

Japan's Giga School Program: Equips Students with Life Skills for Digital

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Abstract

The Covid 19 pandemic is a human tragedy impacting all life aspects. One of them is education. In Japan, several policies were implemented to address gaps in access to education due to school closures during the pandemic. This article aims to describe the policy of the Japanese government in building a distance learning system that can be accessed equally by all students. This policy is known as The Global and Innovation Gateway for All (GIGA)'s school program. This program carries the concept of "one student, one device." The method used in this research is document analysis (documentary analysis method) on several reports issued by related ministries and statistical data. From the study results, it can be concluded that this policy successfully reduced the gaps in accessing distance education while creating a new, modern civilization in the teaching process in educational environments in Japan.

Keywords: Japan, education, digital, school, devices.

1. Introduction

The end of 2019 can be considered the beginning of the humanitarian tragedy that swept the world. Starting with the discovery of the first COVID-19 case in China in August 2019, the outbreak continued to move across countries worldwide. No country has been spared from the COVID-19 attack. All sectors of life have been affected. One of them is education. Teaching activities can no longer run face-to-face; students and teachers can only interact through distance learning. Distance learning that must be carried out immediately creates confusion in the world community. Those who have been accustomed to the face-to-face learning model for years must change the learning system in a short time.

On February 28, Prime Minister Shinzo Abe called for the closure of schools in Japan. The closing process began on 2 March 2020 and until early April 2020. School closures impact delayed learning for a specific time (Kang, 2021). The effect of this policy is that students no longer receive education in classrooms. The learning model is changed to a distance learning model. This policy could have gone better. Many problems arise, primarily related to the provision of supporting infrastructure for distance learning systems.

For private schools in Japan, the issue of providing learning infrastructure is relatively easy to do. However, things are different in public schools. As of 16 April 2020, only 5% of public schools could provide online learning. Many students and parents need clarification about this educational gap. In schools that have held online classes, there are also many obstacles. One of them is the need for more technical support for students. Distance learning in Japan develops well only in higher education, and in primary and secondary schools, development is slower than in tertiary education. Most schools still use textbooks and paper teaching materials as references (Kang, 2021).

Students, teachers, and parents experience the challenge of adjustment in learning activities at school. Before the pandemic, most schools in Japan used learning media in textbooks and paper materials compared to other media, such as television programs and videos. This shows that the use of technology in elementary school classrooms has yet to maximize distance learning (Isha & Wibawarta, 2023). Since the closure of Japanese schools, teachers have been forced to look for other ways, such as using various learning media that can be accessed online.

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The number of internet users in Japan is enormous and shows a significant increase yearly; a report issued by the World Bank (2023) shows the increase in the population of internet users in Japan as shown in Figure 1 below:

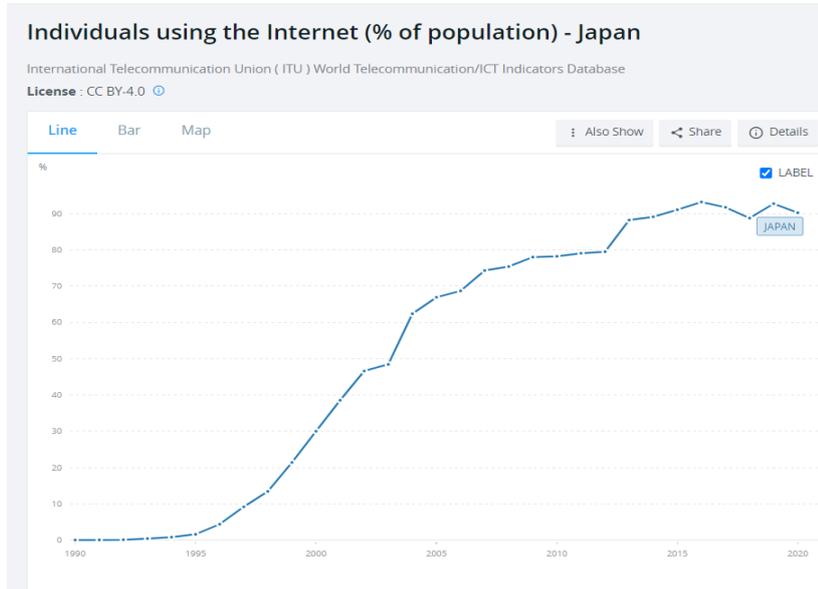


Figure 1. Number of Internet users in Japan.

