

LEARNING STYLES AND MULTIPLE INTELLIGENCES: TWO SIDES OF THE SAME COIN?

¹Aysha, ² Prof Mohammad Yusoof,

¹,Research Scholar, ²Professor,

¹ Department of Teacher Training and Non- Formal Education

Institute of Advanced Studies in Education

Jamia Millia Islamia

New Delhi -110025

ABSTRACT: In recent years, research on concepts of Multiple Intelligences and Learning styles has grown tremendously to understand individual differences and to plan classroom instructions incorporating these two. But there has been growing debate on whether these two are similar concepts or are they distinct from each other.

Many studies have shown that designing instructions based on everyone's unique learning styles have led to an increased academic achievement. As Stated "[...] curriculum is learned differently by individuals, [and therefore] should be taught differently to individuals" (Dunn, et al. 2001). Students are known to be different in the ways they process information. It is an undeniable fact that students can learn but they learn differently.

Therefore, it is imperative for educators to determine each student's unique learning styles and multiple intelligence to help the teaching-learning process. This paper discusses the two theories and suggest aspects to merge both the theories to improve student learning. The purpose of this paper is to describe the findings after an intervention on students of secondary science classrooms. This paper also discusses the concepts, relevance and their practical applications. It also helped determine if Students awareness of their unique intelligence and learning style would affect their classroom achievement, retention and Interest.

The identification of each child's unique abilities then helped teacher adapt instruction in every classroom. The more comprehensively educators understood the differences, the better chance they had of organizing a classroom which would address the distinct learning needs of their students. Data was collected using a learning style questionnaire, a multiple intelligence test, and classroom assessment. Correlation between learning styles and Multiple intelligence were observed in the data collected. In the light of the information discovered in this study, certain suggestions are made.

Keywords: Learning Styles, Science Classroom, Multiple Intelligence, Instruction, VARK.

Introduction

“Students possess different kinds of minds and therefore learn, remember, perform, and understand in different ways.”

Howard Gardner (1983)

In today's world, the fast-paced development in various fields of science, education and research as well exposure to alternative outlooks in social, economic and cultural issues have brought about an impact on instructional and educational systems. There is a recognition of the fact that students differ from each other be it their intelligence, learning styles, motivation, attitudes, skills, personalities among others. But the knowledge has not been able to bring about much difference in the methods of instructions. It remains the same for all learners as it is “one size fits all” philosophy. This results in frustration among learners due to the mismatch between their learning preference and the method of instruction.

This is where Multiple Intelligence (MI) and Learning Style (LS) can help. Teacher need to be oriented to both concepts to modify their teaching strategies and assessments. This would help accommodate learners needs and preferences in an inclusive classroom. There is a paradigm shift in school nowadays, it should explain both the concepts to students (Walter,1992). This would learners identify their best styles and reap maximum benefits of teaching learning process. Teaching Learning process should consider each child's unique differences. As Gardner stated, “It's very important that a teacher take individual differences among

kids very seriously. The bottom line is a deep interest in children and how their minds are different from one another, and in helping them use their minds well". (Gardner ,1999)

Both the concept of LS & MI has been investigated in this paper as being the important variables that affects the academic achievements of learners. The aim is to find parallel between the two concepts as well as their differences. This help understands the concept of individual differences as they bring about an excellent grasp of the process of learning. In this paper we choose to focus on Gardner's Model of MI and Neil Flemings LS.

The theory also asserted the fact that intelligence is not a distinct construct but rather multiple construct fused together, not relying on each other but rather interacting in multiple ways. The theories can bring about both equity and equality in education for learners with different range of styles and intelligences. The similarities and differences are there between even though they are distinct, they do not compete rather they are complementary in nature. (Dunn, Denig, & Lovelace, 2001). This paper examines the two concepts to explain their contribution to the classrooms of today.

