

Applying Multiple Intelligences Theory in Designing English Vocabulary Activities for High School Students

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Abstract - The Theory of Multiple Intelligences, developed by Howard Gardner, posits that there are several distinct types of intelligence that individuals possess to varying degrees. Rather than measuring intelligence through a single, all-encompassing IQ score, Gardner argues that intelligence can be better understood and evaluated through the lenses of linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligences. This study aims to discover whether the Theory of Multiple Intelligences can be applied to design activities to accommodate individual learners in vocabulary lesson. Forty students in Grade 10 at a local high school in the North of Vietnam were invited to take part in a 8-week intervention in which they were engaged in a wide range of vocabulary tasks based on Gardner's idea of multiple intelligences. The comparison of the pre-test and post-test score allows judgements of students' achievements in vocabulary retention and use. The survey results indicate that multiple intelligence activities positively impact students' English vocabulary acquisition. The questionnaire responses at the end of the research period illustrates the participants' support of using Multiple Intelligence Theory in designing the vocabulary activities that they have been involved. Therefore, it is suggested that further application of the Theory in language teaching should be taken into considerations to maximize students' individual potentials and increase learning achievements.

Keywords - Multiple intelligent, Vocabulary development, Vocabulary learning, Vocabulary activities.

I – INTRODUCTION

Learning is essential to keep up with the changing world and conform to society's norms. Lenin encouraged his followers to "Learn, Learn More, and Learn Forever." Learning English is crucial as it has become a worldwide language. Having a strong vocabulary in English is the foundation for effective communication, and learners must be provided with vocabulary knowledge to support their proper utilization of the language. Having a large vocabulary can help students in all aspects of learning a foreign language. Education's primary goal must be to produce knowledgeable, capable, and responsible citizens. Howard Gardner's theory of multiple intelligences states that everyone has a minimum of eight intelligences and is capable of achieving greater levels of intelligence in the future. Education must focus on developing students' various forms of intelligence, not just linguistic acuity.

About the definition of "vocabulary", many researchers provide different explanations for the word "vocabulary" which can have multiple meanings depending on its characteristics, purpose, and context. Importantly, Soltani (2011) maintains that vocabulary acts as a crucial connecting link across the four pillars of English as a foreign language (EFL) proficiency. Another point is that Linse (2005) defined "vocabulary" as "a person's collection of phrases." Or Neuman and Dwyer (2009) describe vocabulary as "words we must know in order to communicate effectively. In many cases, it is widely recognized that vocabulary plays a crucial role in English as a foreign language proficiency, as it connects all aspects of language learning. Schmitt (2020) feels that lexical entries have a big affect on pupils when they realize that there is no news to be found. A person's vocabulary includes unique terms and expressions that are commonly used by native speakers, and it is an essential factor in verbal and written communication. In short, vocabulary is often defined as a collection of words or phrases that a person knows and can use in context. And it is necessary to expand one's vocabulary in order to effectively communicate and share ideas with others.

It can be easily seen that "learning vocabulary items plays a significant function in speaking, reading, listening, and writing" in the process of acquiring English language skills (Nation, 2001). But vocabulary is the most essential component. Without vocabulary knowledge, learners cannot comprehend the language or communicate effectively. This is because "very little can be represented without grammar; nothing can be communicated without vocabulary", according to Wilkins (1972). Vocabulary is vital for successful communication, both oral and written because if you don't know enough words, you won't be able to say much (Boyd Zimmerman, 1997). Increasing vocabulary is difficult, especially for Asian children. According to Aitchison (2003), "the vocabulary is enormous, and even for native speakers, it takes time to understand its meanings." However, having a broad vocabulary is necessary to acquire appropriate knowledge and abilities in communication, study, and job. And students need to devote a greater amount of time to this activity in order to expand the breadth and depth of their knowledge. Vocabulary is also essential for reading comprehension, expressing complex ideas, and learning new concepts. In sum, learners must focus on expanding their vocabulary to communicate effectively in a foreign language.

