

The Multiple Intelligences of Grade School Pupils

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Abstract

Multiple Intelligence is an integral part of teaching pupils in the primary years. Identifying the types of intelligence of pupils can assist teachers to understand them better. This study then tries to analyze the multiple intelligences of grade school pupils of St. Paul University Dumaguete. The data utilized for the study were collected by the Guidance Office using a standardized tool.

The results of the study yield that the most and least occurring Multiple Intelligences per grade level are, as follows: for Grade 1, the highest is *Music* and the lowest is *Math*; for Grade 2, the highest is *Body/Nature* and lowest is *Word/Math/Self*; for Grade 3, the highest is *Nature* and the lowest is *Word*; for Grade 4, the highest is *Self* and the lowest is *Word*; for Grade 5, the highest is *Self* and the lowest is *Math*; and for Grade 6, the highest is *Music* and the lowest is *Art*. If treated as a single population, the most and least occurring Multiple Intelligences in all levels are *Self* (18.07%) and *Word* (7.23%), respectively. Furthermore, at $p < 0.05$, *Art* has a positive correlation with Grade Levels at Pearson $r = (-0.883)$, which implies that lower grade levels tend to have more occurrence of *Art* intelligence. This study recommends that creative strategies and appropriate instructional materials shall be designed to cater to intellectual needs of pupils.

Keywords: *multiple intelligences, intelligence test, creative strategies, instructional materials, intelligence needs*

Introduction

In the early 1900's, Alfred Binet developed the first "intelligence test" used to measure "IQ" (Intelligence Quotient). Such assessment was focused primarily on a very partial and limited definition of intelligence. Recent cognitive psychology research shows that intelligence needs to be understood more broadly and embraces more capabilities than had previously been recognized. In 1983, Howard Gardner proposed the theory of multiple intelligences as a model of intelligence that differentiates intelligence into

various specific (primarily sensory) modalities, rather than seeing it as dominated by a single general ability. He defined intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural settings" (Gardner, 1989). Although his definition of intelligence was provisional, it was defined as "the bio-psychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (Gardner, 2000).

In this study, Multiple Intelligences are enumerated, as follows: 1) **Logical-Mathematical Intelligence (*Math*)** – consists of the capacity to perform mathematical operations, logically analyze problems, and conduct scientific investigations; 2) **Linguistic Intelligence (*Word*)** – Language as a means of remembering information and the ability to effectively express oneself poetically or rhetorically are examples of this intelligence; 3) **Spatial Intelligence (*Art*)** – Language as a means of remembering information and the ability to effectively express oneself poetically or rhetorically are examples of this intelligence; 4) **Musical Intelligence (*Music*)** – involves proficiency in musical pattern appreciation, composition, and performance; also includes the ability to identify and compose musical tones, rhythms, and pitches; 5) **Bodily-Kinesthetic Intelligence (*Body*)** – entails the potential to solve problems by using all or parts of one's body; or the ability to use mental skills to coordinate one's physical movements; 6) **Interpersonal Intelligence (*People*)** – the ability to notice and make differentiations among others and, specifically, their states of mind, personalities, inspirations, and aims; also the capacity to comprehend other people's intentions, motivations, and desires; 7) **Intrapersonal Intelligence (*Self*)** – the ability to distinguish and identify a variety of personal thoughts and feelings, as well as to use these

thoughts to comprehend one's own actions; and 8) **Naturalist Intelligence** (*Nature*) – the ability to distinguish likeness, recognize contrasts, and make groupings of the living organic entities in one's current circumstance (González-Treviño *et al.*, 2020).

The first two (Linguistic intelligence and Logical-mathematical intelligence) have been typically valued in schools; the next three (Musical intelligence, Bodily-kinesthetic intelligence, and Spatial intelligence) are usually associated with the arts; and the final two (Interpersonal intelligence and Intrapersonal intelligence) are what Howard Gardner called 'personal intelligences' (Gardner, 1999). In *Frames of Mind* (1983), Gardner treated the personal intelligences “as a piece”. Because of their close association in most cultures, they are often linked together. Notwithstanding, he contends that it's a good idea to consider two types of individual knowledge. They are used at the same time and tend to complement each other as people develop skills or solve problems.

