Multiple Intelligences Approach to Curriculum Transaction in achieving the educational objectives

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Abstract

Learning is not a spectator sport. Non-interactive, chalk-talk method used in overcrowded classrooms end up producing children who are able to replicate but not create knowledge. Different activities can be a vital door to learning, which stimulate their interests and cater to the various intelligences as propounded by Professor Howard Gardner in his theory of Multiple Intelligences. The Multiple Intelligence Approach reaches out to children with different interests, likes and capacities. An extensive use of thematic lessons, web plans, strengthened Multiple Intelligences among the students thereby leading to mastery learning. The researcher catered to MI-based instructional planning and implementation which had a positive impact on students' cognitive and affective capabilities. The main aim of the study was to study the effectiveness of Multiple Intelligence Approach to curriculum transaction among secondary school students in realizing the educational objectives as given by Revised Bloom's Taxonomy

1. INTRODUCTION

The illiterate of the 21st century, according to futurist Alvin Toffler, "will not be those who cannot read and write, but those who cannot learn, unlearn and relearn"

Learning is not a spectator sport. Learning happens in a variety of ways – from conversations, life experiences, personal thoughts, educational courses or working on some projects. Learning has changed drastically unfolding the mysteries of active, integrative, engaged learning scenarios. Our focus towards learning needs to be channelized in creating an exciting learning experience that is real and relevant for young learners to recognize for themselves the importance of learning in their lives, both now and in the future, a laid back attitude towards this would lead an impoverishment of education. Learning begins with a need, motivation and an intention to learn. The learner then ponders on the important aspects of what is to be learned and differentiate them from the lifeless, sterile, futile, quickly forgotten matter that is crammed into the mind of the poor helpless learner who is tied to his/ her seat by bonds of conformity.

2. RATIONALE:

Non-interactive, chalk-talk method used in overcrowded classrooms end up producing children who are able to replicate but not create knowledge. Traditional learning is indicative of the learning fields' reluctance to change. Various approaches towards the conventional system engulfs the learning community in the chains of lack of interest and motivation towards learning. Effective learning can originate from classroom as evidenced by effective use of alternative teaching - learning models. Students should be made to learn differently in a classroom rather than passively listening to the teachers' lecture and receiving information. Different activities can be a vital door to learning, which stimulate their interests and cater to the various intelligences as propounded by Professor Howard Gardner in his theory of Multiple Intelligences. The Multiple Intelligence Approach reaches out

to children with different interests, likes and capacities. It caters to all the children not just emphasizing the verbal and mathematical intelligence, instead get an in-depth understanding of a concept through activities and tasks that enhance comprehension, understanding, and creativity thereby being able to achieve the educational objectives as given by Revised Bloom's Taxonomy. Recent trends in instructional design place more and more emphasis on learner centered classroom environment. Gardner's theory and its implications within the realm of education certainly explain the fact that some people are indeed better at certain things than others. Learning is a matter of making connections between previous experiences and new abstract knowledge thereby building strong connections in the form of concrete experiences. Multiple intelligences approach facilitates ways for students by ensuring that curriculum and instruction validate the strengths and build on the assets that students possess and value them. Teachers encourage students to be independent thinkers and learners, and provide different types of learning experiences so that students discover meaning in content and engage in active learning through a wide range of activities by expanding the gamut of techniques, tools and strategies beyond the typical and predominant ones that are used.

Revised Bloom's Taxonomy is a classification of thinking organised by level of complexity that gives teachers and students an opportunity to learn and practice a range of thinking and provide simple structures for many different kinds of questions and thinking that purposefully sought to achieve well defined goals. It can be used as an integrated approach across six levels of thinking and eight different ways of knowing and understanding the world through Prof. H.Gardner's Multiple Intelligences Approach. This assists in achieving a balanced programme of activities that cater for all students' abilities and interests through a comprehensive planning.