A suggested vocabulary learning method for students is Multiple Intelligent. In 1983, Dr. Howard Gardner of Harvard University introduced his concept of this method in his book "Frames of Mind". This challenged the long-held belief that intelligence is a single cognitive ability, and instead characterized intelligence as consisting of diverse types. Gardner believes that teachers should communicate with all pupils and help them develop their various intelligences. According to Gardner's theory, human intelligence can be understood in a variety of ways and has different characteristics. The theory proposes that each person has a range of different intelligences. Gardner suggested eight separate classifications of intelligence, which include Verbal/Linguistic, Mathematical/Logical, Visual/Spatial, Musical/Rhythmic, Bodily/Kinaesthetic, Interpersonal, Intrapersonal, and Naturalistic Intelligence. Each form of intelligence corresponds to a different area of the human brain. The idea of multiple intelligences has been incorporated into the policy-making processes of several nations and international organizations. Gardner's theory has had a significant impact on the cultural life of the general public in many nations, and its applications can be tailored to students of varying ages. Gardner's theory proposes a different way of understanding intelligence beyond the traditional IQ test, which often assessed people's ability to think logically through the performance of tests on paper. According to Le Thi Tuyet Hanh (2017), there is a connection between the idea of multiple intelligences and the learner skills that are based on the development potential of the education sector as it is described as follows:

Intellectual type	Competence Type
Linguistic intelligence	Language competence
Mathematical and logical thinking intelligence	- Computational competence - Problem solving and creativity competence - Technological competence - Informatics competence
Interpersonal Intelligence	Communication and cooperation competence
Inner intelligence/ Intrapersonal Intelligence	Self-control and self-learning competence
Musical intelligence	- Physical competence - Competence to understand nature and society - Aesthetic competence
Spatial intelligence and painting	
Motor and physical intelligence	
Natural intelligence	

Table 1. The connection between the idea of multiple intelligences and the learner skills.

There are many suggested activities based on Gardner intelligences to increase students' ability and interest in learning vocabulary (New Talent Language School):

Linguistic intelligence: Encourage children to read, write, tell stories, play with words, compose essays, and present their ideas through conversations, debates, and presentations. They can also participate in activities such as scriptwriting, film making, or designing brochures.

Mathematical and logical thinking intelligence: Encourage children to think like scientists, use logic and mathematics to solve problems, and conduct experiments. They can also engage in activities such as word puzzles and problem-solving puzzles.

Musical intelligence: Encourage students to compose songs, connect music to their studies, and sing along to songs. They can also play musical instruments or engage in other musical activities.

Motor and physical intelligence: Encourage students to perform plays, dances, and other physical activities that require skill and dexterity. They can also engage in sports or other physically active pursuits.

Spatial intelligence and painting: Encourage students to use colors, photos, drawings, and sketches to help them understand the concepts they are learning. They can also engage in creative activities such as mind mapping or visits to art museums.

Interpersonal intelligence: Encourage students to participate in class discussions, work in groups, and share their ideas with others. They can also host their own talk shows or debates to encourage others to offer their perspectives.

Intrapersonal intelligence: Provide students with activities that will help them make connections between their personal experiences and the topics they are learning. They can create blogs, write reports or essays, and engage in metacognitive projects that prompt them to reflect on their own learning processes.

Natural intelligence: Encourage students to explore the natural world, learn about ecosystems, and participate in activities such as gardening or outdoor expeditions. They can also learn about sustainability and conservation efforts.

Intelligence Area	Is strong in	Likes to	Activities	Profession
Linguistic intelligence	reading, writing, telling stories, memorizing dates, thinking in words.	read, write, talk, memorize.	reading, hearing and seeing words, speaking, writing, discussing and debating.	Writer, lawyer, journalist, speaker, teacher, poet.
Mathematical and logical	math, logic,	solve problems,	working with	Scientist, engineer,

thinking intelligence	reasoning, problem-solving, patterns.	puzzles, question; work with number.	patterns and relationships, classifying, categorizing, working with the abstract.	accountant, trader, negotiator, statistician.
Musical intelligence	singing, picking up sounds, remembering melodies, rhythms..	sing, hum, play an instrument, listen to music.	rhythm, melody, singing, listening to music and melodies.	Composer, singer, DJ, musician.
Motor and physical intelligence	athletics, dancing, acting, crafts, using tools.	move around, touch and talk, use the body language.	moving, processing knowledge through bodily sensations	Dancer, actor, athlete, gardener, chef.
Spatial intelligence and painting	maps, charts, drawing, puzzles, visualization, imaging.	design, draw, build, create, look at pictures.	work with pictures and colors, visualizing, drawing.	Artist, architect, graphic designer, engineer, fashion designer, interior designer, photographer, pilot, sculptor.
Interpersonal intelligence	understanding people, leading, orrganizing, communicating, resolving conflicts, selling.	have many friends, talk to people, join groups.	sharing, comparing, interviewing, cooperating.	Mediator, leader, advisor, salesperson, teacher, doctor, coach.
Intrapersonal intelligence	understanding self, recognizing strengths and weaknesses, setting goals.	work alone, reflect, pursue, interests.	working alone, doing selfpaced projects, having space, reflecting.	Psychologist, philosopher, writer, theologian, career counselor.
Natural intelligence	understanding nature, making distinctions, identifying flora and fauna.	be involved with nature, make distinctions, work in the outside.	working in nature, exploring things, learning abot plants and natural events.	Astronaut, biologist, zoologist, nature conservationist, gardener, farmer, animal trainer, geologist, ecologist, veterinarian.

