Adoption of Gaming as an Alternative Educational Tool Among Japanese Youth

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ABSTRACT

There are few areas in our daily lives that have not been changed by the rapid growth of technology. Like many others, education has seen some of its effects and with other factors such as the Coronavirus, many teachers and institutions have been forced to change their pedagogical methodologies. A combination of the technological advances and the new methodologies has been reflected in the use of video games as educational tools across the world. This text will try to explore the question of adopting gaming into education in Japan. Explore its possible benefits by measuring the test results of students in different stages of their educational lives from primary to tertiary education. The goals of this paper are to try to find if there is a noticeable difference and benefit from this new type of pedagogical approach. How does Japan compare to other countries regarding the adoption of gaming as an educational tool? What are the student's opinions and sentiments towards it with the objective of providing the best possible result in students' motivation? The results found through observational data show some promising prospects in the adoption of gaming as an educational tool, but also some of the lack of technology adoption and the negative image that gaming has in Japan.

INTRODUCTION

With the undeniable surge in technology adoption in every area of our lives, education is a field that has been affected by this digital shift. Circumstances like the Coronavirus pandemic which started in 2019 and the following years have forced many countries to adopt and adapt these type of technologies (Nagashima, et al. 2022). The result in many educational institutions to the incorporation of technology to their curricula has seen both positive and negative results. With what seems to be a point of no return in education technologies, many countries are facing questions on how to incorporate technology in a successful way that does not hinder their competitiveness in a globalized world. In Japan, when talking about education, many students and teachers still have some reservations about the introduction of technology to the classrooms (Qing, 2007). Also, many educational institutions traditionally have an approach strictly to the theoretical and with arguably antiquated methods of memorization which do not present the opportunity for students to have creative opinions or ideas. These methodologies focus mostly on the preparation of students to deliver a favorable result in standardized tests which have the goal of guaranteeing these students a place in a top university in the country which consequently guarantees a lucrative job in a company where workers traditionally spend their whole career until retirement (Goodman, 1990).

The country is at risk of falling behind in technology adoption and use (Arora, et al, 2013). This has negatively affected Japanese student's performance compared to other countries with similar geographical location and even economic status (Kariya, 2010). These academic results tend to also be reflected in the competitiveness of the graduates in the professional world (Hixon, 2019) and on a macro level, Japan compared to other countries such as the United States, Germany and South Korea (Shinozaki, 2009). Not only students are falling behind in technology adoption, but when comparing the United States to Japan, the teachers are also slow when introducing new technology (Takayama, 1993), and subsequently, new methodologies to the classroom (Joshi, et al. 2010). All these elements tend to exacerbate the issue and slow the progress and adoption of alternative methods of teaching.

For Japan to stay competitive in the educational and international fields, some reforms need to be put in place to its educational institutions. This paper will try to explore what are some of the possible benefits of incorporating practices that would sound absurd to the previously mentioned institutions. An alternative that has seen positive results in other countries has been the incorporation of games to the classrooms. Gaming is already an active part in everyday life outside of the classroom for many students and previous researchers

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have tried to incorporate it into education. This paper will try to explore this idea specifically among Japanese students in middle and higher education, its reception among students who currently use gaming as an educational tool and what are some of the current initiatives taken in Japan by educational institutions.

Defining "Gaming"

It is important to define what this paper will refer to as "gaming". In this case, gaming does not necessarily mean only playing games in the classroom, but more of a pre-designed, level-based system in which the student will attempt to solve a problem by using tools and skills they have acquired previously, while it is presented in a way that resembles a game or a puzzle. This system will have a progressive learning curve in which the students will start with a relatively simple task and will increase in complexity as they advance. The nature of this system will also allow students to approach the problem in whichever creative way they see fit (Wood, 2003). Not in a linear fashion but allowing the students to choose their desired "path" and create their own journey of education. This more ambitious method of education has been attempted by many educators and institutions. These are some of the previous researches done by previous academics.