By tradition, intelligence or smartness is viewed in terms of a score one obtains on a standardized intelligence test or merely on their subject grades. Thus, students who have other potentials but who don't perform well academically are not given a chance to develop fully and their strengths may remain unrealized; consequently, this may be a loss to the school and to the society, at large. How students utilized their intelligences within the classroom or into the society is always something to reflect on as educators. On this basis, the Grade School Guidance Office conducted a survey on the multiple intelligences to all the Grade School Pupils of St. Paul University Dumaguete. The knowledge about the kind of intelligence the pupils have would benefit not only the pupils but also the teachers and the administration, as well.

Specifically, this study seeks to answer the following:

1. What is the **most and least occurring** multiple intelligence/s in **each** grade level?
2. What is the **most and least occurring** multiple intelligence/s in **all** grade levels?
3. Is there a **significant difference** between the grade levels and their perceived multiple intelligences?

Methodology

This study utilized a descriptive quantitative research design. The research questionnaire is a standardized tool (F-0GD-037-2017) adapted from *Multiple Intelligence Survey for Kids* by Laura Candler (*Free Multiple Intelligence Survey for Kids*, 2013), which aims to identify the multiple intelligences of all Grade School pupils in all levels. There was a total of 170 (99%) pupils who were able to answer the said survey tool out of 172 total population. The said test was administered by the Guidance Personnel through the assistance of the Homeroom Advisers. The purpose of the test was explained to the pupils and the directions were also read aloud. The instrument used consists of 8 categories corresponding to the 8 multiple intelligences and a total of 24 items.

In the testing procedure, ethical considerations were observed through parental consent form concerning the ages of the participants including their rights to confidentiality with their results as observed in the Guidance Center's testing procedures. To answer the tool, the student simply rated the item in each section that best describes themselves. Responses were then

tabulated afterwards and frequency distributions as well as percentages were used. For the statistical treatment of the data gathered, frequency counts and percentages are used.

Additionally, inferential statistics was used in the study using *Pearson Correlation* or *Pearson Product Moment Correlation* (PPMC) to evaluate the linear relationships between data sets when a change in one variable is affecting a proportional change in the other variable. In this study, the researchers aimed to deal with the correlation between Grade Levels and the occurrence of Multiple Intelligences with the data set being analyzed using the correlation matrix of *jamovi* (v. 2.3.26.0).

Results

Figure 1 below shows the distribution of respondents exposing the total number of pupils in comparison to the frequency of those who had participated in the survey. There was a total of 170 (99%) pupils from the Grade School Unit who were able to answer the test out of 172 total population. Grade 4 leads the highest number of respondents ($n = 39$) while Grade 1 is having the least number of participants ($n = 22$).

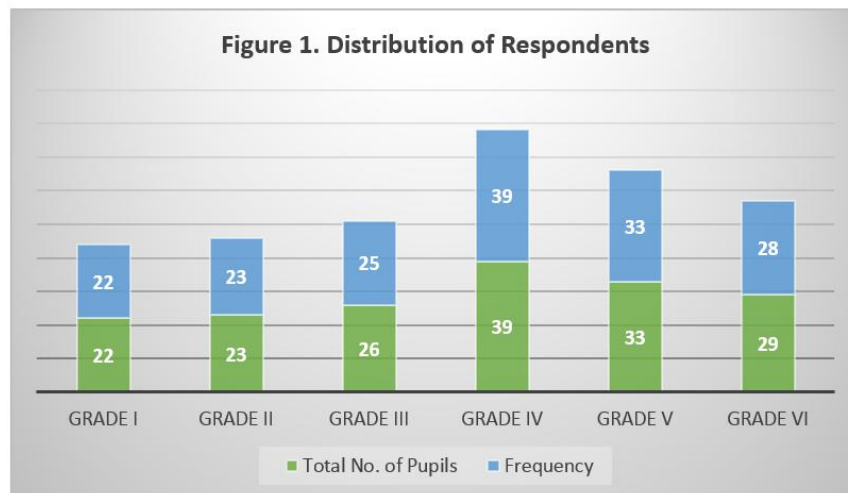


Figure 2 below shows the Multiple Intelligences of the Grade 1 pupils. There was a total of 22 respondents. Their top 3 Multiple Intelligences are as follows: Top 1 is *Music* with 59% of respondents; Top 2 is *Body* with 41% and Top 3 is *Nature & Art* with 36%. The least occurring intelligence is *Math* with 23%. Some pupils also exhibit multiple intelligences results; thus, n equating to more than the total number of respondents.

