

# EFFECT OF MUSIC ON LEARNING NUMBER CONCEPT AMONG CHILDREN WITH INTELLECTUAL DISABILITY

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## ABSTRACT

The study aims to explore the 'Effect of music on learning Number Concept among Children with Intellectual Disability' Ten children aged 6-9 years with Mild Intellectual Disability participated in this study. The sample selected is from Sweekar-Upakar Special School in Secunderabad. A Pre-test - Post-test control group design is used for evaluation. With the subjects randomly assigned to either the experimental group or the Control group, a checklist was developed to assess the number concept among children with intellectual disabilities. A 40-minute intervention was given for 20 sessions for two weeks straight, excluding pre and post-tests. The findings revealed that the subjects in experimental group, who have received music as a medium of instruction showed higher achievement in learning number concepts than the subjects in the control group.

**Keywords: Intellectual Disabilities, Number Concept, Music, Experimental Group, Control Group**

## INTRODUCTION

Children with Intellectual Disability (ID) have a condition of arrested or incomplete development of mind, which is especially characterized by sub-average intelligence, thus partially or totally restricting the person's ability to perform certain activities in their life. This is owing to impairment in cognitive, emotional or behavioural endowment. 'ID' may be defined as the product of interaction between personal skills and the demands of his or her environment (Luckasson, 2002). Individuals with ID are not alike; each one is unique. Yet within this diversity, there are several characteristics (Schloss & Sedlak, 1982). Describing the characteristics of a person with ID is difficult because not all ID individuals have the same characteristics and no single child has all the characteristics. Generally, they have a marked delay in their developmental milestones when compared to normal children.

Tomprowski and Tinstey (1997) theorize that individuals with ID experience difficulty focusing their attention, maintaining it, and selectively attending to relevant stimuli. Memory which is an important component of learning is often impaired in children with ID (Drew & Hardman, 2007). Early experiments suggested that persons who are intellectually disabled experience difficulty with short term memory (Ellis, 1963). Researchers have identified several factors that may contribute to the memory difficulties of persons with intellectual disabilities. Among them are problems attending to relevant stimuli (Westling, Fox, 2004) inefficient rehearsal strategies; and an inability to generalize skills to novel settings or tasks

(Tomporowski and Tinstey (1997)). Due to this, children with ID are unable to learn concepts. Learning concepts is difficult and less interesting enough for children with ID to learn in the traditional classroom settings. Learning the number concept takes longer in children with ID. Nelson and Cummings (1981) also reported in their study that children with educable mental retardation have significant deficits in their understanding of basic concepts. Hence it requires a lot of effort and time on the part of the teacher to achieve the desired results. Besides the teacher's efforts and materials, the appropriate supports over a sustained period, generally improve the life functioning of the person with mental retardation (AAMR, 1992).

Children with intellectual disabilities are different in interests, limitations, and intellectual functioning. Thus, children with ID can benefit from innovative teaching methods and materials which in turn help them in the acquisition of target behaviours and knowledge. Therefore, teachers should make academics more enjoyable by using other methods. The child's attention and interest can be held by teaching through music. Music is a universal language. Warner (1983), states that music in early childhood classes is a must because music promotes finger plays, action, songs, games, writing words from songs and other music activities, children are able to utilize, creative thinking and problem solving. Music is a teaching tool or teaching strategy and has esthetic qualities. Just a little teacher preparation that music can provide the children with ID is tremendous Wood (1982). A good music program or a good music activity must be developmentally appropriate and effectively incorporated into all curriculum areas. Music should be an integral part of the early childhood curriculum. In this, the teacher's role includes planning activities that will encourage music participation and expression, as well as providing materials and experiences that will stimulate creative thinking and action for the children with ID. Music can help to accomplish the purpose and is often a first means of creating in the child, a pleasurable reaction to an outside stimulus. It is often the beginning of a social relationship upon which other things may grow. Music can be one of our most effective teaching strategies or teaching tool.

Music allows the development of creativity, social interaction and Rhymes can be utilized in teaching subjects like languages, and math to children with mental retardation to make it lively and interesting. Right from infancy, children like humming to music, enjoy making movements to music and listening to stories, especially if they include action and voice modulation. Music sharpens the sense of attention and concentration. Music plays a crucial role in the field of special education. So, teachers should give importance to music as a teaching strategy in special education, and as a co-curricular area. Music is also included currently in the co-curricular activities in special education.

The present study aimed at measuring the effectiveness of music (Rhymes) method in learning number concepts among children with ID. No such studies have been reported on the education of children with ID in India. Therefore, the possibility of exploring the effectiveness of music method in learning number concepts needs to be examined. If the music method is found to be effective, then teachers can be encouraged to use this method in teaching any concept to children with ID. This would help to develop suitable rhymes with musical components to teach concepts that have importance in day-to-day life.

**OBJECTIVES:**

- To find the achievement of number concept among children with ID who receive music as a medium of instruction (Experimental Group)
- To find the achievement of number concept among children with ID who receive instruction through conventional method. (Control group)
- To compare the achievement of number concept between Experimental and Control groups.

**METHOD****Participants:**

Participants selected for the experiment were children with mild ID ages ranging from 6 to 9 years. The participants were selected from Sweekar-Upakar special school Secunderabad. The size of the sample is 10 children with ID. The experimental design used for the study was a pre-test post-test control group design.