Figure 1 above shows a significant increase in internet usage in Japanese society from 1990 to 2020. Among countries in Asia Pacific, Japan ranks fourth in terms of several internet users after China, India, and Indonesia, as shown in Figure 2 below:

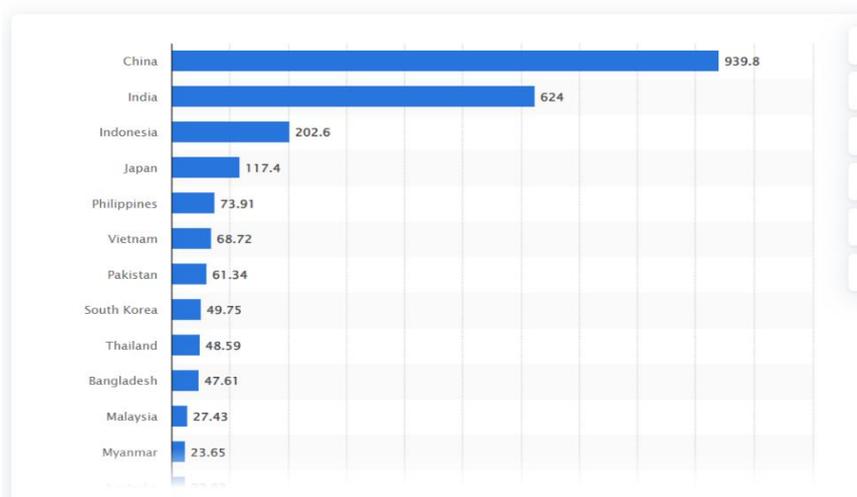


Figure 2. Internet user data in several Asia Pacific countries
Source: statista.com (statista.com, 2023).

However, Japan highly depends on cash and written and faxed documents. Even before the COVID-19 pandemic, the country's evident slowness towards digitalization has been clear for a while (Anju, 2021). In the educational sector, A survey conducted by the Ministry of Education, Culture, Sports, Science, and Technology in Japan, cited by Craig (Craig, 2022), shows the frequency of internet use by students as shown in Table 1 below:

Table 1. Frequency of Internet use by students

A	B	C	D	E	F	G	H
9~12	21,2	17,80	27,9	19	7,40	4,40	2,4
13~15	19,8	14,5	25,2	20,7	10,4	7,5	1,9
16~18	22,6	8,8	21,7	15,1	10,4	19,7	1,7

Source: The Ministry of Education, Culture, Sports, Science, and Technology of Japan

- A: Age group
- B: Almost every day
- C: 3~4 times/ week
- D: 1~2 times/ week
- E: 2~3 times/ month
- F: Once a month
- G: Never
- H: No answer/unspecified

The data shows that at the elementary and junior high school levels (ages 9~12&13~15), the highest percentage uses the internet 1~2 times a week. However, at the senior high school level (ages 16~18), internet use increases daily (22.6 percent). From these data, it can be concluded that internet use among school students is relatively high, namely 80~90 percent of the total respondents. This shows the high dependence of students on internet access to support their activities. However, until COVID-19, students were adroit at using the internet and devices to communicate, play games, and watch videos. They needed to be more adept at using them to find, synthesize and apply online information.

Distance learning during the pandemic caused many problems in the education system in Japan. One is the tension in accessing education for students far from the city centre. To avoid inequality in accessing education, the Japanese government implemented the *Leave No One Behind* (LNOB)'s approach to respond to educational challenges due to the COVID-19 pandemic. *Leave No One Behind* was originally an educational approach initiated by the UN and adopted by Japan in November 2016. This approach aims to realize the Sustainable Development Goals in the "2030 Agenda". All UN member states are jointly committed to the LNOB's approach to eradicating poverty, ending hardship, and reducing inequality (UNSDG) (Lyons, Kass-Hanna, Zucchetti, & Cobo, 2019).

