Predicting Preschoolers’ Task Persistence Based On Their Involvement In Indoor And Outdoor Learning Activities

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Abstract
This study examined the predictive power of preschoolers’ involvement in indoor and outdoor learning activities on their task persistence in Niger state, Nigeria. Two research questions and two null hypotheses guided the study. Correlational research design was employed in the study. The population of the study consisted of 8,568 Nursery III preschoolers across the 549 preschools in the five Local Education Authorities in Niger State. A sample of 390 preschoolers were drawn through multistage sampling procedure. Two instruments; Preschoolers’ Learning...
Activities Rating Scale (PLARS) and Preschoolers’ Task Persistence Rating Scale (PTPRS) developed by the researchers were used for data collection. The reliability coefficients obtained for the PLARS and PTPRS were 0.83 and 0.80 respectively. Data collected were analyzed using simple linear regression. Results showed that 35% of preschoolers’ task persistence is predicted by their involvement in indoor learning activities, which is statistically significant (p < 0.05). It also shows that 20% of preschoolers’ task persistence is predicted by their involvement in outdoor learning activities, which is statistically significant. Therefore, it was recommended among others, that government and school administrators should provide indoor and outdoor activities and materials for preschoolers in schools.

Keywords: Preschoolers, Tasks persistence, Social learning skills, Indoor activities, Outdoor activities

Introduction

Many developed and developing countries in the world have recognized preschool as a stepping stone to later successful academic progress and the general well-being of individuals. This is because the development of children’s cognitive, emotional, and social abilities, as well as their overall personality, has been adjudged to be highly enhanced by learning experiences at preschool. The Federal Republic of Nigeria (FRN, 2013) in its National Policy on Education defined preschool as the type of education designed for children between the ages of 0-5 years in an early childhood care centre or nursery before the start of primary school. It is also viewed as a period in which children receive their most important school learning experiences (Yoleri, 2013). Furthermore, the OECD (2017) defined preschool as the basic preparatory type of education offered to children before substantive education. From these definitions, preschool can be operationally defined as the first form of education given to children aged between 0 and 4 years in order to prepare them for further education.

The objectives of preschool according to FRN (2013) include:

- to promote a smooth transition of a child from the home to the school; to prepare the child for the primary level education;
- to provide adequate care and supervision for the children while their parents are at work (on the farms, in the markets, offices, among others) and to inculcate social norms in children. Others are:
- to inculcate in the child the spirit of enquiry and creativity through exploration of nature, the environment, art, music and playing with toys and to develop in children a sense of co-operation and team spirit;
- to inculcate good habits, especially good health habits; and to teach the rudiments of numbers, letters, colours, shapes, forms, among others, through play.

From these objectives, it could be construed that preschool is the fulcrum upon which every other level of education rests and, above all, the type of education that shapes preschoolers’ lifelong learning and general living. Preschoolers, according to Enemuo, Obidike and Aleke (2015), refer to children between the ages of 0 and 5 who are receiving formal
education at a preschool. In this study, "preschoolers" therefore refers to children who are receiving their first form of formal education at various preschools.

The benefits of preschool learning cannot be underestimated. Buttressing on the benefits of preschool, Barnett (2011) reported that children who attend preschool are associated with better academic performance and greater chances of educational attainment. The European Commission (2014) stated that learning experiences gained at preschool have a great impact on the subsequent accomplishments of individuals as they lay the foundation for lifelong learning. In other words, preschool is the foundation upon which the entire education of an individual is built; thus, it can be considered very essential to children’s successful progress in later levels of education. According to Akpan (2012), the learning activities offered to preschoolers are aimed at facilitating the developmental changes in children and their successful progress in subsequent levels of education and life in general. Nevertheless, Yldrm and Akamca (2017) asserted that preschoolers can maximize learning through indoor and outdoor learning activities.

Indoor learning activities, according to Ajayi (2014), are those learning experiences offered to preschoolers inside the classroom setting. Ajayi further explained that the activities involve children’s learning with various materials such as erasers, drawing paper, crayons, clay, water, and sand, among others. Children’s learning through play is also included, with materials such as picture books, flannel boards, beads, meeting toys, hand mirrors, plastic bracelets, bounce chairs, green plants, and music boxes, among others, which are organized in designated corners of their classroom. From the above, it can be inferred that indoor learning activities include all of the learning experiences preschoolers have in a classroom setting.

