

Gardner's Multiple Intelligences and Academic Achievement of Students: A Review of Literature

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Abstract: In the present paper, with respect to “multiple intelligence” and academic achievement of students, thirty eight current scholarly articles (from 1997 to 2018) were reviewed. Most of the studies were conducted at elementary, secondary and college level in (India, Malaysia, Turkey, Iran, Poland, Oman, Indonesia, and Saudi Arabia). Most of the studies on multiple intelligences have been conducted with respect to academic achievement and achievement in different subjects as English, Mathematics, Science, Biology, Physics, Social Science, Chemistry and Physical sciences. The review of literature revealed that “multiple intelligences” is a very vital factor in the overall as well as subject wise academic achievement of students. The implication of the paper is that multiple intelligence approach should be integrated at all the levels of education system for the evolution of a balanced personality of students.

Keywords: multiple intelligences and academic achievement

Introduction

Education is considered indispensable for holistic development of personality as well as for the progress of society. Human beings possess inherent capacities, abilities, potentialities that must be manifested through education. Of all the capacities, abilities, potentialities, intelligence plays a pertinent role in the everyday life activities and decisions of man, his adjustment to the environment around. In today's education, intelligence is a vital variable that impacts the success in all walks of life. In this technological and competitive world, the performance of the individual as a person, as a citizen, as a worker and as a learner is largely contingent upon the intelligence he possesses. Apart from interest, attitudes, knowledge, communication skills and various other related characteristics, intelligence is an attribute that contributes towards the performance or overall behaviour of the individual.

The term intelligence has been defined differently by various psychologists. During Ancient India intelligence was called as “Viveka” by rishis and seers. Binet and Simon (1916) defined that “it seems to us that in intelligence there is a fundamental faculty, the alteration or the lack of which, is of the utmost importance for practical life. This faculty is judgment, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances. A person may be a moron or an imbecile if he is lacking in judgment; but with good judgment he can never be either. Indeed the rest of the intellectual faculties seem of little importance in comparison with judgment.” Stern (1914) defined “intelligence as an individual capacity generally at conscious level to adjust his thinking to new requirements. It is the general mental adaptability to new problem and conditions of life”. While in 1914 Thorndike defined “intelligence as the power of good responses from the point of view of truth or fact”. Further Terman in 1921 stated that “an individual is intelligent in the proportion that he is able to carry on abstract thinking”. According to Wagnon (1937) “intelligence is the capacity to learn and adjust to relatively new and changing conditions”. In 1948 Woodworth and Marquis, stressed that “intelligence means intellect put to use. It is the use of intellectual abilities for handling situations or accomplishing any task”. Stoddard (1943) found “intelligence as the ability to undertake activities that are difficult, complex and abstract and which are adaptive to a goal and are done quickly and which have social value and which lead to the creation of something new different”. Then Wechsler in 1944 defined “intelligence as the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment”. Later Gardner and Hatch (1986) defined “intelligence as the ability or skill to solve problems or to fashion products which are valued within one or more cultural settings”. (as cited by Legg and Hutter, 2007)

In 1983 Howard Gardner challenged the traditional beliefs and conventional definition related to intelligence by considering it as very narrow and propounded a unique theory of intelligence in 1983 called the “theory of Multiple Intelligences”. This theory appeared in the book, “Frames of Mind: The Theory of Multiple Intelligences”. Gardner questioned the notion of “general intelligence”, “g” and then existing intelligence tests, that how an individual’s intellectual capacities can be apprehended through “a single measure of intelligence”. Gardner stated that, “human mind performance cannot be measured by one single tool such as the Alfred Binet scale”. Indeed, he worked to provide a more comprehensive base of intelligence’s concept via provision of multiple frames. According to Gardner, “human intelligence or cognitive competence can be better described as a set of an individual’s multiple abilities,

