



## **EFFECT OF STORY TELLING ON LEARNING SINGLE DIGIT ADDITION AMONG PRIMARY LEVEL STUDENTS WITH MILD INTELLECTUAL DISABILITY**

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### **ABSTRACT**

Mostly teachers follow same old traditional methods for teaching single digit additions. The study aimed to investigate the effect of storytelling method in learning single digit additions for primary level students with mild intellectual disability. The experimental design approach was followed. To achieve the goals of the study, two checklists were developed; Prerequisite Checklist for Assessing Single Digit Addition that measures students' achievement on concepts related to single digit additions; the second was checklist on achievement of single digit addition that measures the students' achievement on learning single digit additions. The experimental group was taught using storytelling method where each story included the concept on single digit additions and control group was taught the same additions by conventional method (Black board teaching). Results revealed statistically significant improvement on students' achievement on learning single digit additions using storytelling method when compared to other group. The research findings also found that using storytelling method in teaching additions increased students' motivation and ability to solve mathematical problems.

**Key Words:** Storytelling, Single digit additions, Primary level students, Mild Intellectual Disability.

## INTRODUCTION

*"The foundation of all learning consists in representing clearly to the senses, sensible objects so that they can be appreciated easily"* - Comenius, 2002

### Background

We use mathematical skills at home, on the job, and in the community. However, teaching mathematics to intellectually disabled students includes learning through concrete experiences and the application of learned skills. In addition, both the classroom activities and the community exercises should be blended in such a way that the generalization of skills occurs smoothly. It is important to teach math skills to special students.

### Importance of Teaching Arithmetic to Children with Intellectual Disabilities

1. Mathematics is very important and useful in our daily life i.e., to see a bus number, time concept;
2. Helps with basic life skills such as making everyday consumer financial transactions;
3. Improves cognitive ability.

### Storytelling

Storytelling is one of the activity and a teaching method which is welcomed by children of all age groups. Plato in his book '*Republic*' has suggested storytelling as a proper pedagogical method to train and teach children. Aristotle in his book '*Politics*', has also advised on the stories children should read.

Ramanujam, Shaw and Seth (2006) have cited that storytelling in a classroom addresses many issues in education:

1. Storytelling is a joyful language experience.

2. It is empowering for a child to be able to express his or her thoughts and feelings articulately through oral language.
3. Develops a story-based curriculum for better understanding of subjects and concepts.
4. New vocabulary can be introduced and easily comprehended within a story's context.
5. Telling stories increases the ability to recall information, to sequence the events of the story, to understand the parts of the story, to understand the parts of the story such as a beginning, middle, and an end.
6. Storytelling encourages spontaneous play, self-expression, and self-esteem.
7. Storytelling is a way to emphasize the uniqueness of each person's imagination and imagination can generate language.
8. Storytelling is a way to bring together children and books and to interpret literature in an artistic rather than in a classroom manner.
9. Improves the attention span of children and ensures interactive and participatory learning.
10. Facilitates better conceptual understanding of subjects. Addresses multiple intelligence in children and to facilitate creativity.

### Objectives of Storytelling

Panandikar & Bagachi (2007) have listed the following as objectives of storytelling:

- 1. Educational Tool:** Storytelling can be used as a tool to improve the quality of education. Teachers and parents can make a lesson interesting by choosing a suitable story to make the lesson easy to understand.

2. **Entertainment:** Children enjoy all types of stories. Storytelling, properly done, produces a relaxed, restful feeling. It establishes a happy relationship between teller and listener, drawing people closer to one another, adult to child, child to child.
3. **Promoting the Reading Habits:** Stories told along with the books which they appear, help in creating children's interest in those books and motivate them to read. A story told from a picture book by showing colorful and attractive illustrations encourages children to read the book. Cinderella and Laughing Stories are some of the books that contain such illustrations.
4. **Therapy:** The modern child, facing psychological stress due to rapid social changes and other factors, needs emotional security. Positive stories with interesting concepts can help reduce stress.
5. **Ethics:** Stories can also help teaching children about basic human values like honesty, love for animals, respect for elders, friendship etc. Stories from the Ramayana, Panchtantra and other folk tales are helpful for this purpose.

### **SIGNIFICANCE AND SCOPE OF THE STUDY**

Classroom teachers continue to dominate their instruction with traditional method. Learning can be enjoyable if teachers use appealing methods of teaching. Research shows that there is a high correlation between the students' level of motivation and their achievements. It was argued that the use of storytelling methods in teaching is very effective for motivating students' desire to learn (Diaw, 2009). Before the wide spread of new technology, narration was the only way to transfer heritage, customs, traditions, beliefs, and history from generation

to generation. Stories create a favourable environment for learning, and reduce student's tensions and improve student's memory for what they learn.