On the other hand, outdoor learning activities, according to Ajayi (2014), are those learning experiences offered to preschoolers outside of the classroom setting. According to Ajayi, the activities provide preschoolers with the opportunity and ample freedom to explore and encourage social interactions among them. This includes the provision of an open space for running, throwing, rolling, as well as equipment for climbing, jumping, sliding, and swinging, among others, to enhance the acquisition of skills that cannot be acquired in the traditional classroom setting. In the same vein, Yldrm and Akamca (2017) considered outdoor learning activities as the learning tasks given to learners in open spaces in the outside environment rather than in the classroom, which allow children to actively participate and to learn by doing the tasks.

A pupil’s ability to accomplish a particular task often depends on their level of engagement and perseverance in learning. In essence, the nature of a task determines the learner's persistence on the task. Task persistence is viewed as the tenacity or determination to carry out a task until it is successfully accomplished (Kikas & Silinskas, 2015). DiCerbo (2016) also described task persistence as the sustained effort of individuals towards the successful completion of activities given to them. This means that task persistence is characterized by people's continuous effort and determination to complete a learning activity. According to some scholars (Hashmi, Seok, & Halik, 2017; Zhang, Nurmi, Kiuru, Lerkkanen, & Aunola, 2011), preschoolers who are high in task persistence show determination and do not give up easily until they complete the activity that is required of them, while those who are low in task persistence tend to quit easily when faced with challenges in the learning activity.
Previous studies on preschoolers’ involvement in indoor and outdoor learning activities in relation to their task persistence, however, have conflicting findings. For instance, while Brownie and Keiffer (2009) and Olee (2017) reported differences in children’s patterns of work during indoor and outdoor activities, other studies (Bjrg, 2015; Accery, Godin, & Alany, 2016) indicated that there were no differences. Hashmi, Seok, and Halik (2017) also posit that indoor learning activities enhance preschoolers’ persistence tasks performance more than outdoor learning activities, whereas Kroeker (2017) indicates that indoor and outdoor learning activities have similar impacts on task persistence. Similarly, Asogwa (2019) reported that using cartoons and indoor activities improved pupils’ task tenacity. While Dowdell, Gray, and Malone (2011), indicates that outdoor activities remarkably increased the willingness and curiosity to learn among children. The contradictions in these reports imply that further research is needed in order to clearly justify the correlation among the above variables.

In Nigeria, especially in Niger State, as commonly observed, many preschoolers show little eagerness in completing tasks given to them. They rarely stay focused on finishing a tracing or coloring exercise. The majority of preschoolers begin a task, abandon it, and move on to the next without completing the first one they began. Considering the potential benefits of preschoolers’ involvement in indoor and outdoor learning activities and the dearth of empirical literature on the contribution of such activities to preschoolers’ task persistence, a study in this direction is worthwhile. It is against this background that this study examined the predictive power of preschoolers’ involvement in indoor and outdoor learning activities on their task persistence in Niger State, Nigeria. Specifically, the study examined the predictive power of:

1. Preschoolers’ involvement in indoor learning activities on their task persistence;
2. Preschoolers’ involvement in outdoor learning activities on their task persistence;

Research Questions
The following research questions were posed to guide this study:

1. What is the predictive power of preschoolers’ involvement in indoor learning activities on their task persistence?
2. What is the predictive power of preschoolers’ involvement in outdoor learning activities on their task persistence?

Hypotheses
The following null hypotheses are postulated for the study and were tested at 0.05 level of significance.

Ho1: There is no significant predictive power of preschoolers’ involvement in indoor learning activities on their task persistence.
Ho2: There is no significant predictive power of preschoolers’ involvement in outdoor learning activities on their task persistence.

Method
This study employed a correlation survey research design. This design has been adopted by Okenyi et al. (2019), Achagh et al. (2020), Eya et al. (2020), Ezema et al. (2019), Gana et al. (2019), Ugwuanyi and Okeke (2020), Ugwuanyi, Okeke et al. (2020), Ugwuanyi, Okeke and Njeze (2020), Ugwuanyi, Okeke and Ageda (2020), Ugwuanyi, Okeke and Asomugha (2020).

The area of study was Niger State, Nigeria. The population of this study consisted of 8,568 Nursery III preschoolers across the 549 preschools in the five Local Education Authorities in Niger State (Source: SUBEB office Minna, Niger State, November, 2021). The study sample comprised 390 preschoolers drawn through a multistage sampling procedure involving cluster, simple, and stratified random sampling techniques.