talents and mental skills related to a multiple number of domains of knowledge in a particular cultural setting”. Elaborating his comprehensive view of intelligence further, Gardner emphasized, every individual possess seven intelligences that differ among people, further develops and grows differently contingent upon the hereditary traits or environmental experiences. Gardner named these varied types of intelligence as, “linguistic intelligence”, “logical/mathematical intelligence”, “spatial intelligence”, “musical intelligence”, “bodily/kinaesthetic intelligence”, “interpersonal intelligence”, “and “intrapersonal intelligence”. Later in 1999 Gardner added two more types of intelligence, namely “naturalist Intelligence” and “existential Intelligence”. The underlying core idea behind multiple intelligences was to enable people identify and recognize their weaknesses and strengths, so that they work on their weaknesses and build on their strengths. Prevalent intelligence tests were designed to measured limited areas only, primarily maths and linguistics. Gardner’s indicated that “there are nine main intelligences, and there is also the possibility to add more”. “Linguistic intelligence is the ability to use words effectively in writing, reading and speech” (Gardner, 1999). “Logical/mathematical intelligence is the ability of reasoning, analyzing and dealing with numbers” (Gardner, 1999). “Spatial intelligence is related to the ability to recognize the world and space and present information visually” (Gardner, 1999). “Musical intelligence is parallel in structure to verbal-linguistic intelligence and that it is reflective composition and appreciation of musical patterns” (Gardner, 1999). “Bodily/kinaesthetic intelligence is related to physical ability. People with strong bodily/kinaesthetic intelligence can control their movements and their body and excel in physical activities such as dancing” (Gardner, 1999). “Interpersonal intelligence is related to a person’s ability to communicate with others; including the ability to build relationships with other people and interact effectively with them” (Gardner,1983). “Intrapersonal intelligence is the ability to understand and communicate within a person’s self. It involves the ability to express personal goals, needs, and emotions and recognize what needs People who are strong in intrapersonal intelligence learn best individually and prefer working alone”(Gardner,1999). “Naturalist intelligence was added later to the previous intelligences and is related to nature. People who are strong in this intelligence are connected to nature, know the weather, like animals and plants and learn best when they are in a nature setting, not in a classroom” (Gardner, 1999). “Existential intelligence is the ability to question about the existence of human, death, the meaning of life and the reason for existence”. According to Gardner (1999), “These are questions that transcend perception; they concern issues that are too big or small to be perceived by our five sensory systems”. (as

cited by Rekha, 2013). Children differ immensely in terms of intelligence. According to traditional view of intelligence, education in schools mostly deals with linguistic and logical intelligence and does not give importance to individual skills and different learning methods. Multiple intelligence theory focused on individual differences. Gardner multiple intelligence theory opened new vistas in education. The theory of multiple intelligence functions for organizing as well as synthesizing educational innovations that try to break out the narrowly confined methods and approaches to learning. Gardner's theory opens the doors to an extensive array of instructional strategies that can be used in the classrooms easily. Every child is a unique creation of God in itself, endowed with intelligence, capacities, capabilities and talents. The education system needs to device ways and means requires to educate the child as a whole rather than doing this in a fragmented manner. This would require establishment generic connection among separate and distinct subject areas in the curriculum. In fact the teachers need to develop approaches that permit learners to exhibit multiple ways of comprehending and thus recognizing and valuing their uniqueness. Gardner's theory can serve as a base for identifying talented children at an early age and can also lead to the development of their talents. Indeed Gardner tried to define human potential by going beyond the IQ score. Identification of each individual's intelligence will enable the individual to choose the educational stream appropriately and thus will avoid making wrong choices and there by leading to optimum utilization of human resources. Multiple intelligences theory will provide direction to the students, first to work towards development of some of the multiple intelligences inherent in them, and further also to enthuse them to work on the less prominent multiple intelligences and bring out in the forefront, in this diversified and competitive global scenario. Further the multiple intelligence theory can work as a diagnostic test and based on which students can undertake suitable stream of study which will later help to create a career on the strength of one's multiple intelligences.

