IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

REIMAGINING MATHEMATIZATION THROUGH TOY-BASED PEDAGOGY IN A MATHS CLASSROOM OF FOUNDATIONAL LEARNERS

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Abstract: The study tries to explore the efficacy of toy pedagogy as a means of teaching mathematics at the foundational stage. The pretest-posttest control group experimental model, which is one of the quasi-experimental research designs, was used in the study. The study targets students of Government Primary Assamese Medium Schools in Nagaon district. The sample students of the study were selected by the purposive sampling method. The annual examination result of class 1 was taken as the basis for selecting the experimental and control groups. A total of 46 students of class 2 were selected into two groups from two schools. To assess student achievement after the intervention using Toy Pedagogy, a pre-test and post-test were conducted. In preparing the tests, three chapters were considered from the textbook. Achievement scores from pre-tests and post-tests of two groups, one exposed to Toy Pedagogy and the other to traditional teaching methods, were analyzed to evaluate the relative effectiveness of the Toy Pedagogy approach. Analysis and interpretation of the data reveal that among these two methods, teaching with toy pedagogy was the more effective method. The effect of teaching different groups of students by these two different methods was found to be significant, but teaching by toy pedagogy was more effective than the traditional method. Teachers' positive perceptions of toy pedagogy in mathematics education are vital for making the teaching-learning process more effective. New perspectives and ideas can improve mathematics education in future courses of action at the foundational level.

Key Words - Teaching, Mathematics, Pedagogy, Toy based, Play based activities, early childhood, foundational stage, academic achievement

I. INTRODUCTION

Play is part and parcel of every child's life. It is important for development and learning life skills. Through play, children develop the ability to enjoy themselves, interact with others, think critically, solve problems, and engage in meaningful work. Through play, children relate to the imagination, the world, and the others. The critical distinction to keep in mind here is that "toys" are the implements that children manipulate during play. It affects the learning and growing of children. Toys are an important learning medium. Toys provide a means to encourage learning through experience in novel directions. They are useful for the teaching learning of mathematics, languages, science etc. Toy Based Pedagogy is a method of teaching-learning that is based on the concept of learning 'through toys and games. The idea of games and toys having an important role in the learning process is connected mainly with keeping games and toys at the curriculum's core. This helps make new ideas more easily and further defined and simplified. It helps reduce the gap between what students learn in theory and how they apply it in practice at school. It helps to solve, research, imagine, apply, create, analyse, improve, verify, and present the student's work. Such lived experience of connecting with theory gives the student in this case a holistic understanding of it.

Toys contribute significantly to a child's cognitive, physical, social, and emotional development. They have the ability to set alight and enlarge a child's imagination. The concept of Toy-Based Pedagogy was evolved as a means to advocate for toys and toy pedagogy as a part of curriculum for School Education, Early Childhood Care and Education and Teacher Education. Toy-based pedagogy is inherently designed to promote both interdisciplinary and multidisciplinary approaches in education. As is common knowledge, a multidisciplinary approach looks at a problem from several angles without actively attempting to combine disciplinary viewpoints in a systematic manner.

This approach is based on the concepts of experiential and constructivist learning. Taking this into consideration, when teachers use toys as educational tools, they have the potential to create a playful environment in which curiosity and creativity flourish, and important academic concepts are reinforced. The incorporation of toys into the learning experience makes it more relevant and fun for the kids, as it allows them to visualize abstract concepts, play with new ideas, and connect with peers. These very learning styles of young children thus allow for 'personalization' of instruction in such a way that each learner gets what he/she needs. When integrated within the context of the foundation stage, toy-based pedagogy can be extremely beneficial towards advancing learning outcomes, as well as promoting social and emotional development. But, to place this at the forefront of its practice, as it should to be successful in the classroom, it needs evidence to support it.