MULTIPLE INTELLIGENCE

The modern conception of intelligence began when Binet conceptualized that intelligence is measurable (Binet & Simon,1905). But the test constructed calculated a person's intelligence based on the mathematics and language domain. Believing intelligence to be more than a single construct and considering its inability to measure intelligence of people with diverse abilities, researcher formulated various theories of intelligence. Gardner believed Binet's test were limited in nature and proposed his theory of "Multiple Intelligence" He believed that there were more types of intelligences which were ignored by researchers as they were more interested in measuring a child's linguistic ability and mathematical skills

In his book "Frames of Mind" (1983) Gardner introduced the theory of Multiple Intelligences theory. The seven intelligence he had listed were:

1. **Linguistic**
2. **Musical**
3. **Bodily-Kinesthetic**
4. **Intrapersonal**
5. **Interpersonal**
6. **Visual-Spatial**
7. **Logical-Mathematical**

In 1995 Gardner added the 8th type of intelligence i.e. Naturalist Intelligence which is included in this study.

DESCRIPTION OF THE INTELLIGENCES USED IN THIS STUDY

The various types of intelligences formulated by Gardner is described below along with the preferred job skills and abilities as described in table 1.

INTELLIGENCE	DESCRIPTION	SKILLS
Linguistic Intelligence	It allows individuals to communicate effectively as they make use of words and manipulate its syntax, phonology and semantics in languages"	e.g. Poets Students who enjoy playing with rhymes, who pun, who always have a story to tell, who quickly acquire other languages
Musical Intelligence	Sensitivity to rhythm, pitch or melody, and timbre or tone of a musical piece. And allows people to create, communicate, and understand meanings made from sound.	e.g. Musicians and instrument players Students who are attracted to sounds outside the class or who constantly tap fingers or objects on their desk.
Bodily-Kinesthetic Intelligence	Individuals use all or part of the body to create products or solve problems. This intelligence includes specific physical skills such as coordination, balance, dexterity, strength,	e.g. Artists, sports person, surgeons Students who relish gym class and school dances, who prefer to carry out school projects by making models and who toss crumbled paper

	flexibility, and speed to allow individuals to use any parts of their body to create things or solve problems	with frequency and accuracy into wastebaskets across the room.
Intrapersonal Intelligence	Having an accurate picture of oneself (one's strengths and limitations); awareness of inner moods, intentions, motivations, temperaments, and desires; and the capacity for self-discipline, self-understanding, and self-esteem.	Students' uses of other intelligences—how well they seem to be capitalizing on their strengths, how cognizant they are of their weaknesses, and how thoughtful they are about the decisions and choice they make
Interpersonal Intelligence	The ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people. Includes sensitivity to facial expressions, voice, and gestures; the capacity for discriminating among many kinds of interpersonal cues; and the ability to respond effectively to those cues in some pragmatic way (e.g., to influence a group of people to follow a certain line of action).	e.g. Teachers, politicians, psychologists, and salesperson Students exhibit this intelligence when they thrive on small-group work, when they notice and react to the moods of their friends and classmates, and when they tactfully convince the teacher of their need for extra time to complete the homework assignment
Naturalist Intelligence	Expertise in the recognition and classification of the numerous species—the flora and fauna—of an individual's environment	e.g. Zoologists, agriculturist, biologists, florists, archeologists etc.
Visual-Spatial Intelligence	Sensitivity to color, line, shape, form, space, and the relationships that exist between these elements. possible for people to perceive visual or spatial information, to transform this information, and to recreate visual images from memory."	e.g. Graphic designers, engineers and carvers Students who can easily make sense of graphs and flow charts. Even those who are likely to doodle in their spare time or who look for patterns in objects."
Logical-Mathematical Intelligence.	Sensitivity to logical patterns and relationships, statements and propositions (if-then, cause-effect), functions, and other related abstractions	e.g. Scientists, mathematicians, and philosophers. Students who carefully analyze the components of problems either personal or school-related before systematically testing solutions.

