DEVELOPMENT OF MULTIPLE INTELLIGENCE ACTIVITIES IN SCIENCE AT PRIMARY LEVEL

Attiya Rehman

ID# 102410-004

DEPARTMENT OF EDUCATION

SCHOOL OF SOCIAL SCIENCES AND HUMANITIES

University of Management and Technology

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EXECUTIVE SUMMARY

With increased interest in the theory of Multiple Intelligences, there is a need to identify the ways to amend the theory into classroom application. This study is designed to develop the activities for the promotion of Multiple Intelligences of students in the subject of science at Primary Level.

The purpose of the study was to design activities for each specific component of intelligence in order to utilize all of the dimensions of intelligences into Science activities. In the study, each of the selected topicshave been presented in eight different ways (verbally, logically, Body kinesthtically, visually, musically, naturalistically, interpersonally, and intrapersonal) those of the core concepts of multiple intelligence theory. Children learn through multiple ways with the application of this theory which serves as a catalyst for change. Change through learning by operating all of the intelligences into the learning intentionally. The same was the basic intent of this developmental study. Each and every topic and its conversion into activities were dealt with accordingly. It is presumed that the activities will not only provide with the hands on skills but help in changing the attitude towards teaching and learning. The activities would help make operational the optimum facilities of multiple intelligences.

There are a total of about 308 activities related to a variety of topics. The activities have been placed in three sections of biology, chemistry and physics. Two unique examples from daily experiences are shared in section 2 of biology part; Birthdaycelebration and offering Salah that are although not included in regular primary science syllabus but helps teachers and students understand that how science involves in our daily affairs and how can we organize any event into a great learning event for the pupils by utilizing multiple intelligences so that they can perform a task in various different ways.

These are the glaring examples that in performing such activities, we are actually operating all of the intelligences, but we usually don’t bother. The examples may serve as a blueprint for developing MI activities for the events like these.

This developmental model of multiple intelligence activities may provide practical introduction to the theory of multiple intelligences at primary level and serve as a

resource material for teachers looking for new ideas to enhance their teaching pedagogies. The activities would help teachers to think beyond the traditional teaching-learning styles, understanding that their students can learn through many different ways, adapting their teaching styles, and ensuring the teaching and learning of science through abroad range of multiple intelligenceactivities in order to enrich students' learning.

DEDICATION

My thesis project is dedicated to my family.Thank you for being there to help me and encourage me through all the efforts this project required. I appreciate all of you, without your cooperation I couldn’t be able to achieve this success.May Allah shower bountiesof blessings.

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It is the Almighty who is Omni knowing and who bestows knowledge power to the human beings, with his blessings I could conclude a task of petty addition to the knowledge in the shape of a developmental study. I owe gratitude to my supervisor who was always considerate to listen and help out of turmoil. It would be an injustice if I do not thank my department, its Head and Dean for the facilitations they extended to me, enabling me to get the Rector's Medal. My special thanks are due to the chief librarian and his staff for providing me with the books and extending welcome all the time I visited them.

I offer my special thanks to my parents and my whole family; the way they stood by me and supported me morally and financially, deserve my heartfelt thanks. I also would like to express my deepest gratitude for their consideration, tolerance, and encouragement.

My elder brother who had been my close friend passed away during the process of write up for which I pray the departed soul may rest in peace.

Attiya Rahman

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Chapter 1

INTRODUCTION

1.1 Human Intelligence

Humans have always been curious about their intelligence and its application. They have always been seeking to do better in every arena of life by employing their intelligence and this process continues from the advent of human life to this day. There is a long list of wonderful achievements that can only be ascribed to human intelligence.

Humans have not been given anything more excellent than intelligence. Once, Gabriel (a.s) came to Adam (a.s) and said I have been asked to offer you three choices, intelligence, bashfulness and religiosity. Adam said, “I choose intelligence”. Gabriel took back bashfulness and religiosity and left intelligence with Adam (Sahibul-SaifSheykh Abdul Kerim al-Kibrisi, Adam *a-s Chose Intelligence*).

Learning from nature, environment and other creatures is part of human intelligence. Mankind learned from crow how to bury their dead human fellows when Cain happened to have murdered his brother Abel, and he was totally helpless what to do. Allah made two crows help him. Crows fought in front of Cain, one killing the other buried the dead by digging the ground. Cain learned from that and did exactly the same with his dead brother Abel.

In the same way, humans got inspired to design aircraft from observing how birds fly. Humans noticed that birds soar up in the air when their wings created a lifting effect by curving wings in a certain directional movements. They emulated similar mechanism through propulsion engines and balancing wings to make aircraft a flying reality.

