

## LEARN FROM JAPANESE EDUCATIONAL SYSTEM

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### Abstract

This paper presents some major differences in the educational system of Japan and Philippines. This is divided into two parts; the first part discusses Japan's system while the latter is about the Philippines' system. There are nine years of compulsory education in Japan. Classes are slow paced designed to the level of the average learner. Early stages of study focus on the goal of entering a university. Performance of Japanese in international competitions is outstanding but Japanese educators are not yet satisfied with the students' performance. In the Philippines, compulsory education lasts for six years. Classes are fast paced with varied activities which are designed to motivate the students to learn but the results of international competitions show that the system still needs a lot of improvement.

Keywords: curriculum, educational system, mathematics

### Introduction

"The youth is the hope of the fatherland." This is according to the national hero of the Philippines. A nation that wants to succeed in the future must therefore take care of the youth.

Taking care of the youth does not simply mean giving foods and shelter. The best thing a nation can offer to her citizens is education. With educated citizens, progress of a nation would not be far ahead. The question however is how to properly educate the people. All countries have existing school systems but the extent of education the people receive differs from one country to another. When the performance of students from different countries is compared, there is a wide gap between the best performing country and the least performing country.

This study was conducted to compare practices in Japan, a high performing country and the Philippines, a struggling country, with concentration on high school mathematics. It is hoped that by comparing the educational systems of the two countries, Philippines could somehow learn from the Japanese educational system.

### Overview of Japan's Educational System

Japan's curriculum is a product of years of observation and series of studies of existing conditions. From classrooms teachers to the officials of the Ministry of Education, Culture, Sports, Science and Technology, (MEXT), data are gathered, studied, and the curriculum is designed based on the findings of the studies conducted. MEXT designs the curriculum to be implemented all over the country. Revision of the curriculum takes place almost every ten years, the latest was in the year 2002.

The educational system according to National Center for Education Statistics [19] runs this way.

Preprimary education is offered in Japan in day nurseries and kindergartens for children ages 3 to 5 and has a duration of 1 to 3 years. Compulsory education begins with primary education for children who are 6 years of age and lasts for 6 years. Secondary education is divided into two stages: lower and

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upper secondary education. Lower secondary school lasts three years. Upper secondary education includes separate programs of vocational and general education. Vocational education lasts 3 years and leads to a certificate of graduation that provides a qualification for the labor market. General education that leads to university studies also lasts 3 years and leads to certificate of graduation. Vocational/technical education programs offered at junior colleges and specialized training colleges last 2 to 3 years and lead to the award of an associate's or a technical associate's diploma. Academic higher education includes first university degree programs that last for 4 to 6 years and lead to the award of a bachelor's degree; second university programs of 2 years' duration that lead to the award of a master's degree; and graduate and professional programs that culminate with the award of a doctor's degree.

Japanese parents enroll their children in learning institutions as early as three years old so children can start their formal education early. Elementary education is free and the pupils need not pass national or prefectural tests to be promoted to the next level [25]. Junior high school is also tuition-free although parents may have to pay for some things needed in school like workbooks. In junior high school, students' lessons are starting to get faster as teachers try to cover all the topics included in the curriculum to help the students pass their entrance examinations for senior high school or the upper secondary education. About 60 % of the students enroll in cram schools [24] to increase their chances of passing entrance examinations for senior high school. Senior high is not compulsory nor free but each prefecture or municipal district maintains a publicly funded high schools that offer relatively low cost education [26]. The presence of entrance examinations in universities encourages students to always do their best in their studies. Future employment depends largely on the school where they graduated, so students are left with no choice but to maximize learning so as to gain a brighter future. In 2000, more than 30% of senior high school students are enrolled in cram schools [25], which help them prepare for their entrance examination in universities.

Aside from enrolling in private schools, some Japanese students get tutors to help them prepare for entrance examinations.

### **Classroom Culture**

Classes which the authors observed showed almost the same characteristics. Activities were simple and much of the class time is for students to think about the concept being discussed.

