BRIDGING TEACHING AND LEARNING STYLES:

Student–Teacher Alignment in Multiple Intelligences: A Schoolwide K–12 Analysis

A Research Paper Presented to

SARSEF Science and Engineering Fair

In Partial Fulfillment of Requirements for

Advanced Research Methods

by

[redacted]

Social Science

January 2026

INTRODUCTION

The Theory of Multiple Intelligences, developed by psychologist Howard Gardner, explains that intelligence is not just one single ability measured by IQ tests. Instead, people can be smart in separate ways, such as through language, music, logic, movement, nature, or understanding themselves and others. This theory is important because it shows that everyone has unique strengths and learning styles. By studying multiple intelligences, we can better understand how people learn and how education can be adapted to help all students succeed.

Background Research

How Multiple Intelligences Shape Learning Styles and Education

Howard Gardner's Theory of Multiple Intelligences suggests that people learn and understand the world in different ways, depending on which types of intelligence are strongest in them. For example, a student with strong bodily-kinesthetic intelligence may learn best through hands-on activities, while one with strong musical intelligence may remember information better through rhythm or song. This idea has influenced how teachers design lessons, encouraging schools to use more varied teaching strategies so that all types of learners can succeed. By connecting intelligence to learning styles, Gardner's theory highlights the importance of recognizing diverse talents in education.

Strengths and Criticisms of the Theory of Multiple Intelligences

While Gardner's theory of Multiple Intelligences has been widely celebrated for valuing different kinds of talents, it has also faced criticism from psychologists and educators. Supporters argue that the theory helps teachers reach more students by recognizing that intelligence is not "one-size-fits-all." However, critics believe there isn't enough scientific evidence to prove that intelligence is truly separate, suggesting they may simply be different skills or learning preferences. This subtopic allows exploration of both the positive impact and the challenges of the theory in education and psychology

Howard Gardner's Theory – In 1983, Howard Gardner proposed the Theory of Multiple Intelligences, challenging the idea that intelligence is a single general ability (IQ) HowardGardner.com – MI Theory

Eight Original Intelligences – Gardner identified 8 types: linguistic, logical -mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic. Verywell Mind – Gardner's Theory of Multiple Intelligences

Later Expansion – Gardner suggested a possible ninth intelligence, existential intelligence, though it's not officially recognized in the main model. blog: A Resurgence of Interest in Existential Intelligence

Traditional IQ Limitations – Before Gardner, intelligence was mostly measured through IQ tests, which focused mainly on logical-mathematical and linguistic abilities. Edutopia – Multiple Intelligences Theory: Widely Used, Yet Misunderstood

Educational Impact – Schools began to use MI theory to design lessons that appeal to different learning strengths (e.g., using music for musical learners, group work for interpersonal learners). UTHSC – Multiple Intelligence Theory in Education

Linguistic Intelligence – Strong ability with words, reading, writing, and storytelling. Common in writers, lawyers, and journalists. Verywell Mind – Linguistic Intelligen

Logical-Mathematical Intelligence – Strength in reasoning, numbers, and problem-solving. Common scientists, engineers, and mathematicians. Exploring the 8 Intelligences – University of Tennessee

Bodily-Kinesthetic Intelligence – Learning through movement and hands-on activities. Common for athletes, dancers, and surgeons. Bodily-Kinesthetic Intelligence

Interpersonal vs. Intrapersonal – Interpersonal is understanding others' feelings, while intrapersonal is understanding one's own emotions and motivations. Learning Theories – Multiple Intelligences

Criticism of MI Theory – Some psychologists argue there isn't enough scientific evidence to prove these are separate intelligence. They may just have different skills or talents. PMC – Neuromyths and Multiple Intelligences Theory

STATEMENT OF THE PROBLEM

General Problem:

This project aimed to analyze any mismatch between the common teaching strategies used inside the classroom and the dominant intelligence among K-12 students in our school.

