

Reprinted from

KITAKYUSHU SHIRITSU DAIGAKU HOU-SEI RONSHU

Journal of Law and Political Science. Vol. XLIX No. 1 / 2

October 2021

**COVID-19 and Innovative Strategies of Higher Education for
Human Resource Development in Japan**

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Abstract

This paper is a study of higher education for human resource development (HRD), how it has been affected by the COVID-19 pandemic and is being attention through innovative strategies in Japan. The expansion of compulsory education and a rise in high-school and university enrollment rates have contributed to economic growth in the postwar period. HRD is essential to Japan's national economic plan and policies despite the country's lack of natural resources. HRD imparts attitudes, knowledge, sensitivities, and skills through education. Educational institutions have well developed, and developing, curriculums, teaching, learning and research which provide (new) employees with everything they need for their careers and life in general. However, the country has been facing and continues to faces several challenges. First, Japan has a declining 18 years old population, and second, is struggling with student recruitment, with nearly 40 percent of universities and colleges being unable to reach their capacities or quotas (teiin), a situation different from that of many

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other countries. Under these circumstances, the country needs useful and capable human resources with fundamental knowledge and skills who can lead the society. The Japanese government have introduced several reforms to find solutions to tackle these problems. This paper is a study of Japan's higher education system and a discussion on Education Development, Trends, Issues, Reforms and Innovative Strategies in Education for Human Resources that have surfaced out of the COVID-19 pandemic.

Keywords: human resource development (HRD), COVID-19, higher education, challenges, innovation strategies,

I . Introduction

Education is a powerful instrument in human resource development (HRD) the all over the world especially in higher education ⁽¹⁾ (bachelor, master and doctorate programs). Education is a personal and professional growth process that depends on curriculum, courses and research of higher education institutions. The excellence of Japanese human resources contributed to its improved economy immediately after the Second World War, despite the country's lack of natural resources. Despite there lack of natural resources, Japan has led them to rely heavily on the human resource in an important resource. Japan boasts the third-largest economy in the world. Its economic strength is at least partly due to the strong research and development of the human resource. HRD contribute the quality of the work force and the regulation of the labor market. Quality in turn is a function of basic and higher education, training programs. The human resource, in specific ways to achieve

(1) In this article, higher education include the four years bachelor degree in under graduate school except those in medicine, dentistry, veterinary science and pharmacology, which extend to six years, and two years master and three years for doctorate degree in graduate school in the university.

the high-quality and sophistication of production has been a key strength of the Japanese economy. Since the Second World War Japan has been emphasizing on educational values and well-educated work force, which has contributed to the technological advanced and industrialized country. However, Japan has been facing several challenges in the education sector especially higher education: decreasing young population⁽²⁾; problems include quality concerns best-known means by which universities ranked is called a *hensachi*⁽³⁾ score, growing inequality, and shrinking enrollment; university and college capacity or university seats problems; making the path to admissions much easier which effects students' overall education standards. Recently, there is a big challenge is that Covid-19 has hampered and continues to hamper all sectors including the education sector and human resources, not only Japan but all over the world.

According to the Promotional and Mutual Aid Corporation for Private Schools of Japan, 542 four-year private universities throughout the country 160 are below their quota levels. As an example, in 2005, Hagi International University in western Japan, which was established in 1999, was forced to start a legal rehabilitation process to avoid the closure of the campus due to the decline in student enrollments. The first-year enrollments dropped to only 22 students in 2004 although there was a quota of 300. There were also some universities which, due to low numbers, had to merge. Osaka University and Osaka University of Foreign Studies merged in 2007. The government added HRD as pillar of the Cabinet's policy agenda. With the rapid increase of the ageing population and the declining birth rate, which saps the growth potential

(2) Elementary enrollment had fallen from 12 million in 1982, to just under 7 million in 2018, and secondary enrollments 11.4 million in 1988 to around 6.5 million in 2018. The Japanese population age 0 to 14 declined steadily, falling to 13 percent in 2018.

