The correlation between parental guidance and mathematics learning outcomes in elementary school


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Abstract
The COVID-19 pandemic was a big challenge and parental guidance was needed in student learning to help carry out the learning process at home. Mathematics is one of the subjects that must be taken by elementary school students. Most children think mathematics is a difficult subject even though many children do not like it. The purpose of this study was to determine whether there is a correlation between parental guidance and mathematics learning outcomes in online learning environments in Elementary Schools. This research used a quantitative design. The research designs using a correlational study with parental guidance and mathematical outcomes. The sample taken was 49. Data collection techniques included tests and questionnaires. The analysis data using person correlation analysis. The results of this research show that there is a positive relationship between parental guidance and mathematics learning outcomes. The contribution of parental guidance variables to mathematics learning outcomes was higher than the remaining factors.

Keywords: Elementary school; learning outcomes; mathematics; parental guidance.

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1. Introduction

The world was hit by the coronavirus disease 2019 (Covid-19) pandemic. Several countries, including Indonesia, were affected by this virus. States around the world rushed to contain the spread of infection through various measures (Christian, 2022). During the COVID-19 pandemic, all aspects of life were disrupted, including the educational aspect, as students were forced to study at home, and learning was carried out online. The Covid-19 pandemic in the world of education is a big challenge and parental guidance is needed in student learning. Using technology has been considered to be one of the most appropriate alternatives to keep educational systems functional in many parts of the world during this period of COVID-19 (Adzaku et al., 2022). Students carry out learning at home, and the only monitors of students are parents (Tan et al., 2022). In terms of implementing online learning students need parental guidance to supervise learning, provide learning facilities, and others.

Mathematics is one of the subjects that must be taken by elementary school students. Most children think mathematics is a difficult subject. Thus, this is the reason why even many children don't like it. Mathematical concepts can be visualized as the construction of a house by merging several types of relevant knowledge applied to everyday life (Sihite et al., 2022). The parent’s role in educating children to be more talented, both in the school environment, family, and society is needed, because the student's success in learning is influenced by several factors, including psychological factors, namely intelligence, interests, talents, motivations, and emotions and attention and parental guidance (Susanto, 2020; Smith et al., 2020; Cahoon et al., 2022; Li et al., 2021). From parents, children still really need guidance because they require direction, especially during the online learning period. If parental guidance is not appropriate, then it is feared that children’s learning outcomes will also be less than optimal when online learning takes place.

Based on the results of observations carried out in class IV from Elementary School. It was found that in the online learning process, the teacher gave materials and assignments through the WhatsApp group and the ZOOM application. After the assignment was collected, one task sub-theme was collected by the parents to the school. Therefore, in online learning, parents pay more attention to the child's learning process at home, such as preparing the main communication tool, namely a smartphone to carry out the learning activity. The results of these observations that online learning requires parental guidance. The parents are the main guides for children who are in the same scope in carrying out the learning activity at home.

1.1. Related research

Several studies that describe almost the same variables have also been carried out. Ambaryanti (2013) shows in its result that in RA Al-Islam Mangunsari 02 Semarang in the 2011/2012 academic year there is a significant relationship between parental learning assistance and the quality of student learning outcomes. Romadion (2016) shows research about a strong positive correlation between parental guidance and student learning outcomes with a correlation coefficient of \( r_{xy} = 0.786 \) and 61.7% of the total contribution of the influence of parental guidance on student learning outcomes. Maryani et al., (2018) have researched parents’ roles in overcoming elementary students’ learning difficulties. Wirawan et al., (2018) have studied the correlation between parental guidance and mathematics outcomes. Santosono (2017) studied the learning motivation of students during the implementation of lecturing based on a silico approach. Putri et al., (2020) studied the influence of teacher teaching and guidance of parents on student achievement with mediation of learning motivation in santo yoseph Denpasar. Rosyida & Sari (2020) determined the role of parents in improving children’s learning motivation in Arabic language learning. Susanto (2020) studied the effect of parental guidance and emotional intelligence on learning achievement in social science. Patras et al., (2021) researched related to the effect of learning discipline on independent student learning. Abarca (2021) characterized the student learning achievements reviewed from parental


From some studies that have been carried out, one can deduce that there is a correlation between parental guidance and the learning outcomes obtained by children (Koşkulu-Sancar et al., 2023; Wang et al., 2021). The differences between the two previous studies will be carried out by location, respondents, research conditions selected online, subjects, and parental guidance variables. Based on the background description, online learning requires parental guidance in its implementation, which in turn will have an impact on mathematics learning outcomes. Parental guidance is a direction from parents that aims at nurturing, providing assistance, educating, disciplining, and paying attention to the functions that function to shape and develop the abilities of children to achieve good life goals (Harnanda & Saparahayuningsih, 2020).