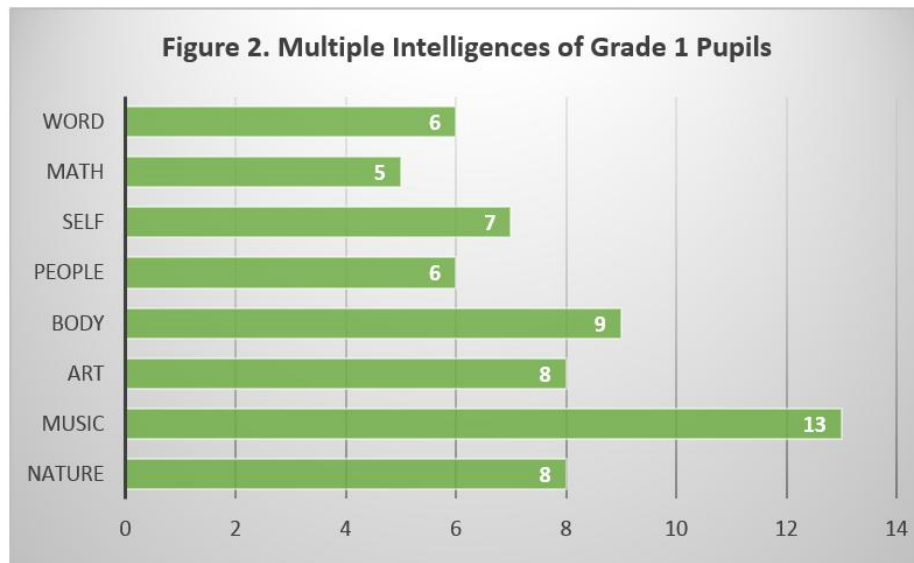


Figure 3 below shows the Multiple Intelligences of the Grade 2 pupils. There was a total of 23 respondents. The top 3 Multiple Intelligences are, as follows: Top 1 is *Nature & Body* with 52% of respondents; Top 2 is *Music* with 48% and Top 3 is *Art & Self* with 39%. The least occurring are *Word, Math,* and *People* with 35%.

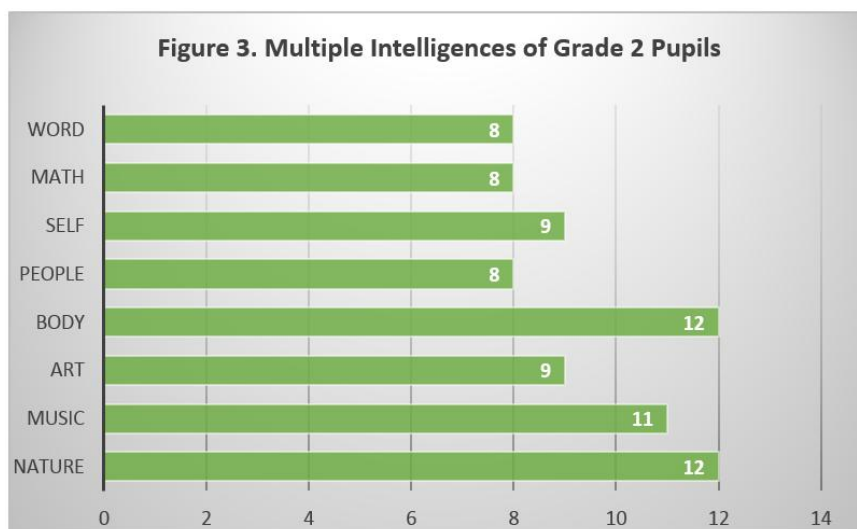


Figure 4 below shows the Multiple Intelligences of the Grade 3 pupils. There was a total of 25 respondents. Their top 3 Multiple Intelligences are, as follows: Top 1 is *Nature* with 40% of respondents; Top 2 is *Art* with 28% and Top 3 is *Body* with 20%. Least occurring is *Word* with 4%.