During the pandemic, the LNOB's program in Japan focused on addressing problems in the education sector during the COVID-19 pandemic. The focus of the Japanese government on overcoming tensions is carried out in ways such as 1) enabling students to take part in learning through additional material or transferring some of the material to next year's lesson; 2) Looking for solutions to reduce the impact on students who will face tough exams, such as high school and university entrance exams; 3) Reducing additional costs when students study at home, especially for students from painful families—assistance in the form of additional internet quota and school fees (Isha & Wibawarta, 2023).

To achieve the above goals, Prime Minister Suga's government finally decided to accelerate digital transformation in Japan and prioritize it. One of these policies is building an information technology-based school program, the GIGA system. GIGA, or Global and Innovation Gate Away, aims to foster students' ability to process information and provide individually optimized education for each child by utilizing information and communication technology (ICT). The Global and Innovation Gateway for All (GIGA) program aims to realize one device for one student and provide a high-speed & high-capacity communication network. The GIGA program also seeks to give instruments for every student and assistive devices for children with disabilities (Umejima et al., 2022).

To realize this program, the Japanese government, through the Ministry of Education, Culture, Sports, Science and Technology (MEXT) at the end of 2019, prepared funds of 460 billion yen or 3 billion USD. This amount is intended for 13 million students in 35 thousand schools. Initially, this program was targeted to be completed by the end of

March 2023 but was postponed by three years to ensure that schools could prepare for any online learning that had to be faced due to the pandemic (Anju, 2021).

2. Literature Review

2.1. Digital Learning

The wider community increasingly recognizes various learning applications amid today's rapid technological developments. Internet-based educational applications allow individuals who live geographically far apart to share information and ideas. Learning technology provides a constructivist environment, collaborative learning, and independent learning. Individuals can create projects in their respective fields and work together (Keser & Özdamlı, 2012). Web-based educational technology uses computer networks that provide resources and a multimedia learning environment. In practice, the members are divided into many groups. Team members via the Internet or multimedia technology offer related resources to learning (Fan & Li, 2011).

When used correctly, using digital technology in teaching and learning can be the right solution for students because it allows fast-tracking of the learning process. This technology can function as a centre for knowledge broadcasting and exchange, where information and knowledge flow freely from teacher to student and between students. This is made possible by the continued growth of digital content and the breadth of digital tools that drive knowledge creation, consumption, management and dissemination. The need to create and share knowledge in an educational context has long been established and remains a cornerstone of successful academic endeavours (Johansen, 2023; Mhlongo, Mbatha, Ramatsetse, & Dlamini, 2023) (Johansen, 2023; Mhlongo et al., 2023).

The Covid-19 pandemic hit the world at the beginning of 2020 and has rapidly changed the structure of people's lives. The world of education is forced to replace face-to-face learning with online learning (Giatman, Siswati, & Basri, 2020). The COVID-19 pandemic has resulted in unprecedented changes in education systems worldwide. Apart from the economic and social impacts, there is a dilemma of acceptance of the new "e-learning" educational system by students in educational institutions (Al-Okaily, Alqudah, Matar, Lutfi, & Taamneh, 2020). Adaptive learning, supported by Communication & Information Technology, is an important research area for education systems to improve student outcomes (Gomede, de Barros, & Mendes, 2021). Digital technology as an e-learning application is also called instructional technology (Rahayu, Ferdiana, & Kusumawardani, 2022).

2.2. GIGA school program: "One student, one device."

In Japanese society, education is critical and can affect one's life. In Japan, for example, the better the quality of a person's high school, the greater the chance that the individual will be accepted at the best university in Japan. The better a person's educational background, the easier for someone to get a job. Japan is a country that adheres to the concept of *gakureki shakai* or academic background-oriented society. This term implies an understanding that education is the primary determinant of socioeconomic success. In a literary background-oriented society, the quality or ranking of universities impacts achieving socio-economic awards. However, the *gakureki shakai* has become a significant challenge during the COVID-19 pandemic. The COVID-19 pandemic has affected children and parents, which has prevented children from getting optimal education (Cook, 2013).