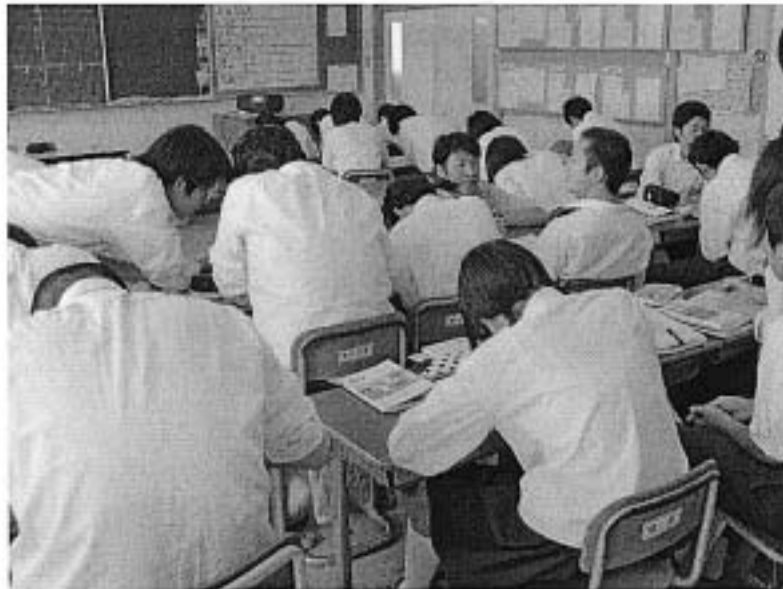
Discipline could be clearly observed in Japanese classrooms. Once the teacher starts talking, everybody listens. Japanese students are trained to sit quietly and listen to the explanation of the teachers. They seldom ask questions even if they don't understand some things and would prefer to look for the answer by themselves [23]. Teachers don't have to reprimand misbehaving students because the students themselves condemn anybody who disobeys authority. Teachers' discussions of Mathematics lessons are usually slow paced, designed to the level of average learners. Classes are conceptual, involving a steady and relaxed pace of instruction, during which Japanese students are expected to think about Mathematical concepts rather than perform many calculations [25].

Fast learners, after solving the exercises given, may help their classmates understand the concept or may have time to draw some cartoon characters they often see in television or in comic magazines. Teachers spend time going around the classroom explaining individually to students whose mastery level of the lesson is not yet satisfactory. It is common to see teachers squatting in front of their students as they engage in one-to-one discussion with the students to help the latter improve the mastery level. Some schools may manage to get more than one teacher for one class to make sure students who need help will have somebody to assist them before the session ends.

Daily Mathematics lessons are not ended with a written evaluation. Short tests or quizzes are

not common in Mathematics classes in Japan.

**Figure 1. Individual instruction.** A teacher squats in front of a student as he helps the student master the concept.



Most students actually do not feel the need to study mathematics. The survey of MEXT conducted in November 2002 revealed that only 39.6% of the Japanese students believe that Mathematics is important [23]. Whether or not they believe in the importance of Mathematics, they have to study it if they desire to enter university. Only about 49% of university bound students manage to pass the entrance examinations [16]. So the students are left with no choice but to master everything, to increase their chances of entering university since, later in life, their career would depend on the school where they graduated. Graduates of universities are offered high paying jobs while others may settle for a lesser income.

### Students' Achievements

In recent international competitions in mathematics, Japan is always found on the upper bracket as one of the top performing nations. The same is true in the recent survey conducted by the Organization for Economic Cooperation and Development (OECD). These achievements could not only be attributed to some few teachers since the contests involved not just one or two students and the survey involved a number of students that represents the population of the students in the country.

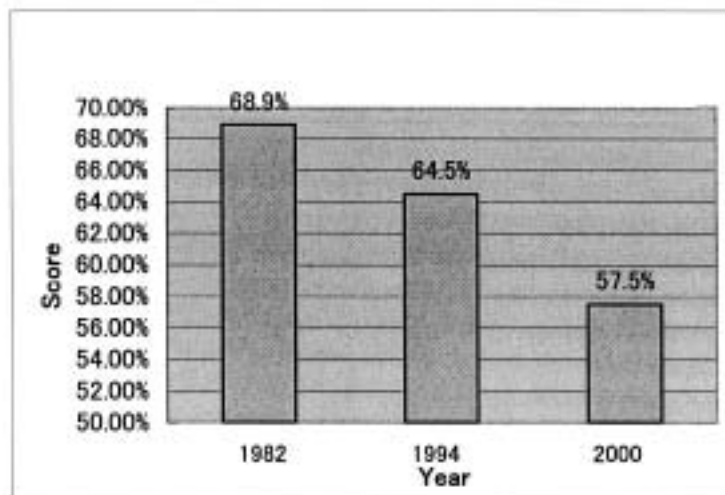
In the last two International Mathematics Olympiads, a world championship Mathematics competition for high school students held annually in a different country, participated in by more than 80 countries from around the world, Japan was able to place herself on the top ten countries in terms of performance level [11]. In the 2003 and 2004 competitions held in Tokyo, Japan and Athens, Greece respectively, all the members of the Japan team were able to receive a medal to give honor to their country and to give justice to all the hardships suffered by their mathematics teachers since they were in elementary school.