Many educators show interest in utilizing stories to transmit mathematical concepts. National Council of Teachers of Mathematics (NCTM, 2000) considered communication as an essential component of learning mathematics. This means using language in the form of writing and speaking in order to communicate their mathematics ideas. As a result, it is important to practice the art of communication in different ways. Storytelling in teaching mathematics can help in understanding complex thoughts and ideas, because it encourages students to focus and think harder (Zazkis & Liljedahl, 2009).

### **STATEMENT OF THE PROBLEM**

The present study aims to investigate the effectiveness of storytelling method on learning single digit addition for primary level students with mild intellectual disability.

### **OBJECTIVES OF THE STUDY**

1. To find out the effectiveness of storytelling method on learning single digit addition among students with mild intellectual disability in experimental group.
2. To find out the effectiveness of conventional teaching method on learning single digit addition among the student with mild intellectual disability in control group.
3. To compare the achievement scores on learning single digit additions between experimental and control group.

## REVIEW OF LITERATURE

The researcher has reviewed the related literature to establish the need for this study and the reviews were collected on:

- ❖ Storytelling method.
- ❖ Arithmetic Operations.

### Studies related to Storytelling Method

Kermani & Younesi (2014) conducted a study to find out the effect of William Cook's storytelling method on children who had behavioral problems. The behavior problem word is used for expressing many problems categorized in the field of behavioral problems including serious and continuous aggression and minor antisocial behaviors in DSM- IV. The results of this study indicate that social problems, aggressive behavior and disobedient behavior scores are so high in pretest significantly decreased after the treatment.

Daemi & Farnia (2013) investigated that storytelling method increases children's social skills. Training materials including social stories to teach social skills like, confidence and stability in social situations, social cognition (social competence), Interpersonal communication and Level of active participation in organized activities. Results showed that in all subscales including social skills, social competence and communication there was a difference between control and experimental groups. The results of this study showed that storytelling had an effect on increasing the social skills of children in pre-school.

Hettiarachchi & Ranaweera (2013) revealed that the use of local, traditional stories incorporating a multi-sensory storytelling and story-making framework was found to aid the receptive and expressive vocabulary skills of children with language-learning difficulties and also children's attention and listening skills was also improved.

### Studies related to Arithmetic

Pupo (1994) examined the effectiveness of teaching intellectually disabled students' addition through a multisensory approach. The study suggests that following less than one month of instruction, moderately intellectually disabled students were able to use the faded touch point to add pairs of single-digit numbers.

## METHODOLOGY

**Research Method:** Experimental method was used to examine the effect of storytelling on learning single digit addition among students with intellectual disability at primary level.

**Research Design:** The Pre-test/Post-test control group design was used.

The pretest-post-test control group design can be represented as:

<i>Experimental</i>	$RO_1$	$X$	$O_2$
<i>Control</i>	$RO_3$		$O_4$

In this design, which uses two groups, one group is given the treatment and the results are gathered at the end. The control group receives no treatment, over the same period of time, but undergoes exactly the same tests.

**Sample:** The sample for the study consists of 6 students with mild intellectual disability who were attending primary class in National Institute for the Empowerment of Persons with Intellectual Disabilities, (Formerly known as National Institute for the Mentally Handicapped), Secunderabad, Telangana, India. The chronological age of the students was ranging between 7 – 14 years.

**Sampling Technique:** The sample selection was based on non-probability method and the sampling technique used was purposive sampling technique.

**Selection of Sample:** About 14 students with mild intellectual disabilities age ranged

between 7 to 14 years from primary class were assessed using pre requisite checklist to measure the performance on single digit addition. Based on the performance 6 students who have scored at least 40% or more were selected and randomly assigned into experimental and control group.

### **Inclusive Criteria**

- ❖ Students with intellectual disability.
- ❖ Students who are diagnosed with mild category.
- ❖ Attending a special school.
- ❖ Belonging to age range of 7-14 years.
- ❖ Having verbal communications to express their needs.
- ❖ Having the ability to follow instructions.

### **TOOLS**

The researcher had administered a self-developed instrument which was validated by 12 experts in the field of special education working in The National Institute for the Empowerment of Persons with Intellectual Disabilities.

