Effectiveness Of Play-Based Learning Approach Through Interactive Storytelling Techniques to The Cognitive Skills Development of Kindergarten Learners

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Abstract — This study was conducted to determine the Effectiveness of Play-Based Learning Approach through interactive storytelling techniques to the Cognitive Skills Development of Kindergarten Learners that was conducted in St. Vincent Learning Center in Schools Division of Baybay City. The findings of the study were the bases for the proposed Improvement Plan. This study, which utilized a quasi-experimental research approach, was particularly significant for kindergarten learners, as it aimed to provide a deeper understanding of how play-based learning, when paired with interactive storytelling techniques, directly influenced their cognitive development. Young children are at a crucial stage in their developmental journey, where foundational skills such as attention, memory retention, problem-solving, and comprehension are rapidly forming. By integrating interactive storytelling into playful activities, the study provided learners with an environment where they could explore ideas, express themselves creatively, and process new information in an engaging and meaningful way. This method respected the natural curiosity and learning styles of young children, helping them absorb complex concepts through familiar and enjoyable contexts such as stories, characters, and role-playing. The Test of Difference Between the Pre-test and Post-test Scores of Kindergarten Learners, which assesses whether a statistically significant difference exists between the learners' cognitive skills before and after the intervention. The table highlights the pre-test and post-test mean scores, the computed t-value, the critical t-value at a 0.05 significance level, and the decision regarding the null hypothesis (Ho). It determines if the improvement in learners' performance is statistically meaningful.

It discusses the results by comparing the pre-test mean score and the post-test mean score, revealing a clear increase in cognitive performance. The computed t-value is notably higher than the critical t-value which leads to the rejection of the null hypothesis. This means the difference between pre- and post-test scores is statistically significant, showing that the intervention had a substantial effect on the learners' cognitive development. The improvement in scores from average overall development (AOD) to highly advanced (SHA) shows that the instructional strategy used in the experimental group effectively enhanced cognitive skills. The significant gain suggests that the learners not only retained but built upon their prior knowledge, skills, and understanding in a structured and supportive learning environment. The results imply that the intervention or instructional approach significantly contributed to the learners' progress, as evidenced by the increase in the average score. The result implies that meaningful and developmentally appropriate

activities, such as play-based and interactive storytelling strategies, can greatly impact kindergarten learners' cognitive performance in measurable ways.

Keywords — Effectiveness, Play-Based Learning Approach, Cognitive Skills, Kindergarten

I. Introduction

Play-based learning is an educational approach centered on the idea that young children learn best through play. In early childhood education, particularly in kindergarten, play serves as a natural medium through which children explore, experiment, and make sense of the world around them. It goes beyond entertainment—it becomes an essential part of a child's cognitive, social, and emotional development.

According to Weisberg, Hirsh-Pasek, and Golinkoff (2013), play-based learning supports children's ability to acquire knowledge, enhance memory, develop problem-solving skills, and build emotional regulation through meaningful, self-directed activities. These activities often involve storytelling, role-playing, construction, and games that stimulate the mind while engaging the senses. Through interactive storytelling, for example, children are encouraged to think creatively, understand narratives, follow sequences, and even develop early literacy and comprehension skills.

Interactive storytelling has emerged as a dynamic educational tool in early childhood education, particularly in fostering literacy skills among kindergarten learners. The integration of storytelling with interactive elements encourages engagement and participation, which are crucial for language development and comprehension.

In a play-based classroom, children are given opportunities to work collaboratively, negotiate roles, and manage interpersonal relationships. These activities naturally foster social competence and the ability to work within a community. More importantly, they encourage children to make independent choices and build resilience when facing challenges—key indicators of cognitive maturity.

However, while play-based learning offers substantial developmental benefits, kindergarten teachers often face challenges in implementing this approach. Teachers may struggle to balance structured curriculum demands with the open-ended nature of play. There is also the pressure to meet academic standards in literacy and numeracy, which sometimes leads to undervaluing play as merely recreational rather than educational. Additionally, some educators lack sufficient training in designing and facilitating purposeful play experiences, making it difficult to assess learning outcomes effectively.

This research seeks to address these issues by examining the effectiveness of the play-based learning approach—particularly through the lens of interactive storytelling—on the

cognitive development of kindergarten learners. By doing so, it hopes to provide empirical support for play as a legitimate and powerful pedagogical tool.

