Comparative Study of Mathematics Education in the Philippines and Japan

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フィリピンと日本の数学教育に関する比較研究

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ABSTRACT

Mathematics education in Japan and the Philippines has undergone various developments. Mathematics education in Japan was rooted in Chinese influence until the emergence of Western arithmetic-Yosan. In the Philippines, Spaniards and Americans contributed greatly to mathematics education until the commencement of the K-12 curriculum in 2013. This study compares mathematics education in both countries by examining their education systems, issues in education, math curricula, textbooks, and lessons. Written materials from different primary sources were gathered, and lesson observations and seminars on math education were conducted to achieve these goals. The significant findings of this study suggest new perspectives for educators, policymakers, and future teachers in both countries. Moreover, these findings will hopefully contribute to the improvement of mathematics education in both countries.

１．Introduction

１．１．Background

Mathematics is one of the essential areas of learning that one must acquire for many practical reasons and uses.

Just like any other subject, mathematics is important to the extent to which it supports and contributes to the purposes of general education. Children are sent to school in order that they become useful members of the community and contribute to the welfare of society [1]. Furthermore, mathematical literacy helps individuals to understand the role that mathematics can play in the real world and make sound judgments and decisions needed by constructive, engaged, and reflective 21st-century citizens [2].

Meanwhile, the status of mathematical literacy in the Philippines and Japan is different.

Although mathematical skills are seen as fundamental all over the world, and mathematics is considered an essential subject taught on a daily basis, mathematical literacy in Japan and the Philippines is still an issue. This can be seen from the results of the 2018 OECD's Programme for International Student Assessment (PISA) for mathematical literacy where Japan's learners were placed 6th out of 79 nations while the Philippines' learners were placed 78th [3].

While Japan's ranking is already high, many Japanese educators still aim to find ways to improve their instruction. This is in spite of the fact that Japan is a country that has an efficient educational system. This is also one reason why many foreign countries send their educators to observe classes in Japan and learn from their educational system. In addition, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan provides programs/scholarships to foreign educators for them to be trained and informed about their educational system and teaching practices. As the Philippines have a good relationship with Japan and an evolving educational system, the country benefits greatly from such opportunities.

This research studies mathematics education in Japan and the Philippines and aims to provide insights for educators and policymakers in both countries. It is hoped that these insights will be beneficial and can provide a tool to improve mathematics education in both countries.

1. 2. History of Mathematics Education in the Philippines and Japan

Japan and the Philippines have some commonalities in terms of their historical events-both were subject to some Chinese cultural influences and both have been ruled by the Americans. These factors have contributed to their education systems and to their mathematics education. Even though their mathematics education has certain Chinese and Western influences, instructions and methodologies in the current time still differ as it has been through several stages of development.

1. 2. 1. History of Mathematics Education in the Philippines

The Philippines has been colonized by different nations, mainly Spaniards, Japanese, and Americans. However, even before colonization, early Filipinos were already trading goods with Chinese, Malay, Hindu, and Islamic societies [4]. This has led to great impacts on the educational system and mathematics learning in the Philippines.

The economic situation during pre-colonial times was a great contributor and major factor in the educational system in the Philippines. The types of society present before the Spanish colonization were Primitive Communal System and Asiatic Feudalism. With their practical mode of production, they had to provide an education that was plain and simple [5]. In addition, it has long been believed that mathematics in the Philippines originated with Chinese traders during prehistoric times. However, recent discoveries have revealed that ancient Filipinos did possess some system of counting and mathematics, including simple addition and subtraction using stones or twigs, timekeeping and geometry as part of star-gazing activities, building houses (i.e., knowledge of right angles), and so on [6].

During the Spanish time (1521-1898), the system evolved into a more formal structure. During the early years, the establishment of schools from primary level to tertiary level of education came about because of religious

congregations. Christian doctrines were the main focus in these schools [5]. Spanish education for the Filipinos was designed to convert them to Catholicism. Ideally, instruction was also given in Spanish, arithmetic, various handcrafts, together with a little reading and writing [7]. Although many universities and educational institutions were established, science and mathematics were hardly taught to students.

Similar to the Spaniards, the American era (1898-1942) brought many cultural and educational influences to the Philippines. Education became very important for the US colonial government. Every child from 7 years of age was required to attend the nearest school. Unlike in the Spanish period, religion did not form part of the school curriculum. American teachers (Thomasites) arrived in 1901 and provided the Filipinos with a formal education [5]. The coursework for each level placed a heavy emphasis on English grammar, writing, reading, and arithmetic. Between 50%-70% of the total number of hours children spent every day in school was devoted to these courses [8].