Play is something that preschoolers naturally engage in, and as a result of this engagement, they have the opportunity to participate in hands-on activities that foster the development of their cognitive, social, emotional, and physical abilities. It is possible for educators to build rich settings for children to study in by using play-based learning experiences. These environments allow children to not only gain academic information but also nurture the basic abilities that are important for success throughout their whole lives. Learning experiences may be scaffolded with the use of toys, which enables children to go from easy to more difficult activities in stages. It is possible for teachers to design activities that progressively increase in complexity, which gives pupils the opportunity to grow on the information and abilities they already possess". The National Education Policy (NEP) 2020 has placed a strong emphasis on implementing significant reforms in India's educational system to better address the cognitive and social needs of today's learners. Making sure that students are enthusiastically and actively involved in the learning process is the overarching goal of the pedagogy and curricular modifications. If learning is made more fun, children's abilities can be developed more effectively.

IMPORTANCE OF PLAY BASED PEDAGOGIES IN TEACHING MATHEMATICS IN EARLY CHILDHOOD

Pedagogy itself is a contested term, but includes activities that evoke changes in the learner: Watkins and Mortimore define pedagogy as 'any conscious activity by one person designed to enhance learning in another' (1999, p.3). "According to Bernstein, pedagogy is an ongoing process through which individuals acquire or develop new behaviours, knowledge, skills, and standards from sources considered appropriate for providing and assessing such learning." (Bernstein, 2000, p.78). Pedagogy refers to teachers' collective ideas, beliefs, attitudes, knowledge, and understanding concerning the curriculum, instructional practices, and their students. These elements collectively shape their teaching practices, which refer to the decisions teachers make and the actions they undertake within the classroom environment to facilitate effective learning. "Recent curriculum reforms have shifted from teacher-centred pedagogical approaches toward more student-, learner-, or child-centred, as well as active learning methods."

Researchers in early childhood education and psychology, including Jerome Bruner, Eric Erikson, Lev Vygotsky, Maria Montes Sori, and Jean Piaget, have acknowledged the value of learning through play. They claimed that games serve as learning tools and that play is an activity. The majority of preschool-aged children (age's two to seven) are in their preoperational level, according to Piaget's theory, where they learn concepts through object play (Piaget, 1962). Building their ideas and principles through concept understanding enables kids to grasp abstract topics through tangible learning experiences without feeling rushed.

Toy-based pedagogy is a specialized subfield within the broader domain of play-based pedagogy. All activities that are carried out on things, such as toys or outdoor games, are considered to be forms of play. Children play for the purpose of having fun and delighting themselves, and they also learn a great deal from this activity. As a result of the fact that children naturally participate in play, the educational system usually makes use of play in order to enhance the cognitive development of children. "The phrase play-based learning may also refer to a wide, very flexible approach that can take many other forms, such as role play, art integrated learning, experiential learning, and so on. Students in grades one through six are often the ones who gain the most from toy-based pedagogies. This is due to the fact that these pedagogies assist students enhance their conceptual understanding, promote their holistic development, boost their creativity and imagination, and increase their emotional intelligence.

Pedagogy that is based on toys may be beneficial to the child's overall development in the following key areas.

- Toy-based pedagogy has the potential to enable children's brains to grow and develop in a holistic manner, which in turn, may enhance the creativity and imagination of students. When children engage in play with toys such as blocks, dolls, animal toys, balls, mini-cars, or pretend play, they begin to conceive and construct tales, which may help them develop their creative and imaginative abilities.
- Contributes to the development of interdisciplinary and multidisciplinary learning. When children are exposed to their surroundings, they typically take in information. Learning about science, technology, mathematics, the arts, and engineering may be accomplished via the use of toys.
- Toys are a great way for children to develop their motor skills and improve their hand-eye coordination. When children begin to handle toys, it helps them develop their motor skills and improves their hand eye coordination. They progress more physically as a result of this. Toys, in addition to being a source of emotional comfort for the child, also help in the development of social skills. Toys that facilitate manipulation, coordination, and sensory stimulation contribute significantly to the development of fine and gross motor skills, as well as spatial awareness. Moreover, these toys aid in the advancement of mental agility, which constitutes a critical aspect of basic sensory-motor skill development.
- Active Learning Encourages Children's Cognitive Development Psychologists stress the significance of active learning for the development of children's cognitive abilities. Children are able to actively connect with ideas and create their knowledge of the world around them via the use of toys, which give chances for hands-on inquiry and experimentation.