(3) A score of 50 is at the mean, 60 is one standard deviation above the mean, 70 is two SDs above the mean. *Hensachi* scores vary by department; a medical department 72 and a much lower one for its nursing department 55. The private university has *hensachi* ranging from 35 to 65 for its various departments.

from the nation's economy, the idea that investment in human resources is indispensable is laudable (The Japan Times, August 19, 2017).

In addition, COVID-19 has become a major disruption to academic institutions across the country, with most institutions have stopped face-to-face teaching in classes, which has affected student standards and quality levels. The government, industry, private and public companies, research institutes, universities and academia are working in partnership to address the various issues resulting from the COVID-19 pandemic, especially HRD activities to overcome this challenge. There has also been a nationwide push to encourage the use of online, hybrid teaching and instruction as well as online teaching and learning activities in higher education to keep students' quality and standards at acceptable levels.

The studies conducted include; research papers, surveys of research and government documents analysis, observation and personal experience. The discussion in this paper is organized as follows: Research Review of Education Development in Japan; The Trends of Higher Education; Issues and Reforms; Innovative Strategies in Education for Human Resources; Conclusion.

II. Research Review of Education Development in Japan

There are many scholars (Amano, 1989; Oba, 2005; Ushiogi, 2007; Goodman & Phillips, 2003; Benjamin, 1997; Cummings, 1986; Hendry, 1986; Rohlen, 1983; White, 1987 and others) who have been researching Japanese education both nationally and internationally for more than half a century. Many of these scholars have attributed the economic success and industrialization of Japan to highly literate, well-educated and skilled human resources. Japan has attached great importance to education since the Meiji Era (1868-1912). The modern education system was introduced during the Meiji Era. In 1872, the government promulgated the Education System Order with the objective of the

generalization of school education. The modern higher education system also began in the Meiji Era when the University of Tokyo was founded in 1887, with the purpose of training the elite leaders and technocrats who were to be equipped with advanced Western knowledge and skills. Six other universities were established, in Kyoto, Tohoku, Kyushu, Hokkaido, Osaka and Nagoya. These seven universities are imperial universities, and were organized on the European, specifically the Prussian model.

According to Huang (2016) and Ushiogi (2007), higher education developed on the basis of the Prussian research-oriented model in the 19th century. From the 19th century to the early 20th century, many Japanese teachers, students, researchers and scholars went to Germany to pursue advanced research, knowledge, learning and teaching styles. After returning to Japan, some of them introduced German educational ideas and practices to Japanese universities and other higher education institutions (Huang, 2016, 4-5). Professor Takane Yoshito – who studied at the University of Berlin from 1896 to 1900 – attempted to use seminar-based instruction in the Faculty of Law at the University of Kyoto from 1900 to 1907 (Huang, 2016, 4-5). Ushiogi (2007) noted the impact of the Humboldtian⁽⁴⁾ ideal and the German research university on Japanese higher education, which was to introduce and implement a unity of teaching through current research, seminar-based instruction in the classroom, establishing university libraries, laboratories, and research institutes, and seeking corporate autonomy for universities.

After WWII, there was a lot of discussion about university reform from the pre-war period. With the introduction of the Fundamental Law on Education in

(4) The Humboldtian model of higher education (German: *Humboldtisches Bildungsideal*, literally: Humboldtian education ideal) is a concept of academic education that emerged in the early 19th century and whose core idea is a holistic combination of research and studies. The concept of academic education was an idea of Wilhelm von Humboldt, a Prussian philosopher, government functionary and diplomat.

1947, a new framework for the higher education was implemented. Reforms in higher education were important factors that lead the country, during its transition period, to be seen by the world as a contender on the world stage. The object of these reforms were the emphasis on higher education in terms of governance arrangements, and that modern universities combine governmental control with a considerable measure of internal academic freedom (Cummings & Amano, 1977; Amano, 1989).