Method

The participant observation technique, one of the qualitative research methods, has been used in this study. The information contained in this article was gathered through Japanese newspapers, articles, and journals. The figures shown in this article were also gathered from the sources. As another source of information, an educator who currently works in Japan was interviewed, providing an inside view on the phenomenon regarding this article. All these sources were originally in English or translated to English by the source, so there is no misinterpretation or misrepresentation of the information from the author of this article.

The growth of gaming

The rising presence of gaming as an industry is clearly seen in the following graph courtesy of Pelham Smithers. It is estimated that gaming has a higher revenue than the movie and sports industries combined.
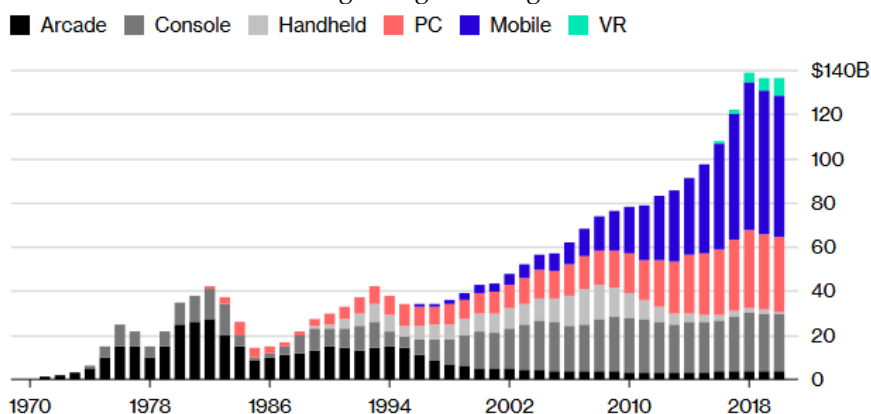
Source: Pelham Smithers

Fig 1. Revenue and distribution in the gaming industry throughout the years.

Meanwhile, in Japan, the video game market in Japan was valued at approximately 1.5 trillion Japanese yen in fiscal year 2019. The establishment of gaming in the target country is undeniable. Considering the spread and presence in Japan, it wouldn't be surprising to assume that incorporating gaming into the classroom might not be a difficult task for an educator.

Educational gaming in Japan compared to the US and the Netherlands.

The introduction of gaming as a tool in education has been attempted in other countries, particularly the USA and the Netherlands which we will compare to Japan. A report of a study made in the United States claims that digital games are built on sound learning principles, provide more engagement for the learner, provide personalized learning opportunities, teach 21st century skills, and provide an environment for authentic and relevant assessment (McClarty, et al. 2012). These are arguably some of the most important desirable characteristics in any teaching methodology. This report notes that the teachers in this research expressed motivation as the main hindering factor that prevents students from engaging in the lesson and that incorporating gaming to the classroom provided opportunities for authentic and appropriate knowledge representation of complex ideas, many of which seem under-represented in traditional assessments. Gaming has its benefits.

Another research done in the Netherlands which focused on how the incorporation of gaming was seen by students asked a group of around 1600 students and found that in general our respondents preferred collaborative and technology-rich learning and deemed games a valuable teaching method (Bekebrede, et al. 2011).

Table 3 Correlation between learning preferences and (added) value of gaming

		Deemed value of gaming	Deemed added value of gaming
Acceptance of technology-rich learning	Pearson Correlation	.225**	.233**
	Sig. (2-tailed)	.000	.000
	N	954	979
Effectiveness of collaborative learning	Pearson Correlation	.137**	.126**
	Sig. (2-tailed)	.000	.000
	N	957	983
Enjoyment of collaborative learning	Pearson Correlation	.170**	.157**
	Sig. (2-tailed)	.000	.000
	N	960	986
Preference for active learning	Pearson Correlation	.156**	.172**
	Sig. (2-tailed)	.000	.000
	N	1004	971

**Correlation is significant at the 0.01 level (2-tailed).

Fig 2. Correlation between learning preferences and added value of gaming among Dutch students.