Similarly, humans could have wrap their bodies with ordinary clothing but taking into consideration the dictates of hot or cold seasons and aesthetic needs of fashion, humans used their intelligence to bring out colours, styles, beauty and individual or cultural idiosyncrasies into clothing.

The development of language is a fantastic example of human intelligence. Language is a core component of a civilization. Modern civilization evolved through usage of basic lingual skills like sounds, signs, impressions and gestures. With the passage of time this phenomenon evolved from very simple to more sophisticated. As a result humans became more capable of conveying all kinds of meanings ranging from very basic to highly abstract, that otherwise, was difficult to express.

Intelligence played basic role in transportation and communication. With the invention of wheel, all the avenues of economic development opened up for human societies. Industrial revolution was the direct result of invention of wheel and steam engine. The volume of economic development that could be accomplished in just one present decade is many times more than the development achievable in tens of past decades because of the wonders of new inventions and innovations like computers, internet, wireless communications and satellites, etc. As a result, the wide world of ours has become a global village. Then there is artificial intelligence where humans have made machines to do the thinking for them.

In sum, there is no aspect of human life, where wonders of human intelligence could not be noticed. Humans, in fact, are working on how human intelligence that itself can be enhanced and amplified. They categorized the intelligence into different components as they have proved that humans possess multiple intelligences and the picture of intelligence completes only by putting all of these components together. It is just like the pieces of puzzle, a puzzlecannot be completed until we join all of its pieces together to complete it.

The inventions and innovations, mentioned above, is an ample testimony that humans possess intelligence that is not a fixed phenomenon rather it can be enhanced through training and practice. If this was not true, the present day development could not be achievable. So the son of Adam had the ability of creative thinking the very first day he was brought to existence. The need is to enhance thiscreative ability.

Brian Tracy says “the single source of wealth is between your two ears”. Today’s wealth is attributed to brain power not brutal physical power.

It is usually thought that some individuals are super-smart while the others are not so lucky and that is just the way it is but the fact is that human intelligence is not a fixed phenomenon. Rather, the level of intelligence we are born with is just a starting point and regardless of our genetic make-up, it is absolutely possible to make ourselves more intelligent and increase our IQ even limitlessly.

The concept of Multiple Intelligence was first proposed by Howard Gardner, the professor of Psychology at Howard University. He concluded that there are at least eight and probably more discrete human intelligences that are, Verbal-Linguistic, logical-Mathematical, Visual-Spatial, Musical, Body-Kinaesthetic, Interpersonal, Intrapersonal, and Naturalistic. All human beings possess each of these intelligences with various amounts and everyone considerably differs from one another with respect to the strength and combination of intelligences (Gardner, 1998).

Different professions highlight different combination of intelligences. Such as pilots, drivers, navigators, architects, and surgeons exhibit spatial intelligence, while dancers, actors, athletes, climbers use Body-Kinaesthetic intelligence. Businessmen show logical-Mathematical intelligence, likewise, lawyers, judges, teachers stand out in terms of their logical and Interpersonal intelligences. But it is not a fixed series; everyone can excel in his/her profession by using a range of intelligences (Gardner, 1998).

Multiple Intelligence theory is the current hot topic in the field of education. The theory has been recommended for improving classroom learning and to flourish education, as the ways of instruction, teaching, learning, and assessing intelligence have been changed during the past decades.

The main focus of this study is on how we can enhance intelligence in children and how the pluralistic concept of intelligence can be used in education to make education process more interesting as well as more useful. As the result, students can be better prepared not only for passing exams but for meeting real life challenges. The importance of this work gains more significance as we notice the concept of Multiple Intelligence being increasingly ignored in our education system. Our education system is failing to utilize all elements of human intelligence. Only few elements of intelligence like verbal-linguistic skills and logical-mathematical skills are mostly emphasized in our schools. The same elements are overly favoured in our traditional IQ testing procedures. But as soon as we go outside the confines of school setting and to real life we find other elements of intelligence as important, especially body-kinaesthetic skills, inter-personal and social skills.

1.2 Justification

Being fascinated from the Gardner’s view, it seems more valuable to work on multiple intelligence theory as it allows developing the fullest potentials, and capabilities of students. It provides students opportunities to utilize all dimensions of intelligence, not just a few, through which they may excel intellectually, socially, emotionally, and physically.