With the Americans out of the picture, the Japanese occupation started in 1941. Embodied in the Military Order No.2 in 1942, they spelled out the basic principles and guidelines of education when re-opening schools. Some of the guidelines were to forget and to stop using the English language and instead learn and adopt Nihongo. Other guidelines suggested a need to grow primary and vocational education, and to foster a love of work.

Among the colonizers of the country, the Americans dominated. With English as the medium of instruction, the educational system in the Philippines is a prototype of the American system. New subjects were introduced and among them was arithmetic [5].

1. 2. 2. History of Mathematics Education in Japan

It is certain that Japanese mathematics had its origins in Chinese mathematics. Beginning in the Nara period (8th century), the Japanese introduced numerous aspects of Chinese culture, including mathematics, into their own culture [9]. Before the Edo period, it was known that people performed daily calculation techniques (the four arithmetical operations) with computing rods, which comprised the main computing tool used before the Soroban (Abacus) was introduced to Japan. The introduction of the Soroban to Japan marked the beginning of the history of mathematics in the Edo period in Japan [10].

In the Edo period, in particular, mathematics developed through the assimilation of Chinese mathematical textbooks. Therefore, to understand Japanese mathematics, it is critical to be familiar with Chinese mathematics. On the other hand, Japanese mathematicians in the Edo period set original problems, developed new methods of solving them, and obtained advanced results. Japanese mathematicians mainly used Abaci for numerical computations. Abaci were tools imported from China that became widespread throughout the country. The Japanese used them for calculations in both private and business settings [9].

During the late Edo period, the master institutions were organized across many fields of hobbies. In addition to traditional arts, master institutions that controlled a group of enthusiasts in other fields, such as Haiku and Wasan, were established. In the case of Wasan, a huge number of schools with different masters were established across Japan. Juku (private school), where disciples would congregate from across

Japan, were formed. Juku schools operated in many ways, for example, there was a Juku school where students first studied introductory arithmetic, and after that they proceeded to solve mathematical problems that were presented to them. Through such practical exercises, they improved their mathematical knowledge.

On the other hand, master institutes always tried to actively send messages beyond the confines of their schools. An example of such activity was the dedication of Sangaku (mathematical tablets) to shrines and temples. Sangaku refers to a tablet in which a mathematical problem and its answer were described.

When the Edo period ended and the Meiji era began, Japan started to promote modernization in all possible fields, in imitation of the West. As to arithmetic education within the overall elementary system, the Ministry of Education proposed a policy employing a curriculum not based on conventional Wasan but on Western arithmetic or Yosan [10].

2. Purpose of the Study

This study aims to compare and analyze the similarities and differences in mathematics education between the Philippines and Japan (Fig. 1). This is done by describing the following areas:

3. Methodology

3. 1. Material

The materials used in this study are written materials from primary sources or from existing data such as journals, books, official records, lesson videos, and other literature.

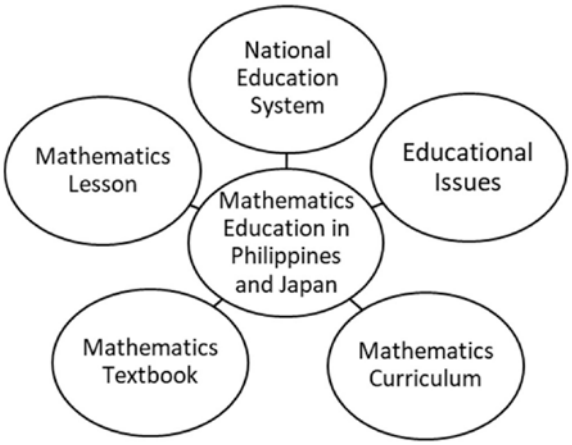

Fig. 1 Scope of Study

3. 2. Lesson Observations

Mathematics lesson observations were conducted from April-July 2021 at Fuzoku Elementary School, an affiliated school to Hokkaido University of Education. Observers recorded and analyzed the teacher-student and student-student interactions, the lesson flow, as well as the assessment of learning. Strong points of the lesson were also identified during the observations.

3. 3. Seminars

The gathered data and observations about mathematics education in the Philippines and Japan were presented through seminar sessions from April-July 2021. A peer discussion was also conducted to evaluate the data being presented.