The results of the Trends in International Mathematics and Science Study (TIMSS, formerly known as the Third International Mathematics and Science Study) which provides trend data on students' mathematics and science achievement from an international perspective, show also Japan as a nation of top performing students. The recent TIMSS, conducted in the year 2003, measured the performance level of 15 year-old students in the participating countries. The result is that Japan got an average score of 570 far above the international average score of 466.

According to the research conducted by Organization for Economic Cooperation and Development (OECD) about the academic performance of students in Mathematics in 31 countries, 15 year-old students in Japan were top performers together with the students from Korea, Finland and Hong Kong [12].

In contrast to the outstanding performance of Japanese students in international competitions, there is widespread dissatisfaction on the part of educators on the existing educational system. In year 2000, Toshio Sawada, a professor of mathematics education in Tokyo University of Science, conducted a survey in which about 1,300 sixth-graders in 11 prefectures took an arithmetic test that used the same questions as those in examinations carried out in 1982 and 1994 by the then Education Ministry. The results are shown in the table below.

**Figure 2.** Scores of Sixth Graders in Arithmetic Test



MEXT also conducted a nationwide survey on the level of performance of third year high school students in November 2002. 105,000 randomly selected students scored an average of 50.2% in mathematics. The score was 11 points below the ministry's expectation [23]. Renowned university professors have also complained that the academic skills of university students particularly in mathematics had fallen considerably in the past few years [1]. MEXT officials have also admitted that there is a declining competitiveness in Japanese educational system and have pledged to improve it [14].

The result of the survey of OECD is also consistent with the observations of Japanese educators. In the survey of OECD in year 2000 among the 15-year old students, Japan ranked first place but went down to sixth place in the 2003 survey out of 41 countries. [22]



Although Japanese are expressing their discontentment on the educational system or on the performance of the students, from the point of view of non-Japanese people, Japan's educational system remains laudable and worthy of emulation.

### **Improving Teaching Skills**

Not many high school teachers continue studying for master's or doctor's degree. In the year 2003, there were 1,396 teachers with master's degree and 1,054 teachers with doctor's degree [16] out of more than 1.2 million teachers from kindergarten to university [17]. Non-involvement in graduate school however, does not necessarily mean refusal to improve the quality of education they can offer to their students. Japanese educational system is strict in terms of mastery of the subject matter among teachers. Take for example in year 2003, the Osaka Prefectural Board of Education fired a 45-year old high school teacher after the teacher scored only 30% on a Mathematics examination intended for junior high school students [15].

Japanese teachers spend a great deal of time researching how to teach. New teachers are given access to available lesson plans to help them prepare better for classroom teaching and they are subjected to temporary adoption, a period where their capacity to teach is being closely monitored. Very few teachers fail during this period. There are also in-service trainings that help teachers improve their skills in classroom management.

Within the school, teachers meet during department meetings, and monthly meetings to discuss some classroom situations. In the local and regional levels, teachers also meet for discussion of teaching techniques and other matters related to teaching. Class observations are also done, a situation where one teacher teaches his students with teachers from other schools observing. Discussions for comments and suggestions would usually follow the observation.

Another approach to develop teaching methods is the lesson study. It is a process where teachers group themselves to discuss lessons they have planned, observe as the lesson is taught to a group of students and come up with suggested ways of how to effectively teach the lesson [10]. Lesson study is already a part of the Japanese educational system and allows teachers in the nation to learn from the experience of other teachers.

The practice of teacher rotation also helps teachers improve their ways of teaching because Japanese educators usually discuss their methods of teaching and so by meeting teachers from other schools, better techniques can easily be shared and mistakes be corrected.

### **Philippine Educational System**

Educational curriculum in the Philippines is designed by the Department of Education (DepEd) and is implemented by all public schools all throughout the nation. DepEd sets the minimum requirements and so schools may increase the duration of teaching time of subjects [4] or they may offer additional subjects they feel important. Major revision of the curriculum usually takes place every ten years.

Philippines has one of the shortest educational systems in the world, six years of elementary education and four years of secondary education. Preprimary education is voluntary but parents are strongly encouraged to enroll their children in day cares, nurseries and kindergartens.

Compulsory education starts at age seven and lasts for 6 years. This corresponds to elementary education. Although it is offered for free in public schools, in school year (SY) 2002-2003 about 6 % of Filipino children of elementary school age do not avail it [5]. Promotion to the next level every year is not guaranteed. Pupils are expected to pass quizzes and long tests and to reach a certain

rating to be able to proceed to the next level.

