

## Recent Studies on Multiple Intelligence in the Philippine Educational Setting: A Meta-Analysis

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### Abstract

Students do not learn and acquire information in one way alone. There are various means in which students can gain information and learn different things in school. These are the theoretical bases where the Theory on Multiple Intelligence by Howard Gardner are anchored with. To better understand the evolution and significance of multiple intelligence in the Philippine educational setting, this study would like to present the synthesis of the articles on multiple intelligence in the educational institutions published from 2012 to 2022 by Filipino authors and to evaluate their contents in terms of respondents considered, study setting, statistical tests used by the studies, and common themes of the significant findings of the various articles. Using google scholar as a search engine, researcher sought for the published articles on multiple intelligence available online published in the mentioned years. The data gathered were analyzed using the descriptive statistical tests. Major findings of the articles were analyzed using the thematic analysis. Findings of the study depicted that most of the articles on multiple intelligence studies in the Philippine educational institutions were published in year 2020 while the least number of articles was produced in year 2012, 2014, 2016, and 2017. Majority of the studies used both college students as the respondents of the investigation. The island of Luzon was able to produce the greatest number of the studies within 10 years. In terms of statistical tests used, majority of the studies utilized both descriptive and inferential tests. The common themes generated in the study are major domains of multiple intelligence, impact of multiple intelligence in the academic achievement of the students, and relationships between students' demographic profile and multiple intelligence. It is recommended that studies on multiple intelligence in the Philippine educational setting older than 2011 should be properly documented and educational researchers in Visayas and Mindanao should work on multiple intelligence studies to augment to the dearth of the published studies on this aspect in the field of education.

**Keywords:** Multiple intelligence, Philippine education, respondents, study setting, statistical analysis, meta-analysis

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### Introduction

There is no single type of intelligence; instead, they have multiple classifications. According to Howard Gardner's theory of multiple intelligence, individuals are not born to possess all types of intelligence; however, they have varied ones. This theory challenged the traditional notion that there is one single type of intelligence, sometimes known as "g" for general intelligence, that only focuses on cognitive abilities. In school and society, linguistic and logical-mathematical modalities are most typed valued. This is the main reason why those students who can solve complex mathematical problems faster and speak in the public spontaneously and substantially are more intelligent than other who cannot perform the said skills and talents. There is robust evidence that each MI possesses neural architectural coherence that is clear, distinct, and aligned with accepted cognitive-neural correlates (Shearer, 2020). These neural patterns are consistent with Gardner's hypothesis that general intelligence is most closely associated with linguistic and logical-mathematical intelligence (Shearer and Karanian, 2017).

Multiple intelligence theory posits human intelligence can be differentiated into eight modalities. These modalities include the visual-spatial, verbal-linguistic, musical-rhythmic, logical-mathematical, interpersonal, intrapersonal, naturalistic and bodily-kinesthetic (González-Treviño et al., 2020; Cherry, 2022). Recently, Das (2018) added one modality which is the existentialist (Figure 1). In the context of education, multiple intelligence pertains to the theory that describes the various means in which the students learn and acquire information from various sources. The use of words, numbers, pictures and music, to the importance of social interactions, introspection, physical movement and being in tune with nature are the ranges of the multiple intelligence.

In modern educational practices, multiple intelligence theory is used as a way to explore and compare the different types of intelligence among students as a tool to help students with deficient school achievement and to contrast the benefits of general intelligence theory (Almeida et al., 2010; Chen et al., 2009). With the prominence of the multiple intelligence theory, there are many published studies on this theory authored by the Filipino writers focusing on the relationships between demographic profile and multiple intelligence and students' academic achievement; however, the studies' contents have not yet analyzed based on their respondents used, place where the studies were conducted, the statistical tests used to interpret the data gathered, and the common themes generated among the studies. With those observations, this study aims to gather studies on multiple intelligence in the educational institutions published from 2012 to 2022 by Filipino authors, to determine the respondents, study setting, and statistical tests used by the studies. Moreover, this work would like also to examine the common themes of the major findings of the various articles.

