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Developing and implementing a viable multiple intelligences module for preschool educators

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Abstract
The present research aimed to develop, implement and assess a multiple intelligences module for preschool educators. The study employed an action research methodology. The sample consisted of 14 preschool educators, selected through purposive sampling procedure. The module was implemented over a week-long workshop, wherein each session lasted for 60-75 minutes using experiential learning and group work method. Data was collected through focus group discussions, rating scale, questionnaire daily audio recordings of the sessions.

Qualitative and quantitative data analysis revealed that the module on multiple intelligences had a significant effect on the participants. The participants reported significant knowledge gain on understanding of multiple intelligences theory, identification of multiple intelligences among children and planning of preschool appropriate activities according to the multiple

Intelligences theory. Qualitative shifts could be identified in the participants' understanding of implications of using multiple intelligences theory in daily classroom practices. As per the responses, the module was found to be very effective and the participants were motivated to integrate the multiple intelligences theory in their curriculum.

Keywords: pre-school educators, multiple intelligences

Introduction

According to the Howards Gardener's Multiple Intelligences Theory, each human being is capable of seven (now nine) relatively independent forms of information processing. Gardner further suggests that there are individual differences into how specific intelligences are expressed. Researchers have also defined Multiple Intelligences as having potential to solve problems or create products in diverse cultural settings (Gardner & Hatch, 1989) [1] The nine types of Multiple Intelligences can be understood as:

- **Verbal-Linguistic:** capacity for effective word usage orally or in writing
- **Logical-Mathematical:** capacity for effective use of numbers and reasoning skills.
- **Visual-Spatial:** accurate ability to perceive the visual-spatial world and ability to perform transformations upon the perceptions.
- **Bodily-Kinesthetic:** using one's whole body to express ideas and feelings and ability in using one's hands to transform or produce things.
- **Musical:** capacity to distinguish, classify, alter, and articulate musical forms.
- **Interpersonal:** ability to identify and understand the moods, intentions, motivations, and feelings of other people.
- **Intrapersonal:** self-knowledge and the ability to act adaptively based on that knowledge.
- **Naturalist:** proficiency in the recognition and classification of the numerous flora and fauna existing in an individual's environment.
- **Existential:** understanding and capability to tackle deep questions about human existence, death, purpose of life and such.

Multiple Intelligences and Education

After the theory of multiple intelligences was developed, many researchers used this theory as a theoretical framework to see its effectiveness in various areas of education across various age groups of children. Various studies in the educational domain have shown that using multiple intelligences theory has shown to be useful not only to the children but also in helping educators to identify their children's strengths and developing teaching strategies accordingly. Evidence from various studies by Vennema et. al. (1997) [4] Sibel et al. 2013 [2] indicate that the use of multiple intelligences theory in teaching had increased children's self – direction, self – confidence, positive classroom behaviour and active engagement in classroom and academic achievement, improved standardized test scores, improved academic performance by students with learning difficulties and improvements in student discipline.

Multiple Intelligences and Preschool Education

For many decades early in this century, research assumed that an infant's mind was a blank slate and how new experiences shaped the child's development. Challenges to this idea of tabula rasa led some psychologists to explore other perspectives and theories of development. For example, Piaget focused on a child's cognitive and intellectual development while Elinor Gibson focused on a child's perceptual development. Although these theories

were different, they shared the view that children were "active learners who can set goals, plan and revise." With new and improved methodologies, researchers found that children were active learners in their conceptual development. The idea of children being active learners was also emphasized by Vygotsky. Gardner suggested that although individuals have a biological proclivity to solving problems in a particular way, the cultural nurturance of the domain is equally important and plays a large role in a child's proclivity towards certain intelligences.

Preschool children are still exploring many different mediums and manipulating materials around them. They are flexible and integrative in their learning. Children have

Propensities and dispositions towards certain ways of learning. Focusing on how children learn gives the child a comprehensive approach to teaching and learning. (UNICEF, 2013) Many researches indicate that the kind of training teachers receive as early childhood educators have direct implication when it comes to ensuring learning conditions of children. Therefore providing quality education at an early age has a positive effect on the child's mind. For learning to occur, focusing on the child's strengths and skills, gives the child motivation and opportunity to learn in the ways that the child learns best.