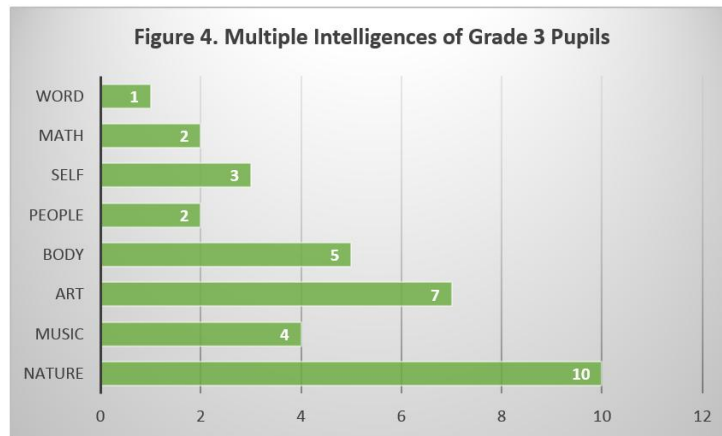
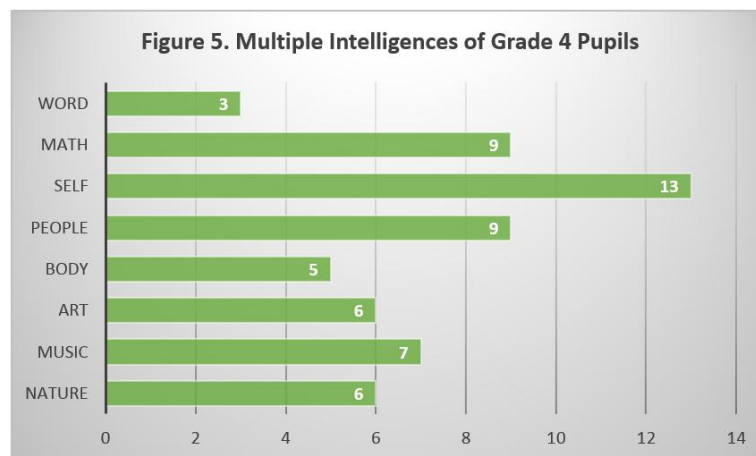
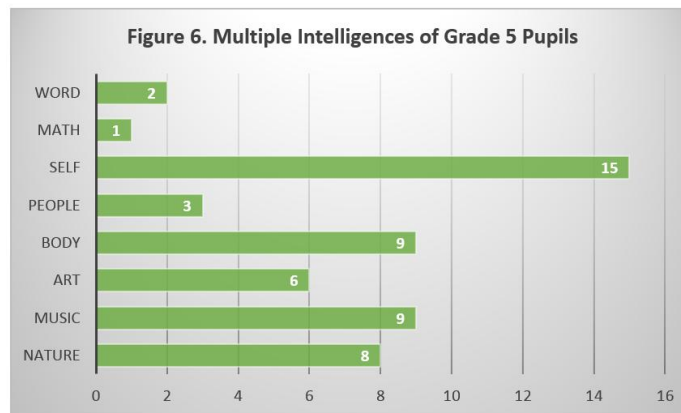


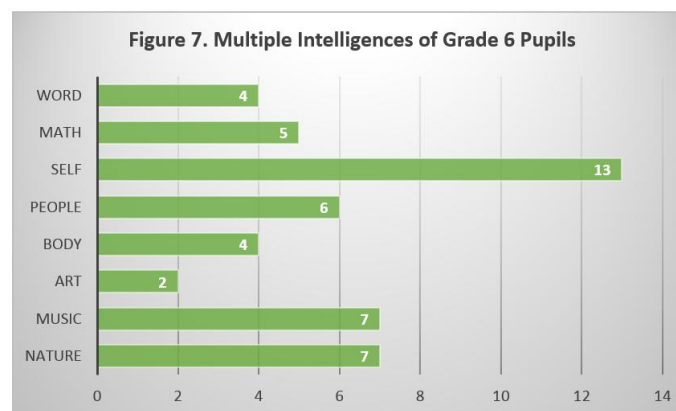
Figure 5 below shows the Multiple Intelligences of the Grade 4 pupils. There was a total of 25 respondents. Their top 3 Multiple Intelligences are, as follows: Top 1 is *Self* with 33% of respondents; Top 2 is *People & Math* with 23% and Top 3 is *Music* with 18%. It is also shown that *Word* is least occurring with only 8%.