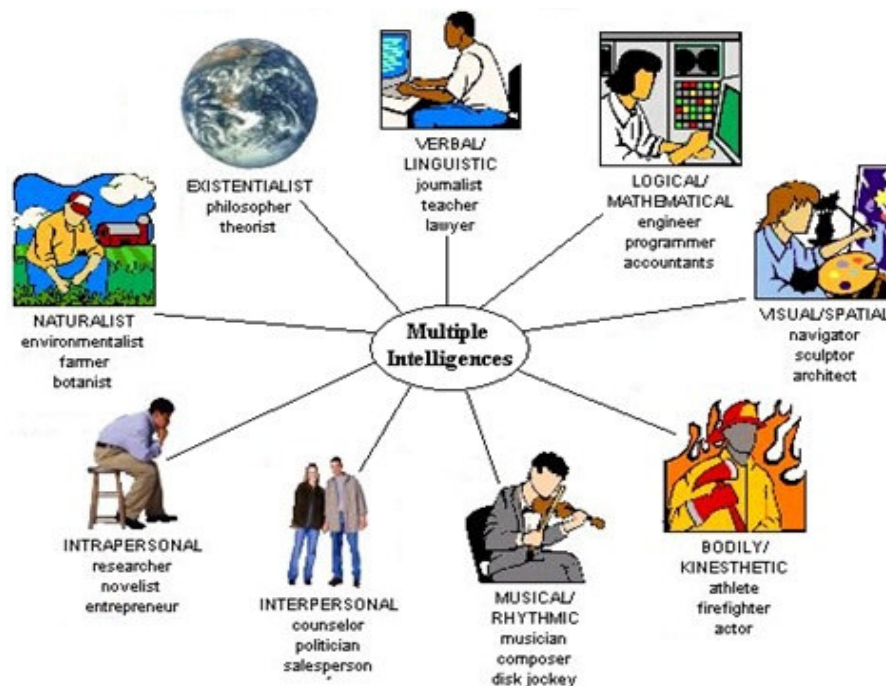


Figure 1. Nine Intelligence in Multiple Intelligence Theory (Source: Das, 2018)

### Research Methodology

The researcher searched for the published articles available online using google scholar as a search engine. The articles considered were restricted only to those papers about the multiple intelligence studies in the educational institutions. In selecting the articles, it was ensured that the respondents/participants of the studies are either the students or the teachers themselves. The articles used in this meta-analytical study are those published online from 2012 to 2022.

After searching the articles, the researcher read and analyzed the manuscript according to year published, respondents used, study setting, inferential statistical tests employed, and major findings of the study. The data from various sites were analyzed using the descriptive statistical tests such as frequency and relative frequency. Major findings of the articles were analyzed using the thematic analysis.

For convenient interpretation, the data were presented in tabular form, bar graph and pie graph. The trend of the data can be seen easily once presented in a tabular or graphical form.

### Results

After gathering the articles on multiple intelligence studies in the educational institutions published from 2012 to 2022 by the Filipino authors through employing inclusion and exclusion criteria, the results were summarized on Table 1. The respondents, study setting, and statistical tests used, and major findings for each article were also tabulated on the said table.

Table 1. Authors, respondents, study setting, statistical tests used, and major findings of the studies on multiple intelligence in the Philippine educational institutions

