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Effectiveness of board games on development of mathematical skills among children with specific learning disabilities: A study of general teacher's perception

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Abstract
Board games play an important role in the life of a student. Some board games create interest to do mathematics. When a child plays those types of board games which involve any type of math skills, the child learns that skills in a fun way. These games are not only help to improve mathematical skills but also help in another skill like critical thinking and problem solving. So, to know the perception of general teacher towards the use of board games for the purpose of learning, the researcher has done this study. The main aim of this study was to know the perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability. 75 general teachers participated in this study. Data has been gathered by the survey method of research in which teachers had to fill their demographic data and their perception towards the board games which was described in the survey form. The results of the research revealed that general teachers have significant perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disability.

Keywords: general teachers, specific learning disability, mathematical skills, board games

Introduction

Specific Learning Disability (SLD) is a disorder which influences the kid's ability either to decipher what they hear and see or to interface information from various parts of the brain. These limitations can appear in a few different ways for instance as specific issues with written and communicated in language, restraint, coordination, or attention. Such issues extend to class work and can defer the procedure of education to read, write and do math. Specific Learning Disability (SLD) can make an individual experience issues in learning and utilizing certain aptitudes. Specific Learning Disability is 'long lasting'. Specific Learning Disability (SLD) is proposed by unforeseen training under achievement or achievement which is continued uniquely by unusually significant levels of help and difficult work.

Specific Learning Disability (SLD) is an unseen impairment. It doesn't deform or permit any perceptible image that would make other concerned or suggest support. At the point when we compare SLD with other significant issue, Specific Learning Disability (SLD) are the most obscure and confusing. Specific Learning Disability (SLD) affects people in a different way at various phases of life-early child hood, the primary school years, puberty, and adulthood. Students with Specific Learning Disability (SLD) can likewise have issues in consideration, emotional and social issues. The abilities generally influenced are reading, writing, talking, thinking, and doing math. Specific Learning incapacities (SLD) vary from individual to person. One individual with SLD might not have indistinguishable sort of learning troubles from another person with SLD. One individual may experience issues with reading and writing. Someone else with SLD may experience difficulties in getting math. Still an alternate individual may have issue in every one of these aptitudes, just as with understanding what individuals are stating. Since challenges with reading and writing as well as math are recognizable difficulties all through the school years, the signs and indications of specific learning handicaps are most every now and again distinguished during that period.

Common Types of Specific Learning Disability

1. **Dyslexia-** This is the reading disorder. This is also referred sometimes as reading retardation. It is utilized to recognize the students who experience issues in figuring out how to read. The youngster may even be a few years behind his/her normal level of learning. The first and the foremost characteristics of a student with reading problems is that he or she does not read as well as he or should. By which students will also be low in general achievement. A student with dyslexia may manifest so severe difficulty in reading so that it is very difficult to judge how soon she or he will improve. A child having reading difficulties may appear like other students of his or her class but for some reason has failed to learn reading.
2. **Dysgraphia-** Difficulty in handwriting is referred to a 'dysgraphia'. Students with dysgraphia might be not able to execute important motor developments so as to write or copy written letters of structures. They might be experiencing issues to move visual data into the yield of fine motor development. They likewise might be weak in visual-motor capacities and in exercises requiring visual and spatial decisions. The student with dysgraphia has problem in explaining the sequence of activities. For example- what is

happening in the story? He or she has also no idea of paragraph formation.

3. **Dyscalculia-** Dyscalculia also called as arithmetic disorder. Students with dyscalculia show difficulty in understanding basic and simple mathematical concepts like addition, subtraction, multiplication etc and also confuse size and symbols. Children who have a tough time with arithmetic may still fight with it as adults. But there are so many strategies which help them to improve their arithmetic skills and manage the challenges. Trouble with mathematics happens at all level. It can be hard to learn the basic calculation like addition and subtraction as it is to learn geometry. Some concepts like algebra, carryover sums, word problem and so on. It might be difficult to learn these concepts. This type of students may not be able to count on their fingers. They may also show a tendency to reverse numbers.