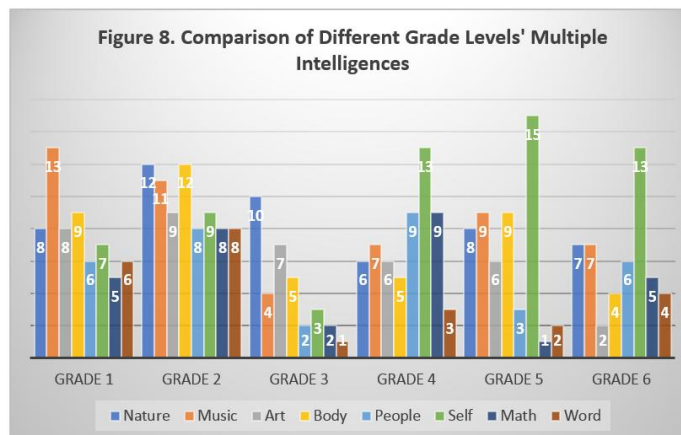
For the Grade 5 pupils, the occurring multiple intelligences are shown in *Figure 6* below. With a total of 25 respondents, their top 3 Multiple Intelligences are, as follows: Top 1 is *Self* with 45% of the total respondents; Top 2 is *Music & Body* with 27% and Top 3 is *Nature* with 24%. Furthermore, the least occurring is *Math* with 3%.



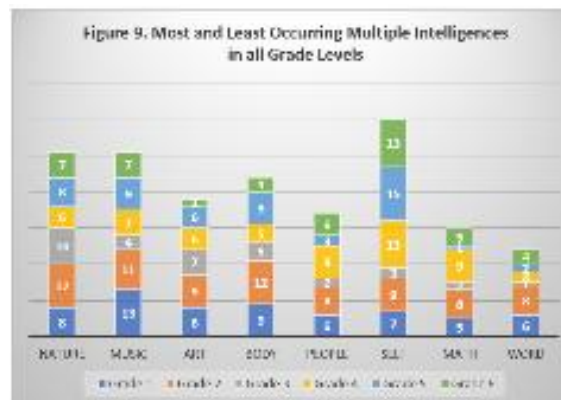
Finally, *Figure 7* below shows the Multiple Intelligences of the Grade 6 pupils. There was a total of 25 respondents. Their top 3 Multiple Intelligences are, as follows: Top 1 is *Self* with 46% of the total respondents; Top 2 is *Nature & Music* with 25% and Top 3 is *People* with 21%. *Art* (7%) is shown to be the least occurring.



In summary, the graph below shows a comparison of the different Grade Level's Multiple Intelligences as stated per level previously. Notably, the **most** and **least** occurring Multiple Intelligences per Grade level are, as follows: for Grade 1 pupils, the highest is *Music* and the lowest is *Math*; for Grade 2 pupils, the highest is *Body/Nature* and the lowest is *Word/Math/Self*; for Grade 3 pupils, the highest is *Nature* and the lowest is *Word*; for Grade 4, highest is *Self* & lowest is *Word*; for Grade 5, highest is *Self* & lowest is *Math*; and for Grade 6, highest is *Music* & lowest is *Art*.



If treated as a single population, the **most** and **least** occurring Multiple Intelligences in all levels are, as follows: *Self* with 18.07% and *Word* with 7.23%, respectively.



Analyzing the data using correlation matrix (*Pearson Correlation*), the results below show a **significant relationship** between the Multiple Intelligences manifested by the pupils and their specific Grade Levels. Consequently, there is a rejection of the null hypothesis (H_0) along the *Art*-Multiple Intelligence which previously claimed that there is no significant relationship between the two variables. Hence, the study will **accept** the alternative hypothesis (H_a).

At $p < 0.05$, *Art* has a significant relationship with Grade Level at $r = (-0.883)$ with the negative sign implying a negative correlation signifying that the variables tend to move in opposite directions. The rest of the multiple intelligences, however, did not expose any significant relationships with grade levels.

| MULTIPLE INTELLIGENCES | Grade Level | |
|------------------------|-------------|---------|
| NATURE | Pearson's r | -0.518 |
| | df | 4 |
| | p-value | 0.293 |
| MUSIC | Pearson's r | -0.550 |
| | df | 4 |
| | p-value | 0.259 |
| ART | Pearson's r | -0.889* |
| | df | 4 |
| | p-value | 0.020 |
| BODY | Pearson's r | -0.156 |
| | df | 4 |
| | p-value | 0.229 |
| PEOPLE | Pearson's r | -0.156 |
| | df | 4 |
| | p-value | 0.767 |
| SELF | Pearson's r | 0.686 |
| | df | 4 |
| | p-value | 0.132 |
| MATH | Pearson's r | -0.237 |
| | df | 4 |
| | p-value | 0.652 |
| WORD | Pearson's r | -0.533 |
| | df | 4 |
| | p-value | 0.276 |

Note: * $p < 0.05$

Discussion

This study aimed to identify the types of multiple intelligences of pupils. Armstrong (2017) notes, the MI types primarily serve as entry points for customizing significant emotional and cognitive processes that support learning, such as attention, memory, motivation, creative cognition, problem-solving, and comprehension. Because each school represents a cultural system of educational beliefs, social ideas, and practices, the advantage of incorporating MI into learning is that it can easily span diverse cultures (Shearer, 2018).