4. Results and Discussion

4. 1. National Education System

4. 1. 1. The Philippines

The 1987 Philippine Constitution declares that education, particularly basic education, is a right of every Filipino. According to Article XIV, Section 2 of the Constitution, the state shall establish and maintain a system of free public

education at elementary and high school levels. Without limiting the natural rights of parents to rear their children, elementary education (7 years including kinder level) is compulsory for all children of school age [11].

The Philippines' education system adopted a trifocalized structure in 1994/1995 having a three-layered system composed of basic education, vocational education, and higher education with three government agencies being responsible for each layer (Fig. 2). The Department of Education (DepEd) sets the overall educational standards and mandates for kinder to Grade 12 (elementary to high school). The Technical Education and Skills Development Authority is responsible for technical and vocational education, while the Commission on Higher Education covers both public and private higher education institutions, as well as degree-granting secondary educational institutions in the country.

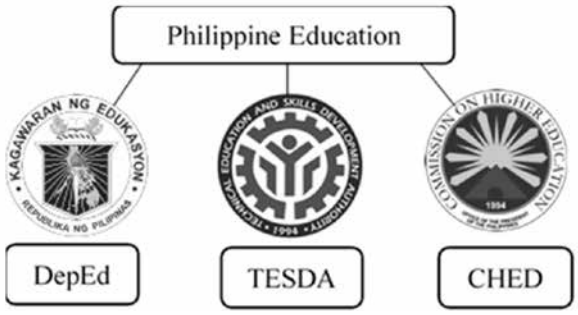

Fig. 2 Philippine Trifocalization of Education

From this structure, the education system follows the 7-4-2-4 system of education in general: pre-primary level (nursery and kindergarten) where kindergarten is compulsory, 6 years of primary or elementary education, 4 years of junior high school, and then 2 years of senior high school. College education usually takes 4, sometimes 5, and in some cases, as in medical and law schools, as long as 8 years. Graduate schooling is an additional 2 or more years [12].

The educational system in the Philippines has undergone different changes and developments. A recently implemented development is the K-12 program of the Department of Education through the Republic Act 10533 of 2013. This program covers kindergarten and 12 years of basic education to provide sufficient time for the mastery of concepts and skills, to develop lifelong learners, and to prepare graduates for tertiary education, middle-level skills development, employment, and entrepreneurship. Some of the features of this program are as follows:

a. Universal Kindergarten-at 5 years old, children start school and are given the means to slowly adjust to formal education. In kindergarten, students learn the alphabet, numbers, shapes, and colors through games, songs, and dances in their mother tongue.
b. Making the curriculum relevant to learners.
c. Mother tongue-based multilingual education-aside from mother tongue, English and Filipino are taught as subjects starting Grade 1, with a focus on oral fluency.
d. Spiral progression of concepts in all subjects.
e. Establishment of senior high school where students may choose a specialization based on aptitude, interest, and school capacity [13].

4. 1. 2. Japan

The Japanese Constitution (Article 26) sets forth the basic national educational policy, which states that all people shall have the right to receive an equal education to the best of their ability, as stated by law. There is an obligation for all children to receive ordinary education as provided for by law. Such compulsory education shall be free.