For the present study the researcher developed the following tools:

- (i) Prerequisite checklist for assessing single digit addition;
- (ii) Checklist on Achievement of Single Digit Addition.

### **Checklist on Achievement of Single Digit Addition:**

This checklist was developed to assess the pretest and posttest achievement scores in the adapted lesson selected. The suggestions given by the professionals after the validation of the

checklist were incorporated and the checklist was finalized after making the necessary changes.

### **Content**

The checklist consisted of single digit additions related to the stories.

Concept 1 - Adding number 1 with 1, 2 and 3.

Concept 2 - Adding number 2 with 1, 2 and 3.

Concept 3 - Adding number 3 with 1, 2 and 3.

### **Format**

The items were arranged in the sequential order. Each concept consisted of 12 items and in total checklist consisted of 36 items. There was a provision for recording the performance of child, session wise in a worksheet.

### **Scoring**

The performance of the students was recorded by providing a key according to the level of independence

Scoring procedure for checklist: -

- 1 – Physical Prompt;
- 2 – Modeling Prompt;
- 3 – Gestural Prompt;
- 4 – Verbal Prompt;
- 5 – Independent.

### **Treatment Condition:**

Experimental group: - The students in the experimental group were taught single digit addition through oral storytelling. Based on the current level of the students four stories were selected to teach single digit additions.

**Table No. 1 - Stories for Experimental Group**

S. No.	Story Name	Materials Used	Outcome of the Story
1	Friendship	Toys (Lion, Elephant, Giraffe and Bear)	1+1, 2+2
2	Thirsty Crow	Models, Pot, Stones	3+1, 3+2, 3+3
3	After Two Days	Calendar, Pen	2+2
4	Share	Ball, Balloons and Chocolates	1+2, 1+3, 2+1, 2+3, 3+1, 3+2

**DATA ANALYSIS**

Analysis is done for following purpose: -

1. To compare the pre and post-test mean scores of experimental group on learning single digit addition.
2. To compare the pre and post-test mean scores of control group on learning single digit addition.
3. To compare the post-test mean scores of experimental group and control group on learning single digit addition.

**Achievement scores of subjects of experimental group on learning single digit addition**

**Hypothesis No. 1:** There will be a significant improvement in pre and post-test mean scores on learning single digit additions among the students with intellectual disability who receive intervention through storytelling method.

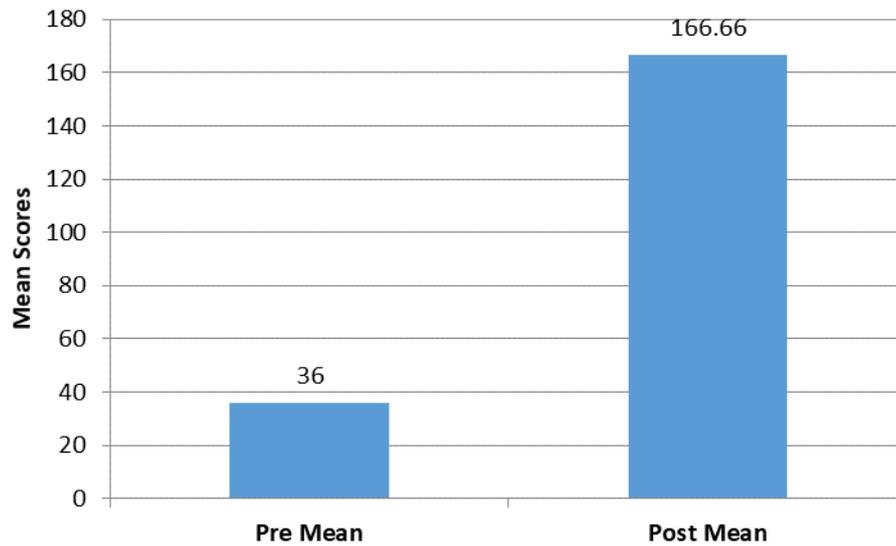
**Table No. 2 - Comparison of Pre-test and Post-test Mean Scores of Experimental Group on Learning Single Digit Addition.**

N	<u>Pre Test</u>		<u>Post Test</u>		t – value	df	Sig. (2-tailed)
	Pre Mean	SD	Post Mean	SD			
3	36.00	.00	166.66	23.09	9.80*	2	.010

\*  $p < 0.05$ , Statistically Significant

Table 2 depicts that the pre and post-test mean scores of experimental group in learning single digit addition through storytelling. The pre-test mean score is 36.00 and post-test mean score is

166.66. The t – value showed high level of significance. It indicates that the difference is significant at 0.05 level of significant ( $p < 0.05$ ).