Authors	Respondents	Study Setting	Statistical Tests Used	Major Findings
Napiere et al. (2012)	232 freshmen College students  14 instructors	In one of the colleges in Cagayan de Oro City	Pearson r	Dominant modes of delivery used were intrapersonal and logic-based modes and the assessment tools used were primarily related to the interpersonal and logical-mathematical intelligence.  Students have dominant musical-rhythmic and spatial-visual intelligence and they preferred to learn through linguistic and intra-personal means.  Correlation results showed that students who have strong intra-personal intelligence tend to prefer to learn in linguistic ways.
Capili, (2014)	131 College Students	Not mentioned	Descriptive	The respondents MI falls on the moderate level except for mathematical which is low.  There is no difference between BEED and BSED MI, and the area of specialization and MI patterns have no correlation except for MAPE, sciences and mathematics.
Bautista, (2015)	27 college faculty  108 college students	University of Rizal System, Morong, Rizal	Descriptive	The findings revealed that, out of 27 faculty and 108 students, 7 and 19 are interpersonal intelligent, 6 and 9 are verbal linguistic intelligent, 4 and 28 have intrapersonal intelligence, 3 and 7 are bodily-kinaesthetic intelligent, 3 and 5 have musical intelligence, 2 and 15 are visual-spatial intelligent and 1 and 25 are logico-mathematical intelligent faculty and students respectively  Faculty have interpersonal intelligence while students are intrapersonal intelligent.
Leonardo, (2015)	60 college students	Bulacan State University, Malolos City, Bulacan	T-test for dependent samples  Analysis of Covariance	The achievement posttest results of the two groups revealed that the students in the multiple intelligence teaching group performed significantly better than the students in the traditional instruction group  Students in MI group showed more positive learning experiences
Mojares, (2015)	111 college students	Batangas State University, Malvar City Campus	Descriptive	Top three intelligences based on the respondents' scores are intrapersonal, bodily/kinesthetic and logical/mathematical while least of the intelligences are verbal/linguistic and visual/spatial.
Silang (2015)	200 junior high school students	General Luna, Quezon	Descriptive	Students performed best in verbal-linguistic and logical-mathematical and performed least in naturalistic
Fabella, (2016)	398 college freshmen students	San Mateo Municipal College, Rizal	ANOVA	Found differences between the respondents belonging to the different programs in terms of all 7 Multiple Intelligences studied.  The MI profile of the respondents according to each program was observed to be unique.
Tuazon (2017)	700 nursing college students	Tomas del Rosario College and Asia Pacific College of Advance Studies, Balanga, Bataan	Descriptive, ANOVA	The levels of multiple intelligences of the nursing students in selected nursing schools found to be above average in the four specific areas namely; musical strength, verbal strength, intrapersonal strength, and visual strength, while on the logical strength, interpersonal strength, and kinesthetic strength the nursing students found to be average.

Authors	Respondents	Study Setting	Statistical Tests Used	Major Findings
Binag (2019)	168 grade 8 students	Bagong Silang High School, Caloocan	Mixed-approach qualitative descriptive	<p>Dominant Multiple Intelligences (MI) exhibited by Grade 8 students are Kinesthetic, Intrapersonal, Musical and Existential.</p> <p>Students' performance in every station based on their pre-test and post-test in terms of Mean Score, MPS, and SD showed that there is an increase in terms of the score from the post-test and pre-test</p>
Gonzales and Montoya, (2019)	60 grade 7 students	Pangasinan State University – Integrated Schools - Junior High School	Descriptive-cross sectional	<p>Majority of the grade 7 students belong to the Musical Intelligence group and that minority of them belong to the Verbal Intelligence group.</p> <p>The posttests' level of performance of the students in Physics 7 when grouped according to their multiple intelligence revealed that Kinesthetic Intelligence group performed significantly better than the other multiple intelligence groups which are Existential Intelligence, Interpersonal Intelligence, Intrapersonal Intelligence, Musical Intelligence, Naturalist Intelligence, Verbal Intelligence, and Visual Intelligence, except for Logical</p>
Aringay and Prado, (2020)	94 public secondary school teachers	Don Carlos in the Province of Bukidnon	Descriptive-correlational method	<p>The respondents possess the following intelligence ranked from the highest to lowest (intrapersonal, spatial, bodily kinesthetic, interpersonal, naturalistic, musical, linguistic and logical-mathematical)</p> <p>When grouped according to multiple intelligences; educational attainment, income and cognitive designation came out to have significantly related with the respondents' performance.</p>
Badajos and Diego, (2020)	178 public elementary school teachers	Negros Occidental	Descriptive-correlational	<p>There was a significant relationship between MI instructional practices on linguistic, intrapersonal, interpersonal, mathematical, spatial, and musical and the educational attainment of teachers</p> <p>The relationship between MI instructional practices on linguistic, intrapersonal, interpersonal, spatial, musical, and bodily-kinesthetic appeared to have no significant relationship with the teaching performance</p> <p>There was a significant relationship in teaching performance between the practices of mathematical and naturalistic intelligence</p>
Baliling, (2020)	17 Araling Panlipunan public secondary school teachers	Northern Tabuk District, Division of Kalinga	Descriptive	<p>The degree of seriousness of problems encountered in using multiple intelligences strategies in teaching by Araling Panlipunan teachers is moderately serious.</p> <p>There are significant differences in the level of seriousness of problems encountered in using multiple intelligences strategies in teaching by Araling Panlipunan teachers as to gender and years in teaching</p> <p>There were no significant differences in the level of seriousness of problems encountered in using multiple intelligences strategies in teaching by Araling Panlipunan teachers as to age and educational attainment.</p>