The Basic Act on Education, which was

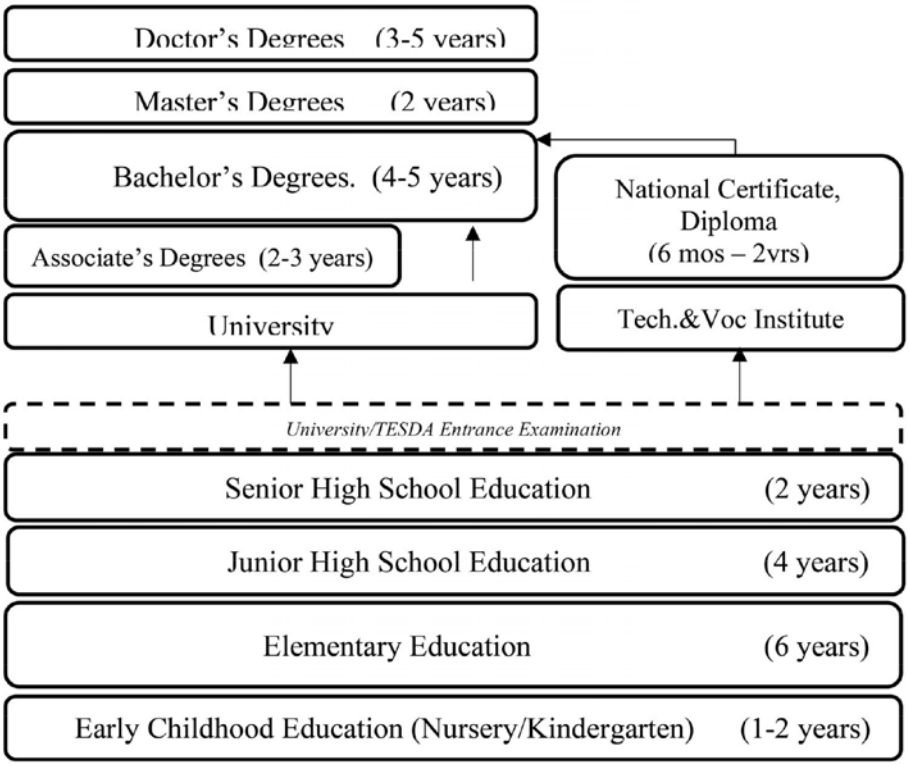

Fig. 3 School System in the Philippines

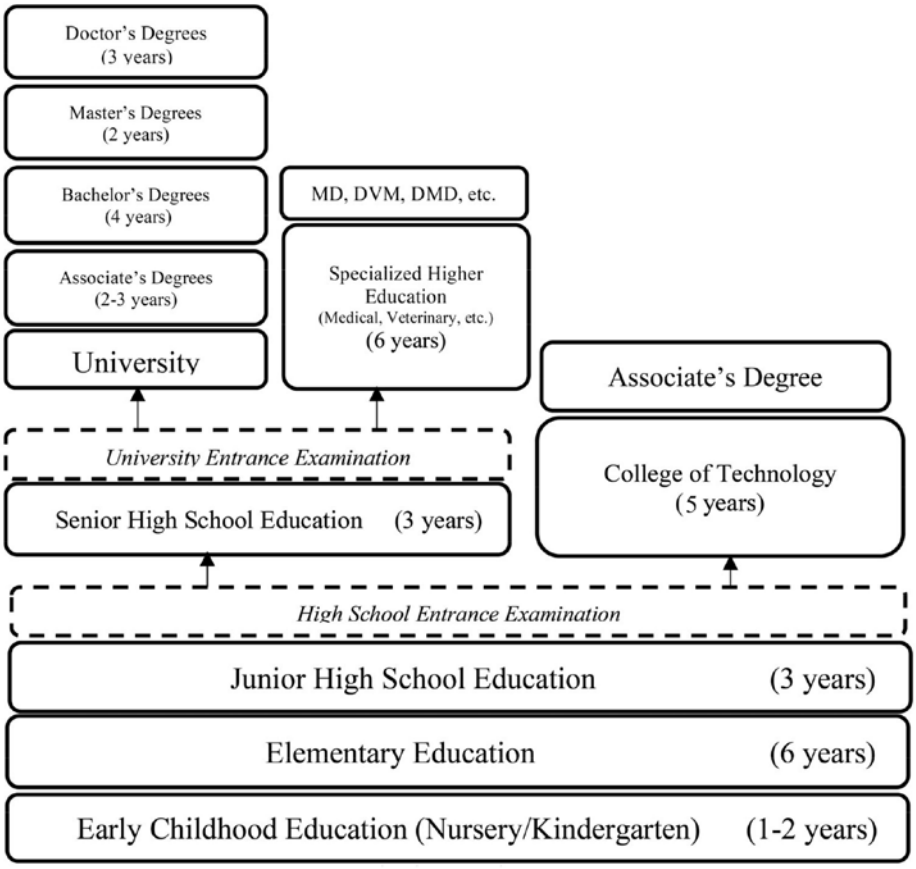

Fig. 4 School System in Japan

promulgated and put into effect in March 1947, provides basic aims and principles, and other educational laws and regulations have been made in accordance with the aims and principles of this law. Cabinet orders have been made to enforce the laws, and the Ministry of Education, Science, Sports, and Culture (MEXT) publishes ministerial ordinances and notices concerning the standards for establishing schools, curriculum standards such as the Courses of Study, and so on [14].

The Japanese school system follows a 6-3-3-4-year system, which primarily consists of six-year elementary schools, three-year junior high schools, and three-year senior high schools, followed by two- or three-year junior colleges or four-year colleges [15].