Completing this research is vital because it not only reinforces the role of play in cognitive development, but also provides practical insights that can empower teachers to better manage and implement play-based strategies. The findings could lead to improved teaching methodologies and stronger academic foundations for young learners, ensuring that education in the early years is both developmentally appropriate and academically enriching.

This study was conducted to determine the Effectiveness of Play-Based Learning Approach through interactive storytelling techniques to the Cognitive Skills Development of Kindergarten Learners that was conducted in St. Vincent Learning Center in Schools Division of Baybay City. The findings of the study were the bases for the proposed Improvement Plan.

Specifically, the study sought to answer the following questions:

1. What is the cognitive skills performance of the kindergarten learners before the integration of Play-based Learning approach through interactive storytelling techniques?

2. What is the cognitive skills performance of the kindergarten learners after the integration of Play-based Learning approach through interactive storytelling techniques?

3. Is there a significant difference between cognitive skills performances of the kindergarten learners before and after the integration of Play-based Learning approach through interactive storytelling techniques?

4. What proposed improvement can be done on the findings of the study?

Statement of Hypothesis:

Ho: There is no significant difference between cognitive skills performances of the kindergarten learners before and after the integration of Play-based Learning approach through interactive storytelling techniques.

II. Methodology

Design. This study, which utilized a quasi-experimental research approach, was particularly significant for kindergarten learners, as it aimed to provide a deeper understanding of how play-based learning, when paired with interactive storytelling techniques, directly influenced their cognitive development. Young children are at a crucial stage in their developmental journey, where foundational skills such as attention, memory retention, problem-solving, and comprehension are rapidly forming. By integrating interactive storytelling into playful activities,

the study provided learners with an environment where they could explore ideas, express themselves creatively, and process new information in an engaging and meaningful way. This method respected the natural curiosity and learning styles of young children, helping them absorb complex concepts through familiar and enjoyable contexts such as stories, characters, and role-playing.

Furthermore, the findings from this research helped identify concrete benefits of interactive and imaginative learning approaches for young learners, as compared to more traditional, didactic methods. The quasi-experimental design enabled the researcher to observe differences in cognitive performance between learners who experienced play-based storytelling interventions and those who did not, offering valuable insights into the effectiveness of experiential and child-centered learning methods. As a result, the study not only highlighted the importance of developmentally appropriate practices in early childhood education but also underscored the need to create learning environments where children were not passive recipients of information, but active participants in their cognitive growth. For kindergarten learners, the study ultimately championed a way of learning that nurtured both the heart and mind, preparing them for more advanced academic and social challenges ahead.

The main locale of the study was the St. Vincent Learning Center in Baybay City. The respondents of the study were the 32 kindergarten Learners. The information for the analysis was gathered using The research instruments was (researcher utilized the Early Literacy Screening Tools to measure the cognitive skills of the kindergarten learners.. The proposed Intervention Plan was taken based on the findings of the study.

Sampling The respondents of the study was the 32 kindergarten learners with 20 males and 12 females in the Schools Division of Baybay City that were involved in this study were being identified and the primary means of reach is during the actual conduct of the study as well as during the gathering of data in the school where the study was conducted.

Research Procedure. In order to gather the necessary data in 1 month (30 days), the researcher was asked permission from the office of the Schools Division Office headed by our School Division Superintendent through a Transmittal Letter. The same letter content was given to the Public-School District Supervisor, School Principal, and to the teachers whom the respondents are under their care.

The researcher conducted the pretest performance before the integration of the interactive storytelling techniques for 4th grading period. After administering the pretest, the researcher integrated the new strategy in teaching the lesson for a duration of 1 month. After the given period of time, the skills they learned was checked and validated through the conduct of the posttest examination.

Data was collated and submitted to appropriate statistical treatment.

Ethical Issues. The right to conduct the study was strictly adhered through the approval of the principal, approval of the Superintendent of the Division. Orientation of the respondents both School Principal, teachers were done. Participation was strictly voluntary. Anonymity and confidentiality were maintained throughout the study. Results were used solely for research and educational improvement purposes.

Treatment of Data. The following statistical formulas were used in this study:

The quantitative responses were tallied and tabulated. The data will be treated statistically using the following statistical tool.

Weighted Mean. This was utilized to assess the performance of the kindergarten learners in their cognitive skills.