Authors	Respondents	Study Setting	Statistical Tests Used	Major Findings
Estrella, (2020)	303 Architecture, ABEnglish, Civil Engineering, Electrical Engineering, Computer Engineering, Mechanical Engineering, ICT, BS Mathematics and Teacher Education students	Pangasinan State University-Urdaneta Campus	Descriptive-correlational	<p>There is no significant relationship between the profile in terms age, sex, civil status, monthly family income and academic status and the level of multiple intelligences.</p> <p>Pangasinan State University students possess dominance in terms of visual and profile had no bearing on the multiple intelligences.</p>
Villanueva and De Vera, (2020)	214 grade 9 student	Alaminos City National High School, Alaminos City, Pangasinan	Descriptive-developmental	<p>Student-respondents' prevailing intelligences are Visual-Spatial, Bodily-Kinesthetic and Verbal-Linguistic.</p> <p>Low performance in poem and short story genres of literature</p>
Asio et al. (2021)	200 senior high school students	In a certain private school in Bulacan	Spearman Rho	<p>Visual intelligence emerged as the top-ranked multiple intelligences</p> <p>Dance/ sports club emerged as the top extracurricular activities took part by most of the students</p> <p>There was no statistical evidence of the relationship between the multiple intelligence and participation rate to extracurricular activities of the students</p>
Palomares (2021)	176 Grade 7 students	Saint Joseph's College of Baggao Inc. Baggao, Cagayan	Pearson r	<p>The dominant Multiple intelligences of the subjects are existentialist, Naturalist and Musical while the least is logical-mathematical</p> <p>There is no significant relationship between the manifested multiple intelligences and the mean academic performance the subjects along Verbal-linguistic, Musical, Spatial, Bodily-Kinesthetic, Interpersonal, Naturalist and Existentialist while Logical-Mathematical Intelligence and Intrapersonal Intelligence are significant</p> <p>There is no significant relationship between the profile variables and the Multiple Intelligences of the subjects</p>
Torreon and Sumayang, (2021)	200 grade 6 pupils and 20 elementary teachers	District of Ubay 2, Bohol,	Descriptive	<p>Multiple intelligences-based classroom activities improved the students' academic performance in school as it broadens the range of talents and skills, understanding, build confidence, take educational risks, and retain more knowledge</p> <p>There is a significant relationship between pupils' academic achievement and the overall multiple intelligence-based classroom activities</p> <p>There is a significant relationship between pupils' academic achievement and multiple intelligence-based classroom activities as to naturalistic, logical, existential, kinesthetic, and intrapersonal domains</p> <p>There is no significant relationship between pupils' academic achievement and multiple intelligence-based classroom activities as to musical, interpersonal, verbal, and visual domains</p>