- Provides Support for Individualized Learning: Each kid is an individual with their own set of interests, strengths, and learning styles. Individualized learning experiences are made possible via the use of toy-based pedagogy because children are able to choose toys and activities that correspond with their specific interests and capabilities. Independence, self-directed learning, and intrinsic drive are all fostered as a result of this.
- Anxiety and stress may be reduced with the help of this: It has been shown that children who engage in play have less worry and tension because it offers them a secure avenue for expressing themselves and releasing their feelings. For the purpose of fostering emotional well-being and resilience, especially during times of change or hardship, psychologists emphasize the therapeutic advantages of play as a means of cultivating these qualities.

Importance of Toy Based Pedagogy

Source: Lone, S. A., & Kour, S. J. (2024). Significance of Toy-Based Pedagogy for Elementary students. Mazedan Educational Reviews and Teaching Methods, 4(1), 17-21.

Foundational Learners: Foundational Learners are students of Grade 2, between age group of 7 to 8 years.
Toy Pedagogy: Toy Pedagogy is a teaching - learning approach in which concepts and skills are learnt in joyful manner using toys, games etc. It focuses on enabling the learner to learn and practice the use of toys in teaching-learning of his/her subject/s. Some hands- on mathematical Toys for learning numbers sense, counting and arithmetic in this study were: Puzzle kits, Wooden arithmetic sets, Cuisenaire Rod, Base – ten and Pattern Blocks and Abacus.

STATEMENT OF THE PROBLEM

The main purpose of this experimental study was to determine the effectiveness of the Toy Based Pedagogy as a teaching strategy in Early Childhood Education to bridge the competency gap in mathematics and increase students' academic achievement. Specifically, it sought to answer the following questions:

1. What is the achievement level of students in control and experimental group in the Pretest?
2. What is the achievement level of students in control & experimental group in the Posttest?
3. Is there a significant difference in the achievement level of students in control group as reflected in their pretest and post-test?
4. Is there a significant difference in the achievement level of students in experimental group as reflected in their pretest and posttest?

5. Is there a significant difference in the achievement level of students in control and experimental groups in terms of their pretest scores?
6. Is there a significant difference in the achievement level of students in control and experimental group in terms of their posttest score?

OBJECTIVES OF THE STUDY

The present study has the following objectives:

- To find out the effectiveness of teaching mathematics at foundational stage without using play-based pedagogy
- To find out the effectiveness of teaching mathematics at foundational stage with using play-based pedagogy
- To compare the academic achievement of students taught through play-based pedagogy and without using play-based pedagogy

HYPOTHESES

The following null hypotheses below are tested at 0.05 level of significance:

HO_1: There is no significant difference in the mathematics achievement levels of students in the control group in terms of their pretest and post-test scores.

HO_2: There is no significant difference in the mathematics achievement level of students in the experimental group in their pretest and posttest scores.

HO_3: There is no significant difference in the pretest mean scores of students both in control and experimental groups.

HO_4: There is no significant difference in the post-test mean scores of students both in control and experimental groups.