Therefore, multiple intelligences theory provides children with this opportunity to learn in the ways that suits their intelligence and holds great scope to reach young child's mind as it can be blended with existing practices. Multiple Intelligences Theory works as a creative approach to develop and implement a curriculum. Approaching and assessing learning using the multiple intelligences method has allowed a wider range of students to successfully participate in the classroom. Multiple intelligences theory has been found to be catalytic to provide a broad spectrum to the learning environment (Sibel, 2013) [2]. In addition, it can help to furnish teachers with the skills of identifying profiles of children and themselves.

Overall it can be summarized that using multiple intelligences with preschool children can also be as effective and beneficial as while using with elementary school children. When preschool teachers are able to identify children's' dominant intelligence, it can be easier for the children to have effective learning when they move to higher standards. The research was thus developed with an aim to develop and implement a multiple intelligences module for preschool educators with a specific focus on:

- Identifying challenges faced by preschool educators in understanding and planning multiple intelligences activities for 3-5 year old children
- Developing and implementing a multiple intelligences module for preschool educators of 3-5 year old children
- Assessing the effectiveness of the multiple intelligences module for preschool educators on:
- understanding of the multiple intelligences theory
- implication on classroom practices with children
- ability to plan multiple intelligences activities for 3-5 year old children

Methodology

The research design followed for the study was "Action Research." It involves action, evaluation, and critical evaluation and based on the gathered evidence, changes in practice and then implemented. It is a reflective process that allows for inquiry and discussion as components of the research. Purposive sampling was used for the selection of the sample. The school chosen was a local school in V*adodara City*, which is an English medium school. The school caters to children from nursery to 12th grade and follows the GSEB (Gujarat State Education Board) curriculum. The research was conducted on all fourteen preschool educators teaching children from nursery to kindergarten. The age of the educators fell in the range of 30-50 years. The total number of years spent teaching in the preschool ranged from 2 years to 19 years.

Tools

Phase I of the research focused on Identification of Challenges faced by preschool educators in understanding and planning multiple intelligences activities for 3 – 5 year old children.

Data was collected through focus group discussions and interactions with the preschool educators.

Phase II of the research involved development of multiple intelligences module for preschool educators of 3 – 5 years old children and implementation of the module within a preschool set-UP.

Phase III of the research involved assessing the effectiveness of the multiple intelligences module for educators on their understanding of the multiple intelligences theory; implication on classroom practices with children and ability to plan multiple intelligence activities for 3-5 year old children. The tools used were:

1. Participatory Observations
2. Rating Scale and Questionnaire
3. Focus Group Discussions
4. Audio Recordings of Daily Sessions

Procedure of Data Collection

After the need assessment, sample selection and development of the program, the activities were implemented in the school over a span of 6 days inclusive of pre-test and post-test.

After a span of 1 month, a post – post test was conducted.

Data Analysis

All the data collected during pre – test, post – test and post – post – test were analysed quantitatively and qualitatively. Quantitative Analysis was computed for both 'percentage of participants' and 'percentage of responses' and Qualitative Analysis was carried out for the data obtained through Focused Group Discussions, Responses on Questionnaires and audio recordings of the workshop

Results

Results of Phase I of the study revealed the challenges faced by preschool educators in understanding and planning multiple intelligences activities for 3 – 5 year old children

1. The teachers were aware of the traditional notions of intelligence i.e. I.Q. testing to measure children's intelligence but very few teachers were aware of the multiple intelligences theory completely.
2. Some teachers found the day long multiple intelligences theory workshop to be too short to fully understand the theory and its concepts.
3. It was also observed that the preschool educators had a tough time in planning the lesson plans using the multiple intelligences activities as some preschool

educators had not yet fully understood the concepts. It was observed that the teachers were regarding the basic concepts behind each multiple intelligences. Consequently their planned activities could not serve the purpose of stimulating various multiple intelligences.

4. All participants expressed a felt need of undergoing an intensive program on multiple intelligences, focused on enhancing their knowledge related to each intelligences and increased ability to plan multiple intelligences activities for 3 – 5 years old.