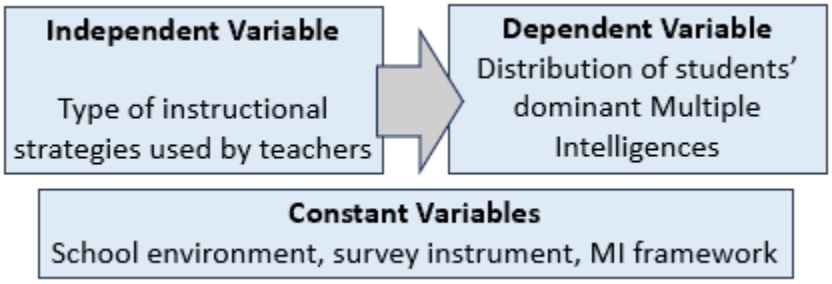
To be specific, this project answered the following questions:

1. What are the dominant Multiple Intelligences among students across elementary, middle school, and high school in the school?
2. Which Multiple Intelligences are most frequently supported by teachers' instructional strategies across the school?
3. To what extent do teachers' instructional strategies align with the dominant Multiple Intelligences of students across K–12?

HYPOTHESIS

- **Null Hypothesis:** Teaching strategies are aligned with students' dominant Multiple Intelligences.
- **Alternative Hypothesis:** Teaching strategies are not fully aligned with students' dominant Multiple Intelligences.

VARIABLES OF THE STUDY



METHODS

Survey and Data Collection:

To start this research, we gathered data from students regarding their perceived learning styles and the current teaching methods being used by the teachers at HPA.

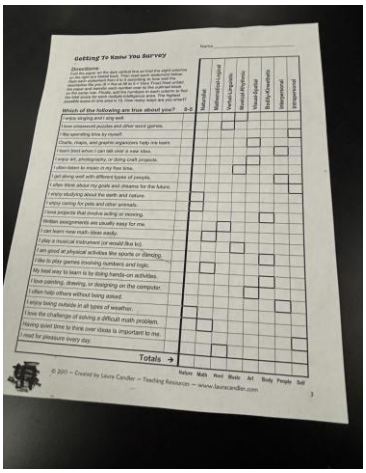


Figure 1: Survey

We started this project by taking the data from the students and looking into the profile of the kind of intelligence that they have.

- **Perceived Engagement**: Questions related to students' engagement levels.
- **Alignment with Teaching Strategies**: Questions to assess how students perceive the alignment of teaching strategies with their learning style.

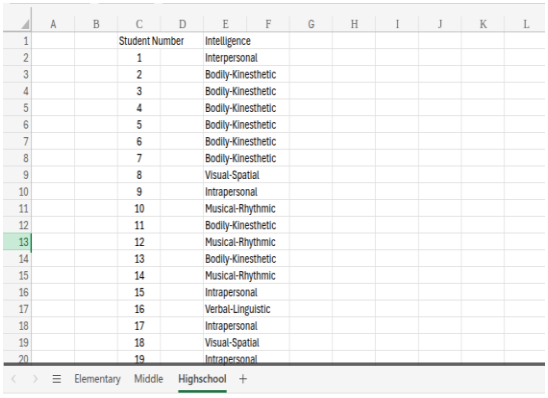
Implementation of Alternative Teaching Strategies:

To test the effectiveness of different teaching strategies tailored to various intelligences and assess their impact on student engagement and performance.

- **Pedagogical Approaches**: Using differentiated instruction, project-based learning, hands-on activities, and technology to reach different intelligences.
- **Student-Centered Learning**: Encourage self-directed learning where students have more choice in how they learn.

Data Analysis and Evaluation.

To analyze the data collected from the surveys, performance metrics, and teacher observations to evaluate the success of the teaching modifications.



	A	B	C	D	E	F	G	H	I	J	K	L
1			Student Number		Intelligence							
2			1		Interpersonal							
3			2		Bodily-Kinesthetic							
4			3		Bodily-Kinesthetic							
5			4		Bodily-Kinesthetic							
6			5		Bodily-Kinesthetic							
7			6		Bodily-Kinesthetic							
8			7		Bodily-Kinesthetic							
9			8		Visual-Spatial							
10			9		Intrapersonal							
11			10		Musical-Rhythmic							
12			11		Bodily-Kinesthetic							
13			12		Musical-Rhythmic							
14			13		Bodily-Kinesthetic							
15			14		Musical-Rhythmic							
16			15		Intrapersonal							
17			16		Verbal-Linguistic							
18			17		Intrapersonal							
19			18		Visual-Spatial							
20			19		Intrapersonal							