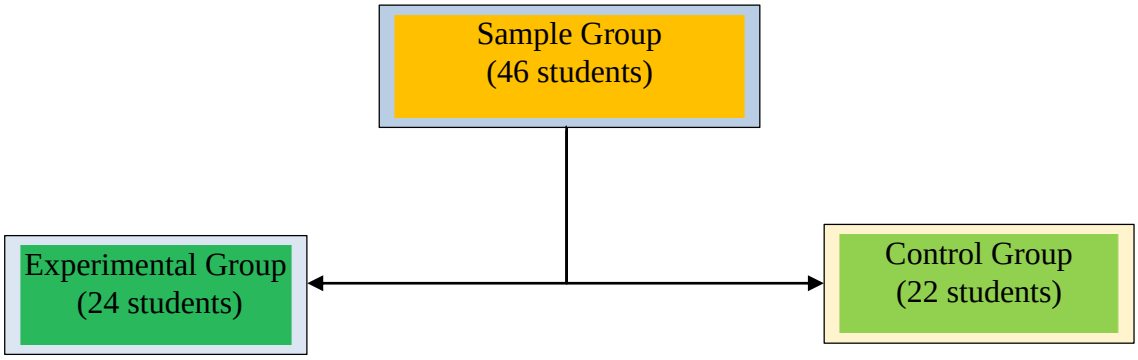
Methodology of the present study

Design	Quasi Experimental Design (Non- Equivalent Control Group Design)	
Population	Class 2 students of Nagaon District of Assam	
Sample	Students of two selected schools	
Sampling technique	Purposive Sampling	
Variables	**Dependent Variable** Academic achievement of the students	**Independent Variable** Teaching using play-based and without play-based pedagogy
Tools used	Pre- test and post -test	
Statistical technique	Paired t-test & Independent t-test	
Method of data collection	Pre- test treatment of target group post -test	
No of students	46 Students	

VARIABLES: In the present study the academic achievement of the students (score) are dependent variable and teaching using play-based pedagogy and without using play-based pedagogy are independent variables

POPULATION: The population of this study includes all students of foundational stage (Class 2) of Government Assamese medium Primary Schools in Nagaon district.

TOTAL SAMPLE: A total number of 46 students of class 2 were selected as sample for the present study using Purposive Sampling technique.



Tools of the study:

I. Pre – test for testing previous knowledge of the students
II. Post test for academic achievement of the students

RESEARCH PROCEDURE:

PERMISSION TO CONDUCT THE STUDY:

The researcher took the permission from the school heads to conduct the experiment.

ADMINISTERING THE PRETEST AND POSTTEST.

To start the study, a pretest was given to the Grade 2 students from both the control group (22 students) and (24 students) from experimental group. The result was computed and analyzed. After which the experimentation started. Using the lesson plans prepared, the researcher started facilitating the teaching learning process with the help of Toy based Pedagogy as a teaching strategy in facilitating mathematical competencies. The intervention lasted for four weeks and the researcher had recorded her daily observations focusing on the participation of the students. After the intervention, the posttest was administered. The results of the pretest and posttest for both groups were compared to determine the effectiveness of the intervention and whether the students mastered the competencies being taught using Toy based Pedagogy as a strategy.

STATISTICAL TREATMENT OF DATA

The researcher collected the data, tabulated them, and then used statistical analyses. The following statistical tools were used:

Independent t-test. This was used to test the significant difference in the achievement level of students in the control and experimental groups in terms of their pretest and post-test scores. The formula in computing t-test is:

t-test $t = \bar{x}1 - \bar{x}2 / SDx$

where t - significant difference of the control and experimental group (pretest and post-test)

$\bar{x}1$ - the mean scores of control group

$\bar{x}2$ - the mean scores of the experimental group

Paired t-test. This was used to compare the means of control and experimental groups in terms of their pretest and post-test scores.

ANALYSIS & INTERPRETATION OF DATA

A pre-test followed by post-test was prepared for evaluating the achievement of students after providing them treatment through Toy Pedagogy. In preparing the tests three chapters namely Playing with numbers (1 to 100), addition and subtraction was considered from text book of class 2. The achievement scores of the pre-test and post-tests obtained by two different groups undergoing teaching with and without Toy Pedagogy was administered using statistical analysis and was used to compare the effectiveness of Toy Pedagogy over the traditional method.

Table 1 shows the academic performance of students in the Pretest

Table 1
Academic performance in the Pretests of Control and Experimental Groups

Parameters	Value: Control Group	Value: Experimental Group
N	22	24
Highest Score	16	17
Lowest Score	8	7
Mean	11.45	12.37
Standard Deviation	3.02	2.98

Table 1 presents the academic performance of the control and experimental groups for the pretest. It is revealed that the highest scores obtained by the examinees were 16 and 17 respectively, while the lowest scores obtained were 8 and 7, respectively. The overall mean of the control group was 11.45 while the experimental group had an overall mean of 12.37.

