

Chapter Two

Literature Review

In this chapter, the researcher provides the experts' opinion about multiple intelligences, multiple intelligences in educational practices, criticisms of multiple intelligences theory, academic achievement, and related study review. The researcher also describes about the conceptual framework of the study which is ended by hypothesis of the study.

Multiple Intelligences

There are many definitions of intelligence. According to Sternberg and Detterman (2000), intelligence is the capacity to learn or to profit by experience. In details, Sternberg stated that intelligence is typically defined as human capacity to learn to adapt to environment and to learn from experience. This means that someone's level of intelligence can be developed as he or she is exposed to various experiences in life. Gardner (1983) defined intelligence as the ability to solve problems, create new problems to be solved, and create something or offer a valuable service or product in one's own a culture. In conclusion, the definitions above point out that intelligence covers some quite wide aspects involving capacity or ability to learn from experience and environment, and also to solve problem and produce a valuable service or product in one's culture.

Individual have different types of intelligence. According to Gardner (2000), there are eight types of intelligence. He defined the various intelligence areas as following:

Linguistic intelligence. The ability that can be called as verbal intelligence which focuses on the production of language, abstract reasoning, symbolic thinking, conceptual patterning, reading, and writing. It is the ability to use the words effectively. Linguistic intelligence includes sensitivity to the meaning of words, the order of words, sounds, rhythm and intonation of the spoken word. Linguistic intelligence is also including the ability to

understand the power of words to change the state of mind and convey information (Gardner, 2000, 2012).

There are some core characteristics of linguistic intelligence. There are ideation, functional literacy, self-regulation, adaptation, oral expression, and written expression. First, ideation implies thinking and remembering through internal language. Second, functional literacy signifies understanding the rules and functions of languages. Third, self-regulation means analyzing one's own use of language. Fourth, adaptation refers to applying rules of language to new and different contexts. Fifth, oral expression means explaining and expressing one's self verbally. Last, written expression signifies explaining and expressing one's self in writing (Mckenzie, 2017).

Interpersonal intelligence. The ability to understand and cooperate with others. Interpersonal intelligence also can be defined as the ability to work cooperatively with others in a small group, as well as the ability to communicate verbally and nonverbally with other people. Interpersonal intelligence is the ability to observe and understand the intentions, motivations and feelings of others. Sensitive to facial expressions, voice and gestures of others, and it is the ability to respond effectively in communicating. Interpersonal intelligence also is the ability to understand the others' life, and understand others' views and attitudes (Razmjoo, 2008; Willingham, 2004).

Interpersonal intelligence has some core characteristics. There are collaborative skills, leadership, social influence, social connection, social empathy, cooperative attitude. First, collaborative skills are the ability to work and complete tasks with others. Second, leadership is an admission by others as someone to follow. Third, social influence is an ability to persuade others. Forth, social connection is an ability to meaningfully connect with others. Fifth, social empathy is an awareness and concern for others. The last is cooperative attitude. It is the willingness to offer and accept input (McKenzie, 2017). Additionally, McKenzie

(2017) also explained that the students with a strong interpersonal intelligence will solicit the support of a group, seek input from peers, love to work collaboratively, and love to share about themselves, appreciate relationships, show a good personality, and tend to be natural leader.

Kinesthetic intelligence. Kinesthetic intelligence means the ability to use the body skillfully to express ideas or emotion, to play a game, and to create new product. Kinesthetic intelligence also includes physical skills in the areas of coordination, balance, endurance, strength, flexibility and speed (Carreiro, 1998; Gardner, 2000; Razmjoo, 2008). In summary, kinesthetic intelligence includes talents in controlling body movements and skills in handling objects.

There are six core characteristics of kinesthetic intelligence. Those are sensory, reflexive, tactile, concrete, coordinated, and task orientated. First, sensory is internalizing information through bodily sensation. Second, reflexive is responding quickly and intuitively to physical stimulus. Third, tactile is demonstrating well-developed gross and/or fine motor skills. Forth, concrete is expressing feelings and ideas through body movement. Fifth, coordinated is displaying dexterity, agility, flexibility, balance and poise. The last is task orientated; it is striving to learn by doing (McKenzie, 2017).