Table 2. Some suggested activities based on Multiple Intelligences.

II – RESEARCH METHODS

2.1. Participants

The study included 40 students who were in the 10A10 class at Luong Ngoc Quyen High School in Thai Nguyen province, aged between 15 and 16, and had an English proficiency level between A2 and B1 based on their previous year's English transcripts. A preliminary questionnaire was conducted to classify the students according to Gardner's multiple intelligences theory. The experimental group participated in eight weeks of sessions that included intelligence-based exercises integrated into appropriate English lessons. At the end of the study, students completed a post-questionnaire to evaluate the researcher's work and increase awareness of the topic.

2.2. Data collection instruments

2.2.1. Tests

The tests aimed to assess the capacity, knowledge, intellect, skills, and talents of an individual or group. In this study, the exam was taken twice to collect data on students' use of new vocabulary after completing various activities and exercises. The tests were administered after students had studied Unit 6, 7, and 8 of the book "I-Learn Smart World". The tests consisted of two parts: multiple choice and free response, and focused on the information covered in the previous lessons, particularly new words and grammar. The test included exercises such as pronunciation, synonyms, antonyms, sentence completion, paragraph writing, error correction, and writing. The tests were a visual evaluation of progress and did not carry significant weight in the overall investigation.

2.2.2. Questionnaires

The Multiple Intelligence Survey was used as the pre-questionnaire for data collection in this research. The questionnaire aimed to gather crucial information about students based on Gardner's categories of intelligence. It consisted of 80 questions organized into 8 subsections. The first two sections (questions 1-20) focused on linguistic and mathematical intelligence, while the third section (questions 21-30) explored visual-spatial intelligence. The fourth to sixth sections (questions 31-60) examined bodily-kinesthetic, musical-rhythmic, and interpersonal intelligences, respectively. The seventh section (questions 61-70) looked into intrapersonal intelligence, and the final section focused on naturalistic intelligence. Based on the questionnaire results, the researcher will make suitable design recommendations for students according to their multiple intelligences.

Moreover, the post-questionnaire was created to investigate students' perceptions of the exercises and activities offered by the researcher in relation to their multiple intelligences and the effectiveness of these activities. The post-questionnaire provides the researcher with valuable information on the significance of the activities and the students' opinions on their efficiency. It also helps identify where students can find the necessary practice and activity.

2.3. Research procedures

After completing the initial questionnaire, the participants were engaged in an eight-week experiment during English instruction in the classroom. The researcher incorporated a range of activities appropriate for different types of intelligence into practical teaching during this period. Additionally, the researcher developed numerous extracurricular events and practical exercises to provide students with more opportunities for practice. At the end of each instructional unit, students took a unit exam to evaluate their utilization of the previously learned material. Following the eight-week period, the students were asked to complete a post-questionnaire to determine their perception of the significance of the activities and their impact on them. The steps involved in the research are outlined in the table that can be seen below:



Figure 1. The steps involved in the research.

