

MUSIC AND DANCE: A MEANS OF DEVELOPING NUMERACY SKILLS AMONG CHILDREN WITH SPECIAL NEEDS

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Abstract

Music and dance are the two art form that are inextricably tied together. This combined form of arts used enjoyed by every individual. This combined for of effectively uses for various purposes such as education, training and therapy. It is one of the important means used for various academic skills among different categories of school children. One of these category is children with special needs including children with intellectual disability. In this study children with special needs refer to children with intellectual disability. Music and dance broadly use for developing various skills among children with intellectual disability. In this this study researcher used music and dance for developing numeracy skills among children with intellectual disability. Pre-test post-test control group experimental design was used in this study. Purposive sampling technique was used to select the sample in this study. Results of the study indicate that post-test numeracy skills of both experimental and control group is higher than their pre-test numeracy skills. Findings also revealed that post-test numeracy skills achievement score of experimental group who taught using music and dance is higher than the post-test numeracy skills achievement of control group. Result indicate that there is highly significant difference between the post-test numeracy skills achievement of experimental and control group.

Key words: Music, Dance, Special Needs, Intellectual disability, Numeracy Skills.

INTRODUCTION

Music is the arrangement of sounds to create some combination of form, harmony, melody and rhythm. Music is generally agreed to be a cultural universal that is present in all human societies. On the other hand, dance is the movement of the body in a rhythmic way, usually to music and within a given space, for the purpose of expressing an idea, emotion, releasing energy or simply taking delight in the movement itself. Music and dance are the two art form that are inextricably tied together. This combined form of arts used enjoyed by every individual. This combined form of arts is used for education of children with intellectual disability. As per the Rights of Persons with disabilities (RPWD) Act 2016, 'Intellectual disability, a condition characterized by significant limitation both in intellectual functioning (reasoning, learning, problem solving) and in adaptive behaviour which covers a range of every day, social and practical skills, including specific learning disabilities and autism spectrum disorders.' According to American Association on Intellectual and Developmental Disability (AAIDD) 2021, 'Intellectual disability is a condition characterized by significant limitation both in intellectual functioning and in adaptive behavior as expressed in conceptual, social and practical adaptive skills. This disability originates during the developmental period, which is defined operationally as before the individual attains age 22.' Children with intellectual disability have very limited cognitive capacity because of which their learning of any skills is limited. In addition to cognitive capacity various internal and external factors of the individual affect their academic achievement. Some of the important factors include socio economic condition, learning capacity, teaching learning process, strategies, materials and learning environment. These factors directly or indirectly affect learning achievement. Among all these factors training method and strategy as well as learning environment is very important.

NEED AND SIGNIFICANCE OF THE STUDY

Learning and achievement of individual including persons with intellectual disability are influenced by various internal and external factors. Among all these factors, teaching method, strategies and environment is one of the most important external factor. Therefore, present study focused to investigating the impact of music and dance on achievement of numeracy skills among children with intellectual disability. Present study will help to understand the effect of using music and dance on numeracy skills achievement. This study will also help

parents, teachers and other professionals to plan and use appropriate method, strategies and create conducive environment for their optimum skills development.

OBJECTIVE OF THE STUDY

- To assess the numeracy skills (meaningful counting) of control and experimental group.
- To compare the pretest posttest numeracy skills of control group.
- To compare the pretest posttest numeracy skills of experimental group.
- To compare the posttest numeracy skills of experimental and control group.

HYPOTHESIS

- There will be no significant difference between the pre-test and post-test numeracy skills of control group.
- There will be no significant difference between the pre-test and post-test numeracy skills of experimental group.
- There will be no significant difference between the posttest numeracy skills of experimental and control group.

METHODOLOGY

Experimental research design was used to find out the effect of using music and dance on development of numeracy skills among children with intellectual disability.

SAMPLE AND SAMPLING TECHNIQUE

In this study purposive sampling technique was used to select the sample. Total ten sample were selected for the study from a special school in Lucknow based on the criteria set for the present study. Out of these ten samples, five assigned to experimental group and five assigned to control group randomly. Characteristics of the sample in control and experimental group are mentioned in table-1.

Table-1. Characteristics of the sample

Group	Subject	Gender	Age in year	IQ
Control group	C-1	F	5	64
	C-2	M	7	63
	C-3	F	6	65
	C-4	M	5	61
	C-5	M	5	68
Experimental group	E-1	F	7	62
	E-2	M	5	67
	E-3	M	6	61
	E-4	M	5	59
	E-5	M	5	66

TOOL

Investigator developed the tool which consist of two parts viz. Part-I and Part-II. Part-I was developed to collect demographic information of the sample. It includes profile of sample. Part-II is Numeracy Skills Checklist (NSC) consist of different sub steps of meaningful counting. Task analysis method was used to prepare the checklist to teach the meaningful counting up to ten. To establish the content validity, the developed checklist was circulated among eighteen professionals working in the field of intellectual disability for their comments and suggestions. Suggestions received from professionals were incorporated before finalization of checklist. Test-retest was used to find out the reliability of the checklist. It was determined that

the scores were statistically significant ($P < 0.01$) and hence tool found to be reliable. The checklist has the provision to record the baseline scores and performance during intervention.

SCORING

The different level of performance of each and every subtask of children with intellectual disability given score 0 to 5 that are mentioned in the table-2.