Two instruments, the Preschoolers’ Learning Activities Rating Scale (PLARS) and Preschoolers’ Task Persistence Rating Scale (PTPRS), developed by the researchers, were used for data collection. The PLARS contained 20 items arranged in two clusters (I and II). Cluster I had 10 items and was used for observing and rating preschoolers’ levels of involvement in indoor learning activities, while Cluster II had 10 items and was used for observing and rating preschoolers’ levels of involvement in outdoor learning activities. The rating options range from 4, 3, 2, to 1, depicting excellent (E), good (G), fair (F), and poor (P), respectively. The Preschoolers’ Task Persistence Rating Scale (PTPRS) had 10 items and was used for observing and rating preschoolers’ task persistence. It also had a range of 4, 3, 2, and 1 to choose from when rating the instrument. This meant that they could be rated as excellent (E), good (G), fair (F), or poor (P).

The instruments were face-validated by three (3) experts; two from Childhood Education and one from Measurement and Evaluation. The experts were required to do a face validation of the instruments by examining the appropriateness of items, correctness of grammar, and suitability of the instruments in addressing the purpose of the study. The comments and suggestions of the experts were used in improving the quality of the final versions of the instruments. The reliability of the modified instruments was established after trial-testing thirty copies of the instruments on a similar sample of thirty (30) preschoolers from other preschools in the Federal Capital Territory (FCT). Data gathered from the trial test was analyzed using the Cronbach Alpha method of estimating reliability. The reliability coefficients obtained for PLARS, PTPRS, and PSLSRS were 0.83, 0.80, and 0.83, respectively.

Data collected were coded on SPSS (Statistical Package for the Social Sciences), version 26.0 and analyzed using simple linear regression analysis. The correlation coefficients \( r \) and the coefficients of determination \( r^2 \) were used to answer all the research questions while the regression ANOVA model were used for testing all the null hypotheses at 0.05 level of significance.

Results
The results are presented in Tables in line with the research questions and the null hypotheses formulated for the study.

Research Question One: What is the predictive power of preschoolers’ involvement in indoor learning activities on their task persistence?
Table 1: Regression Analysis of the Predictive Power of Preschoolers’ Involvement in Indoor Learning Activities on their Task Persistence

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>$\bar{x}$</th>
<th>SD</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor Learning Activities</td>
<td>390</td>
<td>30.33</td>
<td>3.64</td>
<td>0.59</td>
<td>0.35</td>
</tr>
<tr>
<td>Task Persistence</td>
<td>28.72</td>
<td>3.75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEY:** N = Number of respondents, R = Correlation coefficient, $R^2$ = Coefficient of determination

Result in Table 1 shows that the correlation coefficient obtained between preschoolers’ involvement in indoor learning activities and their task persistence was 0.59. This shows that there was a moderate and positive correlation between preschoolers’ involvement in indoor learning activities and their task persistence. The result further shows that the coefficient of determination ($R^2$) (i.e. the predictive value) associated with the correlation coefficient of 0.59 is 0.35. The $R^2$ indicates that 35% of preschoolers’ task persistence is predicted by their involvement in indoor learning activities. This indicates that 65% of preschoolers’ task persistence is predicted by other variables order than involvement in indoor learning activities.

**Hypothesis One**

**H01:** There is no significant predictive power of Preschoolers’ involvement in indoor learning activities on their task persistence.

Table 2: Regression ANOVA test of the Predictive Power of Preschoolers’ Involvement in Indoor Learning Activities on their Task Persistence.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Dec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1911.315</td>
<td>1</td>
<td>1911.315</td>
<td>208.028</td>
<td>0.00</td>
<td>S</td>
</tr>
<tr>
<td>Residual</td>
<td>3564.862</td>
<td>388</td>
<td>9.188</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5476.177</td>
<td>389</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$\alpha = 0.05$, S = Significant

Result in Table 2 shows that an $f$-ratio of $(F(1, 389) = 208.028, p < 0.05)$ was obtained for the predictive power of Preschoolers’ involvement in indoor learning activities on their task persistence. Since the associated probability ($p$) value of 0.00 is less than 0.05 level of significance set as criterion for testing the hypothesis, this implies that the null hypothesis one ($H01$) is rejected. Hence, inference drawn is that preschoolers’ involvement in indoor learning activities is a significant predictor of their task persistence. This also implies that the predictive power of preschoolers’ involvement in indoor learning activities on their task persistence is statistically significant.

