you do not pay attention to this critical period, some experts believe that it will damage on all-round development of the child, and no miraculous medical attempt or training can compensate it latter.

The Necessity and Importance of the Research

The importance of this issue is because the pre-school education is underlying for future trainings; and any events and experiences of each child in the kindergarten is an important factor for understanding his personality. The kindergarten makes children ready to enter to the school and the experience indicates that in the first months of the primary school, the difference between students who have preschool course is significant with the students

² Nazarinezhad, Mohammad Hossein – "Education of Kindergarten", page 27.

³ Nazarinezhad, Mohammad Hossein – "Education of Kindergarten", page 10.

⁴ Mofidi, Farkhonde – "Preschool and Primary School Education", Page 8.

who are coming school directly. Clearly, after a while, this difference will be less significant and gradually, at the last 6 month of the academic year, it will reach to its minimum.

The most important duty of this research is to determine the necessity of the kindergarten curriculum to the extent the academic abilities of the students and its effects on educational advances of the students. It also shows that who much its importance can affect the in charge persons of this field.

Another point that adds further importance to the problem is the different reactions in different countries toward preschool educations. For example, the former Soviet Union put this period as a part of the formal training process, but in the case of Iran, this course is not mandatory. With the permission of the Ministry of Education, the preschool classes attached to primary schools in 1970, yet no significant progress in the development of this class or the related teacher training has been done.

Research Objectives

Formation needs of preschool centers and educational and scientific reasons for children, brings specific objectives of each training course to the mind. Since the objectives of preschool education for children cannot be separated from the later academic learning goals, it is necessary to mention the objectives of this research. Preschool education purposes will be mentioned as detailed in the following topics. Currently, the research objectives can be divided to partial and general objectives as follows:

General Objectives

The general objective of this study is to determine the effects of pre-school education on cognitive and non-cognitive strategies of first grade students based on Gagné perspective.

Partial Objectives

Details of the research objectives are

To obtain further information about the effect of Preschool Education on the educational success of students and to compare the grades (GPA) of first grade students who had the preschool education with the students who did not had these courses.

To compare cognitive strategies of first grade students who had the pre-school courses with the students who had not these courses.

Comparison of verbal information of the first grade students who passed the preschool course with the students who did not take this course.

Research Hypotheses

There is a significant difference between the academic achievement of students who passed the preschool course, and students who had not taken this course.

There is a significant difference between the cognitive strategies of students who passed the preschool course, and students who had not taken this course.

There is a significant difference between the verbal information of students who passed the preschool course, and students who had not taken this course.

Variables

- A) Independent variable: Preschool Education
- B) Dependent variables:
 - 1- Educational Achievements
 - 2- Cognitive strategies
 - 3- Non-cognitive strategies, based on:
 - (1) Verbal information
 - (2) Thinking skills
 - (3) Motor Skills
 - (4) Attitude Skills
- C) Moderating Variable: Gender
- D) Control Variable: Age and Intelligence

Statistical Population

The main study population consisted of all first-grade male and female students in districts 1 and 2 of Hamadan who were enrolled in 2001-2002 academic year. Therefore, the number of research population is 7550 people.

Sampling and Sample Size

This research applied the simple and cluster random sampling method and the under study group is first grade students of elementary school. To do so, at first we attended in 2 of the districts of department of education of Hamedan. Then, and based on the list of city’s schools, we applied random sampling and 6 schools of each district were selected of which 3 was for girls and 3 for boys. Then, from the student list of each school, 30 students were selected from each school. 15 students of these samples had passed pre-school educations and 15 of them did not have the chance to take these course. Finally, as per the proposed table of Talkman and based on the total study population, 360 subjects were selected.

Method of Research

The method of this research is ex post facto. In this study, academic achievement, cognitive strategies, verbal information, intellectual skills, motor skills and attitudes of 2 groups of students are compared. Therefore, the purpose of this ex post facto study is to compare the certain characteristics or attributes of the subjects with who did not have this feature or behavior. In this research, the cause is already happened and studding it is performing based on its effect on the subject.

The Statistical Methods Used in the Study

Statistical methods are the methods that are effective in analyzing data and partly determine the result of the research work. In this study, some data is used in order to explain the different statistical methods, these are including:

- a- The mean, standard deviation, variance, frequency, percentage, etc.
- b- Student t-test (hypotheses test for the difference between the mean of two groups)
- c- Mann-Whitney U test

In this research, we used t Student of the independent groups to compare the mean of GPA of students who are and are not attending preschool.