Table-2. Scoring of Academic Achievement Checklist

SN	Levels of achievement	Score
1.	Independently	5
2.	Cluing	4
3.	Verbal prompting	3
4.	Physical prompting,	2
5.	Totally dependent	1
6.	Not applicable respectively	0

PROCEDURE

First of all, researcher took permission from the head of the organisation to conduct study. Researcher also took consent from the parents whose children selected for the study. Experiment was conducted by the investigator in a special school. Pre-test were conducted using Numeracy Skills Checklist (NSC) developed for the present study. All the children with intellectual disability of experimental group were trained in numeracy skills (counting) up to eight through music and dance. All the sample of control group trained in numeracy skills (counting) up to eight through traditional method. The materials used were musical instrument, music system, picture cards of dance steps and video of dance. A total of 30 sessions were carried out. Each session was conducted for one hour. Social and tangible reinforcers were used during the intervention. Post-test were conducted after completing the intervention for both the groups using Numeracy Skills Checklist (NSC) developed for the present study.

RESULTS

Collected data were tabulated and analysed objective wise using descriptive and inferential statistics such as t-test.

Table-3. Numeracy skills developmental score of control and experimental group.

Control group	Pre-test score	Post-test score	Experimental group	Pre-test score	Post-test score
C-1	101	149	E-1	99	156
C-2	97	132	E-2	103	158
C-3	102	122	E-3	101	127
C-4	100	123	E-4	102	154
C-5	98	122	E-5	104	148
Total	498	648	Total	509	743
Mean score	99.6	129.6	Mean score	101.8	148.6

Table-3 reflects the pre-test and post-test numeracy skills developmental score of control and experimental group. Average pre-test and post-test score of control group is 99.6 and 129.6 respectively and that of the pre-test and post-test score of experimental group is 101.8 and 148.6 respectively.

Table-4. Comparison of pre-test and post-test mean score of numeracy skills development of control group.

SN	Group	N	Mean	SD	df	t-value	Level of significance
1.	Pre-test	5	99.6	1.4	8	Calculated value-2.79	0.05
2.	Post-test	5	129.6	12.51		Table value-1.86 at 0.05	

Table-4 shows pre-test mean score is 99.6 with standard deviation of 1.4 and the post-test mean score is 129.6 with standard deviation of 12.51 control group. Post-test mean score is higher than the pre-test mean score. In order to find out the significance t-test were applied. The calculated t-value is 2.79 is higher than the table value 1.86 at 0.05 levels. Hence the null hypothesis is rejected.

Table-5. Comparison of pre-test and post-test mean score of numeracy Skills development of experimental group.

SN	Group	N	Mean	SD	df	t-value	Level of significance
1.	Pre-test	5	101.8	27.17	8	Calculated value-8.62	0.05
2.	Post-test	5	148.6	11.95		Table value-1.86 at 0.05	

Table-5 reflects pre-test mean score is 101.8 with standard deviation of 27.17 and the post-test mean score is 148.6 with standard deviation of 11.95 of experimental group. Post-test mean score is higher than the pre-test mean score. In order to find out the significance t-test were applied. The calculated t-value is 8.62, is higher than the table value 1.86 at 0.05 levels. Hence the null hypothesis is rejected.

Table-6. Comparison of post-test mean scores of numeracy Skills development of control and experimental group.

SN	Group	N	Mean	SD	df	t-value	Level of significance
1.	Control group Post-test score	5	129.6	12.51	8	Calculated value-2.79	0.05
2.	Experimental group Post-test score	5	148.6	11.95		Table value-1.86 at 0.05	

Table-6 reflects post-test mean score 129.6 of control group with standard deviation of 12.51 and the post-test mean score 148.6 of experimental group with standard deviation of 11.95. Post-test mean score of experimental group is higher than the post-test mean score of control group. In order to find out the significance t-test were applied. The calculated t-value is 2.79, is higher than the table value 1.86 at 0.05 levels. Hence the null hypothesis is rejected.

DISCUSSION

In this study, analysis of data revealed that the post-test **numeracy Skills development** of both experimental and control group is higher than their pre-test **numeracy Skills development**. Result also revealed that post-test **numeracy Skills developmental** score of experimental group who taught through music and dance is higher than the post-test **numeracy Skills development** of control group. This difference is statistically significant at $p < 0.05$ level. During intervention, it was observed that students of experimental group shows more interest and paid more attention in learning. They involved in the activities with more enthusiasm and enjoyment. This clearly indicates that using music and dance positively, affect the **numeracy Skills development** of experimental group. This indicates that training children with intellectual disability using

music and dance is better than the training with traditional method. Music and dance is one of the important means of developing **numeracy Skills**. Similar study conducted by Naderi and Mackvandi (2000). The result of this study also indicates that using music for teaching increase attention in learning and make learning more meaningful.

CONCLUSION

Music and dance are the two art form that are inextricably tied together. This combined form of arts used enjoyed by every individual. This combined form of arts is used for various purposes including education and training. The continuous research and development in the field of education, training and rehabilitation also brought new ideas, process, method and strategies which affect the teaching learning process as well as achievement of learners. It is always matter of concern that maximum learning should be with minimum effort. It is more important for the children with intellectual disability whose cognitive capacity is very limited. Thus, integrating music and dance in the classroom assists children with intellectual disabilities in joyful learning of many skills including, numeracy skills, language & communicate and be creative, which in turn helps them succeed academically. Teaching through music and dance truly enhances the numeracy skills development among children with intellectual disability.

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