Spatial/visual intelligence. Spatial/visual intelligence is defined as the ability to see and observe the visual and spatial world accurately (carefully). Visual means images, while spatial are matters relating to space or place. Spatial intelligence involves the awareness of visual arts, color, line, shape, space, size, navigation, mapmaking, architecture, the relationship between elements and games requiring the ability to visualize objects from different perspectives and angles (Gardner, 2000; Willingham, 2004).

Spatial intelligence denotes some core characteristics. Those are awareness, non-sequential reasoning, visual acuity, imagination, and small motor coordination. First,

awareness means solving problems using spatial orientation. Second, non-sequential reasoning means thinking in divergent ways. Third, visual acuity implies assessment of information based on principals of design and aesthetics. Forth, imagination implies seeing the possibilities before engaging them in the physical world. The last is small motor coordination. It signifies creating, building, arranging, decorating (McKenzie, 2017).

Musical intelligence. The ability to enjoy, observe, distinguish, fabricate, form and express musical forms. Musical intelligence includes capacities such as the recognition and use of rhythmic and tonal patterns and sensitivity to sounds from the environment, the human voice, and musical instruments which can be melody and timbre of the music heard. Music has a profound influence on the development of mathematics and science abilities in a person (Gardner, 2000; Razmjoo, 2008).

Musical intelligence has four core characteristics. Those are aural orientation, patterning, resonance, and audiation. First, aural orientation means heightened listening ability. Second, patterning means seeking all kinds of patterns, not just in sound. Third, resonance means identification with patterns as an expression of experience. The last is audiation which means thinking musically rather than verbally (McKenzie, 2017).

Intrapersonal intelligence. The ability associated with awareness and knowledge of self, it can be the internal aspects of the self, such as knowledge of feelings, range of emotional responses, thinking processes, self-reflection, and a sense of intuition about spiritual realities. The people who have the intrapersonal intelligence can understand the strengths and weaknesses of themselves. Intrapersonal intelligence is also able to motivate them-self and self-discipline. In addition, people who have intrapersonal intelligence highly appreciate the value (rules), ethics (manners), and moral (Gardner, 2000, 2012).

There are four core characteristics of intrapersonal intelligences. Those are affective awareness, ethical awareness, self-regulation, and metacognition. First, affective awareness

implies the knowledge of one's feelings, attitudes and outlook. Second, ethical awareness means the setting of one's principles and moral priorities. Third, self-regulation signifies monitoring one's thoughts, actions and behavior. The last metacognition which means the awareness of one's thought processes (McKenzie, 2017).

Logical or mathematical intelligence. The ability to work with abstract symbols (e.g., numbers, geometric shapes), to recognize patterns, and discern relationships or see connections between separate and distinct pieces of information. People who have this intelligence were able to think and devise solutions (exit) with a logical order (makes sense). They like numbers, sequences, logic and order. They understand the pattern of relationships; they were able to make the process of deductive and inductive thinking. The process of deductive thinking means thinking of great things to little things. The process of inductive thinking means thinking of little things up to a great thing (Gardner, 1983, 2000, 2012).

Logical intelligence has five core characteristics. Those are linear reasoning, concrete reasoning, abstract reasoning, causal relationship, and complex operation. First, linear reasoning which means seeking order and consistency in the world. Second, concrete reasoning which means breaking down systems into their components. Third, abstract reasoning which means using symbols that represent concrete ideas. Forth, causal relationship is identifying cause and effect within a system. The last is complex operation which means performing sophisticated algorithms (McKenzie, 2017).

Naturalist intelligence. The ability to identify, distinguish, express and create categories to what is encountered in nature and the environment, the ability to classify objects and to recognize patterns in nature, sensitivity to the other features of the natural world, the mastery of taxonomy, and to understand of different species. The bottom line is the human ability to recognize plants, animals and other parts of the universe (Willingham, 2004).