The non-parametric Mann-Whitney U test is applied in determining the difference between two independent groups of students who passed the preschool period, and students who have been deprived of it. This test is used when the case is at least expressed as the ordinal scale. Therefore, this test is a suitable alternative for the Student t test.

First Hypothesis

There are differences between the academic success of students who passed the pre-school period and students who have not passed this course. In this hypothesis, we compared the GPA of 180 students who had attended in pre-school programs with 180 students who had not passed this program to compare the effect of pre-school on the educational achievements of these students. In addition, in this hypothesis we established a table and inserted the gained scores, variance and standard deviations of the grades of samples based on each school.

Table 1. The mean of scores and standard deviations of the subjects who had preschool curriculum course (Group A) and ones who had not the preschool period (Group B) based on separated schools

SD	The mean scores of Group B	Frequency	SD	The mean scores of Group A.	Frequency	School
0/71	19/44	15	0/35	19/87	15	Dastgeib
2/63	16/83	15	1/66	18/45	15	Razi
2/78	18/80	15	0/40	19/81	15	Kashani
0/83	19/40	15	0/35	19/87	15	Hafez
0/63	19/40	15	0/35	19/87	15	Esteglal
0/78	18/93	15	0/64	19/53	15	Gadir
1/16	18/84	15	0/41	19/60	15	Shohada
1/16	19/26	15	0/49	19/80	15	Tohid
0/91	18/40	15	0/49	19/67	15	Maryam

0/95	19/23	15	3/71	18/78	15	Sadegiei
0/49	19/67	15	0/27	20	15	Beheshti
6/72	14/42	15	1/01	19/20	15	Sahidi

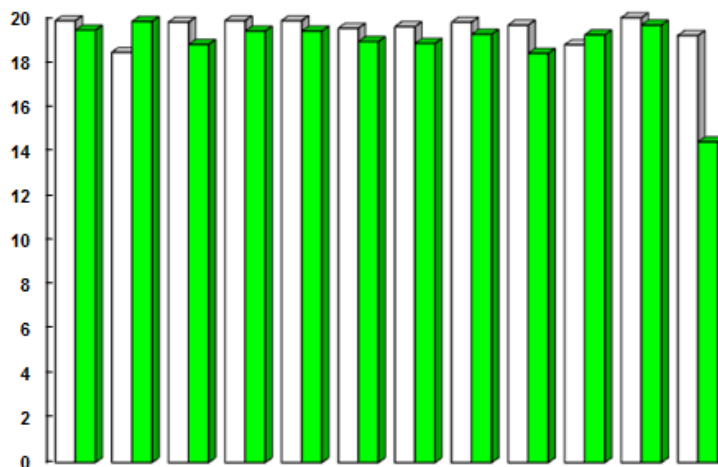


Figure 1. The mean and performance of the subjects who passed the pre-school and the subjects who did not passed the pre-school in their scores, based on separated schools

Table 2. The Mean of scores, variance and standard deviations of the GPA of grades of subjects who had preschool curriculum course (Group A) and ones who had not the preschool period (Group B) in the schools of Hamedan

Standard deviation	Variance	Mean	Frequency	Group
1/31	1/70	19/54	180	A
2/3	5/28	18/55	180	B

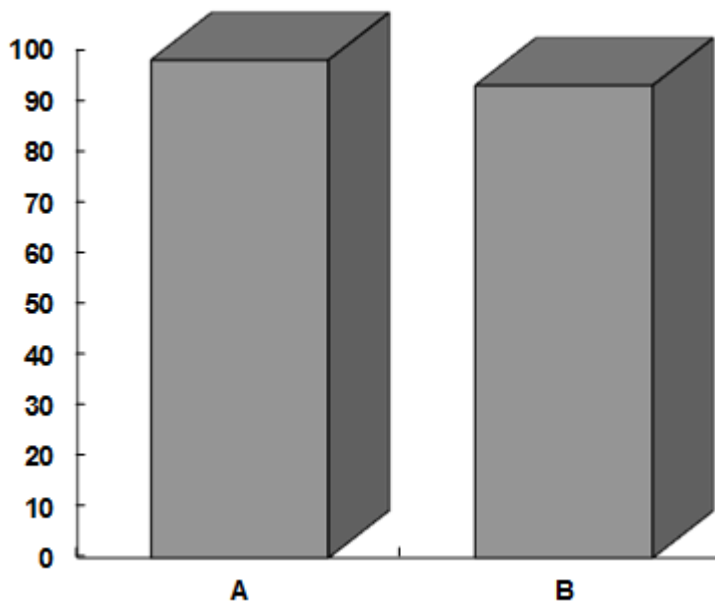


Figure2. percent of the subjects who passed the preschool period(A) And subjects who Ngzrandhand the preschool period(B), the curriculum Nmra GPA