Before beginning their elementary education at the age of 6 years, children have the option to attend kindergarten between the ages of 3 and 5 years. Compulsory education begins with 6 years of elementary school and ends with 3 years of lower secondary school for a total of 9 years. Students then proceed to upper secondary school, which caters to children who have finished their compulsory education, and this is completed over 3 years. Higher education in Japan is divided into colleges of technology, junior colleges, and universities. Colleges of technology provide vocational education to students who have completed their compulsory education, and grant students associate degrees after 5 years of study. Junior colleges offer 2- to 3- year associate degree programs to students who have completed their upper secondary education. Universities offer 4-year bachelor's degrees, 2-year master's, and 3-year doctoral degrees [16].

4. 2. Issues in Education

Philippine education has undergone different changes and developments in response to the issues and problems in the country. Japan, in spite of being a country with a very efficient educational system, has its own issues and challenges, as well.

4. 2. 1. The Philippines

Although the Philippine educational system has been an extensive model for Southeast Asian countries, in recent years, this has not been true, and the system has deteriorated. This is one of the reasons why the K-12 program was implemented in 2013. Nationwide, the Philippines faces several issues when it comes to its educational system.

a. Quality of Education

One of the indicators of the quality of education in the Philippines is the results of the National Achievement Test (NAT) for grades 6-10. The most recent results were the 2017 and 2018 NAT scores for grades 6-10 which were the lowest ever scores in the history of Grade 6 while for Grade 10, the 2017 score was the lowest ever and the 2018 score was the third lowest [17].

Another indicator that shows the problems in the Philippine education system is the 2018 PISA results. The table below shows the results and ranking of the Philippines out of 79 countries [3].

The results of these assessments clearly show

Table 1 2018 PISA Results

Subject	Points	Rank
Reading	340 pts	79th
Math	353 pts	78th
Science	336 pts	78th

an issue in the quality of education in the Philippines.

b. Budget for Education and Lack of Facilities and Teachers

The Philippines still has one of the lowest budget allocations for education among ASEAN countries. The provisions of the Constitution state that the education sector shall continue to receive the largest portion of the national budget. However, the budget for education in 2020 remained at 751.7 billion pesos (1.6 trillion yen) for around 27 million learners [18].

In addition, there are large-scale shortages of facilities across Philippine public schools, including classrooms, teachers, desks and chairs, textbooks, and audio-video materials. Based on reports of the Alliance of Concerned Teachers (ACT), a total of 15 regions have reported a lack of adequate classrooms, with most schools still operating on shifting schedules and class sizes of 50 to 70 (Fig. 5) [19].

c. Affordability of Education and Drop-out Rate

The Philippines has 1.4 million children overall who are out of school, according to UNESCO's data. Additionally, it is the only ASEAN country that is in the top five countries with the highest number of young people out of school. Poverty is a leading cause of the increasing number of out-of-school children. Price increases in oil, electricity, rice, water, and other basic commodities are pushing the poor into dire poverty [20].

Fig. 5 Classrooms in the Philippines and Japan (Public Schools)

4. 2. 2. Japan

The level of education in Japan is high, even by world standards. In fact, in the OECD's PISA results, Japanese students have recorded high levels of achievement [15]. Despite high results in almost all education rankings, Japanese educators and policymakers still identify some issues in Japan's educational system.

a. Issues Regarding English Education

Despite the standard 12 years of English-language education from elementary school to university, many Japanese people find themselves struggling to speak English.

When it comes to English education, Japanese schools mostly focus on reading and writing. These skills are honed mainly in order to pass exams, and very little time is spent on drilling practical skills such as speaking and listening [21].

One solution was to start English education in elementary level rather than junior high schools from the academic year 2020. This is because Japan ranks close to the bottom among 29 Asian countries in English-language proficiency [22].

b. Increasing Absenteeism and Bullying

A 2019 survey by MEXT found that there were more than 540,000 reported cases of bullying in schools, a year-on-year rise of 31%. Absenteeism, violent incidents, and suicides have also been on the increase. A major cause is the excessive emphasis on rules and conformity, which creates a stifling atmosphere [23].

c. The Negative Effects of an Over-Emphasis on University Entrance Examinations

There is huge competition to enter prestigious universities and this has many negative effects on Japanese high school students. Students are lacking in creativity, freedom, and future vision. They are very busy learning specific techniques

in order to perform well in the entrance examinations, so they do not spend much time on other activities such as class discussions, presentations, or experiments, which are also supposed to form part of their education [24].

4. 3. Mathematics Curriculum

4. 3. 1. The Philippines

The Philippine mathematics curriculum (K to 10) has two goals: to develop students' critical thinking skills and to enhance their problem-solving abilities. These two goals are achieved through an organized and rigorous curriculum, a defined set of high-level skills and processes, desirable values and attitudes, and appropriate math tools, taking into account the different contexts of Filipino learners (Fig. 6).