Board Games

Board games are the bench top games which involve some types of counters or pieces which need to proceed onward a stamped surface or we can say "board", as indicated by the arrangement of rules or guidelines. A portion of the board games are totally founded on arranging or technique, however huge numbers of different games hold a component of plausibility.

There are such a significant number of various assortments of board games. A portion of the board games have dice which needs to use by the players to play the game. Shakers in a game as a rule relates with the movement of the piece on the board. Some are containing playing cards which have some details that affect the result of the game. As we can see, board games have a specific set of norm which isolates the board games with other type of games. The main key point of the board game is that a child can enjoy as well as learn important early skills.

Types of Board Games

In general, the board games are divided into 3 categories. The names of the categories are: war games, race games and alignment games.

- **War Games-** In these games, the major objective is to beat or raze your challenger. In war games we can include the board games like chess, checkers, and go.
- **Race Games-** In these games we involve numerous of participants to achieve a particular target or goal first. In race games we can include the board games like Snakes and Ladders, Monopoly, Scrabble and so on.
- **Alignment Games-** In this type of board games involve players to put their counters or pieces on a game board to accomplish a particular arrangement. In alignment games we need the participant or player to deliberately place counters on board rather than place the pieces athwart a board to arrive at the main target or destination.

Objectives of The Study

The following objectives were framed for the present study:

- To study the perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability.
- To compare the perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the basis of their demographic variables like nature of organization and gender.

Hypothesis

- There is no significant difference in the perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the basis of their demographic variables like nature of organization and gender.

Delimitations

This study is limited to the:

- General teachers of government and private organizations in Delhi NCR.

Review of Literature

Robyn Hromek (2009) [2] conducted study on "Promoting Social and Emotional Learning with Games: "It's Fun and We Learn Things" This examination has two wide targets: (1) It audits the theoretical and functional literature on the utilization of games to encourage social and enthusiastic learning (SEL). (2) Based on this survey, it contends that games are an amazing method of creating social and passionate learning in youngsters. Circle Time games are utilized to help all-inclusive projects for instructing SEL to entire classes. Remedial prepackaged games give a viable intercession to youngsters who have been focused for additional guided practice in little gathering settings. Verbatim citations from understudies and educators show manners by which SEL has summed up to genuine circumstances. The job of facilitator is essential to the achievement of this methodology, both in demonstrating proper aptitudes and making the learning associations for understudies. In this article, help and questioning are deconstructed and the estimation of community oriented, as opposed to serious, parts of games featured.

Mike Fleming (2010) [1] conducted study on the impact of The National Theatre's Transformation drama project on young pupils' reading, mathematics, attitude, self-concept and creative writing in primary schools. Two of the schools participating in Transformation were matched to two Control schools in the initial two years of the task. Assessments were controlled to all students toward the beginning of Year 3 as a reason for examination toward the finish of Year 4. The assessments were created by the Performance Indicators in Primary School (PIPS) venture, Curriculum Evaluation and Management Center based at Durham and are broadly utilized by schools across England. This implied correlation could be made against a broadly agent test of schools. In spite of the fact that the example was little, the examination venture had intriguing discoveries. The value-added scores of understudies in the Transformation bunch were much of the time higher/more positive than the scores of students in the Control gathering. The self-concept of the understudies in the Transformation bunch as controlled by the surveys was essentially more positive than the students in the Control bunch toward the finish of Year 4.

Ramani, G. B., Siegler, R. S., & Hitti, A. (2012) conducted study on "Taking it to the classroom: Number board games as a small group learning activity". This investigation inspected whether a

theoretically based number table game could be converted into a practical room movement that can improves Head Start kids' numerical information. Playing the number tabletop games as a little gathering learning action advanced low-pay youngsters' number line estimation, extent examination, numeral recognizable proof, and tallying. Enhancements were additionally discovered when a paraprofessional from the kids' homeroom played the game with the youngsters. Perceptions of the game-playing meetings uncovered that paraprofessionals adjusted the criticism they gave to singular youngsters' improving numerical information over the game-playing meetings and that kids stayed occupied with the tabletop game play after different meetings. These discoveries recommend that the direct number prepackaged game can be utilized adequately in the study hall setting.