The core characteristics of naturalist intelligences are natural orientation, attribute orientation, categorization, hierarchical reasoning, and schematic memory. First, natural orientation is identification with living organisms and their environments. Second, attribute orientation which means finding common traits among items. Third, categorization is identifying categories by attribute. Forth, hierarchical reasoning which means ranking items by significance and relationship. The last is schematic memory which means internalizing and recalling information by attribute, category or hierarchy (McKenzie, 2017).

Multiple Intelligences in Educational Practices

Multiple intelligences (MI) theory has been used in educational field for many years (Aliakbari & Jamalvandi, 2010). In educational field, MI theory is very important because it helps the teacher and learners to expand teaching or learning tools beyond the conventional methods that is used in most school (e.g. textbook, lecture, writing assignments, and formulas). MI theory offers teachers and students to determine and adopt the best teaching or learning method that is suited with their own strengths (Marefat, 2007).

There are many ways to apply MI theory into learning process. The teacher can set up a learning center by involving resources and materials that promote the different intelligences. There are some instructional models that can be applied to explore multiple intelligences. For example, in the learning process, the teacher can use project-based learning and collaborative learning to ensure student valuable learning experiences in the classroom. Project-based learning can help the students to develop their nine intelligences by allowing them to plan, create, and process their designed project, while collaborative learning allows the students to explore their interpersonal intelligence by cooperating, sharing, and discussing with others. The teacher also can use teacher-centered approach and student-centered approach for implementing MI theory into the classroom. Teacher-centered approach entails the teacher to provide some materials, resources, and activities that are incorporated with the

lesson that teach to different intelligences. On the other hand, student-centered approach demands the student to actively create different materials that denote their understanding of the subject matter. In details, the students-centered approach allows them to use all their kinds of intelligences, while teacher-centered approach restricts the use of their varied forms of intelligence (Giles, Pitre, & Womack, 2017).

In language learning, the teacher can implement multiple intelligences – especially, linguistic and interpersonal intelligence – by using some approaches. For instance, the teacher can use teacher-centered approach to explore students' linguistic intelligence by providing materials and activities that involve learning language through hearing and seeing words, discussing, debating, speaking, reading, and writing. Then, the teacher also can provide the material and activities that involve language learning through comparing, relating, sharing, interviewing, and cooperating to explore students' interpersonal intelligence (Giles, Pitre, & Womack, 2017).

Integrating multiple intelligences – specifically linguistic and interpersonal intelligence – in language learning can help the students to improve their academic achievement. Linguistic intelligence can help the students to improve their speaking, listening, reading, and writing skills, while interpersonal intelligence can help them to improve their communication skill that will influence also their language proficiency (McKenzie, 2017; Giles, Pitre, et al. 2017).

Criticisms on Multiple Intelligences Theory

Despite the fact that MI theory has been implemented in educational field for many years (Aliakbari & Jamalvandi, 2010), there has been rising criticisms of the theory along with the expanding popularity of multiple intelligences theory. The most general criticism of multiple intelligences theory is the lack of empirical evidence of MI theory.

To date there have been no published studies that give evidence to prove the validity of MI theory. Meanwhile, MI theory is so broadly accepted and integrated in educational practices, even though Gardner's ideas are based more on reasoning and intuition which is lack of supported theory or references than on the results of empirical research studies (Peariso, 2008). Sternberg and Grigorenko (2004) also argued that there were no validating studies that can be an evidence to prove the validity of MI theory. In details, when MI theory was formulated there was not significant study or theory to support Gardner's idea directly (Randall, 2017). Therefore, why MI theory should be accepted in educational practices since it is still lack of scientific evidence.

Academic Achievement

Academic achievement is an achievement in educational field that every student wants to achieve. Benazir and Fauzia (2013) argued that academic achievement is something that a learner wants to achieve at educational institution i.e. school, college or university. Academic achievement is award given usually at educational field, such as school, college, or university. Academic achievement may also refer to learners' great performance in academic field. In big picture, academic achievement means fulfilling all offered courses or earning college degree (Arikunto, 2010). In addition, the researcher defines students' academic achievement as excellence in all academic disciplines, in class as well as in extracurricular activities.