3. LITERATURE REVIEW:

Marlow(2001) claims that teacher-made tests could be made more effective than standardized tests. Using Multiple Intelligences Theory (H. Gardner, 1993) can show ways to assess student achievement through their individual strengths and the use of the various types of intelligence suggested by the theory. Learning styles theory also has much to offer classroom assessment. Teacher observation is another important aspect of assessment in science. It is also important to consider metacognition skills when evaluating student achievement in science. Students must learn the skills required for self-evaluation, and teachers must help them develop these skills.

Christine (2003) attempted to examine an 8th grade Tennessee adolescent science student's integration of science concepts within a project-based setting using the multiple intelligence theory. The project-based approach allowed students to learn in personally diverse modalities using a linear or nonlinear fashion based on personal choice. However, upon analysis of results, significantly more students chose the spatial intelligence to represent integration.

Iris (2005) focuses the attention on poor student motivation and problematic social skills that may interfere with the academic growth of elementary school students, this action research project examined the impact of a multifaceted intervention on student motivation and achievement. Participating in the study were second and third graders from 3 schools. The 12-week intervention was comprised of 3 elements: use of the multiple intelligence approach to instruction, incorporation of cooperative learning strategies, and the provision of an engaged learning environment. Students worked in teacher-selected base groups

weekly for 15 minutes for data collection and reflection and in randomly-assigned cooperative learning groups at least twice weekly for 30 to 45 minutes. Cooperative learning activities taught appropriate social skills. Multiple Intelligence activities and a series of engaged learning activities were incorporated into classroom practices. Data were collected through student surveys and journals completed weekly, teacher observation checklists, attendance records, and unit reading test scores. The findings of the post-intervention data were: • The theory of multiple intelligence had a positive effect on the targeted classrooms. There were decreases in missed reading assignments for two sites, and an increase for one site. • Students revealed positive attitudes toward themselves and their school. Participating teachers concluded that cooperative learning and engaged learning were used together to successfully increase student motivation and achievement. Audrey (2003) conducted a study containing 13 curriculum units designed to enhance differentiated instruction for learners with special needs from grades 1-12, including gifted students. It integrates Benjamin S. Bloom's levels of cognitive understanding with Howard Gardner's eight domains of intelligence to provide a framework for individualized instruction. Each unit has activities for the eight multiple intelligences (logical-mathematical intelligence, linguistic intelligence, bodily-kinesthetic intelligence, spatial intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence) at each of Bloom's taxonomic levels: knowledge, comprehension, application, analysis, synthesis, and evaluation.

Bahaddin (2005) discusses the arrangement of teaching and learning environment to achieve learning, and effective contribution by teachers in this process. Gardner "multiple intelligence theory" (MIT) is applied to a wide variety of fields ranging from teaching of mathematics to music, education of gifted students, improvement of the quality of guidance for students in schools rearrangement of evaluation systems, and the perfection of apparatus used for education purposes. The study aims to emphasize that the applicability of the theory in classroom teaching- learning. In this study, the post-test pattern of experimental study without a control group is used. The results were: • MIT makes important contributions to class control and efficiency of the lessons. • Through MIT, an individual's active participation and showing his or her abilities provides a more effective assessment.

Ronald (2006) in his article highlights the application of improvisational based ice breakers and exercises with scalable levels of risk written to approach learning styles as architected by Multiple Intelligences theory, students develop their natural proficiency for synthesis and recognition in an environment that mimics real-life decision making. With the use of authentic assessment, specifically portfolio and performance models, as well as subsequent traditional testing applications, evidence can be gathered to demonstrate improvement in overall academic achievement with the correct implementation of improvisational methodologies.

Temur, Dogan (2007) aimed at the effects of teaching activities prepared according to Multiple Intelligence Theory on mathematics achievements and permanence of information learned by 4th Grade Students. Two classes were selected, 4-A was selected as an experimental group and 4-B as a control group considering their pretest points. It was found that the average of the final test's points of the experimental group who studied in accordance with Multiple Intelligence Theory was 18.08, whereas the average of the final test's points of the control group was 15.95 and it is understood that the result is to the

advantage of the experimental group.