Table 2 shows the academic performance of students in the Post-test

Table 2
Academic Achievement in the Post-test of Control and Experimental Groups

Parameters	Value: Control Group	Value: Experimental Group
N	22	24
Highest Score	23	29
Lowest Score	12	14
Mean	16.86	22.37
Standard Deviation	2.87	4.51

Table 2 presents the academic performance of the control and experimental groups for the post-test. The highest score obtained by the students in control group was 23 while in the experimental group was 29. On the other hand, the lowest score obtained by student in control group was 12 and 14 for the experimental group. The overall mean obtained by control group was 16.86 while the experimental group had an overall mean of 22.37.

There is no significant difference in pretest and post-test mean scores of students in the control group.

Table 3 below shows the gain scores in pretest and posttest of control group.

Table 3
Pretest and Posttest Mean Achievement of the Control Group

Type of Test	N	$\bar{X}$	Df	Calculated t- Value	Critical t- Value	Findings	Conclusion
Pre Test	22	11.45	21	6.92	2.81	Reject H_0	Significant
Post Test	22	16.86					

*Significant at 0.05 level

Table 3 presents the comparison of the pre-test and post-test mean achievement scores of the students in the control group. The mean score increased from 11.45 in the pre-test to 16.86 in the post-test, indicating an improvement in mathematics achievement. The calculated t-value of 6.92 was greater than the critical t-value of 2.81 at the 0.05 level of significance. Therefore, the null hypothesis was rejected, indicating a statistically significant difference between the pre-test and post-test mean achievement scores

of the students in the control group. This finding suggests that the students demonstrated significant improvement in mathematics achievement even in the absence of the Toy-Based Pedagogy intervention.

Although the control group did not receive the Toy-Based Pedagogy intervention, a significant improvement in mathematics achievement was observed from the pre-test to the post-test. The increase in the mean score from 11.45 to 16.86 indicates that conventional classroom instruction also contributed to learners' improvement over the course of the study. This improvement may be attributed to regular classroom instruction, continued exposure to mathematical concepts, practice, and other learning experiences received by the students during the intervention period. However, the significant improvement observed within the control group does not by itself establish that conventional teaching was as effective as the Manipulative/Toy-Based Pedagogy. The relative effectiveness of the two instructional approaches should be determined through the comparison of the groups' post-test performance.

There is no significant difference in pretest and posttest scores of students in the experimental group.

Table 4 shows the gain scores in pretest and post-test of the students in experimental group.

Table 4

Pretest and Post-test Mean Achievement of the Experimental Group

Type of Test	N	$\bar{X}$	Df	Calculated t- Value	Critical t-Value	Findings	Conclusion
Pre Test	24	12.37	23	8.94	2.80		
Reject H_0	Significant						
Post Test	24	22.37					

*Significant at 0.05 level

Table 4 presents the comparison of the pre-test and post-test mean achievement scores of the students in the experimental group. The mean score increased from 12.37 in the pre-test to 22.37 in the post-test, indicating an improvement in students' mathematics achievement following the intervention. The calculated t-value of 8.94 was greater than the critical t-value of 2.80 at the 0.05 level of significance. Therefore, the null hypothesis was rejected, indicating a statistically significant difference between the pre-test and post-test mean achievement scores of the students in the experimental group. The higher post-test mean suggests that Toy-Based Pedagogy had a positive effect on the mathematics achievement of Grade II students.

There is no significant difference in the pretest mean scores of students both in control and experimental groups.

Table 5 below shows the gain scores in pretest of students in both control and experimental.

Table 5

Comparison of Pretests Mean Achievement of the Control and Experimental Groups

Students	N	$\bar{x}$	Df	Calculated t -value	Critical t-Value	Findings	Conclusion
Control Group	22	11.45	42	1.20	2.69	Fail to reject H_0	Not Significant
Experimental Group	24	12.37					

*Significant at 0.05 level

Table 5 presents the comparison of the pre-test mean achievement scores of the control and experimental groups. The control group obtained a mean score of 11.45, while the experimental group obtained a mean score of 12.37. The calculated t-value of 1.20 was lower than the critical t-value of 2.69 at the 0.05 level of significance. Therefore, the null hypothesis was not rejected, indicating that there was

no statistically significant difference between the pre-test mean achievement scores of the control and experimental groups. This finding suggests that the two groups were comparable in their mathematics achievement before the intervention.