Authors	Respondents	Study Setting	Statistical Tests Used	Major Findings
Cabuquin, (2022)	193 STEM senior high school students	Laboratory School in Tacloban Leyte	Descriptive	Interpersonal intelligence was shown to be the most dominant intelligence type among STEM students, whereas logical intelligence was determined to be the least dominant.  On the specialized subjects' performance, the students demonstrated very good to superior performance in pre-calculus, general biology, and basic calculus subjects.  No significant difference in the specialized subjects' performance between students with STEM strand as their preferred choice and those who do not prefer STEM.
Solidum, (2022)	80 grade 6 pupils from private and public schools	Sacred Heart of Jesus Elem. School and Padre Burgos Elementary School, Manila	Descriptive-correlational  Independent two-tailed test  Pearson r	Private school learners are good in their Multiple Intelligence while the Public school learners are average in their Multiple intelligence in using online distance learning.  In both private and public school learners, there is a significant relationships between learning styles (tactile/kinesthetic, auditory, and visual) and multiple intelligence domains.
Subia, (2022)	108 hospitality and tourism management graduating students	Wesleyan University Philippines, Cabanatuan City	Descriptive	Bodily-kinesthetic, intrapersonal, and interpersonal intelligence were their top three intelligence, implying that BS Hospitality and Tourism graduating students

#### Published Articles based on Year of Publication

The number of published articles on multiple intelligence studies in the educational institutions produced by the Filipino authors from 2012-2022 is given on Figure 2. Findings of the study showed that the highest number of published articles took place in year 2020 (5 articles) while the least number of article was produced in year 2012, 2014, 2016, and 2017 (1 article). Year 2015 ranks second as to the number of published articles (4 articles) according to the data gathered. Both year 2021 and 2022 produced 3 articles on multiple intelligence. Meanwhile, there were 2 articles published by Filipino authors on multiple intelligence in year 2019. There was no published article written by the Filipino authors on multiple intelligence in the educational setting in year 2013.

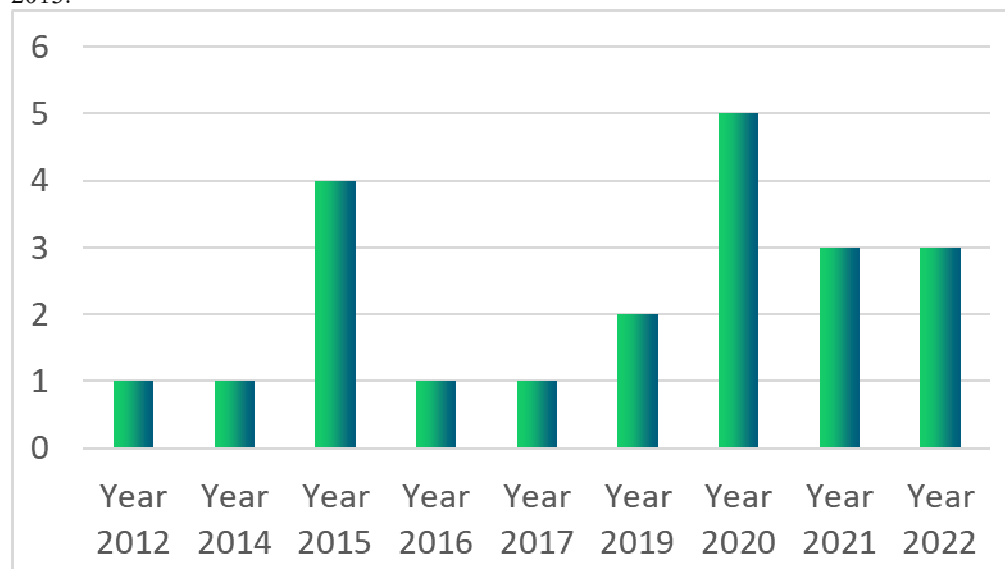


Figure 2. The number of published articles on multiple intelligence studies in the educational institutions produced by the Filipino authors from 2012-2022.

#### Published Articles based on Respondents

The distribution of the multiple intelligence studies in the educational institutions in the Philippines by respondents from 2012 to 2022 is presented on Figure 3. Findings of the study showed that the majority of the studies (7) used both college students as the respondents of the investigation. There are five articles which

utilized junior high school students in the study. Two articles employed college students and faculty, senior high students, and junior high school students in the studies; respectively. One article utilized elementary students and teachers, elementary students only, and elementary teachers only.