(Adapted from Armstrong, Thomas (3rd Ed) "Multiple Intelligences in the Classroom")

When Gardner proposed his theory of multiple intelligence he hinted of additional intelligences to be added later. Recently two more were added:

- Existential Intelligence (Still under consideration);
- and Moral Intelligence

A teacher's familiarity with each learner's unique profile can lead to changes in her teaching practices (Currie, 2003). This would lead them to look differently at their teaching and assessment strategies (Altan & Trombly, 2001). Accounting for MI can also lead to learner centered classrooms. It is "an increasingly popular approach to characterizing the ways in which learners are unique and to developing instruction to respond to this uniqueness" (Richards & Rodgers, 2001, P.123)

When teachers modified their lesson, the students' academic achievement improved (Weiler, 2005). MI can lead to expanding the horizons of classrooms beyond the traditional teaching learning process.

Teachers even when they are aware of the trends are unable to implement it due to the overcrowding of classrooms, overburdening them with non-teaching duties, lack of infrastructures, loss of motivation etc. There are many outdated teaching methodologies that are dominant in many schools. There is also a need to orient them with strategies and tools that can be used to bring about changes in the education system. "You don't have to teach or learn something in all eight ways (and two additional once); just see what the possibilities are, and then decide which particular pathways interest you the most, or seem to be the most effective teaching or learning tools" (Armstrong, 1994).

The theory of MI has been formulated three decades back but till date not many experimental research has been done. Within the field of education, the application is ongoing but based on experiences the theory might still need to be revised (Gardner, 1993).

Many researchers support the theory believing that it can bring about positive changes. It can also lead to bring to the forefront subjects which has been ignored by the system such as art, sports, music among many others.

MULTIPLE INTELLIGENCE SCALE

Multiple Intelligences Developmental Assessment Scales(MIDAS™) was developed by Neuropsychologist Dr. Branton Shearer. in 1987. It has been reported as “The Swiss Army Knife” as it gives a reasonable estimate of the person intelligence along with different skills associated with it.

“To my knowledge, The MIDAS™ represents the first effort to measure the Multiple Intelligences, which have been developed according to standard psychometric procedures. Branton Shearer is to be congratulated for the careful and cautious way in which he has created his instrument and offered guidance for its use and interpretation.” — (Gardner as cited in the MIDAS™ Manual)

LEARNING STYLE

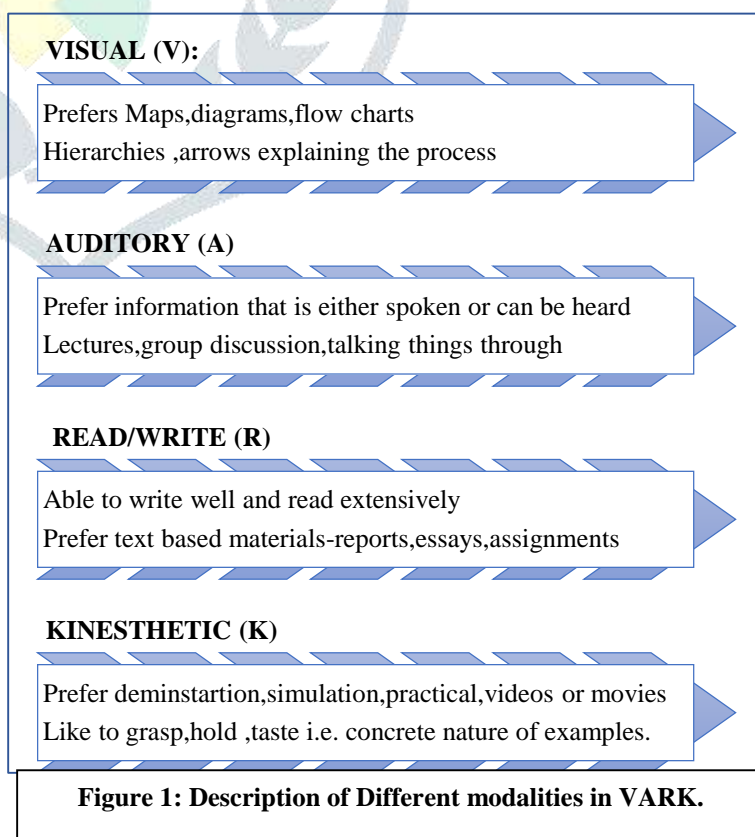
The concept of learning style has been around for many decades and has merged into many models and theories since. But as research into student’s classroom achievement comes under spotlight, research on learning styles has been gaining momentum. It is linked to academic achievements There has been various theories believed to be impacting performances in learning such as ‘perception of learning’, motivation. But the concept of learning styles is providing insights into learning in all types of setting. “Simply being aware that there can be different ways to approach teaching and learning can make a difference” (Yerxa ,2003)