T-Test for Mean Difference- This tool was used to calculate the cognitive skills of the kindergarten learners.

III. Results and Discussion

Table 1
Pre-Test Performance of Kindergarten Learners in Cognitive Skills

Score Range	Description	PRETEST CONTROL	
		Frequency	%
1-7	SSG - Suggest Significant Delay	0	0
8-14	SSL - Suggest Slightly Delay	2	11
15-21	AOD - Average Overall Development	8	42
22-28	SSA - Suggest Slightly Advanced	9	47
29-35	SHA - Suggest Highly Advance	0	0
Total		19	100
Weighted Mean		20.37	AOD - Average Overall Development

This table presents the Pre-Test Performance of Kindergarten Learners in Cognitive Skills, which shows the initial assessment results of the control group before any intervention was applied. The table categorizes the learners' cognitive skill levels based on score ranges, each aligned with specific developmental descriptors such as Suggest Significant Delay (SSG), Suggest Slightly Delay (SSL), Average Overall Development (AOD), Suggest Slightly Advanced (SSA), and Suggest Highly Advanced (SHA). It highlights the frequency and percentage of learners falling into each category, offering a clear view of their baseline cognitive development prior to the implementation of any play-based or storytelling strategies.

The data indicates that a majority of learners (47%) fell under the SSA or "Suggest Slightly Advanced" category, followed by 42% who were classified as having "Average Overall Development" (AOD). A small portion, 11%, was noted to have "Suggest Slightly Delay" (SSL) in cognitive skills, while no learners were found in the extreme categories of SSG (Suggest Significant Delay) or SHA (Suggest Highly Advanced). This suggests that most learners in the control group were either developing at a typical rate or slightly above expectations, with only a few requiring closer attention in terms of cognitive development.

These findings provide a useful benchmark for evaluating the impact of the intervention later in the study. The absence of learners in the lowest and highest performance brackets may reflect a relatively homogeneous group in terms of cognitive readiness. This distribution of scores is critical for assessing the effect of any instructional change by comparing pre- and post-test data. The weighted mean of 20.37, which falls within the AOD range, further reinforces that the cognitive performance of the group was, on average, developing within expected norms.

The results imply that the kindergarten learners in the control group exhibited generally typical cognitive development, with some showing slightly advanced skills. The weighted mean (20.37) confirms the presence of balanced developmental levels, with minimal cases of delay and no highly advanced learners. This implies that targeted interventions may be needed to address learners slightly behind, while more challenging activities could benefit those showing early signs of advancement.

Table 2
Post-Test Performance of Kindergarten Learners in Cognitive Skills

Score Range	Description	PRETEST CONTROL	
		Frequency	%
1-7	SSG - Suggest Significant Delay	0	0
8-14	SSL - Suggest Slightly Delay	0	0
15-21	AOD - Average Overall Development	0	0
22-28	SSA - Suggest Slightly Advanced	8	42
29-35	SHA - Suggest Highly Advance	11	58
Total		19	100
Weighted Mean		29.26	SHA - Suggest Highly Advance

This table presents the Post-Test Performance of Kindergarten Learners in Cognitive Skills, which illustrates the cognitive development outcomes of the control group after the implementation of the instructional program or period under review. The table categorizes learner performance into five developmental levels, ranging from significant delay to highly advanced, based on their test scores. The data reflects the frequency and percentage of learners falling into

each category and includes the weighted mean, offering insights into the overall improvement in cognitive skills post-intervention.

The results reveals a notable improvement in learners' performance compared to the pre-test results. In this post-test, none of the learners fell into the categories of significant delay (SSG), slight delay (SSL), or even average overall development (AOD). Instead, 42% of learners achieved scores suggesting they were slightly advanced (SSA), while a remarkable 58% reached the "Suggest Highly Advance" (SHA) level. This significant upward shift in cognitive skill levels indicates that a considerable number of learners made developmental gains.

The results also further emphasizes that the shift in scores shows the effectiveness of the instructional approach used during the study period. The absence of learners in the lower developmental categories and the high percentage achieving advanced levels suggest that the learning strategies employed successfully nurtured cognitive growth. Moreover, the progression from average or slightly advanced categories in the pre-test to highly advanced in the post-test reflects both a positive learning environment and instructional relevance.