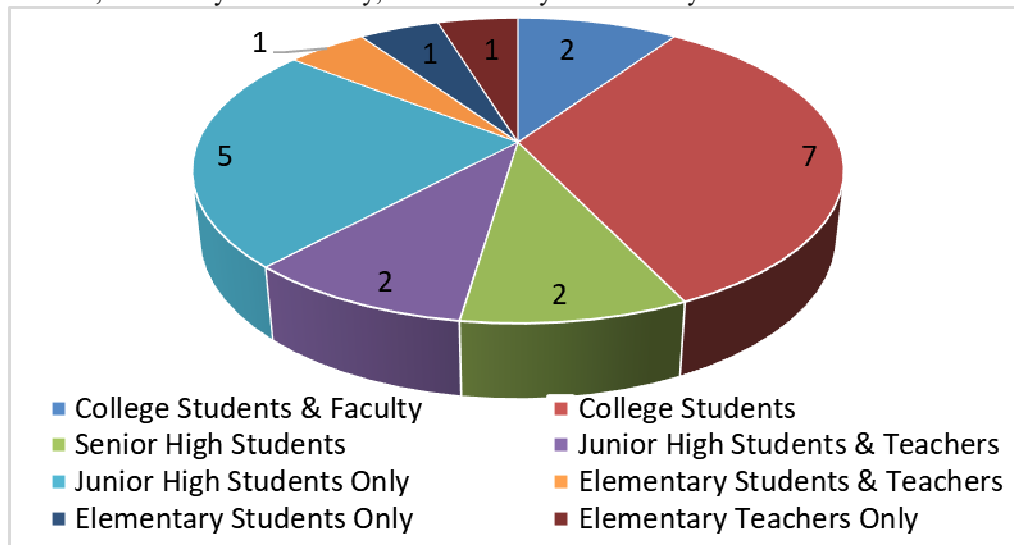


Figure 3. Distribution of the studies on multiple intelligence in the educational institutions in the Philippines by respondents from 2012 to 2022.

#### Published Articles based on Study Setting

The distribution of the multiple intelligence studies in the educational setting in the Philippines by major islands from 2012 to 2022 is presented on Figure 4. Results of the study indicated that the majority of the studies (16) were conducted in Luzon. There are 3 articles wherein their study settings are in the Visayas. Among 21 articles, only one study took place in Mindanao. There is one study presented in the results that did not mention its study setting.

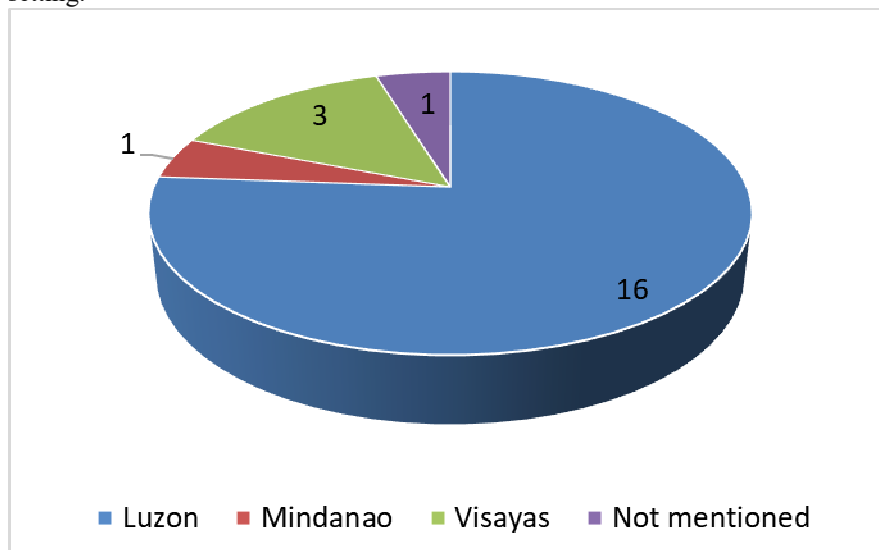


Figure 4. Distribution of the studies on multiple intelligence in the educational setting in the Philippines by major islands from 2012 to 2022.