Week	Lesson	Activities	Type of intelligence
1		Pre-questionnaire	
2	UNIT 6 – Lesson 2.2 – Grammar	Game: Crossword	- Mathematical and logical thinking intelligence
		Work in groups: Write some rules for your class.	- Linguistic intelligence - Interpersonal Intelligence
	UNIT 6 – Lesson 2.3 – Pronunciation and Speaking	Game: Picture prompts	- Spatial intelligence and painting
		Lisen: Listen to the words and focus on the underlined letters; then repeat. Speaking: Make some new rules for your city. In groups: Discuss and write six rules for your city using a mind map.	- Musical intelligence - Linguistic intelligence - Interpersonal Intelligence - Spatial intelligence and painting
3	UNIT 6 – Lesson 3.1 – Listening And Reading	Watch the video and list the things they do to improve their city. Then talk about the topic: “What will you do to improve your community? Why do you want to make these changes?”	- Linguistic intelligence - Musical intelligence
		Work in pairs: Design flashcards about the topic: “Do you think Thai Nguyen city needs more green spaces? What else does it need?”	- Interpersonal Intelligence - Spatial intelligence and painting
	UNIT 6 – Lesson 3.2 – Writing	Find replacement pronouns for the given words Write a letter to the Youth Lead the Change project in your city talking about your project and why you think it is the best. Use the feedback form to help you.	- Linguistic intelligence - Intrapersonal Intelligence
4	UNIT 7 – Lesson 1.1 – Vocabulary and Reaing	Match words with their correct meanings and pictures	- Linguistic intelligence - Mathematical and logical thinking intelligence - Spatial intelligence and painting
		Listen and repeat all the words.	- Musical intelligence
		Work in pairs: Talk about the inventions in Task a you have used before.	- Interpersonal Intelligence
	UNIT 7 –	In groups: Make a play about the topic: “If you were an inventor, what would you invent to help your mother with the housework? How would this invention affect our lives? Why?” The rearrange game.	- Linguistic intelligence - Interpersonal Intelligence - Linguistic intelligence

	Lesson 1.2 – Grammar		- Mathematical and logical thinking intelligence - Motor and physical intelligence
		Speaking: Use the non-defining relative clauses to talk about great inventions or inventors that you know.	- Linguistic intelligence - Intrapersonal Intelligence
5	UNIT 7 – Lesson 1.3 – Pronunciation and Speaking	Game: Catch the word	- Linguistic intelligence - Mathematical and logical thinking intelligence
		Listen to the words, focus on the underlined letters, and then repeat with the correct stress	- Musical intelligence
	Speaking: You're in a talk show. In pairs: Make a conversation about famous inventors and their inventions.	- Interpersonal Intelligence - Spatial intelligence and painting	
	UNIT 7 – Lesson 2.1 – Vocabulary and Listening	Word square: Find the words in the table	- Linguistic intelligence - Mathematical and logical thinking intelligence
		Listen and repeat all the words.	- Musical intelligence
		Work in pairs: Use the new words to describe an object or person in class.	- Natural intelligence
6	UNIT 7 – Lesson 2.2 – Grammar	Complete the sentences using the given prompt.	- Linguistic intelligence - Mathematical and logical thinking intelligence
		Mini-game – Guessing words.	- Interpersonal Intelligence - Natural intelligence
	UNIT 7 – Lesson 2.3 – Pronunciation and Speaking	Game: Sentence Arranging	- Linguistic intelligence - Mathematical and logical thinking intelligence - Motor and physical intelligence
		Mini-game: “I am a great inventor.”	- Interpersonal Intelligence - Natural intelligence
7	UNIT 7 – Lesson 3.1 – Listening and Reading	Game: Happy race	- Linguistic intelligence - Interpersonal Intelligence - Mathematical and logical thinking intelligence
		Work in groups: Draw a mind map showing the advantages and disadvantages of the internet for students.	- Spatial intelligence and painting - Interpersonal Intelligence
	UNIT 7 – Lesson 3.2 – Writing	Game: Sort words.	- Linguistic intelligence - Mathematical and logical thinking intelligence
		Writing: Write an essay about an invention that makes your life easier or more interesting	- Intrapersonal Intelligence
8	UNIT 8 – Lesson 1.1 – Vocabulary and listening	Game: A tale never loses in the telling.	- Linguistic intelligence - Motor and physical intelligence
		Match the word with descriptions; then listen and repeat.	- Linguistic intelligence - Mathematical and logical thinking intelligence - Musical intelligence
	Work in groups: Give the solutions to reduce environmental pollution in Viet Nam using a mind map.	- Spatial intelligence and painting - Interpersonal Intelligence	
	UNIT 8 – Lesson 1.2 – Grammar	Fill in the blanks with the correct word.	- Linguistic intelligence - Mathematical and logical thinking intelligence
Mini game: “We are King and Queen”		- Interpersonal Intelligence	

In addition to the activities in the lesson plan, some other activities are designed as follows:

- Activity 1:
- + English Speaking Festival with two topics: "Environment" and "Preserving traditional culture of Vietnam"
- + Form: singing, dancing, drama, dancing, catwalk, and so on.
- Activity 2:
- + Youth month emulation: Enthusiastically participate in folk dance activities, football, volleyball, emulation to get good

scores.