The results imply that the cognitive development of the kindergarten learners significantly improved, with the weighted mean of 29.26 placing the group in the SHA (Suggest Highly Advance) category. This implies that the instructional methods or conditions in place during the post-test period were highly effective in enhancing learners' cognitive abilities. The results also imply that consistent, developmentally appropriate instructional support contributes to notable academic gains in early childhood.

Table 3
Test Of Difference Between in The Pre-Test and The Post-Test Scores of Kindergarten Learners

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Experimental	Pre Post	20.37 29.26	2.934	0.771	Reject H_o	Significant

This table presents the Test of Difference Between the Pre-test and Post-test Scores of Kindergarten Learners, which assesses whether a statistically significant difference exists between the learners' cognitive skills before and after the intervention. The table highlights the pre-test and post-test mean scores, the computed t-value, the critical t-value at a 0.05 significance level, and the decision regarding the null hypothesis (Ho). It determines if the improvement in learners' performance is statistically meaningful.

It discusses the results by comparing the pre-test mean score of 20.37 and the post-test mean score of 29.26, revealing a clear increase in cognitive performance. The computed t-value

of 2.934 is notably higher than the critical t-value of 0.771, which leads to the rejection of the null hypothesis. This means the difference between pre- and post-test scores is statistically significant, showing that the intervention had a substantial effect on the learners' cognitive development. The improvement in scores from average overall development (AOD) to highly advanced (SHA) shows that the instructional strategy used in the experimental group effectively enhanced cognitive skills. The significant gain suggests that the learners not only retained but built upon their prior knowledge, skills, and understanding in a structured and supportive learning environment.

The results imply that the intervention or instructional approach significantly contributed to the learners' progress, as evidenced by the increase in the average score from 20.37 to 29.26. The result implies that meaningful and developmentally appropriate activities, such as play-based and interactive storytelling strategies, can greatly impact kindergarten learners' cognitive performance in measurable ways.

IV. Conclusion

Based on the results of this study, the test of difference between the pre-test and post-test scores of kindergarten learners demonstrated a statistically significant improvement in cognitive skills following the intervention. The analysis showed a clear increase in learners' performance after the implementation of the play-based learning approach through interactive storytelling techniques. The rejection of the null hypothesis indicates that the gains in cognitive development were not due to chance but were a direct result of the instructional strategy used. This improvement reflects how the learners progressed from an average level of cognitive development to a highly advanced stage, highlighting the effectiveness of the intervention. The findings imply that incorporating developmentally appropriate, engaging, and interactive activities can significantly enhance the cognitive abilities of young learners in a meaningful and measurable way.

V. Recommendations

Based on the findings of this study, the following recommendations are proposed to Play-Based Learning Approach through interactive storytelling techniques to the Cognitive Skills Development of Kindergarten Learners among the ff:

a. The Teacher should integrate play-based learning and interactive storytelling techniques regularly to enhance the cognitive development of kindergarten learners, ensuring activities are engaging and developmentally appropriate.

b. The School Heads should provide continuous professional development and support for teachers to effectively implement play-based instructional strategies, including resources and training on interactive storytelling methods.

c. The Public Schools District Supervisor should facilitate workshops and monitoring activities that promote the adoption of play-based learning approaches across kindergarten classrooms to ensure consistent and effective practice.

d. The Parents should actively support their children's learning by encouraging playful and storytelling activities at home, fostering an environment that nurtures creativity and cognitive growth.

e. The Researcher should explore additional variables that may influence the effectiveness of play-based learning and storytelling, such as socio-economic factors, learner motivation, and classroom environment.

f. Future researchers should conduct longitudinal studies to examine the long-term impact of play-based learning and interactive storytelling on various developmental domains beyond cognitive skills, such as social and emotional growth.

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AUTHOR'S PROFILE

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She was born on December 19, 1990 at Western Leyte Provincial Hospital, Baybay City. She graduated Bachelor's degree in Elementary Education at Franciscan College of Immaculate Conception. She is currently finishing her Master's degree of Arts in Education major in Elementary Education at Western Leyte College of Ormoc City. She is currently teaching in one of the prestigious private schools in Baybay under the Department of Education as Kindergarten Teacher at St. Vincent Learning Center of Baybay, Leyte, Inc. She believes fostering a nurturing and engaging environment where young children can develop foundational academic, social, and emotional skills