There is no significant difference in the achievement level of students in the control and experimental groups in terms of their post-test scores.

Table 6 shows the gain scores in post-test of students in control and experimental group

Table 6

t-test Comparison of Post-test Mean Achievement of the Control and Experimental Groups

Students	N	Mean ($\bar{x}$)	df	Calculated t-value	Critical t-value	Findings	Conclusion
Control Group	22	16.86	39	4.88	2.70	Reject H_0	Significant
Experimental Group	24	22.37					
*Significant at 0.05 level							

Table 6 presents the comparison of the post-test mean achievement scores of the control and experimental groups. The obtained t-value of 4.88 was greater than the critical t-value of 2.70 at the specified level of significance. Therefore, the null hypothesis was rejected, indicating that there was a statistically significant difference between the post-test achievement scores of the control and experimental groups. The experimental group obtained a higher mean score (22.37) than the control group (16.86), indicating that the students who received Toy-Based Pedagogy performed better than those who received the conventional teaching approach. Thus, Toy-Based Pedagogy was found to have a significant positive effect on the mathematics achievement of Grade II students.

FINDINGS & DISCUSSIONS OF THE STUDY ON THE BASIS OF EXPERIMENTATION

After the analysis and interpretation of data, the following findings were gathered.

- **Level of Academic achievement of the students in pretest and posttest.** Academic Results revealed that the achievement level in pretest mean scores of control group was 11.45 while 12.37 for the experimental group. The achievement level of control and experimental groups in the post-test mean scores were 16.86 and 22.37. These results suggest that students are moving towards mastery level. It is also supported by many researchers that when students were taught using play/Toy pedagogy, they can apply mathematical skills to solve problems in everyday life (Cragg & Gilmore, 2014). Children's intellect, social skills, physical development, and creativity all benefit from playing games that are appropriate for their developmental stage (Chin & Zakarian, 2015; Goldstein, 2012). Through unstructured "play" activities, kids can develop their creativity and critical thinking skills. Building blocks are frequently used to help kids develop their mathematical abilities because they are both cost-effective and well-liked by kids. By improving balance and hand-eye coordination, playing with blocks also helps young children comprehend addition, subtraction, and division (Goldstein, 2012). In terms of social interaction, block games motivate kids to collaborate more with their peers (Lynch & Simpson, 2010). Children can also construct structures using their imaginations when playing block games (Goldstein, 2012). They could feel the fulfilment that comes from making their own innovations.
- **There is no significant difference in the pretest and post-test mean scores of students in the control group.** There is a significant difference in the achievement level of control group in terms of their pretest and post-test score. It implied that conventional method of teaching can also improve the academic performance of students. Although the control group did not receive the intervention but the group still learned the lesson which is indicated in the table where there is an increase of more than five points of the mean. In this regard the traditional way of teaching which is more on lecture and drill is still effective since the students are already used to it. The study of Hiebert & Grouws (2007), support the effectiveness of traditional method of approaches, such as direct instruction and problem-solving, in improving students'

mathematics achievement. The use of the blackboard and the chalk is also effective but using Toy Based Pedagogy is better than this. A combination of these two strategies would yield higher performance of the students.

- **There is no significant difference in the pretest and posttest mean scores of students in the experimental group.** There is a significant difference in the achievement level of experimental group in terms of their pretest and post-test score. It implied that using Toy Based Pedagogy in teaching greatly improved the students' academic achievement. Using Toy Based Pedagogy in teaching mathematics provides great opportunity for the students to use objects in learning mathematics competencies. Seeing and hearing alone are not enough to retain information but by the use of Toy Based Pedagogy they are allowed to demonstrate about the application of the concept to real life situation. These findings also support the results of Cope (Spring 2015), that manipulatives as a Toy Based Pedagogy have the potential to help concrete abstract ideas, help students solve problems, and make math lessons more interesting and fun.