So, there is a need to bring forth such theories to suggest ways that how the theory can be changed into practice, how the multiple intelligence activities can be developed and applied in the classrooms, and how teachers are prepared to use multiple ways of teaching and assessing in order to improve and excel students' learning.

In this study, Science activities related to multiple intelligence are designed that the kids will inevitably utilize all elements of intelligence into their learning.

1.3 Statement of the Problem

We teach the students a blend of subjects, all the subjects need varied types of multiple intelligences. Science needs a special type of multiple intelligence pairing in order to make Science teaching learning process more interesting and comprehensive for students to clarify complex scientific concepts. For the same we need to have a special arrangement of activities designed for the students of science. Hence the study has been kept focused on, "Development of Multiple Intelligence activities in Science at Primary Level".

1.4 Significance of the study

The study would be significant because of its following divulging parameters:

- The purpose of this study is to develop science activities related to all intelligences. It presents a large collection of science activities to develop the different intelligences.
- This study helps to develop and improve the concept of Multiple Intelligence theory and curriculum and the ways through which the theory can be converted into practice, among teachers, parents, and students in Pakistan. It may aware them of the techniques which can safely be applied for the learning of the students through the developed material.
- The study would be helpful for teachers to use activities in their classrooms as resource material. Teachers can apply them as they are or with a little amendment according to their students' mental capacity and interest.
- The study will provide ideas for teachers that will help them to have a wide range of activities related to each of the intelligences. These activities may helpful for teachers to provide creativity flow that will come up with many more ideas on their own.
- Study would prove that scientific principles can be transferred into practical form, and all the elements of intelligence can be utilized through these science activities.
- The study may be beneficial for teachers as well as students in diagnosing and understanding their strengths and weaknesses regarding different components of intelligence. They can get the idea that in which areas they need to put more efforts.

- The study may be helpful to promote scientific thinking and attitudes among children at early ages and to develop accurate scientific concepts in primary students.
- The study may be of help to allure the attention of educationists, policy makers, and subject specialists to develop the Multiple Intelligence (MI) activities based curriculum in other subject areas like the one in this study.
- The study may beof value to make up the deficiencies in the area of science teaching in Pakistan, with special reference to Multiple Intelligence activities.
- This study contributes to help teachers in enriching their knowledge and processes of teaching through enforcing the elements of multiple intelligence in their routine teaching.
- The study may promote teaching methods, learning processes, and assessment techniques in teaching and learning as well as re-motivate the teachers to improve the quality of science teaching.
- The study may bring motivation and enthusiasm among students to learn science through a variety of stimulating activities.
- Many studies have done on both theoretical bases of Multiple Intelligence Theory and its application in different educational settings butno study could be found out related to determining the promotion of students' multiple intelligences specifically in the area of science to develop their scientific concepts at Primary Level in Pakistan.

This study would enrich students' understanding of Science; stimulate their individual capabilities, and enhance their self-esteem.

1.5 Objectives of the Study

Following are the objectives of the study:

1) To develop activities for the promotion of Multiple Intelligences of primary school children in the subject of science.
2) To identify the activities with respect to the elements of Multiple Intelligences.
3) To know whether the entire Science curriculum at primary level can be translated into multiple intelligence activities.
4) To validate the activities as regard to their utility in the curriculum.

1.6 Research Questions

1. Why some teachers feel that although some students are brilliant but they fail to develop the clear concepts of Science?

2. How the activities of Science can be developed by utilizing the multiple intelligences?
3. Can each dimension of Intelligence be operationalized in the classroom?
4. Can the entire Sciencecurriculum of primary level be translated into activities pertaining to the elements of multiple intelligence?