Janet Davis-Temple, Sunhwa Jung, and Diane M. Sainato (2014) [4] "Teaching Young Children with Special Needs and Their Peers to Play Board Games: Effects of a Least to Most Prompting Procedure to Increase Independent Performance" This examination explored the impacts of a least to most inciting strategy on the presentation of prepackaged game steps and game-related on-task conduct of little youngsters with uncommon necessities and their generally creating peers. Subsequent to instructing the tabletop game advances utilizing a methodical provoking system, the members exhibited increments in the presentation of prepackaged game steps and game-related on-task conduct. In addition, the members kept up significant levels of execution and game-related on-task conduct during post-game preparing. The impacts of instructing prepackaged games utilizing prompting procedures, suggestions for training, and regions for future investigation are introduced.

Methodology

Design of The Study

The current research was intending to study of perception of general teachers towards effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities. This examination was led by survey strategy of research.

Sample and Sampling Procedure

The sample of the current research was drawn from different private and government organizations which are located in Delhi NCR. The sample of 75 general teachers were finalized for the investigation or research. Purposive and convenience sampling was used for the selection of the teachers for the study.

Tool

The main aim of the research was to know the perception of the teachers towards the effectiveness of the board games on development of mathematical skills among children with specific learning disability. So, by remembering the main aim of the study, the researcher developed a self-developed survey Google form as a tool.

The self-developed tool divided into 4 sections having 8 questions in each section. So, the tool consists 32 questions related to the mathematical skills. Questions of each section were based on 4 different board games Ludo, Snakes and Ladders, Head Full of Numbers, and qwirkle. Teachers need to tick the appropriate response related to these board games according to their perceptions.

Scoring

The scoring was done in a way where each closed ended questions had 5 responses. The responses were Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. The scoring for the questions was Strongly Agree-5, Agree- 4, Neutral- 3, Disagree- 2 and Strongly Agree-1.

Procedure of Data Collection

First the self-developed survey form has been updated by the help of the guide. Then the form has been circulated to the 12 rehabilitation experts for the validation. After doing all the correction which was suggested by the experts the researcher circulated the Google form to general teachers of the private and government organizations to know their perception and to collect the information. After collecting the data there were 3 information which was from outside of Delhi NCR so the researcher deleted that information.

Analysis and Results

Table 1: The perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability.

N	Mean	Maximum Score	Percentage
75	130.52	160	81.57%

The total numbers of general teachers are 75. From the survey data the mean was calculated for general teachers is 130.52 from the maximum of 160. So, it has shown that 81.57% general teachers are highly agreed on the effectiveness of board games on development of mathematical skills among children with specific learning disabilities.

Table 2: Comparison between general teachers of private organization and general teachers of government organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

S No	Groups	N	Mean	S.D.	d. f.	t	Level of Significance
1	General teachers of private organization	53	129.87	15.42	73	1.99	Significant
2	General teachers of government organization	22	129.87	15.84			

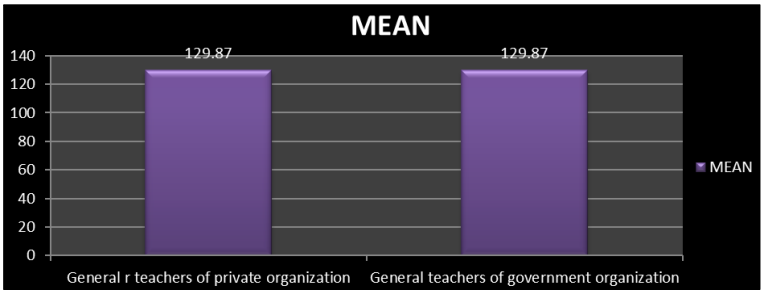

Fig 1: Comparison between general teachers of private organization and general teachers of government organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

