Parents And Numeracy

Meilani Hartono

Abstract: This research is a part of the partnership program between Bina Nusantara University and INOVASI. INOVASI (Inovasi untuk Anak Sekolah Indonesia) is an educational partnership between Indonesia and Australia government that is aimed to find and understand ways to improve student learning outcomes in primary education – especially those related with literacy, numeracy, and inclusive education. This partnership program lasts for 12 months, in 2018-2019. The focus of this program is numeracy. The purpose of this study is 1) to find out whether there are differences in numeracy abilities of parents before the research is conducted and as tricky as research, and 2) to find out whether there are differences in the average numeracy ability of elementary school parents in Sumenep Regency. The population of this study was 180 parents of students taken from 3 elementary schools and 3 MI. The sample in the study was 90 parents from 3 elementary schools. This research is quantitative. Data analysis was performed on the results of the Pre-Test and Post-Test. Data were processed using SPSS 22.0. The analysis test conducted was Paired T-Test and Anova Test. The conclusions of this research are: 1) there are differences in numeracy abilities of parents before and after training; 2) There is no difference in the average Pre Test results between three groups of parents from 3 different elementary schools, but there are differences in the average Pre Test results between the three groups of respondents who come from 3 different elementary schools; 3) There is no difference in the average Pre Test and Post Test results between the four groups of respondents based on age classification; and 4) There is no difference in the average Pre Test and Post Test results between the five groups of respondents based on their educational background.

Index Terms: Parents, Numeracy.

1. INTRODUCTION

INOVASI (Inovasi untuk Anak Sekolah Indonesia) is an educational partnership program between the Governments of Indonesia and Australia that aims to find and understand ways to improve student learning outcomes in primary education - especially those related to literacy, numeracy and inclusive education skills. Working with the Ministry of Education and Culture, INOVASI established partnerships with 17 districts in the provinces of West Nusa Tenggara, East Nusa Tenggara, North Kalimantan and East Java. This education program runs from 2016 to 2019 and is managed by Palladium on behalf of the Australian Department of Foreign Affairs and Trade (DFAT). This research is part of a partnership program between Bina Nusantara University and INNOVATION. This research was conducted in Sumenep Regency, East Java. The program lasts for 12 months involving 14 elementary schools and 3 MI. The sample in this study was 90 parents chosen from 3 elementary schools. In Sumenep Regency, students after completing school lessons have a religious activity that is reciting Qur'an. After finishing the Koran, students return home. At home, students have enough time to do homework and assignments from school. In this process, students were accompanied by their parents.

When this program starts, it is necessary to research the numeracy abilities possessed by parents. This needs to be done so that the adequacy of parental numeracy is known so that parents can accompany their children to learn numeracy at home.

The formulation of the problems in this study are: 1) whether there are differences in the numeracy ability of parents before the research is done and as difficult as the research; and 2) whether there are differences in the average numerical ability of elementary school parents in Sumenep Regency.

The purpose of this study is 1) to find out whether there are differences in the ability of parents' numeracy before the research is carried out and as difficult as research, and 2) to find out whether there are differences in the average numerical ability of elementary school parents in each school.

2 LITERATURE STUDY

The word "numeracy"—which only came into use around the time of the mid-twenty-eight-century events of Hidden Figures—is awkwardly defined. The Oxford English Dictionary (OED, 2011) defines numeracy as "the quality or state of being numerate; ability with or knowledge of numbers." Although numeracy is a term used in many English-speaking countries, such as South Africa, Australia, and New Zealand, it is more common to speak of quantitative literacy or mathematical literacy [1] [4], [7]. The Department of Education and Early Childhood Development in Victoria, Australia (2009) interprets numeracy in practice as the teaching, learning and using of mathematics: Numeracy is not the same as mathematics, nor is it an alternative to mathematics. Rather, it is an equal and supporting partner in helping students learn to cope with the quantitative demands of modern society. Whereas mathematics is a well-established discipline, numeracy is necessarily interdisciplinary. Like writing, numeracy must permeate the curriculum. When it does, also like writing, it will enhance students' understanding of all subjects and their capacity to lead informed lives. [8] Based on the results of several studies, it was concluded that the importance of the role of parents in assisting children's learning in the field of numeracy. [2], [3], [4], [5]. Parents must have sufficient abilities before teaching their children. To improve someone's ability, training is needed [6].