**Research Question Two:** What is the predictive power of preschoolers’ involvement in outdoor learning activities on their task persistence?
Table 3: Regression Analysis of the Predictive Power of Preschoolers’ Involvement in Outdoor Learning Activities on their Task Persistence

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>( \bar{X} )</th>
<th>SD</th>
<th>R</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Learning Activities</td>
<td>390</td>
<td>28.84</td>
<td>3.93</td>
<td>0.45</td>
<td>0.20</td>
</tr>
<tr>
<td>Task Persistence</td>
<td>28.72</td>
<td>3.75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEY:** N = Number of respondents, R = Correlation coefficient, \( R^2 \) = Coefficient of determination

Result in Table 3 shows that the correlation coefficient obtained between preschoolers’ involvement in outdoor learning activities and their task persistence was 0.45. This shows that there was a moderate and positive correlation between preschoolers’ involvement in outdoor learning activities and their task persistence. The result further shows that the coefficient of determination (\( R^2 \)) (i.e. the predictive value) associated with the correlation coefficient of 0.45 is 0.20. The \( R^2 \) indicates that 20% of preschoolers’ task persistence is predicted by their involvement in outdoor learning activities. This indicates that 80% of preschoolers’ task persistence is predicted by other variables other than their involvement in outdoor learning activities.

**Hypothesis Two**

**HO\(_2\):** There is no significant predictive power of Preschoolers’ involvement in outdoor learning activities on their task persistence.

Table 4: Regression ANOVA test of the Predictive Power of Preschoolers’ Involvement in Outdoor Learning Activities on their Task Persistence.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Dec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>913.886</td>
<td>1</td>
<td>913.886</td>
<td>102.189</td>
<td>0.00</td>
<td>S</td>
</tr>
<tr>
<td>Residual</td>
<td>3469.922</td>
<td>388</td>
<td>8.943</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4383.808</td>
<td>389</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \alpha = 0.05 \), S = Significant

Result in Table 4 shows that an f-ratio of \( F(1, 389) = 102.189, p < 0.05 \) was obtained for the predictive power of Preschoolers’ involvement in outdoor learning activities on their task persistence. Since the associated probability (p) value of 0.00 is less than 0.05 level of significance set as criterion for testing the hypothesis, this implies that the null hypothesis for (H\(_{O2}\)) is rejected. Hence, inference drawn is that preschoolers’ involvement in outdoor learning activities is a significant predictor of their task persistence. This also implies that the predictive
power of preschoolers’ involvement in outdoor learning activities on their task persistence is statistically significant.

Discussion
The study revealed that there was a moderate and positive correlation between preschoolers’ involvement in indoor learning activities and their task persistence, which was statistically significant. This finding lends support to Hashmi, Seok, and Halik (2017), who found that structured classroom activities can be used to increase learning-related abilities, including persistence and motivation, among kindergarteners. The findings also agree with an earlier finding by Asogwa (2019) that using cartoons and indoor activities improved pupils' task tenacity. The findings thus suggest that involving preschoolers in indoor activities will improve their task persistence. In other words, according to the findings of this study, the persistence of such tasks can be improved during indoor learning activities. This may be because when preschoolers do indoor activities with their teacher, they are more likely to stay with a difficult task and are more likely to be motivated to finish it.

The study also revealed that there was a moderate and positive correlation between preschoolers’ involvement in outdoor learning activities and their task persistence, which is statistically significant. This finding is consistent with Dowdell, Gray, and Malone (2011), whose study revealed that outdoor activities remarkably increased the willingness and curiosity to learn among children. Furthermore, the findings corroborate with previous findings by Asogwa (2019), which showed that the use of cartoons and outdoor games enhanced pupils’ task persistence and achievement. These findings may be true because pupils in general like and enjoy various outdoor activities like playing football, running, skipping, and swinging, among others. With these, pupils are more likely to stick with a tough activity and are readily encouraged to accomplish it. Thus, outdoor activities could potently predict preschoolers’ task persistence.

Conclusion
There is a significant predictive power of preschoolers’ involvement in indoor learning activities on their task persistence. In addition, the preschoolers’ involvement in outdoor learning activities has significant predictive power on their task persistence. This implies that involvement of preschoolers in indoor and outdoor learning activities contributes greatly to their persistence in tasks given to them.

Recommendations
Based on the findings of the study, the following recommendations are made:
1. Government and school administrators should provide indoor and outdoor activities for preschoolers in schools.
2. Teachers should be trained on how to integrate indoor and outdoor activities into teaching.
3. Parents should effort fully provide indoor and outdoor activities for their children at home.
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