LS has been described as “cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (Keefe, 1979a, p. 4). Educators who have been applying it in the classrooms believe that each student has a dominant modality through which they can effectively process information. It is assumed that once its identified than classroom pedagogy can be adapted accordingly. There are more than 70 learning style models with its own connected technical lexicon and dichotomies (Coffield, 2004). A research study found that many of teachers in different parts of the world believe in the fact that learners learn best when receiving information in their dominating modality. (Howard-Jones, 2014).

LEARNING STYLE SCALE

The VARK was developed by Neil Fleming in 1987. The learning style questionnaire used in this study is the VARK analysis and the different modalities are described in figure 1.

There are many learners who prefer to switch from mode to mode and are known as being multimodal i.e. they prefer learning in all or more than modality. In this study there are least 10 students who have demonstrated multi-modalities. Learners learn in all of the described styles but some styles are considered to be more dominant.



METHODOLOGY

RESEARCH DESIGN & ENVIRONMENT

In this descriptive study, the various LS and MI were measured. Students of Grade 11 (Science Stream) who had taken up biology as an option were selected. After the students were done with the questionnaire the results were discussed. The following week a learner profile unique to each respondent were handed over along with learning strategies to better aid them in their studies.

INSTRUMENTS USED:

For this study two scales were used. The first questionnaire was the VARK analysis was intended to determine the learning styles of the respondents. The questionnaire consisted of 16 questions and is used to determine the preferred learning style of respondents i.e. Visual, auditory, reading/writing and kinesthetic. To determine their multiple intelligence, this study used MIDAS Multiple Intelligences Survey.

PROCEDURE

The researcher after being granted permission from the concerned authorities selected a school for data collection. Then permission was taken from the school principal including assuring them of their anonymity. After permission the researcher then proceeded to the classroom. First the students were apprised of the different concepts of the questionnaire. They were informed of the nature of the questionnaire along with the fact that it was voluntary. After they filled up the questionnaires the data was then tabulated, interpreted and analyzed.

RESULT

After the study was conducted, the findings are described below. There were a total of 92 students all of whom had volunteered. The results of VARK analysis shown in table 1 and the MIDAS results are listed in table 2.

VAR K ANALYSIS, n = 92.

VAR K Learning Styles	Frequency
Visual	21
Auditory	39
Read/Write	13
Kinesthetic	39

The data revealed that auditory and kinesthetic ability dominated among the VARK test takers. The data is slightly higher than the number of students as some demonstrated multimodality i.e. exhibited more than one type of learning style. This implies that students prefer to listen to lectures or discussions and work in collaboration with other learners.

MIDAS

Intelligence	Frequency
Linguistic	2
Visual-Spatial	5
Musical	8
Logical Mathematical	4
Interpersonal	27
Intrapersonal	20
Bodily Kinesthetic	18
Naturalistic	12

Table 2. MIDAS results of students, n =92

Table 2. illustrates the various types of MI and its frequency among students. In this student scored the highest in interpersonal intelligence followed by intrapersonal. Students possessing Interpersonal intelligence are remarkably talkative and this can be utilized through classroom discussions, presentations and even group work. The researcher observed the same in the classroom as well. The second intelligence which the students scored highly was the intrapersonal intelligence. This result was surprising for the researchers as the students were said to have discipline issues and unable to sit for long i.e. were restless. Such students prefer working alone or even like expressing their feeling, thoughts and expression through personal blogs or journals. They prefer individual study as they are aware of their strengths and limitations and the teachers can incorporate flipped classrooms to aid such students.