1.3. Purpose of the research

The purpose of this study was to determine whether there is a correlation between parental guidance and mathematics learning outcomes in online learning environments in Elementary Schools.

2. Method and materials

2.1. Research method

Design This research is a correlational study, that examines the correlation between parental guidance and mathematics learning outcomes in online learning environments for the 4th graders from elementary school. The correlational research is research that seeks to determine whether there is a relationship between two or more variables (Masyhud, 2014). The method used in this study is quantitative because the data presented relates to numbers and statistical analysis.

2.2. Participants

The research was carried out in the fourth grade of Elementary School with 49 students and parents as research respondents. The students become research participants by filling out an online survey distributed by the researchers through Google Forms. The sample of this study was taken from the entire population the 4th graders from elementary school. A questionnaire was used as a data collection technique in this study to obtain data regarding parental guidance; moreover, data concerning learning outcomes were obtained from available evidence by mid-semester assessment (PTS) in mathematics.

2.3. Data collection tools

In this study, the questionnaire used a form of Google which was later given to the respondents, namely the fourth-grade students of Elementary School through the class WhatsApp group. When making a questionnaire must pay attention to the determination of the measurement scale. Because the measurement scale is used to see an overview of the characteristics of the respondents and the respondents' assessment of each variable in the questionnaire (Winokan et al., 2022). Thus, the questionnaire used in this study contains a closely structured questionnaire. To use research instruments to be more accurate, this research uses a Likert scale of 1-5. Each item in the questionnaire is a positive as well as negative statement.

2.4. Data analysis

In this study, four indicators consisting of providing learning facilities, supervising learning activities at home, providing motivation, and helping to overcome learning difficulties were considered. Before the questionnaire is used to collect research data, the questionnaire that has been made must be tested for validity and tried out first to obtain a valid and reliable instrument. In the initial data analysis, two requirements must be tested, namely the normality test of the data and the linearity with the help of SPSS software version 21, while for the final data analysis, the Pearson product-moment correlation coefficient test was carried out with the help of SPSS software version 21 as well as the coefficient of determination test.

3. Results

In the initial data analysis, two requirements must be tested, namely the normality and the linearity test of the data for the explanation as follows.

3.1. Data Normality Test

The Shapiro-Wilk test was used in the normality test of the data in this study. The results of the normality test assisted by SPSS version 21 software are as follows (Tables 1 and 2).

**Table 1**

<table>
<thead>
<tr>
<th>Tests of Normality</th>
<th>Kolmogorov-Smirnova</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Guidance</td>
<td>.123</td>
<td>.958</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>.062</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>.076</td>
</tr>
</tbody>
</table>

*a. Lilliefors Significance Correction

**Table 2**

<table>
<thead>
<tr>
<th>Tests of Normality</th>
<th>Kolmogorov-Smirnova</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Outcomes</td>
<td>.091</td>
<td>.958</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>.200̂</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>.111</td>
</tr>
</tbody>
</table>

*This is a lower bound of the true significance.
*a. Lilliefors Significance Correction

Based on the significance obtained in the normality test, the data is 0.076 from the parental guidance variable and 0.111 from the learning outcome variable. So, the variable data on parental guidance and learning outcomes are normally distributed because the significance value of the SPSS version 21 software output is greater than 0.05.

3.2. Data linearity test

In this study, the linearity test of the data is processed with the help of SPSS version 21 software. The linearity test produces deviations from the required linearity (table 3).