“Academic achievement refers to the average marks obtained by an individual in the final examination”. (as cited by Ayesha and Khusrshid, 2013). Academic achievement is considered as a significant aim of education. Students with high achievement have better future prospects as compared to the students with low achievement. To be progressive in academics the student must possess certain level of intelligence and a planned a set of habits related to the study. Among the various factors that may influence academic achievement, includes level of intelligence, peer relationship, physical and mental wellbeing, study habits, socioeconomic status, parenting, quantity and quality of time spent with children. Goods (1959) described,

“academic achievement as the knowledge attained or skills developed in the school subject usually designated by the test scores or marks assigned by the teacher”. Trow (1959) defined “academic achievement as attained ability or degree of competence in school task, usually as measured by standardized tests and expressed in percentage or grade units based on norms derived from pupil’s performance”. According to Crow and Crow (1969), “academic achievement means the extent to which the learner is profiting from instruction in the given area of learning. Achievement is reflected by the extent to which skill or knowledge has been acquired by a person through the training imparted to him”. According to Hurlock (1969), "achievement is the status or level of a person's skill, the range and depth of his knowledge or his proficiency in a designated area of learning or behaviour". Pandey (1973) explained “academic achievement as the quality and quantity of learning in a subject or a group of subjects assessed by examination marks”.

In the context of education, multiple intelligence and academic achievement of students is very significant as it helps the parents and teachers to have holistic view of education. According to Gardner (1994), multiple intelligences persuaded both the parents and teachers are examine their own thoughts and assumptions regarding achievement and consider various teaching approaches. Multiple intelligences theory is significant theoretically as well as practically as it has showed practical implications for teaching. Teachers should take into consideration a variety of multiple intelligences of students during teaching and should encourage the students to utilize their varied intelligences in their learning (as cited by Gen, 2000). Multiple intelligences has implication for student’s teachers, parents and university management, as it will help in understanding the causes behind failure and success in academics. Indeed it implies the recognition of individual differences. In fact academic achievement means all those behavioural changes that take place in an individual as an effect of varied learning experiences. Though our examination system lacks objectivity and a scientific picture of the real achievement yet it is the only method to get academic achievement. The examination marks obtained by students is the only record of academic achievement.

Review of Literature

Batulayan (2001) studied the relationship in multiple intelligence and achievement of sixth class students revealed that “logical” and “intrapersonal intelligence” were related to the academic achievement while other intelligences: “verbal-linguistic intelligence”, “visual intelligence”, “musical intelligence”, “bodily/kinaesthetic intelligence” and “interpersonal

intelligence” did not have significant relationship to academic achievement Ayesha and Khurshid (2013) revealed that there is a positive relation in “multiple intelligence” and academic achievement. Further Ahavan, Zainalipour, Jamri and Mahmoodi (2015) studied the relation in “multiple intelligences” and problem solving styles and its role in the academic achievement of high school students and found that multiple intelligences had a positive relation with academic achievement. Ahvan and Pour (2016) found that “logical”, “visual”, “verbal”, “bodily”, “interpersonal”, “intrapersonal” and “naturalistic intelligence” had a significant positive relation in academic achievement while “musical intelligence” a negative predictor for academic achievement of students.