**Published Articles based on Statistical Tests Used**

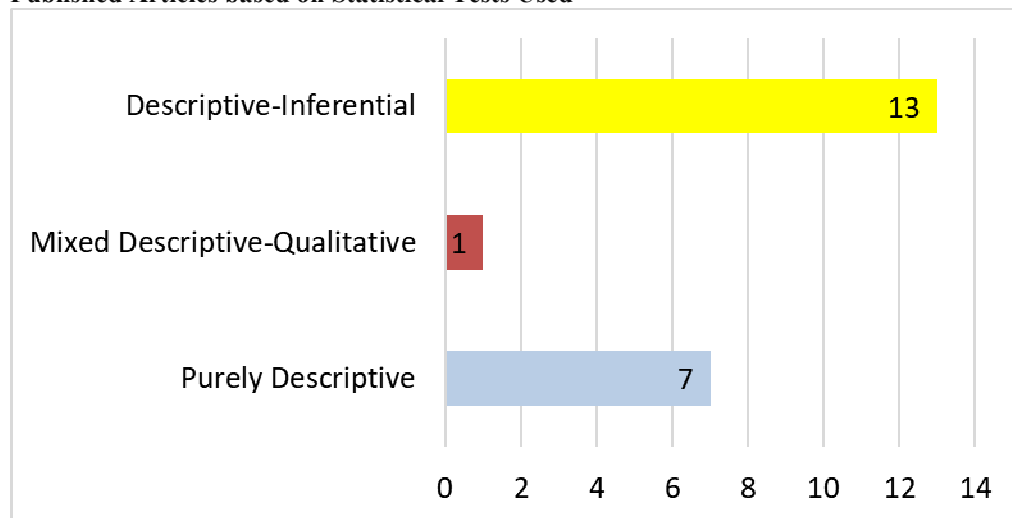


Figure 5. Distribution of the studies on multiple intelligence in the educational setting in the Philippines by statistical tests from 2012 to 2022.

The distribution of the multiple intelligence studies in the educational setting in the Philippines by statistical tests from 2012 to 2022 is given in Figure 5. Outcome of the study revealed that the majority of the studies (13) utilized descriptive and inferential tests. There are 7 articles which employed pure descriptive tests only. There is only one study which used mixed descriptive tests and qualitative analysis.

**Common Themes of the Articles on Educational Multiple Intelligence in the Philippines from 2012-2022**

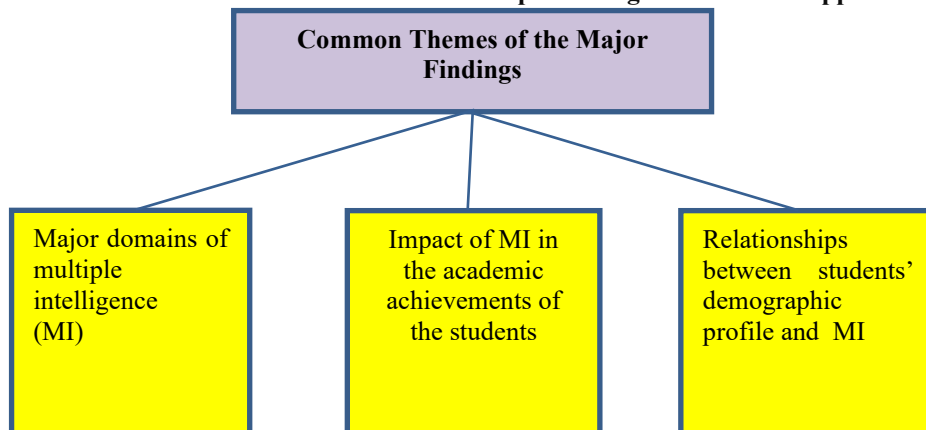


Figure 6. The common themes of the significant findings of the study

The common themes for the significant findings of the study are presented on Figure 6. The common themes generated in the study include the major domains of multiple intelligence, impact of multiple intelligence in the academic achievement of the students, and relationships between students' demographic profile and the multiple intelligence.