- **There is no significant difference in the mathematics achievement levels of students in the control and experimental groups in terms of their pretest scores.** There is no significant difference between the pretest mean scores of the students in control and experimental groups. This implies that both groups were equivalent in terms of their academic standing before the intervention for the experimental group. The results above suggested that the achievement levels of Grade-2 mathematics students for both control and experimental groups were initially comparable. In this case, both groups of students were regarded suitable for comparative study.
- **There is no significant difference in the mathematics achievement levels of students in the control and experimental groups in terms of their posttest scores.** It was found out statistically that there is a significant difference in the achievement level of students in control and experimental groups in terms of their post-test scores. The result implied that students who were taught using Toy Based Pedagogy had better academic performance compared to those who were exposed in traditional method of teaching. Thus, the use of Toys as a play way strategy significantly improved the mathematics' achievement of Grade 2 students. In the opinion of Shaw (2002), the use of mathematical models has various advantages similar to how a photograph may give visual representations of concepts, which can be worth a thousand words and aid pupils in understanding and comprehending math.

Effective teaching methods are crucial for the foundational stage of education as they play a vital role in fostering holistic development, developing essential skills like literacy, numeracy, problem-solving, and social-emotional competencies, which are crucial for future academic success, building a strong foundation for future learning, and cultivating a love for learning. They help create a positive and engaging learning environment where children can develop essential skills and reach their full potential. So, it is very important for the teacher to choose the right method of teaching for the holistic development of the students specially the foundational learners. Teachers' understanding, pedagogies, and techniques to improve their teaching are necessary for mathematics instruction in early childhood education (MacDonald et al., 2021: Murphy et al., 2019).In order to align daily activities with curriculum objectives and modern teaching methods, teachers must have a thorough understanding of early childhood mathematics, as well as an awareness of the needs of young children, curiosity, ability, creativity, critical thinking, and problem-solving skills and comprehension (Wood & Hedges, 2016).

This study revealed that teachers using toy pedagogy are better able to "simplify the communication of mathematical concepts". It was also found that the teacher could also stimulate the students to pose questions and clarify doubts. The children's learning experience after the use of toys in class is satisfactory for the teacher, according to this study. It is positive to evaluate students problem-solving skills in novel or unfamiliar situations. This study finds that teachers generally prefer to draw on multiple resources in their classroom teaching. An observation during the teaching – learning process using toy pedagogy is that when

teachers were using toy pedagogy, they would encourage children to discuss. It shows that the teacher has-analyzed the material and also discussed students' behavior at time of entry, transition, and termination.

CONCLUSION

Fostering an interest in math's is something important to do at an early stage, math is not only an important skill to develop, math toys not only help children understand the concept of numbers, counting, number recognition, and patterns, but also start very early in dealing with problem-solving. Learning toys are enjoyable and engaging way for children to discover the world around them. These toys combine education and entertainment, making the learning process enjoyable and exciting. By providing interactive experiences, they capture children's attention and foster curiosity, allowing them to develop essential skills while having fun. As children play with these toys, they gain knowledge, develop cognitive and motor skills, and build self-confidence. Learning toys create an environment where learning becomes an adventure, fostering a lifelong love of discovery in young minds. The relevance of active learning for the cognitive development of children is another belief that is supported by psychologists. Children are able to actively connect with ideas and create their knowledge of the world around them via the use of toys, which give chances for hands-on inquiry and experimentation. At the elementary levels of education, the value of toy-based pedagogy was suggested by a number of different commissions and committees. An awareness that play is more than simply a form of amusement; rather, it is a significant channel through which learning and development may take place is the foundation upon which the use of toys as educational instruments in preschool is built. For the purpose of encouraging children's creativity and imagination, toy-based teaching provides children with open ended tools that provide an infinite number of options. This allows children to freely explore and express their creativity, which in turn helps them develop abilities in creative thinking and contributes to the overall development of children by addressing a variety of areas, including cognitive development, social development, emotional development, and psychological development.

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