**Characteristics of subjects in Experimental and Control Group.**

Group	Subjects	Age	Gender	IQ
<b>Experimental Group</b>	<b>E1</b>	<b>7</b>	<b>F</b>	<b>70</b>
	<b>E2</b>	<b>6</b>	<b>M</b>	<b>61</b>
	<b>E3</b>	<b>8</b>	<b>F</b>	<b>62</b>
	<b>E4</b>	<b>6</b>	<b>M</b>	<b>54</b>
	<b>E5</b>	<b>7</b>	<b>F</b>	<b>50</b>
<b>Control Group</b>	<b>C1</b>	<b>6</b>	<b>M</b>	<b>70</b>
	<b>C2</b>	<b>7</b>	<b>F</b>	<b>62</b>
	<b>C3</b>	<b>9</b>	<b>F</b>	<b>61</b>
	<b>C4</b>	<b>8</b>	<b>M</b>	<b>53</b>
	<b>C5</b>	<b>6</b>	<b>F</b>	<b>50</b>

## TOOL

A checklist has been developed for measuring the effectiveness of music on the number concept. In order to develop a checklist for assessing the number concept, the researcher reviewed the existing checklists which are used to assess the number concept, and according to the purpose of the present study, the checklist has been developed. Task analytic method was used to prepare the checklist to teach the basic number concept up to three, which included matching, identification, and naming of numerals. To establish validity, the developed checklist was circulated to 20 professionals working in the field of ID for their comments and suggestions, based on the comments and suggestions received from the professionals the checklist was finalized. To test the reliability, test-retest reliability was conducted and the tool was found to be reliable at 0.85. The checklist has the provision to record the baseline scores and performance during intervention.

## PROCEDURE

The experiment was conducted at Sweekar-Upakar special school, in Secunderabad. All the participants selected for the study were given a pretest on the validated checklist. Based on the performance level, students were divided randomly into two groups, that is the experimental group and the control group. Experimental group children received instructions through music. Control group children learned number concepts through the traditional method. The content selected was numerals up to 3. The materials used were number flashcards, rhymes that are based on numbers, and objects for counting. A total of 20 sessions were carried out. Each session was conducted for forty minutes. The students of the control group received teacher instructions conducted in the traditional method. Reinforcement was provided to the subjects during the intervention such as - Social reinforcement and materialistic rewards provided at the end of the session. The performance of the subjects was recorded in the checklist at the end of every session. The student's performance was recorded after every session on the record sheets. After completing the intervention, the data was analyzed using t-test.

## RESULTS

**Table 2 Comparison of pre-test and post-test mean scores of the experimental group in learning number concept**

Test	N	Mean Scores	SD	t-value
Pre-test	5	15.6	8.96	t=21.4** df=4 P<0.01
Post-test	5	61	5.09	

The above table represents the pre-test & post-test mean scores of the experimental group in learning the number concept. The mean scores for the pre-test are 15.6, and the post-test is 61. To find the significant difference level, paired t-test was calculated. The calculated t-value is greater than the table value. Hence the results indicated a highly significant 0.01 level.

**Table 3: Comparison of Mean Scores of Pre-& Post Test of Control Group in learning number Concept**

Test	N	Mean Scores	SD	t-value
Pre-test	5	15.4	9.04	t=13.53** df=4 P<0.01
Post-test	5	40.2	5.71	

The above table represents the pre-test & post-test mean scores of the experimental group in learning the number concept. The mean scores of the pre-test are 15.4 and the post-test is 40.2. To find out the significant difference paired t-test was calculated. The calculated t- value is greater than the table value. Hence the results indicated a highly significant level of 0.01.

Groups	N	Post Mean Scores	SD	t-value
Control	5	40.2	5.71	t=6.08** df=4 P<0.01
Experimental	5	61	5.09	

The above table represents the post mean scores of the experimental group (61) and control group (40.2). To find out the significant difference paired t-test was calculated. The calculated t- value is greater than the table value. Hence the results indicated a highly significant level of 0.01.

**DISCUSSION**

The analysis of data revealed that the experimental group has learned the number concept through music faster than the traditional method taught to the control group. Both the groups showed a significant difference in pre-& post-test mean scores whereas the experimental group achieved mean scores that were highly significant in learning the number concept. Based on the given result the researcher can conclude that the hypothesis is proved statistically highly significant at  $p < 0.01$ . The study reveals that the method of teaching by using music is better than the conventional method. During the intervention, it was observed that experimental group students showed more attention, concentration and interest in learning, and as soon as the researcher started playing tape recorder, students participated with great enthusiasm. One student had difficulty pronouncing the number 1(okati in Telugu), but when he was singing along with the song he was able to pronounce it with great clarity. Hence it shows that teaching children with ID through music has a great effect on children's attention, learning pronunciation and faster learning and retention of the concepts. This finding was similar to that of Farah Naderi; Behnam Mackvandi (2000). The universal element of music can turn the stimulation of a classroom environment into a real experience and make new information meaningful in gaining interest (Zatorre 2000). The results of the study support the fact that special educators can use rhymes with music components to teach concepts, which are more relevant in the day to day life of people with mental retardation. This method will help the children with ID to learn

the concepts which they find difficult to learn due to low intelligence levels. Educational programs must be designed, implemented and evaluated systematically to have an effect on the development of each learner (Beirne-Smith et al., 1994).

## CONCLUSION

The educational system has been changed using innovative teaching strategies to enhance learning and change the style of current schooling systems. Education through music opens doors that help children pass from school into the world around them a world of work, culture, intellectual activity, and human involvement. The future of our nation depends on providing our children with a complete education that includes music. Music is about communication, creativity, and cooperation, and by studying music in school, students have the opportunity to build concepts at the pre-primary level, enrich their lives, and experience the world from a new perspective. Music has great power for bringing people together.

The success of music is part of human abilities. Music is an intelligence stimulating force, students have positive attitudes and self-perceptions, so they can actively process. The universal element of music can make the artificial classroom environment into a real experience and make new information meaningful bringing interest and order to the classroom (Zatorre 2000). Evidence is needed that educational rhymes with music components truly enhanced learning in a demonstrable way.

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