The biggest obstacle faced in accessing education during a pandemic is the limited number of computers students can use. The Japan Association for Promotion of Educational Technology, cited by Nippon.com (Nippon.com, 2021), pushing for greater use of information technology in education, conducted a nationwide survey from August to September 2019 that targeted a selected 3,337 public elementary schools and 1,913 public junior high schools as shown in Figure 4.

Figure 3 shows that up to 2019, 37 percent of junior high schools and 33 percent of elementary schools did not prepare electronic devices for learning. Only 24 percent (junior high school) and 22 percent (elementary school) stated they had designed the electronic device. However, only 4 percent (junior high schools) and 2 percent (elementary schools) provided one device for each student. The majority of elementary and junior high schools, as much as 33 percent, only set up a computer room for shared purposes.

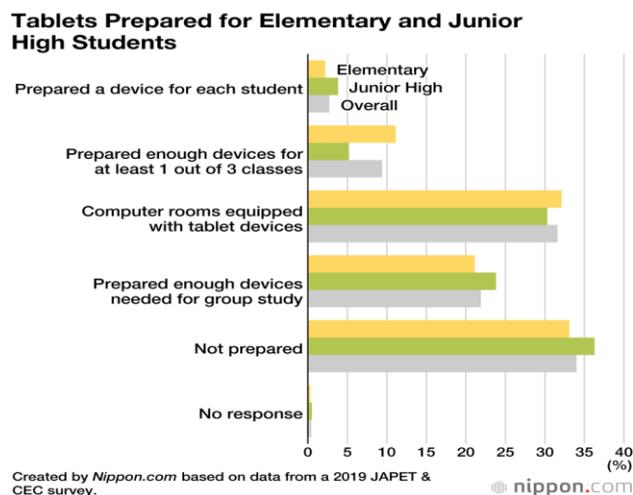


Figure 3. Tablet prepared for elementary and junior high school students
Source : The Japan Association for Promotion of Educational Technology

3. Research Method

This research employed a qualitative and documentary analysis method to obtain an overview of GIGA program implementation and achievements. The steps taken are to look for data related to policies related to the GIGA program issued by the Ministry of Education, Culture, Sport and Technology (MEXT)-Japan. Data showed several plans and the resulting group, personal, and joint learning targets. Data also showed that the financing process includes financing for the maintenance of student electronic equipment, development of Internet networks in schools, placement of GIGA technicians in schools, preparation devices, and Internet networks in residential areas. In addition to data from MEXT reports, this paper also used data from two educational institutions in Japan regarding implementing GIGA to show the realisation of program implementation.

4. Results and Discussions

4.1. GIGA school plan: program & budgeting

The GIGA school program started with several plans by the Japan-Ministry of Education, Culture, Sports, Science, and Technology. From the initial planning, three main focuses were issued in the implementation of this program which included group-personal-joint learning as shown in Table 2.

Table 2. GIGA Program

	Before “1 device for one student.”	With “1 device for one student.”
Group Learning	Teachers can motivate children's interest by using an electric blackboard, etc.	Teachers can understand each student's reaction in class. It enables teachers to provide interactive lessons with detailed guidance based on each student’s responses.
Personal Learning	All students learn the same content at the same time.	Each student can learn different content at the same time. Each student’s study log is automatically recorded. Enables individualized learning and instruction based on each student’s educational needs and understanding.
Joint Learning	Group presentations can be made, but it’s hard for quiet students to voice their	Each student can collect information from their perspective.

Before “1 device for one student.” individual opinions.	With “1 device for one student.”
	Students can share their thought immediately and edit collaboratively. All students have immediate exposure to various opinions while experiencing information editing.