For Grade 1 pupils, *Music* is the most occurring Multiple Intelligence. *Musical* intelligence involves their skill in the performance, composition, and appreciation of musical patterns. Music smart incorporates the ability to perceive and form melodic pitches, tones, and rhythms. This is a positive sign that shows creative thinking capacity of these pupils as more associations, connections, meanings, and memories an individual can make is affecting higher brain activity (Sarrazin, 2016). After all, “musicality is as universal as linguistic ability” (Hallam, 2006). On the other hand, the least occurring multiple intelligence for Grade 1 pupils is *Math*. Studies concerning the children’s development on the grasp of mathematical skills and knowledge is oftentimes affected by socio-economic and curricular factors, and by short- and long-term perspectives of social interaction (Prudent *et al.*, 2011). Necessary modifications of learning materials or even pedagogy in teaching concepts that involves logical thinking will be beneficial for the students.

Nature-smart and *Body-smart* are what prevailed among Grade 2 pupils. It is evident that majority of these pupils recognize, categorize, and draw upon certain features of the environment. They want to understand “how things work” and seek out opportunities to observe, identify, interact with, or care for objects, plants, or animals. Also, they can use mental abilities to coordinate bodily movements and explore the environment and objects through touch and movement. In primary schools, bodily-kinesthetic activity is crucial for the development of students’ learning. The teacher’s role is integral to carry out this action, stimulating it with a relevant, assertive, and motivating communication, along with teaching and learning based on the exploration of body expression and training of sensorimotor activities (Daniel *et al.*, 2020). On the other hand, the least occurring multiple intelligences include *People*, *Math*, and *Word*. This factual age-position effect could be attributed to the continuous maturation of the auditory and visual temporal processing and could be explained by the structural integrity of the brain wiring (Dawes & Bishop, 2008). Additionally, the diminished social interaction of the pupils during the pandemic may have affected their social cognition as children are more vulnerable when it comes to long terms effects of a delay or absence of peer interaction which involves skills like planning, attention and even problem-solving (Sahakian *et al.*, 2021).

For Grade 3 pupils, their most occurring multiple intelligence is *Nature* while *Word* is least occurring. It is conclusive that most of these pupils recognize, categorize, and draw upon certain features of the environment. They want to understand “how things work” and seek out opportunities to observe, identify, interact with, or care for objects, plants, or animals. Children with high naturalistic intelligence tend to ask endless questions about what they

observe and so teachers might teach these students through direct observation and exploration of the natural world (Matthew *et al.*, 2020). Skills like observation, empathy, sensitivity, curiosity, and motor are directly linked to the development of such intelligence. On the contrary, the inability to express oneself through language and communication might be attributed to either shyness or social anxiety which are inherent to the pupils. Several studies revealed that children are shy due to their personality. By looking at the electrical signals of their brains it should be mentioned that not all reserved or reticent students suffer from social anxiety or another phobia. Both temperament and biological factors come into play in a child's personality (Power of Positivity, 2020).

The MI results of the Grade 4 pupils revealed that their most occurring intelligence is *Self*. This suggests that many of these pupils have the capacity to understand oneself, to appreciate one's feelings, fears, and motivations. They find approaches and outlets to express feelings and thoughts and works independently. Among the varied intelligences proposed by Gardner, intrapersonal is one particularly important competency for young children to develop and build because the early childhood period is a critical stage of developing emotional and social abilities (Wee *et al.*, 2013). By putting oneself in the position of another person and comprehending their role characteristics, thoughts, and emotions (Mead, 1934), role-play encourages decentering, which permits the capacity to see, comprehend and think about at the same time the shifted or different parts of objects, situations, and events (Fenson & Ramsay, 1980). A fundamental social interaction skill can be having a positive attitude toward other people. As kids grow up, they foster mentalities, convictions, and consciousness of self and others (Berk, 2006).

Self-concept as highlighted in an intrapersonal intelligence is a person's unique combination of physical and psychological characteristics, abilities, behaviors, attitudes, and values (Shaffer, 2009). In contrast, *Word*, as a multiple intelligence, is also least occurring in this grade level just as the previous grade levels.