It is clear that teachers and students see some clear benefits of incorporating gaming into the curriculum. Although these studies were done in western countries. The question remains if the same will be adequate for students of different cultural backgrounds, specifically, Japan.

In an interview done in 2021 with Les Smith, the Head of English Department in a high school in Gifu prefecture, Les describes gaming as an integral part of the educational approach of his program. *"Students decide their own way of learning and build on their previous knowledge." … "In some way, they create their own learning, and this agency makes them take ownership and responsibility for their actions. That investment in themselves is something that not many programs can achieve without the supplemental aid of gaming."*

In Japan, playing video games starts from an early age as shown in fig. 3.1. The graph shows that very early in their lives, Japanese children are acquainted with video games. Unfortunately, the presence of video games among Japanese youth can also be considered an addiction and in some cases. A survey targeting 9000 subjects of which 5100 reported gaming up to ¼ of a day as shown in fig. 3.2.
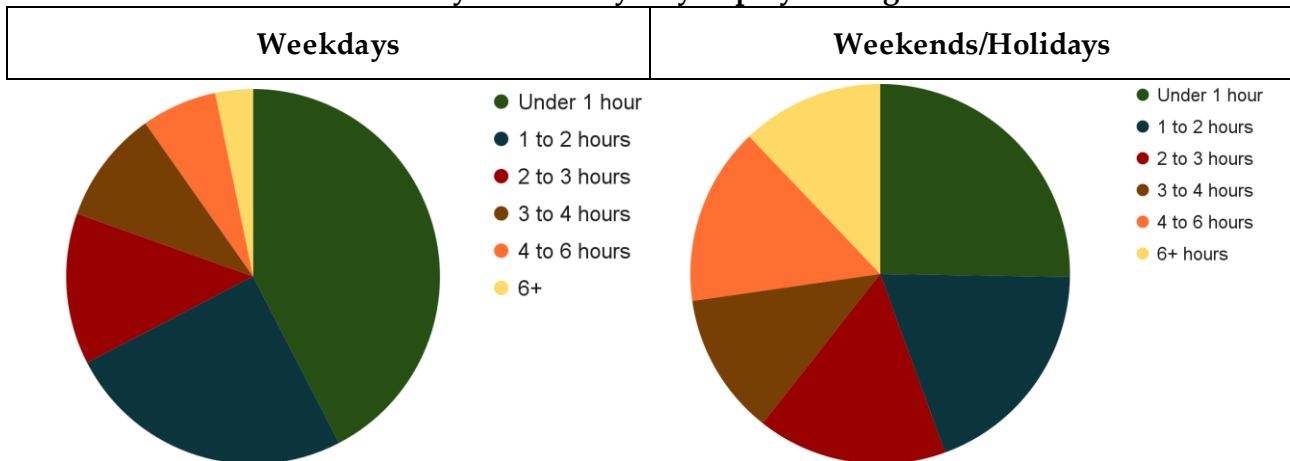
Age Survey Respondents Began Playing Online Games
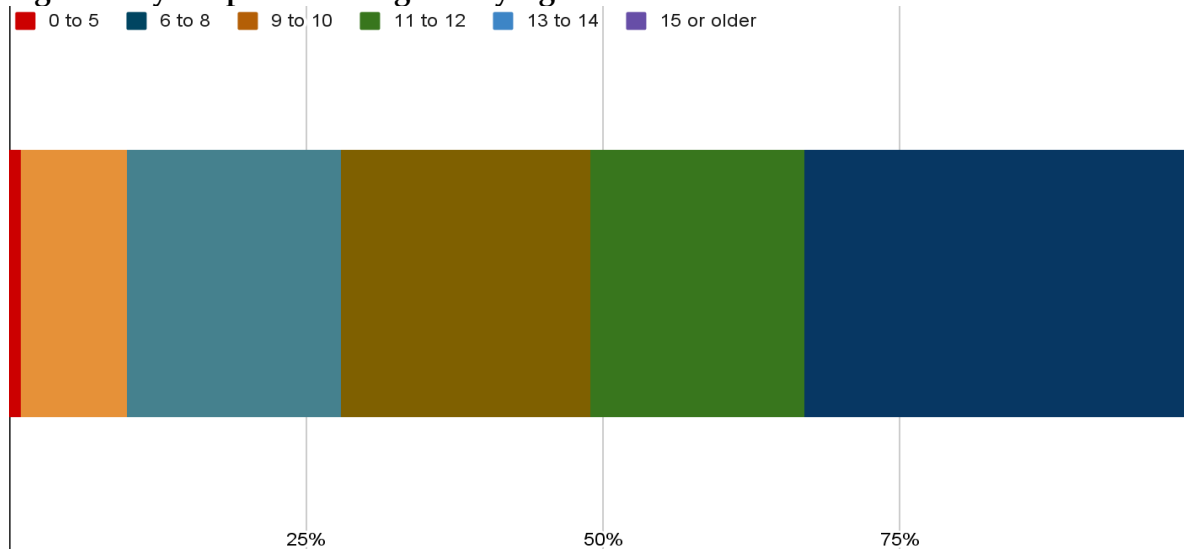
Created by nippon.com based on data from the National Hospital Organization Kurihama Medical and Addiction Center. nippon.com