Fig. 6 Conceptual Framework of Math Education

Math is taught from the simplest concepts to more complicated notions through the levels in a spiral progression. The following time allocations are given at each level for math lessons:

Table 2 Time Allotment for PH Math Class

Grade/Level	Time
Elementary	250 mins/week
Junior High School	240 mins/week
Senior High School	80hrs/sem

There are five content areas in the curriculum:

- Numbers and Number Sense
- Measurement
- Geometry
- Patterns and Algebra
- Statistics and Probability [25]

The domain of Numbers and Number Sense includes concepts, operations, and the application of numbers. Measurement focuses on measures and applications of length, mass, weight, capacity, time, money, temperature, angles, perimeter, area, surface area, and volume. Geometry focuses on two- and three-dimensional figures. Algebra studies patterns, relationships, and changes among shapes and quantities. Statistics and Probability focuses on skills in data collection, organization, and interpretation, including making predictions about outcomes [26].

The K to 10 mathematics curriculum provides a solid foundation for mathematics at grades 11-12. More importantly, it provides the skills needed by Filipino learners as they proceed to the next stage of their life as learners and as citizens of the Philippines [25].

4. 3. 2. Japan

MEXT determines the courses of study in terms of the broad standards for all schools, from kindergarten through to secondary schools, to organize their programs in order to ensure a fixed standard of education throughout the country [14].

Mathematics is a required subject in primary, lower secondary, and the first year of upper secondary school. The mathematics curriculum consists of three parts: overall objectives for the level, objectives and content for each grade, and

syllabus design.

The 2008 revision of the curriculum organized mathematics content in grades 1–6 into four content areas:

- Numbers and Calculations
- Quantities and Measurements
- Geometric Figures
- Mathematical Relations

At lower secondary level, the mathematics content is organized into four areas:

- Numbers and Algebraic Expressions
- Geometric Figures
- Functions
- Making Use of Data [27]

Math is taught through a spiral progression and has a time allotment as in the table below.

Table 3 Time Allotment for JP Math Class

Grade/Level	Time
Elementary	250 mins/week
Junior High School	240 mins/week
Senior High School	4–5hrs/week

The main goal of mathematics education is to develop active learning through the systematic abstraction of mathematical concepts following the three pillars for achieving targets in math (Fig. 7).

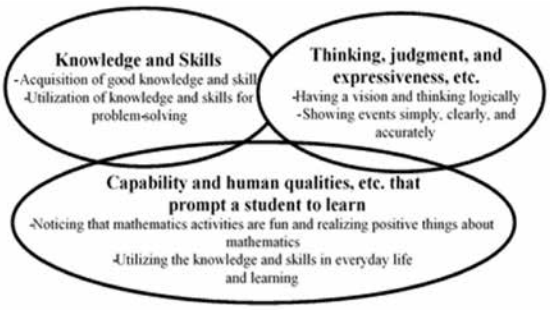

Fig. 7 3 Pillars for Achieving Targets in Math

4．4．Mathematics Textbooks

4．4．1．The Philippines

All matters pertaining to textbook planning, content review and evaluation, technical standard setting, and procurement and allocation are coordinated by the Instructional Materials Council Secretariat of the Department of Education. Text-based and non-text-based learning resources suitable to the needs of learners are aligned with the curriculum, addressing the learning competencies found in the curriculum guides [28].

On the other hand, all private schools have the prerogative to choose and prescribe their own textbook on condition that these are locally authored, published, and fit into the guidelines as prescribed by law [29].

Generally, mathematics textbooks in the Philippines provide detailed explanations for each lesson in a straightforward and interesting approach through relevant life situations. Also, creative and critical thinking, as well as understanding problem-solving strategies, are developed through worked examples in each lesson [30].

Since all learning materials should be aligned with the curriculum guide, all the content and standards of the curriculum guide should be found in a math textbook, from Numbers and Number Sense to Statistics and Probability.

The math textbook provided by the Department of Education usually has four parts for each lesson. It usually starts with a (1) Chapter Introduction describing the general objectives and integration of the lesson in a real-life situation.