Grade Point Average (GPA) as Indicator of Student's Academic Achievement

There are some indicators to determine students' academic achievement. One of the indicators is probably grade point average (GPA). GPA is the grade point that earned after following some courses that are computed by multiplying the points for the grade by the numbers of credits for the offered courses. GPA is calculated by dividing the total number of grade point earned by the total number of graded credits taken (Volwerk & Tindal, 2012). In

some country like Indonesia and USA, commonly the highest possible average that is gained by students is 4.00 or an A in every subject.

As an indicator to determine student's achievement, it was needed to classify and categorize the level of student's achievement classification. Every level of classification denotes different description. In Universitas Muhammadiyah Yogyakarta, the arrangement level of Cumulative GPA (CGPA) as written in academic guideline book of Universitas Muhammadiyah Yogyakarta is based on the decree of education minister No. 232/U/2000. The order of CGPA is as seen in the table below:

Grade Point Average (GPA)	Description
3.51 – 4.00	Very Good/ <i>Cumlaude</i>
2.76 – 3.50	Good
2.00 – 2.75	Satisfactory
< 2.00	Failed

From the table, it can be concluded that GPA score which is higher than 3.51 belongs to very good or *cumlaude* category. Then, GPA score with the range of 2.76 – 3.50 belongs to good category. Next, GPA score with the range of 2.00 – 2.75 belongs to satisfactory category. The last, GPA score which is lower than 2.00 belongs to failed category.

Related Study Review

There are some studies that were conducted to investigate the relation of multiple intelligences and academic achievement. Some of those studies revealed that there was relationship between MI theory and academic achievement, while another showed the opposite result. For example, there were Ayesha and Khurshid's study and Razmjoo's study. The study that is conducted by Ayesha and Khurshid (2013) revealed that there was

correlation between MI theory and academic achievement, while Razmjoo's (2008) research showed that there was no correlation between MI theory and academic achievement especially in the context of student's language proficiency.

Ayesha and Khurshid (2013) conducted the study to investigate the correlation between multiple intelligences and academic achievement among the university student in Rawalpindi and Islamabad, Pakistan. The research took 250 male and female university student that were collected from 4 private and public sector universities. Ayesha and Khurshid employed two instruments in the study, Gardner's (2000) simple multiple intelligences inventory (SMII) was used to measure students' intelligences level, while students' GPA of first three semester was used for measurement of students' academic achievement. After data collection, the researchers analyzed the data using SPSS 16 by applying various statistical test such as Mean, Standar Deviation (SD), and Pearson correlation. Afterward, the result of the study showed that there was positive correlation between multiple intelligences and academic achievement.

Despite the result of Ayesha and Khurshid's study that showed there was positive correlation between MI theory and academic achievement, Razmjoo's study denoted the opposing result. First of all, Razmjoo conducted the study to examine the strength of the relationship between multiple intelligences and students' language proficiency in English. The study had three objectives. The first objective was to investigate the relation of multiple intelligences and students' language proficiency. The second objective was to explore whether one intelligence or combination of intelligences are predictor for students' language proficiency. The last objective was to find out the influence of gender on multiple intelligences and language proficiency. Razmjoo had taken the sample from 278 male and female Iranian Ph.D candidates who participated Ph.D Entrance Exam in Shiraz University, Iran. Then, to fulfil those objectives that is mentioned above, Razmjoo distributed 100-item

language proficiency test and 90-item multiple intelligences questionnaire that is adapted from McKenzie's (1999) multiple intelligences inventory. After data collection, Razmjoo analyzed the data descriptively to determine Mean and Standard Deviation (SD). In details, Razmjoo also analyzed the data inferentially utilizing correlation, regression analysis, and independent t-test. On the basis of results, it was found that there was not a significant correlation between multiple intelligences and students' language proficiency.

In addition, the difference between those two studies and this study was the context of study. Present study was conducted to measure the correlation between multiple intelligences and academic achievement in the context of English education students while those two study were conducted to find out the correlation between multiple intelligences and academic achievement in the context of general school students.