Younas, Subhani and Chauhan (2009) found multiple intelligence based teaching at the primary level to be very useful in teaching and learning of English. Abraham (2009) studied the effectiveness of multiple intelligence models for learning English at secondary level and found no significant differences in experiment and control by their gender, income and qualification. Beichne (2011) undertook a study to examine the relation in English teacher’s instructional practices at middle school level and student achievement and suggested to incorporate “Gardner’s multiple intelligence theory” in instructional practices in order to improve student achievement. Mohammadi, Abidin, Zainol, Ahmed and Yang (2012) examined the relation in student’s strengths in “multiple intelligences” and English achievement in Malaysia and found that learning environment where multiple intelligences was not incorporated there was a tendency to have negative and weak relation with multiple intelligences and achievement in English. Jing (2012) undertook a study on the teaching English reading through “multiple intelligence theory” at primary school and found that multiple intelligences based reading contributed significantly in arousing pupils’ interest towards English reading and improving pupils’ reading proficiency. Piengkas, Wolther, Noodyod (2014) studied the English achievement for the fourth class students by the integrated “multiple intelligence model” and revealed that there were a variety of learning activities and provide every student with the opportunity to develop them in all aspects. Saadamanesh (2014) found relation in combination of “multiple intelligence” and final English tests of students in Iran and also found a relation in “linguistic intelligence” and final English tests of students. Kassim (2015) studied the effect of “multiple intelligences approaches” in learning English grammar in the classroom and found that students can learn best, when they are involved in activities that involve their strengths. Younas, Subhani and Akram (2015) examined the role of “multiple intelligences” in English language learning and revealed that “linguistic”, “musical”, “bodily”, “interpersonal” and

“intrapersonal intelligence” were very helpful and beneficial in learning English language. Peters (2015) conducted a study by incorporating “multiple intelligence theory” into English classes and found that learners of English language are able to know themselves better and find appropriate milieu in which they would feel comfortable and safe. Priyanka (2018) studied the “multiple intelligence” and achievement in English of students and found significant relation in multiple intelligence and achievement in English.

McGraw (1997) undertook a study on impact of “multiple intelligences” on the learning of maths concepts by students and found that no significant difference in learning of concepts when reinforced by employing strategies based on multiple intelligences. Pajkos and Klein (2001) examined achievement in maths for sixth and seventh class students by using “multiple intelligences” and found that students prefer to learn maths by employing “verbal” and “logical intelligence” strategies. Janet et al., (2002) found that students learnt best when instruction was geared to their multiple intelligences. Chandra (2002) found that all the components of “multiple intelligences” are positively related to maths achievement of secondary school students. Afaneh and Khazendar (2004) only found a positive relation in “logical intelligence” and achievement in maths in students of class first to tenth. Further no differences were found in male and female students in the “musical”, “intrapersonal” and “interpersonal intelligence”. Krishna (2004) found strategies involving “multiple intelligence theory” to be more effective than the traditional method of teaching with respect to achievement in maths. Robert and Alphonseraj (2007) investigated the relation in “multiple intelligence” and achievement in mathematics in high school students and revealed a positive relation in multiple intelligence and achievement in maths. Xavier and Annaraja (2007) examined the effectiveness of “multiple intelligence” based teaching on achievement in maths in fifth standard students and found significant differences in multiple intelligence and achievement in maths. Al Meqbal (2007) examined the impact of teaching strategies based on the theory of “multiple intelligences” on student achievement and mathematical thinking and found significant differences in experimental group and controlled group among middle class students due to the use of teaching strategies. Niroo, Nejhad and Haghani (2012) studied the effect of Gardner theory application on mathematical intelligence and student’s mathematical functioning relation and found that no significant relationship in these two variables, in general and in all the levels of cognitive domain. Sreeraj (2015) examined the relationship in “multiple intelligences” and maths achievement of secondary school students and revealed that selected components of multiple intelligences are positively relation to the achievement in maths. Kandeel (2016)

studied the “multiple intelligences” patterns and relation in achievement in maths of students at King Saud University and revealed overall appearance of all multiple intelligences patterns in students.

Benette (2004) evaluated the effectiveness and suitability of strategies using “multiple intelligence” on achievement of Physics and found that these strategies to be more effective than traditional method. Jeba and Annaraja (2008) found no significant differences in “multiple intelligence” and achievement in chemistry in high school students. Leo and Venkatesh (2009) studied the relation in multiple intelligences and academic achievement in Biology in students of eleventh class and found significant difference in gender, medium, locality and academic achievement of students. Joseph (2009) revealed “multiple intelligence” approach to be more effective than the direct instruction (conventional method) on the biology achievement of secondary school students with respect to different levels of cognitive domain. Shanthy and Amaladoss (2009) investigated the relation in “multiple intelligence” and achievement in physics in college students and found significant difference in gender, medium of instruction, locality and achievement in physics. Arun (2014) found that teaching through instructional method for biology based on “multiple intelligence” increased the achievement in biology of students of secondary level. Rashmi (2017) studied the effectiveness of instructional strategy based on “multiple intelligence theory” on physical science achievement and scientific attitude in secondary school students and found no interaction effect of gender and scientific attitude on achievement in Physical science of students.