Carol (2007) in the article on teaching Multiple Intelligence through a "Slime Trail" has reported her concern of present age teacher accountability and high-stakes testing. One way to increase achievement and address the needs of young adolescents is to employ an assortment of innovative teaching methods. At the same time, teachers' assessments should allow for a wider range of evaluation of student performance that expands traditional assessments. Gardner's theory of Multiple Intelligence (MI) accounts for a broader range of potential among individuals to develop this range of intelligences, instructional methods need to be varied so that students may use their intellectual strengths to better understand a topic.

Bumen, Nilay (2007) focuses our attention to the Multiple-intelligence (MI) theory and the application of MI theory has lead to increases in learning objectives and other holistic outcomes. It explores the characteristics of MI-based instructional planning and implementation, the effects of this planning on students' cognitive and affective capabilities also its effects on teachers' individual and professional capabilities, and the problems encountered during implementation.

Melissa (2007) studied the impact of increasing the motivation in reading among elementary and middle school students through the Use of Multiple Intelligences. This project was conducted by four teacher researchers who taught in the second, fourth, sixth, and eighth grade levels and consisted of 133 students. It also showed that the two most common intelligences addressed in the classroom were verbal/linguistic and interpersonal, while the least common were intrapersonal and naturalistic intelligence. The teacher researchers chose to implement multiple intelligences as their primary solution to increasing reading motivation in elementary and middle school students. Multiple intelligences incorporate eight major intelligence areas. They found that the students became skilled in selecting books and choosing activities that suited their dominant intelligence while the teacher researcher became more tolerant of students' needs and behaviours that are attributed to their dominant intelligence.

Abdallah A.(2008) studied the effect of Multiple Intelligences strategies comprising logical-mathematical intelligence, verbal-linguistic intelligence, intrapersonal intelligence and interpersonal intelligence on ninth grade students' reading comprehension achievement in an EFL setting. The sample of the study consisted of four ninth grade sections, which were selected purposefully (two male sections and two female sections). To answer the questions of the study, the researchers used the following procedures and instruments: (1) A reading comprehension test was constructed. It was judged by a jury of three professors, two English supervisors and three experienced teachers; and it was modified according to their comments; and (2) The instrument was applied on the sample of the study at the beginning of the second semester of the academic year. To analyse the collected data, means, standard deviations and two-way ANOVA analysis were used with multiple intelligences strategies and gender as variables. The findings of the study showed a significant difference in the students' reading comprehension due to the teaching strategies in favour of the experimental group and no significant difference in the students' reading comprehension due to the students' gender. Abdallah, Sayed (2008) state of multiple ways to be smart emphasising on Gardner’s Theory of Multiple Intelligences in teaching English and oral communication. It highlights the educational applications and implications of MI Theory in English Language Teaching,

with special focus on MI-Based Instruction. It also tackles communications skills in English and the importance of the communication process, with special focus on speaking. Learning styles and strategies as a learner-centred approach is closely related with MI Theory.

Kamuran (2009) studied on the effects of cooperative Learning method and Multiple Intelligence Theory among the Turkish Elementary Students' in mathematics achievement and retention towards the mathematics course were investigated. The participants of the study were 150 students who were divided into two experimental (used CLMI) and two control groups (used traditional method). The findings revealed CLMI had a more significant effect on the academic achievement than the traditional method but the CLMI had not significant effect on retention.