3 RESEARCH METHOD

The population in this study were 180 parents chosen from 3 elementary schools and 3 MI. Each school sends 30 parents from 1.2 and 3 class parents. The sample in this study was 90 parents from elementary school. The sample of elementary school parents was chosen because there were no illiterate and numerically ill parents in the elementary group. This research is quantitative. The data used is the data from the Pre Test and Post Test that was done during the program. Data obtained using SPSS 22.0 software. The analysis of the data used is Paired T-Test and Anova. Paired T-Test is used to...
determine whether there are differences in numeracy skills before and after parental training. ANOVA test was carried out to find out whether there were differences in numeracy ability between each parent group. ANOVA test is done for Pre Test and Post Test Value.

4 RESULT AND ANALYSIS
Respondents of this study were students’ parents. At the beginning of the program, the Pre Test was carried out. The Pre Test was followed by 90 respondents. The training was done two times. Pre Test was done before the First Training. The First Training was held with Addition and Subtraction as the material. The second training was held with Multiplication and Distribution material. After the second training, a Post Test was conducted, followed by 78 respondents. Respondent data that is feasible to be processed is respondents who take the Pre Test and Post Test completely. The total amount of data that followed the Pre Test and Post Test was 49 respondents. This happened because of the change of respondents who took part in the training, which caused the Pre Test and Post Test data to be incomplete. The respondents in this study were 49 parents. Based on the numbers, 12 respondents (24%) came from SDN Pandian 5, 20 respondents (41%) from SDN Pandian 1 and 17 (35%) respondents came from SDIT Al Watoniyah. This means that most respondents who met the criteria for processing the most data came from SDN Pandian 1.

Comparison of the number of respondents can be seen in Figure 1.

![Fig. 1. Number of Respondents](image1.png)

Based on age, respondents are classified into 1) 21-30 years; 2) 31 - 40 years; 3) 41-50 years, and 4) more than 50 years. Based on the data obtained, from 49 respondents, it turned out that 4 respondents (8%) were aged 21-30 years; 33 respondents (67%) aged 31-40 years; 10 respondents (21%) aged 41-50 years, and 2 respondents (4%) were more than 50 years old. This means that the majority of respondents in this study were parents with a period of 31 = 40 years. Comparison of the age of respondents in this study can be seen in Figure 2.

![Fig. 2. Respondent’s Age](image2.png)

Data obtained in this study were processed using SPSS 22.0 software. Data analysis was performed using the Paired T-Test. The results of the data processing can be seen in Table 1.

![Fig. 3. Respondent’s Education](image3.png)

Based on their educational background, respondents were classified into 1) elementary school; 2) SMP; 3) high school; 4) Undergraduate Degree, and 5) Masters Degree. Based on the data obtained, from 49 respondents, it turned out that 3 respondents (6%) had elementary school backgrounds; apparently 9 respondents (18%) had a junior high school background; 19 respondents (39%) had a high school background; 15 respondents (31%) have Bachelor background and 3 respondents (6%) have Master background. Comparison of respondents’ educational background in this study can be seen in Figure 3.

Based on age, respondents are classified into 1) 21-30 years; 2) 31 - 40 years; 3) 41-50 years, and 4) more than 50 years. Based on the data obtained, from 49 respondents, it turned out that 4 respondents (8%) were aged 21-30 years; 33 respondents (67%) aged 31-40 years; 10 respondents (21%) aged 41-50 years, and 2 respondents (4%) were more than 50 years old. This means that the majority of respondents in this study were parents with a period of 31 = 40 years. Comparison of the age of respondents in this study can be seen in Figure 2.

![Fig. 2. Respondent’s Age](image2.png)

Data obtained in this study were processed using SPSS 22.0 software. Data analysis was performed using the Paired T-Test. The results of the data processing can be seen in Table 1.

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAIRED SAMPLES STATISTICS</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Pair 1</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Based on the data in Table 1, the average Pre Test score is 10.90 (21.37%), and the average Post Test score is 43.31 (84.92%). The maximum score in the Pre Test and Post Test is 51.00. This means that when parents have not been trained, the mastery of numeracy material for the topics of addition, subtraction, multiplication and division is only 21.37% while after the Training, the mastery of numeracy material for the topic of addition, subtraction, multiplication and division...
becomes 84.92%. Based on the average value, there was an increase in mastery of numeracy material for the topics of addition, subtraction, multiplication and division that belonged to people before and after Training by 63.55%.

**TABLE 2**
**PAIRED SAMPLES CORRELATIONS**

<table>
<thead>
<tr>
<th>Pair</th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>Pre Test &amp; Post Test</td>
<td>49</td>
<td>.060</td>
</tr>
</tbody>
</table>

Based on the data in Table 2, the obtained Correlation value of 0.060 is > 0.05. This means that there is a strong positive correlation between the results of Pre Test scores and Post Test numeracy of students' parents. A sig value of 0.000 <a probability value of 0.05. This means there is no relationship between pre-test and post-test results. Next will be tested whether the training has a significant effect on the Pre Test and Post Test results. The hypothesis in this study is as follows.