2001-2002 academic years

$$t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}} = \frac{1954 - 55.18}{\sqrt{\frac{170}{180} + \frac{5.28}{180}}} = \frac{0.99}{\sqrt{0.387}} =$$

$$t = \frac{0.99}{0.197} = 5.03$$

Since the variance of statistical population is uneven, the T-test is used for separate variance for independent samples.

D.F (Degrees of Freedom) for the students who have had preschool D.F = N₁-1=179 and for students who did not attend in preschool is D.F = N₂-1=180-1=179. The amounts of table for 2 groups with D.F=179 in α=0.05 is equal to 1.96 and the mean of T with the mentioned D.F in α=0.01 is equal to 2.57.

Therefore, the calculated t (5.03) is larger than the mean of the extracted t from the table, thus, the null hypothesis is rejected. Consequently, there is a significant deference between the mean of scores of the students who had attend the pre-school courses and the students who did not have these courses (p>0.01).

Second Hypothesis

There are differences between the cognitive strategies of students who passed the pre-school period and students who have not passed this course.

About this hypothesis, 7 behaviors are mentioned in the scale table of behavior rating. These data were completed considering the evaluated rates provided by dear teachers about 180 students who had passed per-school course and 180 students who had not. In this table, the maximum score was 40 and the minimum score was 7. Therefore, the related behaviors to cognitive strategies are as follows:

Constructing the sentences

Expressing the result of story

Making Story

Selecting name for a story

Finishing stories

Paying attention to details of material and things

applying their knowledge in new situations

$$U_1 = N_1 N_2 + \frac{N_1(N_1+1)}{2} - \Sigma R_1$$

$$U_1 = 180 \times 180 + \frac{180 \times 181}{2} - 43316$$

$$U_1 = 32400 + 16290 - 43316$$

$$U_1 = 48690 - 43316 = 5374$$

$$U_2 = N_1 N_2 + \frac{N_2(N_2+1)}{2} - \Sigma R_2$$

$$U_2 = 180 \times 180 + \frac{180 \times 181}{2} - 21664$$

$$U_2 = 48690 - 21664 = 27026$$

$$U_1 = N_1 N_2 \quad U_2$$

$$U_1 = 32400 - 27026 = 5374$$

$$5374 = 5374$$

$$Z = \frac{U - \frac{N_1 N_2}{2}}{\sqrt{\frac{N_1 N_2 (N_1 + N_2 + 1)}{12}}} = \frac{5374 - \frac{180 \times 180}{2}}{\sqrt{\frac{180 \times 180 (180 + 180 + 1)}{12}}} = \frac{-10826}{\sqrt{974700}}$$

$$Z = \frac{10826}{987.27} = -10.96$$

Considering the table of z distribution, it can be seen that for $\alpha=0.01$, the $Z_{cr}=2.75$. Therefore, considering the fact that $Zob > Z_{cr}$, it can be concluded that the difference between the 2 groups of students (the group that attended in pre-school course and the group who did not attend) is valid. In addition, the total scores of students who passed the preschool period are more than the total scores of students who did not passed this course. Therefore, it can be stated that there is a significant difference between the cognitive strategies of the students who has attend the pre-school and the students who did not attend in pre-school course. ($P > 0.01$)

Third Hypothesis

There are differences between the Verbal Information of students who passed the pre-school period and students who have not passed this course.