Phase II of the study included Development and Implementation of Multiple Intelligences Module

1. Development of Multiple Intelligences Module

For the development of multiple intelligences module, the researcher explored relevant literature pertaining to the subject. The set of activities within each of the nine intelligences were designed independently by the researcher and were based on experiential learning method. These activities formed the basis of the program and were content validated before actual implementation. Multiple intelligences theory emphasizes on a range of interactive, child centered methods. Thus the focus was on experiential learning as an interactive teaching methodology.

Table 1: Multiple Intelligences Module: A Broad Framework

Multiple Intelligences	
Types of Intelligences	**Method**
Verbal – Linguistic	Rhyming words
Logical – Mathematical	Brain storming
Visual – Spatial	Visual games
Bodily – Kinesthetic	Outdoor games
Musical	Listening activities
Interpersonal	Group discussions
Intrapersonal	Self-exploration
Naturalistic	Games
Existential Intelligence	Existential talk

With the above mentioned data in hand, an activity manual was developed which included the following components:

- A multiple intelligences module in the format of a set of nine activity plans based on experiential learning.
- Guidelines for the implementation of the program.

The nine activity plans were further compiled into a single module and the module aimed at providing the program implementer a step by step guideline for the administration of the activities.

2. Implementation of the multiple intelligences module

The multiple intelligences module was administered by the researcher on a group of fourteen preschool educators, teaching 3 – 5 year old children. The program was administered over a span of six days spread across 60 – 75 minutes per day. Educators participated in the activities of the multiple intelligences module and reported their feedback of the module and their learnings. The feedback from the participants was utilized to assess the effectiveness of the program.

Phase III included assessing the effectiveness of the multiple intelligences module

The preschool educators were given one month to implement the multiple intelligences modules in their respective classrooms. After completion of a month, the preschool educators gave feedback on the modules through a post – post – test.

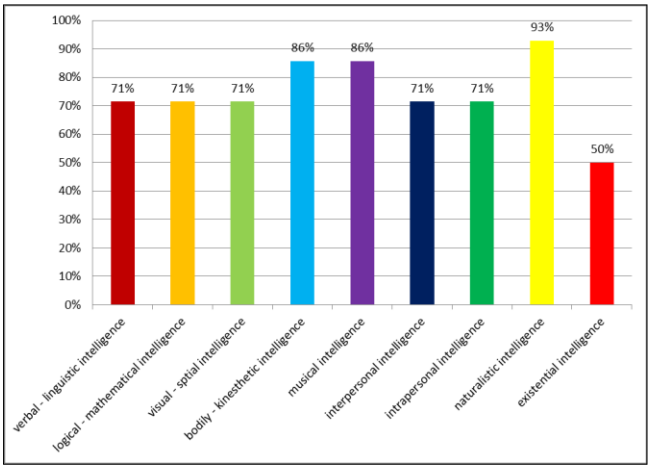

Fig 1: Knowledge gain on each multiple intelligences: percentage of participants (N = 14)

Figure 2 summarises percentage of participant's self – reported knowledge gain on each multiple intelligences. The highest gains in the knowledge were observed on naturalistic (93%), bodily – kinesthetic (86%), musical (86%), followed by verbal – linguistic (71%), logical – mathematical (71%), visual – spatial (71%), interpersonal (71%), intrapersonal (71%) and average knowledge gain was observed on existential intelligence (50%).

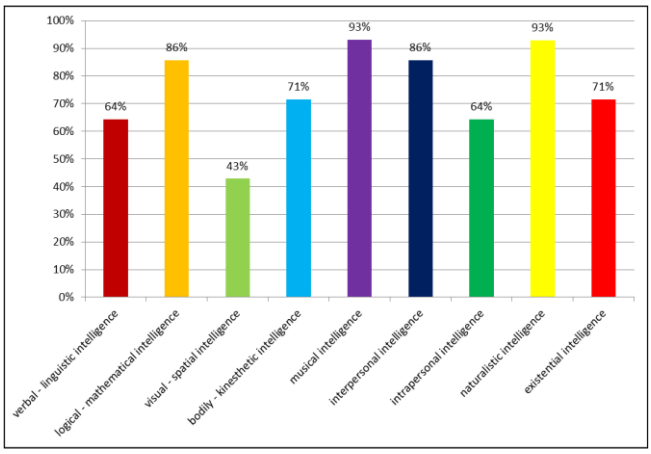

Fig 2: Correct identification of characteristics of multiple intelligence: percentage of participants (N = 14)