Jackson, Allen (2009) conducted a study on the use of technology in curriculum integration. Gardner's theory suggests there are a variety of possibilities to facilitate learning. Verbal, linguistic students learn best through the comprehension of language which includes speaking, writing, reading, and listening. Students with verbal linguistic intelligences can easily access information through worldwide databases and computer networks. Any subject content can be enhanced, enriched, and updated from a variety of easily accessed sources which allow students to master the use of technology to access and share information. Students with logical mathematical intelligence are individuals who are number smart and have innate skills which involve logical, problem solving abilities, creative and manipulative skills, and are adept visual learners. Educators can enhance logical-mathematical intelligence through challenging and innovative multimedia technology. It was found that: • Innovative multimedia technology helped students learn at all levels and effectively gain knowledge through a variety of different software programs that offer immediate feedback. • Learners with visual-spatial intelligence are aesthetically oriented and may have a greater capacity for learning certain sciences like anatomy or topology. • Learning for visual-spatial students takes place all at once, with large chunks of information grasped in intuitive leaps. • Students with bodily-Kinesthetic intelligence learn best through tactile learning experiences. Bodily-kinesthetic proficiency can be enhanced for students through the use of the whole body to express ideas and feelings. • The person with interpersonal is able to collaborate, understand and work effectively with others. They are aware of their interactions with others and usually take notice of and react to the feelings of others. The interpersonal learner learns best in group situations and structured class settings. • Learners with intrapersonal intelligence have accurate self-understanding and are skilled in problem-solving. There is a multitude of different ways to integrate technology into our classrooms and all should focus on learning theory and educational practices. The use of Howard Gardner's Theory of Multiple Intelligences, coupled with an understanding of enhancing the learning community through effective technology can meet the diverse learning needs of all students.

Moberg, Eric (2009) states Intelligence is dynamic and can be taught. The authors review empirical studies, theoretical frameworks, qualitative research, and conceptual frameworks. There are many competing and complementary theories of intelligence. The implications for educators are that we can teach not only ideas, concepts, subjects, and even fields, but also the ability to learn.

A number of major research studies have focused on Multiple Intelligences in the teaching learning activities. Multiple

intelligence approach based teaching could overcome the drawbacks of traditional learning even for the students with special educational needs. An extensive use of thematic lessons, web plans, monthly themes strengthened Multiple Intelligences among the students thereby leading to mastery learning. The researches catered to MI-based instructional planning and implementation which had a positive impact on students' cognitive and affective capabilities.

4. OBJECTIVES Of The STUDY

The study was conducted with the following specific objectives:

1. To study the main effect as well as the interaction effects of the Multiple Intelligence Approach mode of curriculum transaction and the level of achievement of the students (Average, Below Average and Above Average) on the achievement of educational objectives among secondary school students, as given by Revised Bloom's Taxonomy;

2. To study the main effect as well as the interaction effects of the Multiple Intelligence Approach mode of curriculum transaction and the type of schools (SSC, CBSE, ICSE and IGCSE) on the achievement among secondary school students of the educational objectives as given by Revised Bloom's Taxonomy;

3. To study the main effect as well as the interaction effects of the Multiple Intelligence mode of curriculum transaction and gender of secondary school students on the achievement of educational objectives, as given by Revised Bloom's Taxonomy.

6. HYPOTHESIS

$H_0$1. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA,TA) and the level of achievement (LOA) of the participants (Average, Below Average and Above Average) on the achievement of educational objectives of RBT among secondary school students;

$H_0$2. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA,TA) and the type of schools (SSC, CBSE, CCISCE and CIE) on the achievement of educational objectives of RBT among secondary school students;

$H_0$3. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA, TA) and gender on the achievement of educational objectives of RBT among secondary school students.

5. RESEARCH DESIGN

Two units of approximately equal difficulty level in Science subject were selected and modules were prepared for instructional intervention by Multiple Intelligence Approach in order to realize the educational objectives as given by Revised Bloom's Taxonomy. Since random assignment of the subjects into two groups was not possible to establish equivalence, a quasi-experimental study following the Counter Balanced Design (Two Groups Equivalent Materials Post Test Design) was adopted. The same can be depicted as follows:

(a) Counter Balanced Design / Two Groups Equivalent Materials Post Test Design:

X1	MA1	O1
X2	MB1	O2
X1	MB2	O3
X2	MA2	O4

In the first stage, a Multiple Intelligence checklist was administered to assess the students' interest level. The first unit was taught to the first group (X1) by traditional chalk and talk method (MA1) and the second group (X2) Multiple Intelligence Approach (MB1). After completing the unit, a criterion test (post test) on that unit was administered to both the groups to assess

the conceptual clarity of the unit taught (O1 and O2)

In the second stage, the second unit was taught to X1 by Multiple Intelligence Approach (MB2) and X2 by Traditional Approach (MA2). After completing the unit, a criterion test (post test) was administered to both the groups to assess the conceptual clarity of the unit taught (O3 and O4). The achievement scores of the two groups were analyzed as follows: The column means of post test scores were computed to get the mean achievement for the two groups taught by the method.
Then the column mean scores were compared to find out the significant difference between them so as to ascertain the effectiveness of the modes of curriculum transaction on conceptual clarity in Science.
(b) Factorial design Further, to find out the main effect and the interaction effects of the levels of achievement of secondary school students, their gender and, the types of schools from which they were selected on the methods of teaching (Traditional v/s MI approach),

7. FINDINGS:

$H_0$1. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA,TA) and the level of achievement of the participants (Average, Below Average and Above Average) on the achievement of educational objectives of RBT among secondary school students. The parametric tests that have been used for testing the null hypotheses are two-way ANOVA and ω 2 est (omega square estimate).
1.There is significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA, TA) and the LOA (Average, Below Average and Above Average) on the achievement of educational objectives of RBT among secondary school students at 0.01 level. Discussions: The students seemed to be at an advantage as the activities catered to a broader range of intellectual ability. Drawing a picture, composing a rap, or listening to sounds and stories, interpreting the stories, preparing a collage, designing an alternate plan, debating, critiquing - all these activities catered to diverse learning styles and promoted learning. The activities provided opportunities for real life and authentic learning experiences that was well suited to the participants' needs, interests and talents. Participants were at no time left unnoticed or isolated. Since the activities were planned as per the levels of objectives given by Revised Bloom's Taxonomy, the quest for evaluating and creating also increased among the participants. The activities seemed to have emphasized multisensory approach to learning and this might have enhanced the motivation and conceptual clarity of students; group learning also might have contributed to the enhanced understanding of the subject matter and thus resulted in higher levels of achievement.

$H_0$2. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA,TA) and the type of schools (SSC, CBSE, CISCE and CIE) on the achievement of educational objectives of RBT among secondary school students. The parametric tests that have been used for testing the null hypotheses are two-way ANOVA and ω 2 est (omega square estimate).
1. There is significant main effect of approaches to curriculum transaction on the achievement of educational objectives of RBT among secondary school students. 2. There is significant main effect on the type of schools on the achievement of educational objectives of RBT among secondary school students. 3. There is no significant interaction effect of approaches to curriculum transaction and on the types of schools on the achievement of educational objectives of RBT among secondary school students.
Discussions: This implies that the Multiple Intelligence Approach to curriculum

transaction has seemed to be beneficial to the participants across all the types of schools. The activities might have helped the participants to perform better in spite of the large student strength and lack of enough space for accessibility. The participants' motive was to learn through the different activities provided and ingrain concepts as much as possible through the conduct of the activities. Since the learning was a shift from their routine teaching-learning process, a forthcoming attitude and eagerness to learn was witnessed.

$H_0$3. There is no significant main effect as well as interaction effect of the approaches to curriculum transaction (MIA,TA) and gender on the achievement of educational objectives of RBT among secondary school students. The parametric tests that have been used for testing the null hypotheses are two-way ANOVA and ω 2 est (omega square estimate).

1. There is significant main effect of approaches to curriculum transaction on the achievement of educational objectives of RBT among secondary school students.

2. There is no significant main effect of gender on the achievement of educational objectives of RBT among secondary school students.

3. There is no significant interaction effect of approaches to curriculum transaction and gender on the achievement of educational objectives of RBT among secondary school students. Discussions: This implies that the Multiple Intelligence Approach to curriculum transaction may have boosted student achievement as compared to the Traditional approach. The activities seemed to help the participants to hone their skills related to each type of intelligence, learning style and constructivist approach and group learning also fostered the achievement of higher level objectives of RBT.