Source: The Japan-Ministry of Education, Culture, Sports, Science, and Technology

From the data, three advantages can be gained from implementing this GIGA school program. First, in group learning, implementing the GIGA program makes it easier for teachers to observe in more detail the process and progress of each student. A detailed monitoring process can make it easier for teachers to map each student’s abilities objectively and transparently. The results of mapping student abilities can be used as input for efforts to increase student achievement. Second, through personal learning, students can access knowledge according to their interests and skills in their respective locations. This can foster a high demand for learning among students while broadening broad knowledge horizons. Third, the GIGA school program can also further enhance shared learning. The ease of conducting joint education that can be done flexibly will encourage sharing information and forming a collaboration to produce quality work from various perspectives.

The Japanese government assists general students and students with special needs in this program. This assistance program is divided into four aspects: (1) maintenance of student electronic equipment; (2). Development of internet networks in schools; (3). placement of GIGA technicians in schools, and (4). Prepare devices and internet networks in residential areas.

To achieve the target of the GIGA school program, the Japanese government issued tremendous financial support, namely 461 billion yen. These funds are used for the following purposes, as shown in Table 3 below:

Table 3. GIGA school program budgeting

Maintenance of student electronic equipment	Electronic equipment assistance for students with special needs (1.1 billion) Provision of electronic devices for all students (297.3 billion)
Development of Internet networks in schools	Internet network maintenance (136.7 billion)
Placement of GIGA technicians in schools	Placement of ministry experts in each school (10.5 billion)
Prepare devices and internet networks in residential areas.	Procurement of electronic devices at home (14.7 billion) Distance learning capacity building (0.6 billion) Development of online learning infrastructure (0.1 billion)

Source: The Japan-Ministry of Education, Culture, Sports, Science, and Technology

From Tabel 3, it appears that although the largest allocation of funds is in the provision of electronic devices, the government also provides relatively large funds for other supporting aspects that are no less important, such as experts, building internet networks in schools and housing environments and preparing the home environment. to adapt to this distance learning model. This shows that the development of the distance learning model in Japan involves students and related ministries and encourages the active participation of families, especially parents, in monitoring all these remote activities.

4.2. Implementation of GIGA plan in school

The cities of Kawachinago and Shibuya are two areas in Japan that are actively trying to realize the success of this GIGA school program. In Kawachinagano, for example, it is renovating wireless networks in schools and supplying devices to 80% of students where it was not previously provided – all by the end of 2020. The city opted for Chromebooks for devices, assuming students will soon use digital textbooks and videos. They also work closely with Nippon Dentsu to provide a high-speed, high-performance network.

In 2017, before the GIGA school program was launched, Shibuya City could only lend tablets to 8,700 elementary and junior high school students. However, after implementing the GIGA program, each student already had a tablet. Tablets are put to good use in all kinds of classes. In art class, students use it to create their animations. In gym class, they recorded a video of their mat exercise using red dots to indicate where they needed to improve their shape, as shown in Figure 5 and Figure 6.



Figure 4. Use of tablets in a Shibuya elementary school classroom



Figure 5. Use of tablets in sports activities
Source: Japan Times

From Figure 5 and Figure 6, we can see the activities of students using electronic equipment while participating in Japanese language learning and exercising amidst the pandemic that has hit the world. Students no longer only use conventional learning media such as paper and pens but can utilize electronic device facilities provided by the government. The activities shown by school students in Japan, as shown in the picture above, show that GIGA's program is a modern educational plan that has been carefully prepared from various aspects such as financing, human resources and infrastructure both within and outside the school environment. This shows a serious effort by the Japanese government to equip its young generation with skills in technology-based education that will benefit their future.

5. Conclusion

The "one student, one device" policy implemented by the Japanese government through the GGA school program effectively solves distance learning problems that must be carried out during the Covid 19 pandemic. This policy has encouraged the creation of a modern civilization in the learning process in Japan that allows students to access lessons without being constrained by space and time. Students can also explore knowledge according to their interests and abilities. On the other hand, learning with electronic devices can also improve the quality of teacher supervision of each student's proficiency in more detail and objectively. The full support provided by the Japanese government through the relevant ministries shows Japan's seriousness in maintaining the quality of Japanese people even though a pandemic is hitting it. Through this research, the modernisation and transformation of the education system in a

structured and periodic manner is an essential strategy for building and strengthening the formation of a modern and higher education-based society and improving the quality of human resources in a country.

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