Four-year high school education follows elementary education. However, starting SY 2004-2005, all incoming first year students have to take a national test to determine their readiness for high school education. If they pass the test they can proceed to first year high school and graduate after four years. If they fail however, they have to take the bridge program.

Started in SY 2004-2005, bridge program aims to prepare incoming first year students by bridging the gap between the things they have learned and the things they ought to master before going to high school [7]. This program lasts for a year and so a passing score in the National Readiness Test means four years of secondary education while a failing score means an extra year in high school thereby making it five years.

High school education is free but is not compulsory. In SY 2002-2003 close to 64 % of children with age 13 - 16 years old are enrolled in high school education [5]. While some children do not study because of lack of interest, most out of school children cannot afford to go to school because of poverty. Just like in elementary, students are not assured of promotion to the next level every year. They have to attain at least 75% rating. The rating is based on students' performance on quizzes, assignments, oral participation in classroom discussions, unit tests and periodic tests which are given once every grading period. In one school year there are four grading periods. Students' rating is used to classify them, that is, during the opening of each school year students with high rating are grouped together in a class and students with low rating are also grouped together

Unlike in Japan, there are no cram schools or exam preparatory schools in the Philippines. After completion of high school education, students have to take entrance examination for the courses of their choice. Students' desire to enter public universities is mainly for economic reason since there are also a lot of private colleges and universities which can offer education just the same as those offered in public universities only at a higher fee. So, entrance examinations do not create so much tension on the part of the students.

### **Classroom Situations**

Philippine constitution states that the State shall protect and promote the right of all citizens to quality education [20] and so public schools cannot refuse students who wish to enroll. However, schools must live within its available resources. In fact, there is a perennial problem of classroom and teacher shortage. As a result, classrooms are usually crowded, accommodating 50 - 70 students at a time.

Class discussions are usually fast paced to finish all tasks for the day. Classes usually start by discussion of the assignment and of the previous lesson. Motivating students to learn everyday is another thing teachers must not forget. Introduction of the day's lesson follows, together with some few examples. Stating the mathematical idea of the lesson is a task of the students but is sometimes done by teachers to save time. Application of the Mathematical concept in daily life situation should not be missed if the teacher wants to keep students interest towards the lesson. The session usually ends with a short test and an assignment for the following day.

Mathematics teachers are expected to teach not just Mathematics but values education as well. Each lesson plan must include value focus if it has to be complete. That is, during discussion of the lesson, at least one good character trait must also be emphasized. Not only that, with the implementation of the new curriculum, starting SY 2002-2003, Mathematics teachers must also develop students' multiple intelligences [2,3]. The theory of multiple intelligences was developed in 1983 by Dr. Howard Gardner, professor of education at Harvard University [2]. Multiple intelligences

refer to

- Linguistic intelligence** ("word smart")
- Logical-mathematical intelligence** ("number/reasoning smart")
- Spatial intelligence** ("picture smart")
- Bodily-Kinesthetic intelligence** ("body smart")
- Musical intelligence** ("music smart")
- Interpersonal intelligence** ("people smart")
- Intrapersonal intelligence** ("self smart")
- Naturalist intelligence** ("nature smart")

This means that while students are learning Mathematics, the teacher should also try to develop their speaking ability (linguistic intelligence) or the teacher may introduce activities that would require students to dance (bodily-kinesthetic intelligence) or sing (musical intelligence). With these things to develop on the learner, being a Mathematics teacher in the Philippines is a bit complicated.

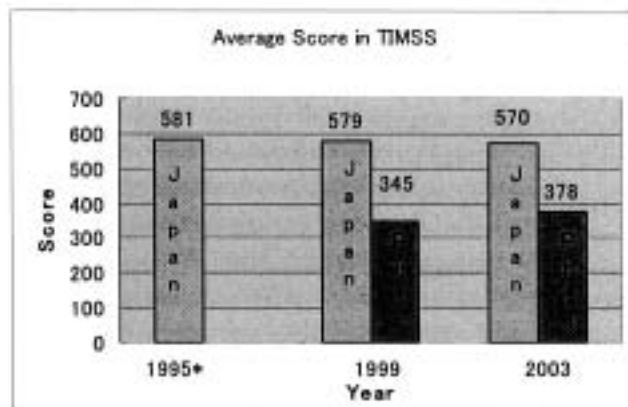
### Students' Achievement

Philippines has been struggling to improve students' achievements. One of the major changes in the latest revision of the curriculum is the increase in the minimum Mathematics teaching time from 40 minutes per day to 60 minutes per day to give more time to students to study mathematics.