1.7 Assumptions of the study

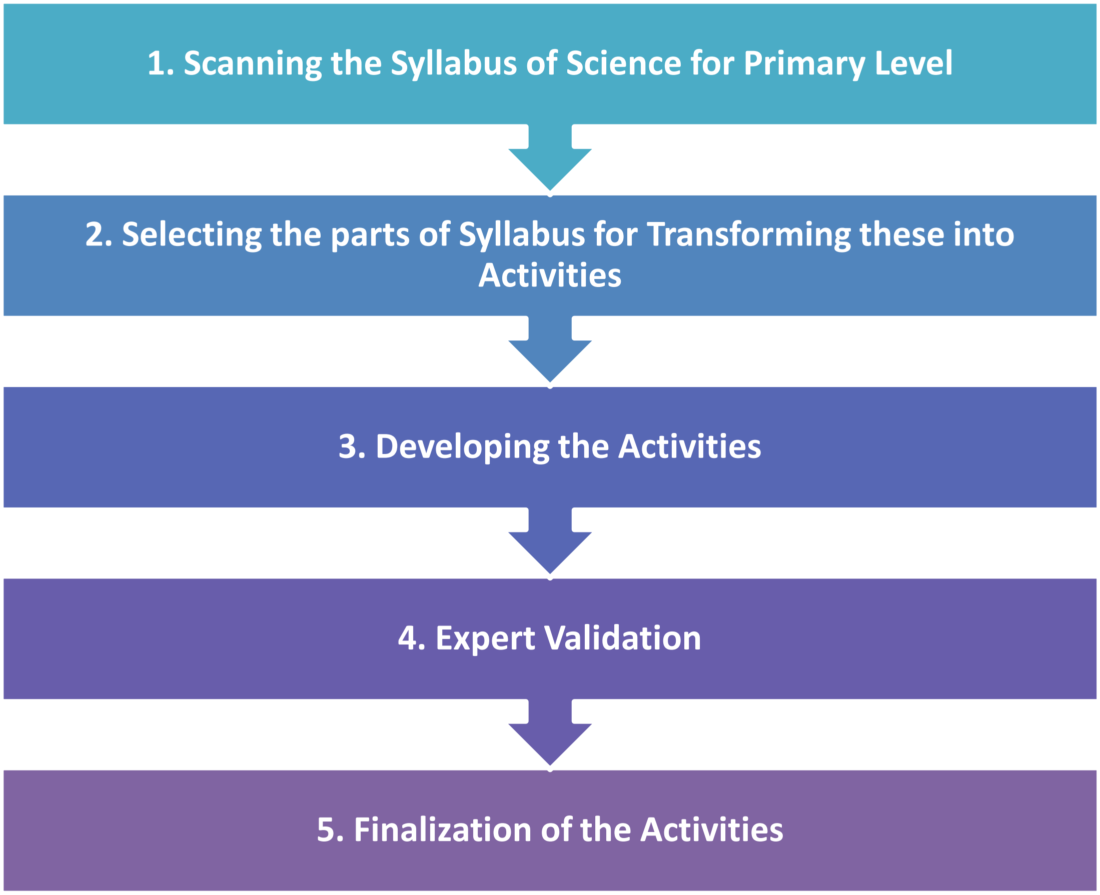
Following stand the assumptions of the study;

1. Teachers are aware of the processes of teaching learning and the use of intelligence and multiple intelligences in their classrooms.
2. Science activities can be developed with the elements of multiple intelligences.
3. Developed activities can bring about a change in the teaching learning scenario.
4. Development of multiple intelligence curriculum bring innovation in primaryeducation.

1.8 Theoretical frame work of the study

Following has been the theoretical framework of this developmental study;

Figure 1.1: *Theoretical framework of the study*



1.9 Glossary of the Terms

MultipleIntelligence:MI theory provides the framework for understanding human capacities and proves that there is not one way to be intelligent, but at least 8 or more independent intelligences through which we learn.

Verbal-Linguistic: The capacity to use words effectively, whether orally or in writing.

Logical-Mathematical: The capacity to use numbers effectively and to reason well.

Body-Kinaesthetic: The capability of using one's whole body to express ideas and feelings, and facility in using one's hands to produce or transform things.

Visual-Spatial: The ability to perceive the visual-spatial world accurately and to perform transformations upon those perceptions.

Musical: The capacity to perceive, discriminate, compose or express musical forms. This includes sensitivity to rhythm, pitch, tone, timber, melody, or colour of a musical piece.

Interpersonal: The ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people. Gesture, facial expressions voice

Intrapersonal: Self-knowledge and the ability to act adaptively on the basis of that knowledge, having an accurate picture of one's own strengths, weaknesses, awareness of inner moods, satisfaction,motivation, desires, and temperament.

Naturalistic: The ability to recognise and classify the numerous species the flora and fauna of one's environment.

Science: The Latin word "scientia," meaning knowledge. According to the Dictionary, Science means a system of acquiring knowledge through the systematic method of observation and experimentation to describe and explain the natural phenomena. The term Science also refers to the organized body of knowledge.

Teaching: Teaching is an interactive process, primarily involvesthe sharing of knowledge between teacher and pupil and occurs during certain definable activity. It is a form of interpersonal influence aimed at changing the behaviour potential of another person.

Learning: Learning is often defined as a relatively lasting change in behaviour that is the result of experience. According to the Dictionary, learning is often defined as a positive change in behaviour, which is demonstrated by people implementing knowledge, skills, or practices derived from education.