About this hypothesis, 16 behaviors are mentioned in the scale table of behavior rating. These data were completed considering the evaluated rates provided by dear teachers about 180 students who had passed per-school course and 180 students who had not. In this table, the maximum score was 80 and the minimum score was 16. The related behaviors to verbal information are as follows:

- Naming Colors
- Naming Figures
- Naming the directions of arrows
- Naming Animals
- Naming objects
- Expression of the 7 days of week
- Expression of holidays
- Naming the seasons
- To express their views of the environment
- Expression of images
- To express the characteristics of birds
- Expressing Feelings
- To repeat stories using images
- Story telling using the given words.
- Story telling while sees the pantomime
- To express their duties toward their parents.

$$U_1 = N_1N_2 + \frac{N_1(N_1 + 1)}{2} - \Sigma R_1$$

$$U_1 = 180 \times 180 + \frac{180 \times 181}{2} - 41486$$

$$U_1 = 32400 + 16290 - 41486$$

$$U_1 = 48690 - 41486 = 7204$$

$$U_2 = N_1N_2 + \frac{N_2(N_2 + 1)}{2} - \Sigma R_2$$

$$U_2 = 180 \times 180 + \frac{180 \times 181}{2} - 23494$$

$$U_2 = 48690 - 23494 = 25196$$

$$U_1 = N_1N_2 - U_2$$

$$U_1 = 32400 - 25196 = 7204$$

$$7204 = 7204$$

$$Z = \frac{U - \frac{N_1N_2}{2}}{\sqrt{\frac{N_1N_2(N_1 + N_2 + 1)}{12}}} = \frac{7204 - \frac{180 \times 180}{2}}{\sqrt{\frac{180 \times 180(180 + 180 + 1)}{12}}} = \frac{-8996}{\sqrt{974700}}$$

$$Z = \frac{9086}{987.27} = -9.11$$

Considering the fact that $Z_{ob} = 9.11$ is larger than $Z_{cr} = 2.57$, the H_0 can be rejected at the level of $\alpha = 0.01$ and therefore it can be said that the students who had passed pre-school educations are more successful in the verbal skills than the students who did not pass these educations and generally, it can be said that there is a significant difference between these 2 groups of students ($P < 0.01$).

In order to answer the first hypothesis about the educational achievements of the students who had passed pre-school educations and the students who did not pass this course, we used the GPA of the students and investigated the differences of GPA of this 2 groups and we saw that there is a significant difference between the scores of the student with 99% confidence. Therefore, these results are in agreement with the results of Palmer et al (1979). In addition, the gained results by Ms. Mina Vosoughi and Ms. Maryam Dadashzadeh and so on in the different parts of the country is in agreement with the results of this research and this will show the significance of the related differences of these 2 groups.

In order to answer the hypothesis about the cognitive strategies of the students who had passed pre-school educations and the students who did not pass this course, we checked the differences of GPA of this 2 groups and we saw that there is a significant difference between the scores of this 2 groups of student. Therefore, these results are in agreement with the results of Gange. Every time we asked a question about the cognitive strategies from the 2 groups of students, the group that had attended in the per-school courses had better answers in compare with the other group.

The gathered data from the 3rd hypothesis shows that there is a significant difference between verbal information of the students who passed per-school with the students who did not pass this course. Thus, the comparison of the total scores of both groups show that the students who had attend per-school has more verbal information. In addition, the results indicated that the students who did not attend in the per-school program will memorize the correct answers but the ones who had attended in the pre-school use their previous knowledge and in this way, they are able to learn the new lessons with higher speed and ease. Gange had introduced this as "Supportive Preconditions".

In respond to the question of the differences between intellectual skills of these 2 groups of students, it shall be mentioned that the results shows that H_0 is significant at the level of $\alpha = 0.01$ and because of significant differences between the scores of these 2 groups, it can be concluded that the students who attended in per-school programs have more intellectual skills and the results of this research is in agreement with the results of Gange's

work. Therefore, the students who had attended the pre-school course and had passed this program are more successful in responding the questions about figures, colors, sizes and compressions.

The results of investigation of the effect of pre-school educations on motor skills indicate that the motor skills of the students who passed the pre-school program is more than the students who did not passed this program. Therefore, this results shows that the abilities for painting, jumping, and related behaviors to these skills is higher in the students with history of per-school trainings and these students are more successful in performing these actions. In addition, they have relatively good speed in motor tasks.

Comparing the results of attitudes of the students who attended in the pre-school and the one who did not attended in this program shows that there is a significant difference between these 2 groups in this regard. Based on the analyzed data about the attitude of students, it can be indicated that the students who had attended in pre-school program have better attitude than the students who did not passed this program. They are more successful in terms of participation in games and social activities and class activities and also other behaviors related to the attitudes. Thus, the results show that the null hypothesis is rejected and there is a significant difference between the attitudes of these 2 groups.

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