For Grade 5 pupils, *Self* is also the highest occurring multiple intelligence followed by *Nature & Music* and *People* which comes third. It is evident that majority of these pupils have the capacity to understand oneself, to appreciate one's feelings, fears, and motivations. They find approaches and outlets to express feelings and thoughts and works independently. Children learn to share with their siblings and peers, as well as to be assertive and persuasive, as both of their intrapersonal and social skills develop. As kids learn language, they figure out how to impart in progressively complex ways. Children can communicate in a variety of ways with parents, siblings, grandparents, teachers, and others even when they are still relatively young (skillsyouneed.com, 2023). It is to be noted, however, that intrapersonal skills may have a less immediate impact on pupils' interactions with others than interpersonal skills like active listening. However, they are still necessary. On the other hand, *Math* is the least occurring Multiple Intelligence despite the higher age years of pupils in this grade level. After all, students, parents, and educators alike frequently view mathematics as a challenging subject. Cognitive factors (lack of ability, preparedness, practice, and knowledge) typically account for difficulties. Emotional factors, on the other hand, are frequently overlooked or dismissed as potential long-term causes of mathematical difficulties. However, it is becoming more and more recognized in the fields of psychology and education that a lot of

students struggle emotionally with math, which hinders their performance and progress in this subject (*IBE - Science of Learning Portal*, 2021). Teachers, then, as facilitators of learning, should provide more practice questions to the pupils, especially questions that involve Higher Order thinking Skills (HOTS) to continually hone the pupils' critical and mathematical thinking capacity.

Finally, for Grade 6 pupils, the most frequently occurring multiple intelligence is *Self* and the least is *Art*. It is evident that majority of the pupils have the capacity to understand oneself, to appreciate one's feelings, fears, and motivations. They find approaches and outlets to express feelings and thoughts and works independently. On the contrary, issues with visual-spatial abilities are probable because of issues in one of the accompanying clinical regions: central coherence, attention, and visual skills like perception, planning, sequencing, and tracking (Cadey, 2023). Spatial knowledge may not be a strength for kids who are more auditory students and lean toward perusing and tuning in. STEM education focuses on math, science, technology, and hands-on experimentation. Around visual learning, it encourages children to develop critical thinking skills. Kids with coherent Math knowledge are much of the time visual students so this methodology can function admirably for certain youngsters and grown-ups. Therefore, play serves as a foundation for science and math in the early years of childhood. According to Mitchell & Burton (1984), "further[s] the development of spatial ability" and "may afford opportunities for children to value and exploit their spatial skills," the use of construction toys. It is impossible to overstate the significance of play in facilitating the development of high scientific achievement. According to Gleick (1992), the renowned physicist Feynman

acknowledged that his early experiences with tinkering established a long-term involvement in play and modeling, which contributed to his achievement of the Nobel Prize. In addition, others have argued that play plays a crucial role in laying the groundwork for becoming a scientist (Wasserman, 1992). In a good note, the current practices in pre-school and school settings appear to provide distinct opportunities for spatial intelligence development. Similarly, as in the pre-school setting, rich growth opportunities that improve spatial knowledge can be given in the grade school 'through exercises that start with play (van Hiele, 1999).

This study also revealed that in all the results of multiple intelligences across grade levels, *Self*-intelligence appeared to be the most occurring while *Word* is the least. This is a progressive result, according to Gardner (2000). The personal intelligences are inseparable and cannot develop independently under normal circumstances. Children were able to see themselves in other people and understand other people based on their own experiences and emotions at the same time. According to Wagner (1999), reflecting on one's own behavior can be aided by investigating and determining the reasons behind a person's actions –that is, relationships with other people help one learn about themselves (Campbell, 1996). According to Hoerr (2000), children with high intrapersonal intelligence are constantly keeping an eye on how others perceive them. In the end, a person's sense of self is the result of combining their knowledge of themselves and others (Gardner, 2000). According to the findings of the study of Wee *et al.* (2013), it is more effective to teach the two personal intelligences (intrapersonal and interpersonal) simultaneously and to encourage children to see themselves through the eyes of others and to comprehend others based on their own

experiences and emotions. Additionally, educators ought to recall that there are various ways of fortifying pupils' relational and intrapersonal insights notwithstanding pretends continuous efforts and supports, such as providing in-service teachers with trainings and professional development workshops to develop various instructional strategies, are crucial not only at the individual teacher level but also at the institutional level. Furthermore, it can be connected to the least occurring multiple intelligence, Word, which can be addressed through the expression of variety of ways during activities, including kinesthetic and artistic expressions in addition to verbal ones. Children's ability to express their true feelings through verbal expressions can sometimes be limited for a variety of reasons such as being shy or self-conscious.