Hanley, Hermiz, Peddy and Albuck (2002) undertook a study to improve interest and achievement in social studies of students employing a “multiple intelligences” and revealed that the effect of multiple intelligence application varied by application period. Velmurugan and Annaraja (2008) studied the “multiple intelligence” and social science achievement of tenth class students and found a high relation in multiple intelligence and achievement in social sciences. Madhumita (2016) examined the innovative teaching of social sciences to enhance “multiple intelligences” and found that different strategies of teaching and learning social sciences help in exploring multiple intelligences.

Conclusion

In the present paper, with respect to multiple intelligence and academic achievement of students, thirty eight current scholarly articles (from 1997 to 2018) were reviewed. Most of the

studies were conducted at elementary, secondary and college level in (India, Malaysia, Turkey, Iran, Poland, Oman, Indonesia, and Saudi Arabia). Most of the studies on multiple intelligences have been conducted with respect to academic achievement, achievement in English, Mathematics, Science, Biology, Physics, Social science, Chemistry and Physical sciences.

The review of literature with respect to academic achievement showed that only “logical mathematical intelligence” and “intrapersonal intelligence” were related to the academic achievement of students (Batulayan, 2001). While Ahvan and Pour, (2016) found that “logical”, “visual”, “verbal”, “bodily”, “interpersonal”, “intrapersonal” and “naturalistic intelligence” had a significant positive relation with academic achievement while “musical intelligence” was a negative predictor of students’ academic achievement.

The review of literature with respect to achievement in English revealed that “multiple intelligences” based teaching proved to be useful in teaching and learning English (Younas, Subhani and Chauhan, 2009). While Abraham (2009) found no differences in experiment and control by their gender, income and qualification with respect to effectiveness of “multiple intelligence models” for learning English at secondary level. Piengkas, Wolther, Noodyod (2014) studied the English achievement of the fourth class students by using the integrated “multiple intelligence model” and revealed that there were a variety of learning activities and provide every student with the opportunity to develop them in all aspects. Further Priyanka (2018) found significant relation in multiple intelligence and achievement in English.

The review of literature with respect to achievement in mathematics revealed that students learnt best when instruction was geared to “multiple intelligences”. (Janet, et.al. 2002). Researcher studies by (Afaneh and Khazendar, 2004; Al Meqbali, 2007; Chandra, 2002; Kandeel, 2016; Robert and Alphonsera, 2007; Sreeraj, 2015; and Xavier and Annaraja, 2007) revealed a positive relationship in multiple intelligence and mathematics achievement. While on the contrary, McGraw (1997) found no significant difference in learning of the maths concepts by students when reinforced by using strategies based on the multiple intelligences. Further Niroo, Nejhad and Haghani (2012) found no significant relation in mathematical intelligence and mathematical functioning with respect to the Gardner’s theory of “multiple intelligence” in general and at the levels of cognitive domain.

The review of literature also revealed that “multiple intelligences” had an impact on sciences, Chemistry, Biology, Physics, Physical science, Social science. Velmurugan and Annaraja (2008) revealed a high relation in “multiple intelligence” and achievement in social sciences.

Madhumita (2016) revealed that different strategies of teaching and learning social science help in exploring “multiple intelligences”.

The review of literature revealed that “multiple intelligences” is a very vital factor in the overall as well as subject wise academic achievement of students. The implication of the paper is that multiple intelligence approach should be integrated at all the levels of education system for the evolution of a balanced personality of students.

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