**Table 3**

<table>
<thead>
<tr>
<th>ANOVA Table</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Combined)</td>
<td>2131.190</td>
<td>16</td>
<td>133.199</td>
<td>5.037</td>
<td>.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Math Learning Results</th>
<th>Between Groups</th>
<th>Linearity</th>
<th>1850.111</th>
<th>1</th>
<th>1850.111</th>
<th>69.968</th>
<th>.000</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Parental Guidance</em></td>
<td>Deviation from Linearity</td>
<td>281.079</td>
<td>15</td>
<td>18.739</td>
<td>.709</td>
<td>.758</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td></td>
<td>846.157</td>
<td>32</td>
<td>26.442</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2977.347</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 3 seen from the deviation from linearity, a significant result of 0.758 is obtained, therefore, the data can be said to be linear because the results obtained are greater than 0.05.

### 3.3. Final data analysis results

The final data analysis encompasses a correlation coefficient as well as a determination test. The determination test for the explanation is as follows.

#### 3.3.1. Correlation coefficient test

The correlation coefficient test in this study used Pearson's product-moment correlation with the help of SPSS version 21 software with results as shown in Table 4.

**Table 4**

*Correlation coefficient test results*

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Parental Guidance</th>
<th>Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.788**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>49</td>
<td>49</td>
</tr>
</tbody>
</table>

Based on the results of the correlation coefficient of this study, it can be shown that there is a significant positive relationship between parental guidance and mathematics learning outcomes. The results of $r_{count}$ are 0.788 which indicates that $r_{count}$ is greater than $r_{table}$ 0.281, which means that there is a significant positive correlation between parental guidance (variable X) and learning outcomes in mathematics (variable Y).

**Table 5**

*Correlation of each indicator of parental guidance with learning outcomes*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$r_{count}$</th>
<th>$r_{table}$ 5% with 49 respondents</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator 1 with mathematics outcomes</td>
<td>0.444</td>
<td>0.281</td>
<td>There is a correlation between Indicator 1 and mathematics learning outcomes</td>
</tr>
<tr>
<td>Indicator 2 with mathematics outcomes</td>
<td>0.424</td>
<td>0.281</td>
<td>There is a correlation between Indicator 2 and mathematics learning outcomes</td>
</tr>
</tbody>
</table>

There is a correlation between Indicator 3 and mathematics learning outcomes
Indicator 3 with mathematics learning outcomes 0.453 0.281

There is a correlation between Indicator 4 and mathematics learning outcomes
Indicator 4 with mathematics learning outcomes 0.627 0.281

3.3.2. Test the coefficient of determination

The calculation process to find the coefficient of determination between parental guidance and learning outcomes is described below.

\[ KD = r^2 \times 100\% \]

\[ KD = 0.788^2 \times 100\% \]

\[ KD = 0.62 \times 100\% \]

\[ KD = 62\% \]

The coefficient of determination obtained a result of 62% so, parental guidance contributed 62% to the learning outcomes of mathematics, while the contribution of other factors was 38% so it can be said that the better parental guidance the better the results of learning mathematics in the online learning environment in the fourth grade. In line with the Obtained results the level of student success is not only due to the ability of students in the process of understanding a science given by the teacher, but also there are internal and external factors that influence it. Internal factors include attention, motivation, discipline, health, physique, way of learning, and talent intelligence. External factors include society, family, friends, school equipment, and the school environment (Elly, 2016).

Other factors that contributed to this 38% can be taken into consideration and developed in further research. Furthermore, the contribution between each variable indicator of parental guidance and learning outcomes of fourth-grade mathematics at Elementary School in online learning can be seen in the calculations in Table 6.

Table 6
The results of calculating the contribution of each indicator of parental guidance to learning outcomes

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator 2</th>
<th>Indicator 3</th>
<th>Indicator 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>KD = r^2 \times 100</td>
<td>KD = r^2 \times 100</td>
<td>KD = r^2 \times 100</td>
<td>KD = r^2 \times 100</td>
</tr>
<tr>
<td>=0.444^2 \times 100%</td>
<td>=0.453^2 \times 100%</td>
<td>=0.627^2 \times 100%</td>
<td></td>
</tr>
<tr>
<td>=0.20 \times 100%</td>
<td>=0.18 \times 100%</td>
<td>= 0.21 \times 100%</td>
<td></td>
</tr>
<tr>
<td>=20%</td>
<td>=18%</td>
<td>= 39%</td>
<td></td>
</tr>
</tbody>
</table>

The contribution of the parental guidance indicator to mathematics learning outcomes, in more detail, can be seen in Figure 1.