+ Form: Enthusiastically participate in activities, actively go to the board to do exercises and get points.

Table 3. Procedures of the treatment.

III – FINDINGS AND DISCUSSION.

3.1. Pre – questionnaire

Scoring the MIS: The highest score is the preferred Multiple Intelligence area.

(1) Linguistic intelligence

(5) Musical intelligence

(2) Mathematical and logical thinking intelligence

(6) Interpersonal Intelligence

(3) Spatial intelligence and painting

(7) Intrapersonal Intelligence

(4) Motor and physical intelligence

(8) Natural intelligence

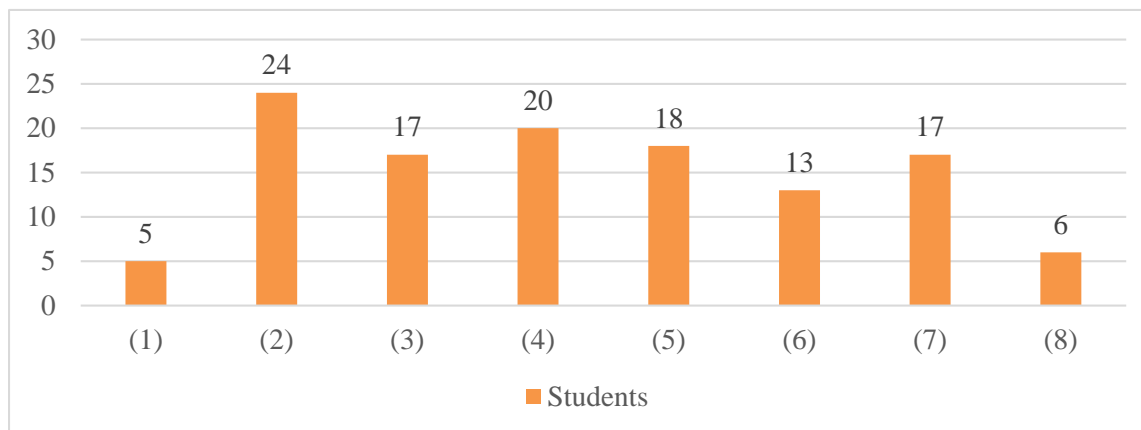


Figure 2. The graph depicts the number of students in each of the Gardner's eight intelligences.

The data presented in the figure provides information about the distribution of different types of intelligence among a group of 40 students. Among the students, only 5 have linguistic intelligence, which is the ability to use language effectively. Mathematical and logical thinking intelligence, which involves the ability to solve complex problems using reasoning and logic, has the highest number of students with 24. The category of spatial intelligence and painting, which includes the ability to visualize and manipulate objects in space and creativity, has 17 students. Motor and physical intelligence, involving control of body movements and coordination, has 20 students. Musical intelligence, which involves understanding and creating music, has 18 students. Interpersonal intelligence, the ability to interact effectively with others, has 13 students, while intrapersonal intelligence, the ability to understand oneself, has 17 students. Lastly, natural intelligence, the ability to appreciate the natural world, has only 6 students. In summary, the data shows that mathematical and logical thinking intelligence has the highest number of students, followed by motor and physical intelligence, and then spatial intelligence and painting. The categories with the lowest number of students are linguistic and natural intelligence. It is important to note that each type of intelligence is important and valuable in its own right, and no type of intelligence is superior to the others.

3.2. The tests

The results:

(1) Before test

(2) Average score

	(1)	(2)		(1)	(2)		(1)	(2)		(1)	(2)
Student 1	8.5	8.33	Student 11	6	6	Student 21	6	7	Student 31	7	6.83
Student 2	5	6	Student 12	7	7	Student 22	5	6.33	Student 32	7	7.33
Student 3	6	6.83	Student 13	6	6.33	Student 23	8	7.83	Student 33	8	8
Student 4	7	6.83	Student 14	8	8	Student 24	6	6.33	Student 34	6	7.17
Student 5	6.5	6.83	Student 15	6	6.33	Student 25	6	6.67	Student 35	7	7.33
Student 6	7	7.5	Student 16	4.5	5.5	Student 26	6	6.33	Student 36	7	7.17
Student 7	6	7.17	Student 17	7	7.17	Student 27	6	6.83	Student 37	6.5	6.83
Student 8	7	7	Student 18	7	6.83	Student 28	7	7.33	Student 38	7	7.67
Student 9	7.5	7.67	Student 19	6	6.17	Student 29	8	8.33	Student 39	6	6.67
Student 10	8	7.83	Student 20	5	5	Student 30	7	7.17	Student 40	6	6.33

Table 4. The results of the tests.