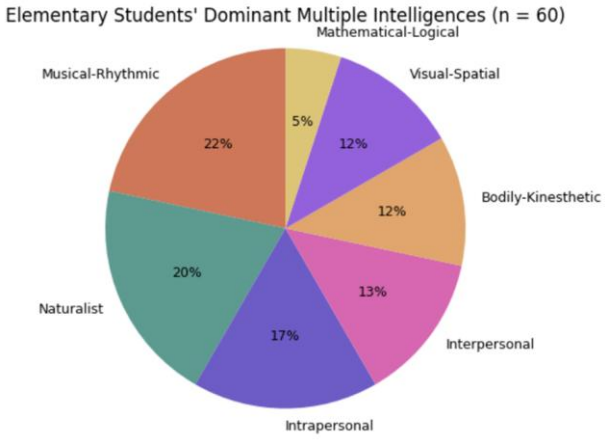
Elementary Middle Highschool +

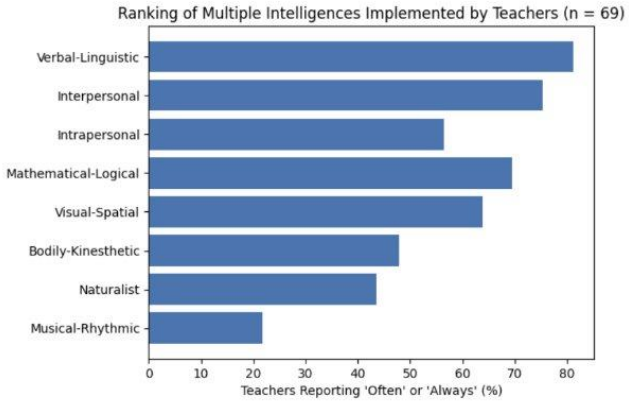
Figure 3: Data in Excel **Quantitative Analysis**: Statistical comparison of student performance before and after the intervention, including engagement levels.

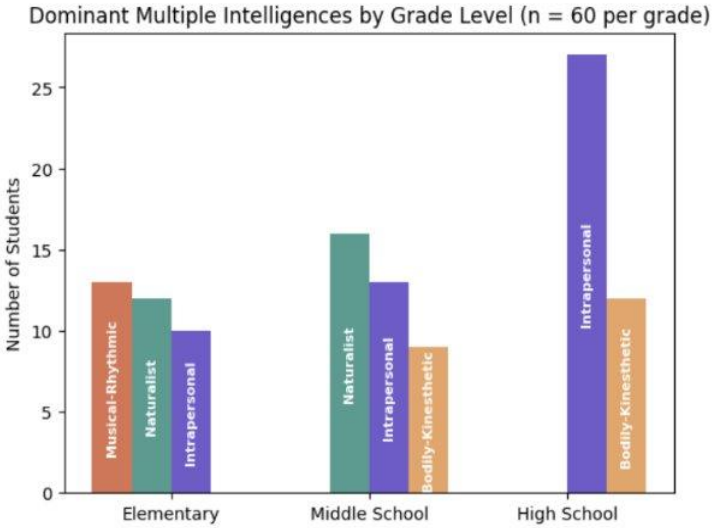
Qualitative Analysis: Analyze open-ended responses from surveys and teacher interviews to understand students' and teachers' perspectives on the effectiveness of the new strategies.

- **Correlation Analysis**: Assess whether there is a significant correlation between the alignment of teaching strategies with multiple intelligences and student engagement.

RESULTS







DISCUSSION AND CONCLUSION

- Intrapersonal intelligence ranked highest among students across K–12, yet instructional support for self-reflection and metacognitive strategies was only moderate, indicating partial alignment between student learning preferences and teaching practices.
- Naturalist and musical-rhythmic intelligences were highly prevalent among students but showed low to very low instructional use, suggesting these intelligences are underused in classroom practice despite strong student presence.

- Verbal-linguistic, mathematical-logical, and interpersonal strategies were frequently emphasized by teachers even though these intelligences ranked lower among students, indicating an overuse of traditional instructional approaches.
- Overall, the results reveal uneven alignment between student learning profiles and instructional strategies, highlighting opportunities to diversify teaching practices to better support dominant student intelligences.

In conclusion, the data from HPA demonstrates that when educators recognize and adapt to the unique intellectual profiles of their students, they foster a more effective and equitable learning environment. This suggests that shifting toward Multiple-based teaching strategies is not just an alternative method, but a necessary step for maximizing the academic potential of diverse learners.