Fig. 3.1 Age in which Japanese youth start playing video games.

How many hours a day do you play video games?

Weekdays	Weekends/Holidays

Created by Nippon.com based on data from the National Hospital Organization Kurihama Medical and Addiction Center. The survey targeted 9,000 people aged 10 to 29 nationwide, of whom 5,100 provided answers. nippon.com

Fig 3.2. Number of hours children spend playing video games per day.

Bridging casual gaming to gaming with academic purposes

Considering the negative image gaming has among Japanese parents portrayed by the media, this research will try to use the familiarity some students might have with gaming and use it as a point of entry that can be a proxy to be used for academic purposes.

Previous attempts have been made to incorporate gaming in the learning process in Japan, an example was study on disaster reduction education, at both a senior high school and in a local community. The results suggested the clear superiority of cogenerate disaster education over conventional, knowledge internalization-oriented disaster education (Yamamori, 2008). Although the incorporation of technology into Japanese classrooms has been slow, the lack of a computer or other technologies does not necessarily imply that gaming cannot be incorporated as a method of learning. Historically, Japanese education focuses mostly on test results, this is what determines a successful student, and this is the factor that will allow students to climb the educational ladder to eventually graduate from a prestigious university and aspire to a highly paid job (Goodman, 1990).

To narrow down the field of study, this research will focus specifically on grades for English tests in college and university students. As previously mentioned, the Japanese education system is mostly focused on test results and although some scholars would argue that test results are not the goal of education, in this case, it will be considered a success if the test results of the students increase due to the incorporation of gaming in the curriculum.

Current attempts of introducing gaming to schools

There have been some attempts to introduce gaming as an educational tool in Japan in the past years. Currently in Tokyo a high-school opened focused on video games and e-sports. eSports High School, as it is called, operates with the support of NTT, which is one of the biggest telecommunications companies in Japan. The facilities of the school have the latest computer rigs that allow students to play at the highest level, practicing their reflexes, strategies and even focuses on teaching students on how to take care of their physical and mental health. Although the idea might seem preposterous for some, eSports High School argues that "Pro gaming, as an occupation, is very difficult, and so our goal is to provide students with skills that can be used not just in competitive gaming, but in a variety of ways.". This statement might not be too far from reality, since in the latest eSports tournament the prices for popular games as DOTA went as high as $40,018,400.00 per pool in 2021. The first term of this high school started in April 2022, so the results of this type of training are still to be seen.