**Figure No. 1 - Pre and Post-test Mean Scores on Learning Single Digit Addition of Experimental Group**

Figure No. 1 shows that the achievement of experimental group on learning single digit addition is higher when compared to the performance before the intervention. The progress by the students in experimental group shows that the intervention through storytelling method was successful and was very effective in learning single digit additions. It is observed during the intervention, that the subjects in experimental group has shown interest and

were actively participated in storytelling sessions.

**Achievement scores of subjects of control group on learning single digit addition**

**Hypothesis No. 2:** There will be a significant improvement in pre and post-test mean scores on learning single digit additions among the students with intellectual disability who receive intervention through conventional method. (control group)

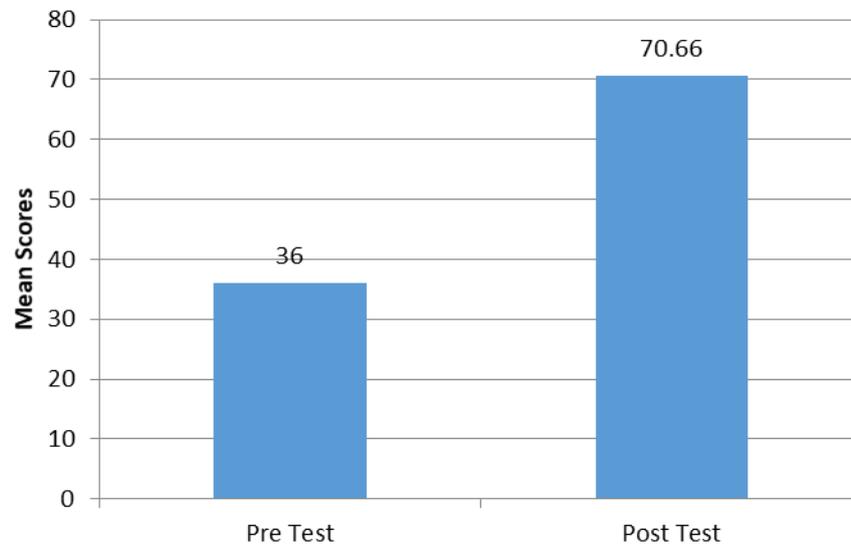
**Table No. 3 - Comparison of Pre-test and Post-test Mean Scores of Controls Group on Learning Single Digit Addition.**

N	Pre Test		Post Test		t – value	df	Sig. (2-tailed)
	Pre Mean	SD	Post Mean	SD			
3	36.00	.00	70.66	16.16	3.71,NS	2	.065

NS-  $P > 0.05$ , Statistically Not Significant

Table 3 depicts that the pre and post-test mean scores of control group in learning single digit addition through conventional method. The pre-test mean score is 36.00 and post-test mean score is 70.66. The  $t$  – value is lower than the

table value. It indicates that the difference is not significant at 0.05 level of significant ( $P > 0.05$ ).



**Figure No. 2 - Pre and Post-test Mean Scores on Learning Single Digit Addition of Control Group**

The above figure shows pre and post-test mean scores of control group on learning single digit additions. Pre-test mean score of control group is 36.00 and post-test mean score is 70.66. The intervention was given through blackboard teaching. The difference between post-test and pre-test mean score is 34.66.

Figure 2 shows that the achievement of control group on learning single digit addition is higher when compared to the performance before the intervention. The progress by the students in control group shows that the intervention through blackboard method was successful in learning single digit additions. But we can't

ignore the fact that, it is observed during the conventional method, that the subject in control group has shown some late interest because of reinforcement. Some improvement was observed in the subjects.

#### **Achievement scores of subjects of experimental group and control group on learning single digit addition**

**Hypothesis No. 3:** There will be a significant difference in post-tests mean scores on learning single digit additions among the students with intellectual disability between experimental and control group.

