

# Mathematical Modeling of Multiple Intelligence Theory with Bayesian Theorem

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**Abstract**— In this work, the multiple intelligence theory proposed by Gardner, a professor of education at Harvard University, is modeled by Bayesian Theorem under two hypotheses. Howard Gardner initially formulated a list of seven intelligences, and then added two more. As a different approach, if set theory for multiple intelligences is used, the structure of multiple intelligences to set theory under four properties of intelligence algebra can be generalized. Assuming that the number of intelligences increases, Boolean algebra in set theory can be applicable. Bayesian theorem with application of conditional probability generates a good structure for multiple intelligences. Bayesian Theorem was applied to two hypotheses; mutual intersections of  $n$  intelligences are empty and non-empty sets, and using conditional probability, it can be shown that multiple intelligences and Bayesian Theorem are in good harmony or multiple intelligences can be explained by Bayesian theorem.

**Keywords**—Bayesian Theorem, Modeling, Multiple intelligences

## I. INTRODUCTION

Up until twenty years ago or so, when teaching was still held in high regard by European society, you had an equal mix of good and bad teachers for a variety of reasons but as the position has declined in held regard combined with falling pay and stricter academic-based selection, the distribution of good and bad has become much more bunched together but with the important exception that there is less creativity in the average teacher nowadays because academia doesn't give much weight to creativity. Creative people tend to be good at putting themselves in good positions, actual ability is of less importance [1]. Every child is a genius. That doesn't mean that every child can paint like Picasso, compose like Mozart, or score 150 on an I.Q. test. But every child is a genius according to the original meanings of the word "genius," which are: "to give birth" (related to the word genesis) and "to be zestful or joyous," (related to the word genial). Essentially, the real meaning of genius is to "give birth to the joy" that is within each child. Every child is born with that capacity. Each child comes into life with wonder, curiosity, awe, spontaneity, vitality, flexibility, and

many other characteristics of a joyous being. An infant has twice as many brain connections as an adult [2]. In the heyday of the psychometric and behaviorist eras, it was generally believed that intelligence was a single entity that was inherited; and that human beings - initially a blank slate - could be trained to learn anything, provided that it was presented in an appropriate way. Nowadays an increasing number of researchers believe precisely the opposite; that there exists a multitude of intelligences, quite independent of each other; that each intelligence has its own strengths and constraints; that the mind is far from unencumbered at birth; and that it is unexpectedly difficult to teach things that go against early 'naive' theories of that challenge the natural lines of force within an intelligence and its matching domains [3]. The theory of the multiple intelligences" (Thinking style: multiple intelligence theorem) suggested by Harvard Gardner in 1983 eliminated the influence of intelligence on societies and education that lasted for years; that is the traditional intelligence test and intelligence definition that only considers the language and mathematic intelligence [4]. Howard Gardner, who is a psychologist and Professor at Harvard University's Graduate School of Education, claims that all human beings have multiple intelligences. Howard Gardner defined the first seven intelligences in "Frames of Mind" (1983). He added the last two in "Intelligence Reframed" (1999). These multiple intelligences can be nurtured and strengthened, or ignored and weakened. He believes each individual has nine intelligences: Verbal-Linguistic Intelligence (well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words), Mathematical-Logical Intelligence (ability to think conceptually and abstractly, and capacity to discern logical or numerical patterns), Musical Intelligence (ability to produce and appreciate rhythm, pitch and timber), Visual-Spatial Intelligence (capacity to think in images and pictures, to visualize accurately and abstractly), Bodily-Kinesthetic Intelligence (ability to control one's body movements and to handle objects skillfully), Interpersonal Intelligence (capacity to detect and respond appropriately to the moods, motivations and desires of others), Intrapersonal Intelligence (capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes), Naturalist Intelligence (ability to recognize and categorize plants, animals and other objects in nature) and Existential Intelligence (sensitivity and capacity to tackle deep questions about human existence, such as the meaning of life, why do we die, and how did we get here) [5]. According to Gardner,

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