Another example more related to English education was with the popular first person-shooter video game Fortnite. A company called CroInc offers online English lessons that allow students to learn and play at the same time. The company claims that students are more engaged in their lessons and are allowed to play and learn with instructors that might not be in Japan.

Yusuke Watanabe, the head of CroInc claims that games do not require a special type of conversation, since "the speech sentence structures are mostly unchanged from those in daily life." It is reported that around 50 elementary and junior high school students in the areas of Tottori, Hokkaido and Tokyo have tried this style of classes. Yet, the effectiveness of this approach is yet to be proved.

On the tertiary level of education, another study (Bolliger, et al. 2015) also focused on the adoption of gaming to Japanese students for learning English. This study tried to investigate the perception of students toward the use of digital games.

The results of this study show that most participants should know how to handle digital games in the classroom, but the answers also show that some students are not certain about how the use of video games would help them improve productivity or help them achieve higher grades. At the same time, most students seemed to think that videogames would help them experiment with knowledge and interact with other students.

The greatest number of students mentioned enjoyment and motivation as potential advantages to using digital games in English-language learning. They thought that the use of games would motivate students to study, attend classes, and participate more actively during sessions and that it would make learning a language easier. They also noted that learning could be more personalized if students had the option to select levels and structure.

On the other hand, some students thought that it would be difficult to focus on studying, playing games would not feel like studying or studying would turn into a solitary event and they doubt that introducing gaming was necessary in the education process. Although, it is important to note that traditionally, in Japan, gaming and studying are normally seen as opposite activities, so the idea of using games to study is a foreign concept for many Japanese students.

Discussion, Suggestions & Conclusion

The information gathered in this research clearly shows that gaming as an industry has an economic revenue that has been consistently increasing in the past years. Overtaking other more mainstream industries. Japan itself is home to some of the most notable video game companies such as Nintendo and Playstation. Among the Japanese youth, we can also see that gaming is a prevalent activity. Some individuals start interacting with video games at an early age during important formative years. Also, the amount of time individuals is playing video games is seen by some as addictive or troublesome.

The results also show that in other countries and even in some instances in Japan, gaming has shown promising results that can have a positive impact in student's education and results. There have been some significant attempts to legitimize gaming as a tool for educational purposes, not only for traditional academic subjects such as English. Gaming has become a significant part of everyday life for many people. This research concluded that the integration and utilization of digital games are a viable alternative in English-learning classrooms even though being labeled a "gamer" was not perceived as a positive trait by participants (Bolliger, et al. 2015). Gaming has also been used to introduce students into professional eSports, which has become a surprisingly lucrative and competitive endeavor. The popularity and presence of these types of competitions seems to be only increasing and it is attracting more and more students with a lucrative and legitimate career.

Some suggestions that can be drawn from the information gathered during this research is that there still exists a sentiment of rejection towards technology adoption in schools (Morrone 2012). So far, most of the gaming industry has been created for entertainment purposes, which is seen by some parents as a waste of time. Even though, as previously mentioned, eSports has proven to be a legitimate career path, the push back this new industry is seeing by the more "traditional" perspectives seems to be inevitable. Initiatives like the one taken by the eSports High School and CroInc are to be praised as trailblazers with the caveat that in any upcoming industry, there will be some failures which should not discourage future initiatives.

The effective adoption of gaming as an alternative pedagogical tool is directly dependent on how well teachers are trained to use these methodologies. It is imperative that instructors do not hinder the progress of the younger generations because of the indoctrination of older educational techniques that might be in contradiction with gaming as a new tool. The objective should not be to replace old methodologies, but to find gaming as a complementary tool to achieve the best results in students. The failure by teachers to do so could result in a rejection by the students in using this tool and ultimately, its rejection.