The table 2 and the figure 1 explain the comparison between general teachers from private organization and general teachers from government organization. There are 53general teachers from private organization and 22 general teachers from government organization. The mean for general teachers from private organization is 129.87 and for general teachers from government organization 129.87. The S.D. was calculated as 15.42 for private general and 15.84 for government general. The degree of freedom is 73. The t value for the comparison is 1.99. So, the difference is significant at 0.05 level. So, the formulated hypothesis is declined that there is some variance between perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the basis of types of organization.

Table 3: Comparison between male general teachers and female general teachers on the perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disability.

S No	Groups	N	Mean	S.D.	d. f.	T	Level of Significance
1	Male general teachers	27	128.31	13.20	72	1.99	Significance
2	Female general teachers	48	132.23	17.17			

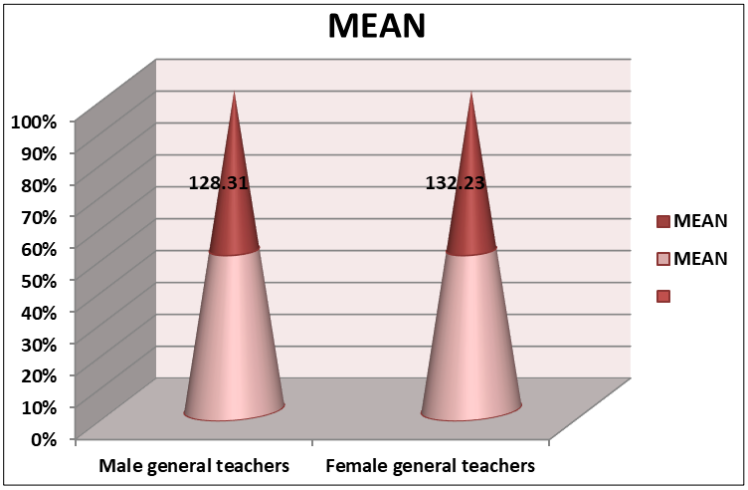

Fig 2: Comparison between male general teachers and female general teachers on the perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disability.

The table 3 and the figure 2 explain the comparison between male general teachers and female general teachers. There are 27 male general teachers and 48 female general teachers. Mean for male general teachers is 128.31 and for female general teachers is 132.23. The S.D. was calculated as 13.20 for male general teachers and 17.17 for female general teachers. The degree of freedom is 72. The t value for the comparison is 1.99. So the difference is significant at 0.05 level. So the formulated hypothesis is declined that there is some variance between perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the on the basis of gender.

Table 4: Comparison between male general teachers of private organization and female general teachers of private organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

S No	Groups	N	Mean	S.D.	df	t	Level of Significance
1	Male general teachers of private organization	19	127.63	14.40	51	2.00	Significant
2	Female general teachers of private organization	34	131.12	16.03			

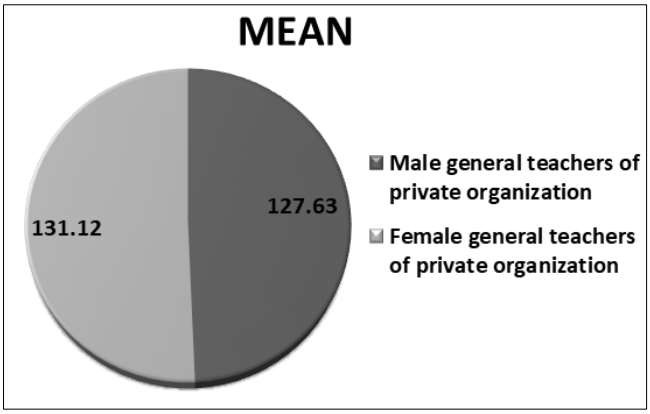

Fig 3: Comparison between Male general teachers of private organization and Female general teachers of private organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

The table 4 and the figure 3 explain the comparison between private Male general teachers of private organization and Female general teachers of private organization. There are 19 Male general teachers of private organization and 34 Female general teachers of private organization. Mean for Male general teachers of private organization is 127.63 and for Female general teachers of private organization is 131.12. The S.D. was calculated as 14.40 for Male general teachers of private organization and 16.03 for Female general teachers of private organization. The degree of freedom is51. The t value for the comparison is 2.00. So, the difference is significant at 0.05 level. So, the formulated hypothesis is declined that there is some variance between perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the on the basis of gender and organization (private).