**Table No. 4 - Comparison of posttest mean scores of experimental group and control group on learning single digit addition**

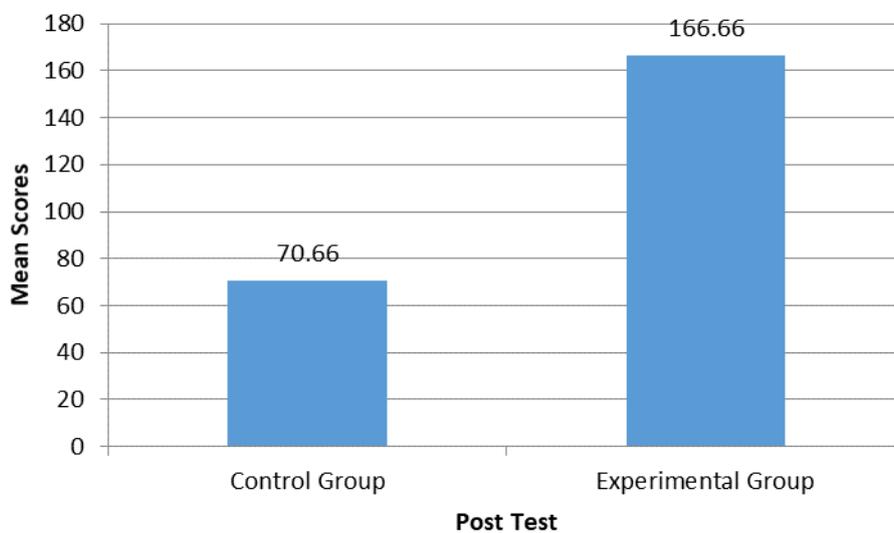
Independent T – Test

N	Experiment Group		Control Group		t – value	df
	Post Mean	SD	Post Mean	SD		
3	166.66	23.09	70.66	16.16	5.89**	4

\*\* -  $p < 0.01$ , Statistically Highly Significant

Table 4 denotes that the post-test mean scores of experiment and control group in learning single digit addition. The post-test mean score of experiment group is 166.66 and post-test

mean scores of control group is 70.66. The t – value is higher than the table value. It indicates that the difference is highly significant at 0.01 level of significance ( $p < 0.01$ ).



**Figure No. 3 - Comparison of Post-tests Achievement Scores between Experiment and Control Group on Learning Single Digit Addition**

Figure 3 depicts that there is a difference between experimental and control group post-tests mean scores on single digit addition. The post-test mean score of experimental group is 166.66 and post-test mean scores of control group is 70.66. The graph indicates that there is a higher improvement in performance level of subjects in experimental group as compared to control group.

**Educational Implications:**

The findings of the experiment have the following implications.

1. The results indicated that storytelling method was effective in learning single digit addition among students with mild intellectual disabilities. The result has implication for future research in similar method in teaching other mathematical

concepts or developing other skills like communication and social skills.

2. The comparison of the performance of students in learning single digit addition indicates that storytelling is more effective than conventional method (Black Board) of teaching. It is important for the teacher to plan the instruction which involves storytelling. Teacher should use different props to tell the stories. Teacher should remember when a new skill is introduced to students with intellectual disabled both the pace of learning and rate of retention are to be higher if innovative and creative teaching methods are used.
3. Special educators should concentrate on developing stories, which can be read and listened by group of students. With the help of stories teacher can decrease the complexity of the concepts and make the students learn easily.

### **Recommendations for Future Research**

The results of the present study indicated that storytelling is effective in learning single digit addition. On the basis of the finding obtained in the present investigation the following suggestions are given for future research in this area: -

1. The present study revealed that storytelling is more effective in producing higher performance in single digit addition among students with intellectual disability at primary level. It is recommended that further research on employing storytelling in teaching to other grade levels other than primary class and topics other than single digit could be carried out.
2. A similar study can be conducted on using different props in telling the story and their effectiveness for the students with intellectual disabilities.
3. The present study revealed that storytelling is more effective in producing

higher performance in learning single digit addition among students with mild intellectual disability. A similar experiment can be conducted at various severity levels to find out whether it produces similar effects.

4. Studies can be conducted by comparing the types of stories, materials used and the settings, with reference to skill development among students with intellectual disability.
5. Based on these findings, this study recommends the use of storytelling by special educators and those involved in curriculum development and teacher training programs.
6. The study recommends including the strategy of storytelling in designing and preparing curricula and training programs.

### **CONCLUSION**

Stories should be formed in such a way that they enhance the learning process in students. Teachers can use different props to tell the stories so that it becomes interesting for the students. Props like masks, puppets, toys, and video based, models and concrete items can be used in telling stories. Students can be reinforced and motivated by teaching additions through the help of toys, models, concrete items, and calendar. This will improve their participation and interaction in the classroom.

The importance of this research study is that it will give classroom teachers one more instructional strategy to use. And as students with intellectual disabilities have significant limitation in intellectual functioning, it is important for the educators to plan activities to provide the stimulation.

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