On the other hand, with regards to the correlation between grade levels and the specific multiple intelligences, only *Art* has a significant relationship with grade level. The Pearson r yielded a negative sign (-) implying a negative correlation signifying that the variables tend to move in opposite directions. This simply imply that the lower grade levels tend to have more occurrence of *Art* multiple intelligence. Many kids start developing spatial awareness at a young age. For instance, a child might follow the developments of a parent as they stroll through a room, or a little kid might start to control and coordinate toys. In school, children perform better on spatial reasoning tests when we let them explore and handle objects, according to experiments (Frick & Wang, 2014; Slone *et al.*, 2018). In one study, for instance, babies' ability to recognize the shapes of various objects was improved after two months of daily block play (Schröder *et al.*, 2020). Additionally, infants were able to anticipate how a specific object would appear when viewed from

various angles with just two minutes of hands-on experience (Möhring & Frick, 2013). Individuals who are great at such errands — collapsing in the imagination — have solid spatial abilities. However, the fact that a student's "mental folding" ability predicts their performance in STEM fields is particularly intriguing. For instance, Hodgkiss *et al.*, (2018) conducted a study on primary school students in Britain and found that students with stronger mental folding abilities performed better on tests in biology, physics, and chemistry. Additionally, the traditional Japanese art of paper folding, known as origami, is thought to have the potential to improve mental folding ability, according to researchers. After just a few hours of origami lessons, school children improved their performance in a preliminary study on a very difficult mental folding task (Burte *et al.*, 2017). This, and so much other evidence-based pedagogies, can be implored in improving spatial skills through the progressing grade levels.

Conclusions and Recommendations

Generally, based on the results presented above, the most and least occurring multiple intelligences per levels are as follows: Grade 1 (highest = *Music* & lowest = *Math*); Grade 2 (highest = *Body/Nature* & lowest = *Word/Math/Self*); Grade 3 (highest = *Nature* & lowest = *Word*); Grade 4 (highest = *Self* & lowest = *Word*); Grade 5 (highest = *Self* & lowest = *Math*); and in Grade 6 (highest = *Music* & lowest = *Art*). Conclusively, the most and least occurring multiple intelligence among the pupils in the Grade School Department are: *Self* and *Word* respectively. Considering the foregoing findings, the following conclusions are drawn:

- a. Every pupil of the Grade School Unit of the Basic Education Department of SPUD can be considered to possess any of the eight multiple intelligences in varying degrees. The trends of the distributions amongst grade levels are also varying. Creative strategies, appropriate instructional materials, and a stimulating and nurturing environment are all ways to enhance these intelligences. In addition, even though teachers and parents generally share a similar perception of their students' and children's intelligence levels, there are areas of intelligence in which they differ significantly and merit further investigation.
- b. If lessons are incorporated with activities based on the Multiple Intelligences results found in this study, students' performance in various subjects will significantly improve. Preparing learning materials and plans that also caters to the development of least occurring multiple intelligence per grade level is also important in the teaching and learning process.
- c. Diversified multiple intelligences evoke complementation and thus should not be taken in isolation. After all, the type of intelligence reinforces the other.
- d. *Art* (spatial intelligence) is inherently dominant in younger Grade School pupils and so needed activities that cater to these needs should also be focused accordingly.

Based on the results of study, the following are recommended:

- a. Furnish a copy of the Grades 1-6 pupils' multiple intelligences to the respective advisers for them to be creative in delivering their lessons to their pupils. Teachers need to know their students'

intelligence to design activities that will help them grow in any intelligence they have. A continuing education in MI for teachers and parents may be part of parent-teacher meetings and curriculum review. A plan of action can also be created.

- b. Other Multiple Intelligence Assessment Tools can be adapted in evaluating pupil performance in the different subject areas which should be based on the Multiple Intelligence Theory. As a teaching method, teachers should shift to more holistic, thematic instruction.
- c. In addition to the plan of action in the results of this study, a comprehensive workshop/training is required to assist educators in the creation of instructional materials that cater not only to limited intelligence but also to other types of intelligences.

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