The table presents data that sheds light on how a certain treatment affects the scores of 40 students. By examining the data, we can identify patterns and trends in student performance and assess the efficacy of the treatment.

Overall, the treatment has had a positive effect, with most students performing better. However, individual results vary greatly, with some students showing significant improvement and others showing minimal improvement. It is important to note that the impact of the treatment varies among individual students. The data shows that some students have significantly improved their scores while others have not benefited as much. There are some students who have shown a remarkable improvement in their scores after treatment, while others have only shown minimal improvement. For example, Student 1 and Student 29 both improved from 5.5 to 8.33, indicating that the treatment is particularly effective for some students. Conversely, Student 21 only showed an improvement of 0.33, suggesting that the treatment may not be equally effective for all students. Another important observation is that the distribution of scores is slightly skewed towards the higher end, indicating that most students have shown an improvement in their scores, while only a few have shown a slight decrease.

In conclusion, the data shows that the treatment has generally had a positive impact on student performance, but the effect varies among individual students. It is therefore important to take into account individual differences when evaluating the effectiveness of the treatment.

3.3. Post-questionnaire

The results: (1) *Totally agree* (2) *Agree* (3) *Neutral* (4) *Disagree* (5) *Totally disagree*

	(1)	(2)	(3)	(4)	(5)
1. I am very interested in exercises and activities based on multiple intelligences.	52.5%	37.5%	10%	0	0
2. The exercises and activities are very relevant to my diverse intelligence(s).	35%	25%	37.5%	2.5%	0
3. The exercises and activities have greatly influenced my learning experience.	42.5%	37.5%	17.5%	2.5%	0
4. The exercises and activities challenged me and made it difficult for me.	15%	17.5%	35%	27.5%	5%
5. The exercises and activities have encouraged me to need to think more creatively than before.	37.5%	47.5%	15%	0	0
6. The exercises and activities have encouraged me to work collaboratively with others.	52.5%	42.5%	5%	0	0
7. Exercises and activities have helped me improve my problem-solving skills.	30%	40%	27.5%	2.5%	0
8. Exercises and activities have helped me improve my communication skills.	35%	47.5%	15%	2.5%	0
9. Exercises and activities have helped me improve my confidence in public.	47.5%	27.5%	25%	0	0
10. Exercises and activities have made it easier for me to memorize and learn vocabulary.	42.5%	37.5%	17.5%	2.5%	0
11. This learning method helps me better understand my learning style.	42.5%	37.5%	20%	0	0
12. This learning method helps me better understand different types of intelligence.	42.5%	37.5%	20%	0	0
13. I will incorporate the knowledge gained from these exercises and activities into my future learning and personal development.	42.5%	30%	22.5%	5%	0
14. Overall, I am very satisfied with the variety of activities and intellectual exercises.	45%	45%	10%	0	0
15. I will recommend this learning method to other students.	45%	40%	15%	0	0

Table 5. The results of the post – questionnaire.

The data shows that respondents generally have a positive view of exercises and activities based on multiple intelligences. However, many remain neutral about the relevance of these exercises to their own diverse intelligences, indicating a need for education on the topic. These exercises are perceived to have a positive impact on learning, problem-solving, communication, and confidence, but some respondents found them not challenging enough. The learning method based on multiple intelligences is seen as helpful and respondents intend to apply this knowledge in the future. Improvements could be made to better cater to individual needs and increase awareness of multiple intelligences.

IV – CONCLUSION

The purpose of this study was to answer two research questions: "What are the strengths of each student based on the idea of Multiple Intelligences?" and "How do activities based on the notion of Multiple Intelligences affect high school students?" A pre-questionnaire was used to categorize students according to Howard Gardner's theory of multiple intelligences, and activities were then developed to suit the strengths of each individual and group of students. These activities were integrated into the overall lesson plan and daily instruction, as well as extra exercises and events outside of regular school hours. The study focused on a tenth-grade class who were preparing for a provincial test in April and needed to increase their vocabulary knowledge. Results showed that the exercises developed were successful in improving vocabulary memory and sustaining students' engagement in the classroom. The use of this learning approach has the potential to assist students of any age or level in enhancing and reinforcing what they have learned, particularly in the area of vocabulary.

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