Then, it proceeds to the (2) Introduction of the Lesson through word problems or situations based on the different contexts of Filipino learners. This is followed by the discussion of

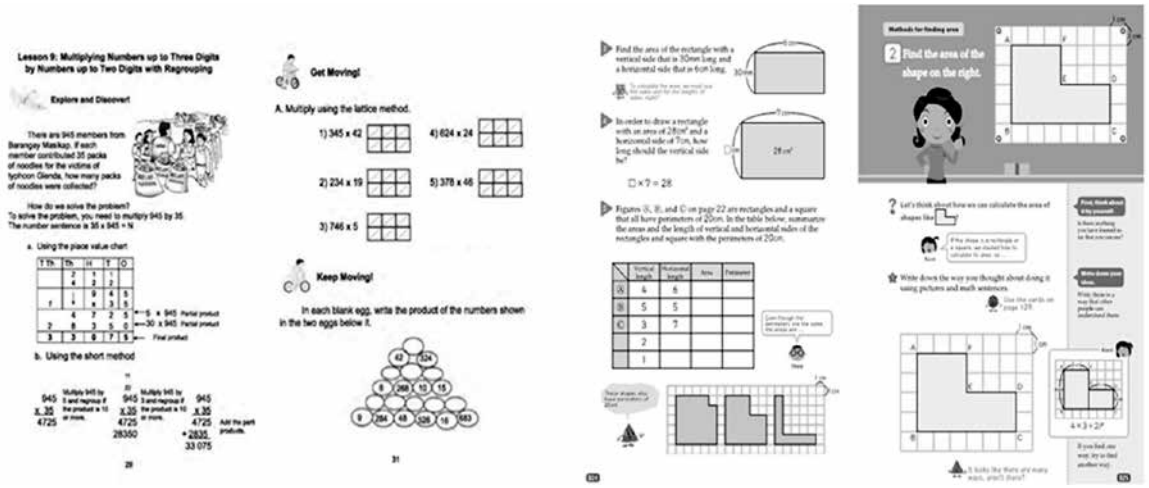

Fig. 8 Parts of a Math Textbook in the Philippines and Japan. *Mathematics 4 Learner's Material (left, retrieved from www.slideshare.net)* and *Mathematics International Grade 6* (right, retrieved from www.globalresources.com).

the (3) Solution and Concepts and other examples. Examples and explanations are enhanced through illustrations and pictures.

After providing certain examples, four types of (4) Activities that depend on the assessment of knowledge, processes, understanding, and products are supplied (Fig. 8).

Some of the textbooks in the Philippines provide project-type activities in every chapter, as well as a chapter review with additional questions and activities [31].

4. 4. 2. Japan

Books created by publishers do not qualify to be used as textbooks in schools unless authorization is obtained from MEXT. Based on the numbers of textbooks reported, MEXT issues instructions concerning the types and numbers of textbooks to be published to respective publishers [14].

Problem-solving has been a major theme in Japanese mathematics curricula for nearly 50 years. Japanese textbooks include ideas from the study of teaching problem-solving. For example, textbooks include open-ended questions to guide students in developing their understanding, instead of explanations of concepts and procedures. The series contains alternative approaches to solving a problem, provides diagrams to help students solve problems independently, and includes separate pages that teach students how to take notes effectively.

In addition, the opening problems in the units appear on the right-hand page of the book. Only the problem is on the initial page, and the following page includes multiple approaches to the solution to support the discussion of a variety of approaches to the solution. Also, there are more open-ended questions and suggestions presented by cartoonlike characters. This represents a move away from providing clear explanations of concepts and procedures to expecting students to investigate mathematics using their own reasoning based on their prior learning. Another special feature is the inclusion of specific pages to support students in developing note-taking skills throughout the grades. Starting in Grade 2, each textbook includes some examples of how to take notes to foster students' mathematical thinking and problem-solving skills [32].

Moreover, other special features of Japanese math textbooks include "How to Use the Textbook," which explains the parts of each lesson and their uses; "Study Steps," which explains the different strategies used in math lessons; "Warm-Up Activity," which connects activities from previous lessons; "Practice and Review," which provides more applications, and word problems that the students can answer; and "Put Your Knowledge to Work," which provides recreational and project-type activities as additional practice.

4．5．Mathematics Lessons

4．5．1．The Philippines

In general, a mathematics class in the Philippines employs a question-and-answer type of exposition, where the teacher starts with definitions and rules and students are quiet most of the time and simply listen to the teacher. To begin a topic, the teacher first asks students what they know about it then explains the definition and rules. The most common strategies in teaching mathematics are exposition, practice and consolidation, and discussion. The teaching strategies perceived to be most effective by science and mathematics teachers in schools identified as having certain benchmarks in teaching and learning were as follows: hands-on experience that allows students to develop to their fullest learning capacity because they depend on themselves, cooperative learning because they can share knowledge better when in groups rather than when working alone, and self-discovery because it enhances their learning capabilities [33].