H₀: There is no average difference between the Pre Test and Post Test results, which means there is no effect of Training in improving the handling of numeracy material owned by respondents

H₁: There is an average difference between the results of the Pre Test and Post Test which means there is an influence of Training in improving the handling of numeracy material owned by respondents

**TABLE 3**
**PAIRED SAMPLES TEST**

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Std. Mean Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Error Interval of the Difference</td>
<td>Lower</td>
<td>Upper</td>
<td></td>
</tr>
<tr>
<td>Paired 1</td>
<td>Pre Test</td>
<td>32.40</td>
<td>9.4</td>
<td>35.13</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>91</td>
<td>1.356</td>
<td>4</td>
</tr>
</tbody>
</table>

Based on the data in Table 3, the value of sig (2 tailed) = 0.000 <0.05, then H₀ is rejected. Because H₀ is rejected, then H₁ is accepted. Based on that, it can be concluded that there is an effect of Training in improving the handling of numeracy material owned by respondents. ANOVA test is then performed on the respondent's Pre Test and Post Test values. The respondent group is divided into three groups based on the origin of their children's school. The respondent group was divided into 3: 1) SDN Pandian 5; 2) SDN Pandian 1, and 3) SDIT Al Wattoniyah. The hypothesis for the Anova Pre Test and Post Test are as follows:

H₀: There is no difference in the average Pre Test and Post Test results between the three groups of respondents from 3 different elementary schools

H₁: There is a difference in the average results of the Pre Test and Post Test between the three groups of respondents from 3 different elementary schools

ANOVA test results based on Origin of Schools can be seen in Table 4.
Based on the data in Table 7, the following conclusions can be drawn:

1. There is no difference in the average Pre Test results between the four groups of respondents based on age classification.
2. There is no difference in the average Post Test results between the four groups of respondents based on age classification.

Furthermore, the Anova test was conducted on the value of Pre Test and Post Test of respondents based on the classification of education. Based on their educational background, respondents were classified into 1) elementary school; 2) SMP; 3) high school; 4) Undergraduate Degree, and 5) Masters Degree.

The hypothesis for the Anova Pretest Test and Post Test is as follows:

\[ H_0: \] There is no difference in the average Pre Test and Post Test results between the five groups of respondents based on their educational background.

\[ H_1: \] There is a difference in the average Pre Test and Post Test results between the five groups of respondents based on their educational background.

ANOVA test results based on age can be seen in Table 8.

**TABLE 8**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>74.876</td>
<td>4</td>
<td>18.719</td>
<td>.313</td>
<td>.868</td>
</tr>
<tr>
<td>Test</td>
<td>2629.614</td>
<td>44</td>
<td>59.764</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2704.490</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>249.510</td>
<td>4</td>
<td>62.377</td>
<td>1.671</td>
<td>.174</td>
</tr>
<tr>
<td>Test</td>
<td>1642.898</td>
<td>44</td>
<td>37.339</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1892.408</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the data in Table 8, Table 9 is made to compare the value of F Compute and F Table.

**TABLE 9**

<table>
<thead>
<tr>
<th></th>
<th>F Compute</th>
<th>F Table</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>0.469</td>
<td>0.313</td>
<td>F Compute &lt; F Table, Accept Ho, Reject H1</td>
</tr>
<tr>
<td>Post Test</td>
<td>0.144</td>
<td>1.671</td>
<td>F Compute &lt; F Table, Accept Ho, Reject H1</td>
</tr>
</tbody>
</table>

Based on the data in Table 9, the following conclusions can be drawn:

1. There is no difference in the average Pre Test results between the four groups of respondents based on their educational background.
2. There was no difference in the average Post Test results between the four groups of respondents based on their educational background.

**5 CONCLUSION**

Based on the results of data processing, it can be concluded as follows:

1. There is a training influence in improving the handling of numeracy material owned by respondents.
2. There is no difference in the average Pre Test results between the three groups of parents from 3 different elementary schools, but there are differences in the average Pre Test results between the three groups of respondents from 3 different elementary schools.
3. There is no difference in the average Pre Test and Post Test results between the four groups of respondents based on age classification.
4. There is no difference in the average Pre Test and Post Test results between the five groups of respondents based on their educational background.

Based on the conclusions from this study, the following recommendations can be recommended:

1. The importance of training is held to improve the ability to teach numeracy for parents.
2. Improvement of parental numeracy ability is not based on differences in age or parental education background, but because of differences in school origin. This means that there are different things that are influenced by the origin of the school. Therefore it is necessary to do further research relating to schools and parents, for example, the School Committee.

**REFERENCES**