**Discussion**

Multiple intelligence as a theory has already been recognized by the educators in various levels in the Philippines. Most of the articles on multiple intelligence studies in the Philippine educational institutions from 2012-2022 were published in year 2020 while the least number of articles was produced in year 2012, 2014, 2016, and 2017. Year 2020 became the golden year for the multiple intelligence in the Philippine educational setting. Perhaps, this is the year when the multiple intelligence gained popularity among the Filipino educators.

Majority of the studies used both college students as the respondents of the investigation. The used of college students as the respondents for this type of study can be traced to the beliefs of the educators that multiple intelligence can be applied to the college students to allow them to realize the right career paths for them to realize their dreams in life. College education is a preparatory ground for the students to let them aware about the workplace and the outside world.

In terms of study setting, most of the studies were conducted in Luzon. Luzon is an island where the capital



City of the Philippines which is Manila is located. The bulk of the studies on multiple intelligence are concentrated in Luzon is an indication that research opportunities are high in Luzon than other major islands in the Philippines. Potentially, this trend can be supported by the idea that Luzon-based teachers have more research skills than those in Mindanao and Visayas. We cannot also isolate the idea that there is higher opportunity for research funding in Luzon than other islands of the country. These observations are not conclusive because there were cases that the educational institutions have produced many research output; yet, they have not considered them for publication.

Statistical tests used wise, majority of the studies utilized both descriptive and inferential tests. The use of both descriptive and inferential tests for the analyses of the data gathered from research endeavors by the teachers in the Philippines is a manifestation of the evolution of the skills learned by themselves in research activities. Over time, educators have become researchers. Whatever strategies and theories they have applied in classroom setting can be validated through the data and analysis they have produced through research activities. Today, the educators are well-equipped with the skills on how to apply the statistical tests for the research data they have collected. These skills were acquired from graduate studies, training programs, and information obtained from seminars and workshops (Boudersa, 2016; Reston and Bersales, 2008).

The present study was able to generate themes which are comprised of domains of multiple intelligence, impact of multiple intelligence in the academic achievement of the students, and relationships between students' demographic profile and the multiple intelligence. These themes are the reflection of the problems and issues faced by the educational system in the Philippines. Some of the teachers are using the traditional ways of teaching and assessing the performance of the students in academics. To make it fair, most of the teachers are now evolving when it comes to teaching styles and strategies. They made their styles and strategies suitable to the current learning abilities and capacity of the learners and present demand of the teaching profession (Shearer, 2018). They now integrate multiple intelligence in the classroom setting to improve the academic performance of the students in various disciplines (Yaumi et al., 2018). Studies on multiple intelligence could shed light to the educators that students can gain information and learn novel things through various means. With these ideas, students' academic performance should be assessed using appropriate schemes, rubrics, and criteria.

### **Conclusion**

From the findings of the study, it can be concluded that most of the articles on multiple intelligence studies in the Philippine educational institutions from 2012-2022 were published in year 2020 while the least number of articles was produced in year 2012, 2014, 2016, and 2017. Majority of the studies used both college students as the respondents of the investigation. In terms of study setting, most of the studies were conducted in Luzon. In terms of statistical tests used, majority of the studies utilized both descriptive and inferential tests. The common themes generated in the study are major domains of multiple intelligence, impact of multiple intelligence in the academic achievement of the students, and relationships between students' demographic profile and the multiple intelligence.

### **Recommendations**

From the significant findings of the study, it is recommended that studies on multiple intelligence in the Philippine educational setting older than 2011 should be documented so that evolution of the multiple intelligence studies can be traced properly. Tracing the evolution of these studies is important understanding the strategies in teaching for the students to improve their academic performance.

It is also suggested to the educational researchers in Visayas and Mindanao to work on multiple intelligence studies to augment to the dearth of the published studies on this aspect in the field of education. Increasing the number of published works can provide robust data necessary in understanding the effects of multiple intelligence to the academic achievement of the students.

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