Figure 1
The contribution of each indicator of parental guidance to mathematics learning outcomes

4. Discussion

The first indicator that provides learning facilities that contribute to learning outcomes is 20%, meaning that parents have enough to fulfill their children's learning facilities. Related to the importance of parents’ roles in supporting children's learning. They can be seen as caregivers and educators, mentors, motivators, and facilitators. Finding tutoring institutions or tutors is included in the parents’ roles as facilitators, that is, providing various learning facilities that support children's learning activities. Learning facilities can also be in the form of tuition fees, textbooks, and other facilities (Maryani et al., 2018). The indicator of parental guidance that contributes to learning outcomes that have less than the maximum value is the second indicator, namely supervising learning activities at home with a contribution value of 18%. In this study supervising learning activities means also teaching children about time discipline and others. With high independence in learning, students will be more active and enthusiastic in carrying out the learning process (Patras et al., 2021). The third indicator motivates to contribute with learning outcomes of 21%, meaning that parents have provided enough motivation to teach their children. Motivation has an important role in encouraging someone to actively do something (Santoso, 2017). To support their children's learning success family plays a huge part, especially in providing assistance and motivation (Rosyidah & Sari, 2020).

Based on the contribution of indicators, the fourth indicator helps overcome learning difficulties to get the highest percentage of results with 39%, thus it can be interpreted that indicators help overcome learning difficulties and provide a significant impact on the learning process so that it becomes more optimal. A person with a learning difficulty may be described as having specific problems processing certain forms of information (Karunanayake et al., 2020). Meanwhile, the indicator that has the lowest percentage is supervising learning activities at home as an encourager to obtain optimal learning outcomes. Therefore, parental guidance is needed by students, especially in online learning.

Parental guidance is a special process of assistance given by parents in the learning process, developing potential, recognizing oneself, and being responsible for children's lives (Putri et al., 2020). The role of supporting school programs includes the participation of families in school trips, assisting end-of-year programs, taking part in activities that will provide income to the school, and doing voluntary work for the college. It is also the responsibility of the family to take part in the activities related to college. It is effective in integrating the child into society and increasing his or her academic achievement (Kiral, 2019). Parental involvement in the form of interest and support at home’ majorly influences children’s mathematics learning outcomes and abilities (Fatmawati & Herman, 2021). Through tutoring that parents provide for their children, will indirectly affect their children's self-concept in improving learning outcomes to achieve the goals of learning mathematics (Wirawan et al., 2018).
Parental guidance plays a role of high psychological impact in learning activities and it is very much needed to make it easier for children to understand the content given by the teacher. Parents' participation in education certainly has a significant impact on the success of online learning (Abarca, 2021). If schools want to succeed in increasing the level of parental involvement in children's learning, then we must understand how parents construct their role (Jay et al., 2018). The existence of parental guidance in carrying out online learning can help children appropriately divide study time, supervise children when studying, solve problems, and help provide learning facilities with good communication with children so that children do not feel under parental pressure.

5. Conclusion

Based on the results of the analysis and discussion, the following was concluded: (a) There is a positive relationship between parental guidance and mathematics learning outcomes as indicated by the resulting \( r_{count} \) of 0.788 at a significance level of 5% from \( N = 49 \) of 0.281. The results show that the value of \( r_{count} \) is greater than \( r_{table} \) (0.788>0.281); (b) The contribution of the parental guidance variable to the mathematics learning outcomes was obtained by 62% while the remaining 38% was influenced by other factors not discussed in this study; (c) It is known that indicator four helps overcome learning difficulties to obtain correlation results with learning outcomes and has the highest contribution of 39%.

Indicator two overseeing learning activities at home has the lowest correlation and contribution of 18%. That is, the four indicators that help overcome learning difficulties have an important role for students achieve optimal mathematics learning outcomes, while the indicator that has the lowest percentage is supervising learning activities at home as a supporter to obtain optimal learning outcomes.

6. Recommendation

There are several recommendations for other researchers including adding variables other than parental guidance, using multiple correlations, and linking mathematical literacy skills, critical thinking, creativity, and collaboration.

Acknowledgments

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References