Table 5: Comparison between male general teachers of government organization and female general teachers of government organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

S No	Groups	N	Mean	S.D.	df	t	Level of Significance
1	Male general teachers of government organization	7	130.14	9.92	20	2.08	Significant
2	Female general teachers of government organization	15	133.00	14.40			

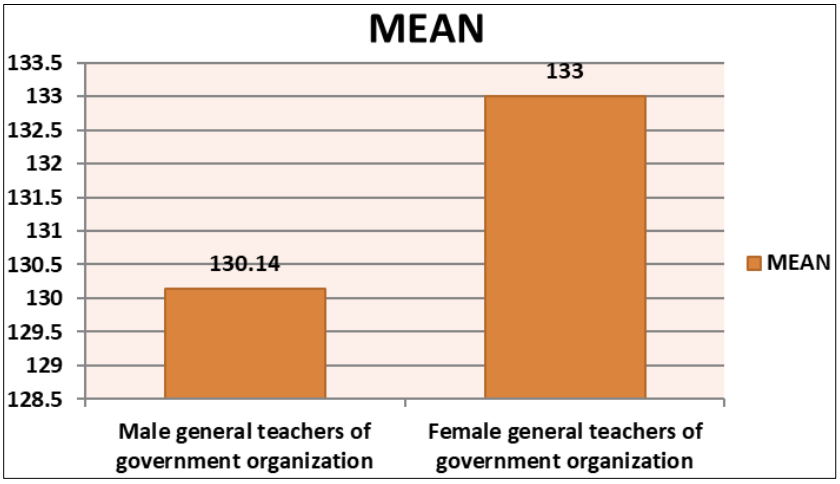

Fig 4: Comparison between male general teachers of government organization and female general of government organization about the effectiveness of board games on development of mathematical skills among children with Specific Learning Disabilities.

The table 5 and the figure 4 explain the comparison between male general teachers of government organization and female general teachers of government organization. There are 7 male general teachers of government organization and 15 female general teachers of government organization. Mean for male general teachers of government organizationare130.14 and female general teachers are 133.00. The S.D. was calculated as 9.92 for government male general teachers of government organization and 14.40 for female general teachers of government organization. The degree of freedom is 20. The t value for the comparison is 2.08. So the difference is significant at 0.05 level. So the formulated hypothesis is declined that there some variance difference between perception of general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disability on the on the basis of gender and organization(government).

Major Findings

1. The percentage of mean score of general teacher's perception on towards the effectiveness of board games on development of mathematical skills among children with specific learning disabilities came out as 81.57%.
2. There is a significant difference between perception of private general teachers and government general teachers towards the effectiveness of board games on development of mathematical skills among children with specific learning disabilities.
3. There is a significant difference between male general teachers and female general teachers on the perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disabilities.

4. There is a significant difference between private male general teachers and private female general teachers on the perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disabilities.
5. There is significant difference between government male general teachers and government female general teachers on the perception towards the effectiveness of board games on development of mathematical skills among children with specific learning disabilities.

Conclusion

From the survey the overall conclusion is that general teachers of any organization and gender think that the use of board games is a great idea to develop the learning outcomes of the children. And also, it is good to use board games for the development of mathematical concept of the child having difficulty to do mathematics calculation. This survey also concludes that the board games is a fun way of learning. The child can learn the concept of mathematics with lots of fun. This is the interesting way and this also motivate the child to do the mathematics.

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