In the new K-12 curriculum, the learner is at the center of the teaching and learning process. Thus, the curriculum uses pedagogical approaches that are constructivist, inquiry-based, reflective, collaborative, differentiated, appropriate, relevant, and integrative [28].

In addition, different strategies and activities are used every day depending on the needs of the students. The following figure shows a common procedure in a mathematics class.

Fig. 9 Common Math Lesson Flow in the Philippines

4．5．2．Japan

In Japan, the major reforms in teaching and learning mathematics occurred during the 1970s and 1980s. A major aspect of these reforms was the shift from a traditional classroom that focuses on teachers' instructions to a student-centered classroom that focuses on students' engagement in mathematical activities. Japanese mathematics lessons include the following characteristics:

- student-centered instruction using problem-solving as a foundation
- structured problem-solving
- carefully selected word problems and activities, and their cohesiveness
- extensive discussion (Neriage)

• emphasis on blackboard practice (Bansho).

The instructional approach, known as structured problem-solving, is designed to create interest in mathematics and stimulate creative mathematical activity in the classroom through students' collaborative work. The lesson usually starts with students working individually to solve a problem using their own mathematical knowledge. After working with problems, students bring various approaches and solutions to classroom discussions. The teacher then leads students in a whole-class discussion in order to compare individual approaches to solutions. This discussion is often called Neriage in Japanese, which implies polishing ideas. This whole-class activity provides students with opportunities to develop their mathematical abilities, including conceptual and procedural understanding.

Moreover, Japanese classrooms are equipped with a large blackboard at the front for the following purposes: to keep a record of the lesson; to help the students remember what they need to do and think about; to compare, contrast, and discuss ideas that students present; to foster organized student note-taking skills; and to help students see the connection between different parts of the lesson.

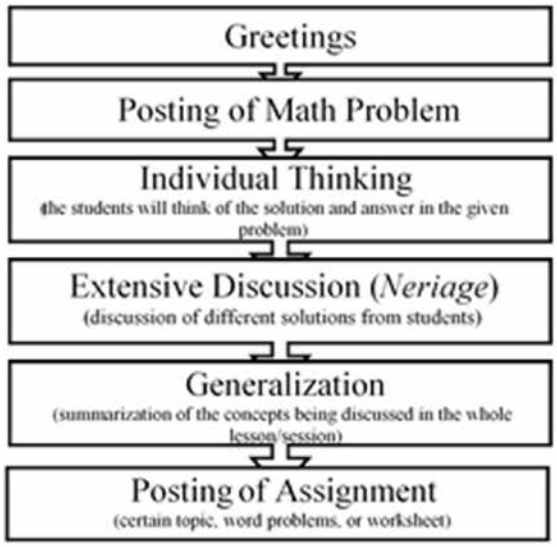

Fig. 10 Common Math Lesson Flow in Japan

Toward the end of a lesson, a teacher often takes the lead to pull all the different approaches and ideas together to see the connections. Then, he/she summarizes the lesson to help the students achieve the lesson objectives. The teacher often asks students to reflect on what they have learned during the lesson [34].

5. Conclusion

Mathematics education in both countries has some similarities and differences and both are still aiming for quality mathematics education through curriculum development, changes in the system, and improvements in facilitating learning.

In the Philippines, there are numerous issues and flaws in the educational system, including the quality of education. Many suggestions and changes have been provided and conducted to fix these problems. Recently, a big curriculum shift has been carried out through its K-12 curriculum which was implemented in 2013 (following on from its former 10-year basic education system). In this new curriculum, certain changes were implemented in terms of the education system, the curriculum, learning materials, lesson flow, and facilitation of learning. This is in response to the country's goal of upgrading the quality of education, addressing the poor performance of students in mathematics, science, and reading, and preparing learners for 21st-century skills. With this new curriculum, it is hoped that the quality of education will improve for years to come.

Japan, despite being a country with a very efficient education system which is always on

top in terms of math, science, and reading, also has some challenges and issues in its educational system. Educators and policymakers are still finding ways to improve their instruction and the quality of education, especially in mathematics education. "Lesson Study" is one of the greatest contributions to the field of education in Japan as it improves instruction in mathematics teaching. Mathematics textbooks, materials, curricula, and the facilitation of learning are all considered as part of this process.

In terms of the education system and curriculum, there is not much difference between the two countries. When it comes to issues of education, math textbooks, and facilitation of learning, there are, however, great differences.

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