Hypothesis

Academic achievement is something in which learner is profiting from instruction in learning process. Academic achievement also can be defined as the level of achieving is how far a student succeeds in particular exam or standardized test (Arikunto, 2010; Ayesha & Khurshid, 2013). According to Azimmudin and Chandra (2013), intelligence is one of the factors affecting academic achievement. Intelligence is directly related to cognitive process that uses brain ability to perceive information, and retain it as knowledge to be applied towards adaptive behaviors within an environment or context. Thus, cognitive process is the best way to increase the academic achievement of a person.

Every person has each intelligence to solve problems as Gardner (2000) believed that there are many types of intelligence and every person has a different intelligence type. Although identical twin that has the same appearance but they possibly have different intelligence, the types of intelligence known as multiple intelligences. Each types of intelligence have different ways affecting one's performance in learning process. For

example, the students with a strong spatial and visual intelligence will effectively learn and absorb information through what they see and observe with their eyes, while the students with a strong logical intelligence will more effectively learn and process information through the abstract symbols, such as numbers and geometric shapes.

As intelligence has different ways affecting one's performance in learning, the researcher interests in students' multiple intelligences. Hence, the researcher wants to investigate the correlation between multiple intelligences and students' academic achievement. The diagram below will show the plan of this study as follows:

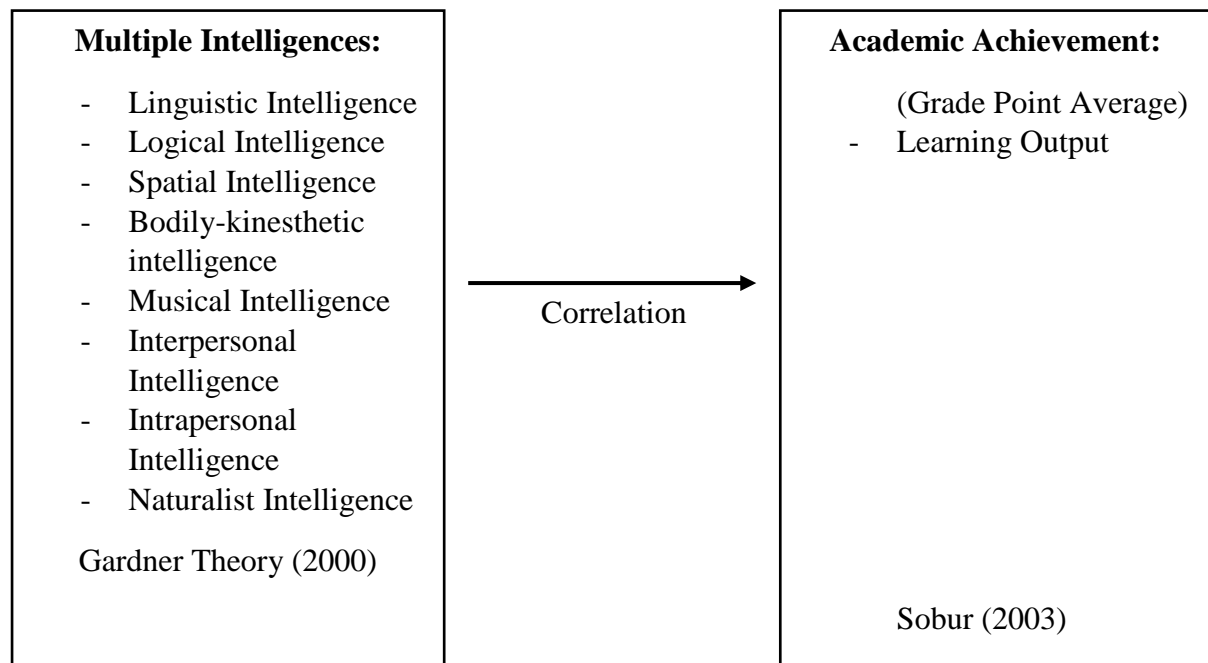


Figure 1. Conceptual Framework

Additionally, the researcher has the hypothesis for this study. The hypothesis of this study is:

(H₀) = There is no correlation between multiple intelligences and students' academic achievement.