There used to have been a National Secondary Assessment Test (NSAT) to assess the performance of graduating high school students. The last NSAT was given in school year 2000-2001 with results showing that the achievement level of students in Mathematics was 51.83% [5]. With the introduction of the new curriculum, the focus was shifted to first year high school students. In the SY 2002-2003 a national test was given to all first year students and the result showed a mean percentile score of 27 [5].

With a very low performance rating of students, the officials of DepEd decided to introduce the bridge program. This program aims to enhance the capacity of high school entrants to benefit from the first year curriculum [7]. To start the program, a National Diagnostic Test was given in July 2003 to first year students. The result showed that only 8% of the students were able to answer at least 50% of the questions in Mathematics [7].

The result of TIMSS was very alarming to Filipinos. In 1999, Philippines was the 36th country with 38 countries participating. Average score was 345 where the international average score was 487 and Singapore got the highest average score of 605. In 2003, Philippines' average score somehow increased to 378, but still very far from the international average score of 466 with 45 participating countries. Again, Singapore got the highest average score of 604 [12].



\*Philippines was not a participant in TIMSS 1995

Figure 3. Scores of Students from Japan and Philippines In TIMSS

The results of tests simply show that in the Philippine educational system, still a lot has to be done. As the DepEd tries to fix the problems in the system, everybody is expecting for some developments on the students' performance. The development is yet to be seen.

### **Improving Students' Performance**

School year (SY) in the Philippines starts in the middle of June and ends in the middle of April [8]. Theoretically speaking, every SY consists of more than 200 school days. In SY 2004-2005, there are 205 school days. This is a lot of days for learning when used efficiently.

With crowded classrooms and hot temperature, learning is not very conducive but the DepED does not stop thinking of possible ways to maximize the learning of the students. The revision of the curriculum in 2002 for example increased the minimum length of daily mathematics classes by 20 minutes to give more time to students to learn mathematics.

Few years ago, education supervisors required Mathematics teachers to ask Higher Order Thinking Skills (HOTS) questions with the belief that HOTS questions would require students to think deeper and not just content themselves of simply describing things.

Cooperative learning, a teaching strategy that involves a small group of students working together as a team to solve a problem, complete a task or accomplish a common goal [27] is also suggested to be used in Mathematics classes to somehow deepen the understanding of the students on mathematical concepts by involving them in the learning process and not learning by merely listening to teachers' lectures.

Similar to Japan's lesson study, where teachers gather to discuss mathematics lessons, prepare a lesson plan, observe as the lesson is taught to a group of students and later revise or re-teach the plan depending on the result of observations [10], Philippines has its own version called the School Based Training Program (SBTP). Teacher-participants in this program meet from time to time to discuss some mathematics lessons and the possible ways of teaching them. Launched in 1999, the SBTP emphasizes the use of Practical Work Approach, a method of teaching where students work on activities and derive the Mathematical concepts from the activity performed with minimal teachers' supervision.

The cooperative learning and the practical work approach as methods of teaching make the students active participants in the learning process. The practice of involving students is due to the belief that the students learn a lot from the things they do.

Recent trend in teaching Mathematics involve the use of information technology to keep the students interested in the lesson by using things that are of interest to the students. Some private sectors and some countries are also helping the DepEd modernize Philippine schools by donating computers and training teachers on the use of these equipment in teaching.



## Conclusion

The table below summarizes some the major differences in the educational system and the performance of students from Japan and Philippines

**Figure 4. Comparison of Japanese and Philippine Educational System**

Point of Comparison	Japan	Philippines
Educational system	6 years of elementary education, 3 years of junior high school, 3 years of senior high school	6 years of elementary education, 4 years of high school,
Number of Years of compulsory education	9	6
Yearly Promotion	guaranteed	students have to pass examinations
Discussion of lesson	slow paced	fast paced
Focus of discussion in mathematics classes	Mathematics only	Mathematics, values education and the development of multiple intelligences
Learning institutions outside school systems	Cram schools/exam preparatory schools	none
Score in IMO 2004	182	16
TIMSS 2003 average score	570	345
Trend in TIMSS performance	decreasing	increasing

To make the Filipinos competitive in the global market, Philippines has been doing a lot of changes in a bid to develop the educational system and improve the quality of education offered to the students. So many things have been done and so many new ideas have been introduced in the system but the results of the tests and surveys show that still a lot has to be done.

Japan, a neighboring country and just a little bigger than the Philippines, has an educational system that is respected around the world. The performance of the students in international competitions is worthy to be praised. The small difference in area yet a big difference in economy and educational performance teaches the Philippines, and other nations as well, a plain and simple lesson: LEARN FROM JAPANESE EDUCATIONAL SYSTEM.

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