The gaming industry will continue to grow and expand into many aspects of our lives. In many cases, it has shown a beneficial effect in the education system in many countries and even in Japan, it became

a successful way to teach communities how to learn new concepts. Having the student's best outcome in mind, the attempt to start using gaming in classrooms with the objective of improving the student's test results could prove an effective and fulfilling way for instructors and students to engage in a more fruitful learning experience. And although there is still a sense of stigma around games and gaming in the Japanese community and education system, there is a strong potential for using games as a bridge to facilitate education.

References

Arora, A., Branstetter, L.G. & Drev, M. (2013). Going soft: How the rise of software-based innovation led to the decline of Japan's IT industry and the resurgence of Silicon Valley. *Review of Economics and Statistics*, 95, 757-775. https://doi.org/10.1162/REST_a_00286

Bekebrede, G., Warmelink, H. J. G. & Mayer, I. S. (2011). Reviewing the need for gaming in education to accommodate the net generation. *Computers & Education, 57*(2), 1521-1529. https://doi.org/10.1016/j.compedu.2011.02.010

Bolliger, D. U., Mills, D., White, J. & Kohyama, M. (2015). Japanese students' perceptions of digital game use for English-language learning in higher education. *Journal of Educational Computing Research, 53*(3), 384–408. https://doi.org/10.1177%2F0735633115600806

Goodman, R. (1990). Review of *education and examination in modern Japan. Monumenta Nipponica, 45*(4), 499–501. https://doi.org/10.2307/2385392.

Hixon, E. & Buckenmyer, J. (2009). Revisiting technology integration in schools: Implications for professional development. *Computers in the Schools, 26*(2), 130-146. https://doi.org/10.1080/07380560902906070

Joshi, A., Pan, A., Murakami, M. & Narayanan, S. (2010). Role of computers in educating young children: U.S. and Japanese teachers' perspectives. *Computers in the Schools*, 27(1), 5-19. https://doi.org/10.1080/07380560903536249

Kariya, T. & Rappleye, J. (2010). The twisted, unintended impacts of globalization on Japanese education. In *Globalization, changing demographics, and educational challenges in East Asia.* Emerald Group Publishing Limited. https://doi.org/10.1108/S1479-3539(2010)0000017004

McClarty, K. L., Orr, A., Frey, P. M., Dolan, R. P., Vassileva, V. & McVay, A. (2012). A literature review of gaming in education. *Gaming in education*, 1-35.

Morrone, M. H. (2012). Social and cultural impediments to the adoption of ICT for language learning in Japan. *Proceedings from the International Conference "ICT for Language Learning" 5th edition.* Florence, Italy.

Nagashima, Y., Inokuchi, M., Yasui, Y., Uchida, K., Tokumura, M. & Hasegawa, T. (2022). Impact of school closure due to the coronavirus disease 2019 pandemic on body mass index in Japanese children: Retrospective longitudinal study. *Journal of Paediatrics and Child Health.* https://doi.org/10.1111/jpc.16122

Qing, L. (2007). Student and teacher views about technology: A tale of two cities? *Journal of Research on Technology in Education*, 39(4), 377-397. https://doi.org/10.1080/15391523.2007.10782488

Shinozaki, A., Y. Yamamoto, Y. (2009) Is Japan an outlier in the information age? International comparisons on corporate reforms leveraged by information technology. *InfoCom Review*, 49, 26-47.

Takayama, S. (1993). An analysis on the computer attitudes for education and the computer anxiety of inservice teachers. *Japanese Journal of Educational Psychology*, 41, 313-323. https://doi.org/10.5926/jjep1953.41.3_313

Wood, D. F. (2003). *Problem based learning. Bmj, 326*(7384), 328-330. https://doi.org/10.1136/bmj.326.7384.328

Yamori, K. (2008). Action research on disaster reduction education: building a "community of practice" through a gaming approach. *Journal of Natural Disaster Science*, 30(2), 83-96. https://doi.org/10.2328/jnds.30.83