RESULTS

After analysis of the result, there was found to be significant correlation between the MI and the LS. It was found that students who scored high on Bodily Kinesthetic ability also did the same on their LS Scale. Even those who scored high on Auditory style of learning scored the same on the Musical intelligence. The findings reveal a correlation between both the scales. These findings indicate there is a further need to develop questionnaires to fully study the extent of correlation between the components of LS & MI. Further research needs to be carried out to obtain better identification of the similarities and differences in both.

CONCLUSION

The theories of both LS and Multiple Intelligence are very simple but it holds importance in education. It is not since students learn differently it is due to the classification of learners and their abilities. Since schools worldwide rely heavily on logical mathematical and linguistic intelligence leading to students possessing it to achieve higher. There is a need to incorporate this into teacher education programs, curriculum and the teaching learning and assessment. In our daily life we see individuals pursuing different goals thus it can be safe to assume they might possess different types of Intelligences (White,2006).

References

- Allen, W. (1992). The color of success: African-American college student outcomes at predominantly White and historically Black public colleges and universities. *Harvard Educational Review*, 62(1), 26-45.
- Altan, M. Z., & Trombly, C. (2001). Creating a Learner-Centered Teacher Education Program. In *Forum* (Vol. 39, No. 3, pp. 28-35).
- Armstrong, T. (1994). Multiple Intelligences: Seven Ways to Approach Curriculum. *Educational leadership*, 52(3), 26-28.
- Coffield FJ, Moseley DV, Hall E and Ecclestone K (2004). Should we be using learning styles? What research has to say to practice. London: Learning and Skills Research Centre/University of Newcastle upon Tyne.
- Coffield FJ, Moseley DV, Hall E and Ecclestone K (2004). Learning styles and pedagogy in post-16 learning: a systematic and critical review. London: Learning and Skills Research Centre/University of Newcastle upon Tyne.
- Currie, K. L. (2003). Multiple intelligence theory and the ESL classroom--preliminary considerations. *The Internet TESL Journal*, 4(4), 263-270.
- Dunn, R., Denig, S., & Lovelace, M. K. (2001). Two sides of the same coin or different strokes for different folks?. *Teacher Librarian*, 28(3), 9.
- Gardner, H. (1983), *Frames of Mind: The Theory of Multiple Intelligences*, New York: Basic Books.
- Gardner, H. (1999), *Intelligence Reframed*, New York: Basic Books.
- Gardner, H., and Hatch, T, (1989), 'Multiple Intelligences go to School: Educational implications of the theory of multiple intelligences', *Educational Researcher*, 18, (8), 4-9.
- Howard-Jones, P.A. (2014), 'Evolutionary Perspectives on Mind, Brain and Education', *Mind, Brain, and Education*. 8, 1, p. 21-33 13 p.
- Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching*. Cambridge university press.
- Shearer, B. (2013). *Multiple intelligences inspired! A common core toolkit*. Kent, OH:MI Research and Consulting, Inc.
- Shearer, C. B. (2009). *The MIDAS handbook of multiple intelligences in the classroom*. (Rev. ed.) Kent, OH. Multiple Intelligences Research and Consulting, Inc.
- Shearer, C. B. (2007). *The MIDAS: Professional manual*. (Rev. ed.). Kent, Ohio:MI Research and Consulting, Inc.

Vennema, Shirley, Lois Hetland, and Karen Chalfen (eds.). *The Project Zero Classroom: Approaches to Thinking and Understanding*. (2006): - "A Brief Overview of Multiple Intelligences for the Research Perspective

Weiler, A. (2005). Information-seeking behavior in generation Y students: Motivation, critical thinking, and learning theory. *The Journal of Academic Librarianship*, 31(1), 46-53.

White, J. (2006) *Intelligence, Destiny and Education: The Ideological Roots of Intelligence Testing*, London: Routledge.

Willingham, D. (2008). Learning Styles Don't Exist. Video available online at <http://www.youtube.com/watch?v=sIv9rz2> Accessed 26th December 2016.

Yerxa, J. (2003) *Learning Styles: Medical education in general practice*, University of Adelaide, Adelaide medical education.