8. SUGGESTIONS:

Learner-centered classrooms to be created for success-oriented students. Teachers should provide extensive opportunities for guided practice, repetition, and review for their students, giving them ample opportunities to practice before they are given tests or other forms of assessment.

• Creating an active learning environment thereby providing with opportunities for hands-on learning and construct their own knowledge. They should be allowed to work with concepts in different ways, including multisensory activities that enable them to see, hear, feel, smell, and even taste concepts.

• Student learning must be developmentally appropriate and compatible with students' levels of intellectual, physical, social, and emotional development.

• Teaching – learning must address many different learning styles. Teachers must remember that their students learn in different ways. Teachers should also keep in mind that students oftentimes will do their best if learning opportunities are aligned with their particular type of intelligence, e.g., verbal linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical/ rhythmic, interpersonal, intrapersonal, or naturalistic.

• Variety of instructional materials can be used during the teaching- learning process to make learning enjoyable and student centered.

• An awareness of constructivist approach of learning can be made through cooperative learning workshops among the school teachers. Teachers can engage students with care-share projects. This will give opportunities of peer tutoring and build student compatibility.

• An awareness of Multiple Intelligences and Multiple Intelligence Approach of

curriculum transaction could be given at schools, which would help students identify their dominant intelligence and teachers to plan activities to meet the diverse student community.

• Teachers need to be oriented about the uniqueness of each child and not to label them as ‘dumb’ or ‘good for nothing’. Teachers need to break down the shackles of rote memorization and invent new pedagogical practices for students welfare.

• Teachers need to be oriented with the Revised Bloom’s Taxonomy and frame educational objectives to meet the needs of each and every child, so that No Child is Left Behind.

• Teachers can work in tandem with the parents about the Multiple intelligence of their children which will enable them to harness the child’s capacity and ability to a better extent.

• Teachers should provide positive feedback to students performance during the assessment conducted at classroom level.

9. REFERENCES:

Abdallah, Mahmoud Mohammad Sayed. (2008). Multiple Ways to be Smart: Gardener's Theory of Multiple Intelligences and its Educational Implications in English Teaching and Oral Communication . Retrieved from ERIC database. (ED502634

Allen. J (2009) Curriculum Integration: The Use of Technology to support Learning. Retrieved from ERIC database.(EJ895070)

Allen. J (2009) Curriculum Integration: The Use of Technology to support Learning. Retrieved from ERIC database.(EJ895070)

Alvin. T. (1970). Retrieved from, http:// www.quotationspage.com/quotes

Bumen, Nilay T. (2007). The Benefits and Problems of Multiple-Intelligence-Based Instruction: A Case Study in Turkey. Retrieved from ERIC database. (EJ807306)

Cutshall, Lisa Christine (2003) The Effects of Student Multiple Intelligences Preference on Integration of Earth Science Concepts and Knowledge within a Middle Grades Science Classroom.

Delaney, Carol. J, Shafer, F. Keller (2007). Teaching to Multiple Intelligence by Following a "Slime Trail" Retrieved from ERIC database. (EJ775772)

Gardner.H. (1983). “Frames of Mind: The theory of Multiple Intelligences” NewYork. Basic Books

Moberg(2009) Intelligence is Dynamic and can be Taught. Retrieved from ERIC database.(ED507871)

Rule, Audrey, L.Hurley (2003) Activities for Differentiated Instruction Addressing All Levels of Bloom's Taxonomy and Eight Multiple Intelligences. Retrieved from ERIC database. (ED475517)

Temur, Ozlem Dogan.(2007). The Effects of Teaching Activities Prepared According to the Multiple Intelligence Theory on Mathematics Achievements and Permanence of Information Learned by 4th Grade Students . Retrieved from ERIC database. (EJ901272)