Figure 3 summarizes the percentages of participants' self – reported identification of characteristics of multiple intelligences. The highest identification of characteristics was for musical (93%), naturalistic (93%), logical – mathematical (86%), interpersonal (86%), followed by bodily – kinesthetic (71%), existential (71%), verbal – linguistic (64%), intrapersonal (64%) and least identification of characteristics was for visual – spatial (43%)

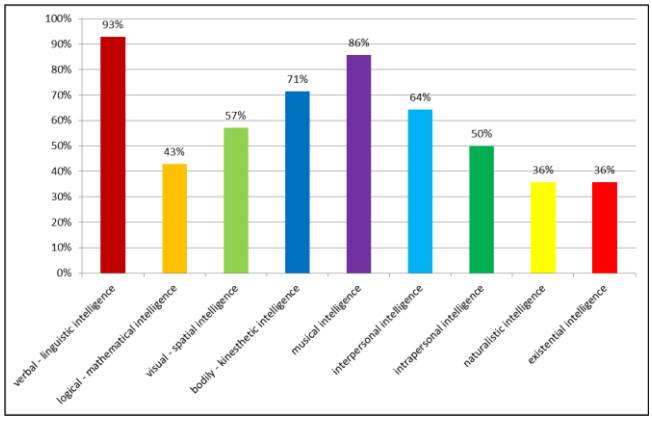

Fig 3: Correct identification of activities stimulating each multiple intelligences: percentage of participants (N = 14)

Figure 4 summarises the percentages of participants for correct identification of activities for stimulating each Multiple intelligences. The highest identification of correct activities was for verbal – linguistic (93%), musical (86%), bodily – kinesthetic (71%), followed by interpersonal (64%), the average identification of correct activities was for visual – spatial (57%), intrapersonal (50%) and the lowest identification of activities was for logical – mathematical (43%), naturalistic (36%) and existential intelligence (36%).

Post – Post – Test Results reveals the opinion of educators on parental involvement and integrating multiple intelligences theory in the curriculum

Parental involvement

While dealing with children, it is obvious that parents cannot be left out as parents are equally part of the school as children are.

The following are the ways the preschool educators suggested to involve the parents:

Methods of Involving Parents	Workshops for parents can be planned – 2
	Plan and give some activities to parents and children – 2
	Conversation paper to parent related to the topic and parents can provide practical experience related to the topic – 1
	Parents can provide various activities like puzzles, story – telling, songs, rhymes, picture book, measuring tape, scale, calculator etc. – 7
	Grandparents can enhance MI by telling mythological stories to follow different aspects of a good life – 1
	Talk to parents – 5

Fig 4: Methods of Involving Parents (N=14)

Integrating the Multiple Intelligences Theory in the Preschool Curriculum

The preschool educators were asked to give their opinions and ideas on how the multiple intelligences theory could be integrated in the curriculum. The following were some methods which the preschool educators suggested:

Methods of Integrating Multiple Intelligences in the Preschool Curriculum	Different game and activities - 2
	Allow the child to explore, learn and ask questions - 10
	Plan activities according to the nine themes - 2
	Planning activity of one intelligence on one day - 1
	Teaching in innovative ways like changing voice tone, body movements to make teaching effectively - 1
	Plan the Curriculum next year - 4

Fig 5: Methods of Integrating Multiple Intelligences Theory in the Preschool Curriculum (N = 14)

Based on the overall analysis of both qualitative and quantitative data it can be concluded that:

- The workshop was successful in increasing the preschool educators' knowledge on multiple intelligences. It was seen that almost all preschool educators reported increased knowledge gain on all the intelligences. Existential intelligence was the only intelligence reported to have the lowest percentage scores.
- The preschool educators were also enabled to identify the children's multiple intelligences from the workshop. Almost all intelligences had received the highest percentage scores in identifying the correct characteristics. Also, from the post – post – test, the

preschool educators reported that they were easily able to identify the multiple intelligences of children in their classrooms.
- The preschool educators were also successful in identifying the activities for stimulating each intelligence. During the post – test the preschool educators were able to identify the

Activities for verbal – linguistic intelligence, musical intelligence, bodily – kinaesthetic intelligence and interpersonal intelligence. Very few preschool educators were able to identify the activities for remaining intelligences. But after the implementation of the modules by the preschool educators, the results of the post – post – test showed that almost all preschool educators were able to plan activities for all the intelligences. Thus, this shows usually the preschool curriculum structure stimulates mainly the four intelligences – verbal – linguistic, musical, bodily – kinaesthetic and interpersonal intelligences, due to which the preschool educators were successful in identifying those activities. Later, the preschool educators after using the modules could plan activities for all the intelligences.

- After the week long workshop, the preschool educators were able to look at intelligences from a multiple intelligences perspective. They also realized that each and every child is unique in their way due to their intelligence and thus the preschool educators need to stimulate the child's intelligence will help the child learn faster. Also, the preschool educators were able to understand the significance of planning activities as each activity planned plays a vital role in stimulating the child's intelligence and thus the activities need to be planned appropriately and carefully.
- The preschool educators were also able to identify ways by which parents can be involved to increase their knowledge and sensitivity towards multiple intelligences theory and also they can equally help the child to stimulate the child's intelligence.
- The preschool educators had a very positive approach towards the workshop and multiple intelligences theory which was seen from their readiness to participate in the week long workshop and to implement the modules for a month. The preschool educators realized the importance of the theory and its usefulness as it also benefitted them by making their teaching easy.
- The preschool educator further found it effective and thus planned to integrate it in the regular curriculum.
- Hence, the research was useful to the preschool educators and was successful to bring about a positive change in the preschool teachers and the school.

Discussion

In a preschool or children of any age – group enjoy teaching sessions where the teachers use different methods and ways to teach a particular topic or subject. When teachers use innovative ways of teaching, the attention of the children is gained and thus they get more involved with what is been taught. One such innovative way of teaching is by using multiple intelligences theory.

- Even though the multiple intelligences theory has been developed in the west, it is flexible and results reveal it was easy for the teachers to integrate it in their school curriculum
- Since the traditional notions of intelligence are deeply ingrained, while conducting the workshop, the researchers' aim was to convey that all the multiple intelligences are unique in their ways and different in their ways, but initially the preschool educators still searched for the superior intelligences. For example, a teacher said "so can it be that out of these 9 intelligences, one will be superior?"
- Gradually, traditional notions of intelligences were questioned; "person with verbal – linguistic and logical – mathematical intelligences are usually appreciated more"…. "The problem with our society is that one/two types of intelligences are appreciated in the society more."
- Increasing Gender sensitivity in classrooms and society at large was sought by the participants; it was interesting to observe that majority of teachers working on it 'inside- out'…. For example, when they were asked during a discussion that what if their body is completely changed, they said, "we would enjoy it if it's a male body", " I always tell my husband you see in the next birth I'll be the husband and you'll be the wife".
- The preschool educators' awareness about multiple intelligence was increased.
- The preschool educators were amazed by the multiple intelligences theory and were curious to know more of how they can be used in the classroom and implemented in their curriculum.
- The preschool educators were able to plan different activities and were also able to plan lessons effectively.
- The preschool teachers also found teaching to be easy after using different ways to teach.
- The preschool educators were convinced that the multiple intelligences theory is effective and thus they planned to include the multiple intelligence theory into their curriculum.
- The preschool educators wanted more examples of lesson plans and activities.
- The only challenge which was observed was in understanding the difference between interpersonal and intrapersonal intelligence. The preschool educators were not able to plan activities for intrapersonal intelligence.

Recommendations

- Similar research can also be conducted with Primary and Secondary educators as more subjects of learning are there during this years and also there is a pressure of exams and grades. Thus, when the learning is catered to the children's intelligences they excel academically and thus will benefit these children also.
- While conducting the research in a primary and secondary schools, the children can be equally involved in helping them understand their intelligences and giving them suggestions how they can change their learning method which will help them and make learning easy.

Parents could also be involved in such researches. As parents are the second teachers at home and they play an equal role in helping the child, they also need to be involved. Thus, the workshops can be conducted with both parents and teachers together.

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