Thus, it changed from the old 6-5-3-3 system used before WWII to the new 6-3-3-4 system. Now, compulsory education is six years in elementary school and three years in junior high school. After graduation from junior high school almost all students go on to three years in high school and more than sixty percent enroll in universities and two-year colleges. The different types of higher education is provided by universities⁽⁵⁾, junior colleges⁽⁶⁾, colleges of technology⁽⁷⁾ and special training schools and colleges⁽⁸⁾. A single four-year

(5) The university education offered in a variety of fields, including the humanities, social sciences, sciences, engineering, and agriculture. Bachelor's degree programs typically require the completion of a general education component, which usually comprises 30 to 60 credits taken in the first two years of the program. Students must earn a minimum of 124 credits to graduate. Medicine, dentistry, pharmaceutical sciences, and veterinary sciences programs require six years of study and between 182 and 188 credits.

(6) Junior colleges (*tanki daigaku*), offer two- to three-year programs in a variety of fields. Two-year courses require the completion of a minimum of 62 credits; three-year courses require a minimum of 93 credits.

(7) A higher education institution that offers a unified five-year education (five years, six months for mercantile marine studies) aimed at nurturing technical experts. It requires graduation from lower secondary schools or equivalent academic ability for admission. A minimum of 167 credits are required for graduation (147 credits for mercantile marine studies).

(8) A higher education institution that provides practical and technical learning and skills in a wide variety of disciplines such as medical care, technology, culture and general education, business, personal care and nutrition, education and welfare, fashion and home science, agriculture and others.

university system was enacted in 1981. The University of the Air (Open University), which was designed to provide life-long learning opportunities to Japanese people, was started in 1985 by TV and radio stations around the country. At present Japan has one of the world's highest-educated populations, with 100 percent enrollment in compulsory grades and zero illiteracy.

However, in 1964, the Economic Council, issued a report entitled, 'Issues and Measures concerned with Human Ability Development in the Context of Economic Growth'. It focused on the future development of the heavy chemicals industry. The object of the plan put forth in the report was the training of a labor force divided into layers consisting of a small number of highly talented people to administer and manage the industry, a large number of middle-level technical specialists, and a very large number of technicians to support them. Vis-a-vis, the policy for diversifying higher education was adopted. According to Oba, during the high economic growth period, it was private universities that developed very rapidly. There were 245 universities and 280 junior colleges in 1960, which increased to 420 universities and 513 junior colleges by 1975. In terms of student numbers, by 1975, there were 1,734,082 students enrolled in universities (including graduate schools), which was 2.77 times more than in 1960 (Oba, 2005, 5). Over that period, an 'academic revolution' (Jencks and David, 1968) was witnessed in Japan. The expansion of higher education and economic growth are closely related, and that can contribute to manpower planning⁽⁹⁾ (Kaneko, 2013).

The Central Council for Education submitted recommendations for another reform to the Minister of Education on various aspects of higher education in 1971. The goals of these reforms were: 1) diversification of higher education, 2) curriculum reform, 3) improvements in teaching methods, 4) opening of higher

(9) Manpower planning is largely concerned with education, training, and age for labor supply.

education to the general public and establishment of a system of certification, 5) organizational separation of education and research, 6) establishment of research institutes, 7) rationalization of the size of higher educational institutions and their administrative structure, 8) improvements in personnel policies and treatment of teachers, 9) change of the form for establishing national and local public universities, 10) improvements in governmental financing of higher education, a system of costs being borne by the beneficiaries, and a scholarship system, 11) a national plan for the co-ordination of higher education, 12) improvements in the students' environment, and 13) improvements in the selection procedures of students.

In addition, in 1977, the university entrance examination so called the 'Center Test' or '*Center Shiken*' (センター試験) in higher education was introduced but abolished in 2020. It was a two-day annual test taken by students all over Japan. Another test, The National Preliminary Test, is conducted nationwide by the University Entrance Examination Center, and yet another test is conducted by individual universities. There are also examinations administered by the individual universities into which students wishes to enroll. The 'Center Test' has been replaced by the 'Standard Entrance Exam' 「大学入学共通テスト」. 'Common examinations', one being an integrated subject-and-course type and the other a comprehensive type (to elicit students' ability to use knowledge and skills) using computer-based testing are administered multiple times per year. The individual examinations of each university are to be abolished in principle, and students will be selected based on essays written in Japanese, presentations, group discussions, interviews and other forms of evaluation, including common tests. External examinations assessing English speaking, writing, listening and reading abilities will also be used.

III. Trends in Higher Education

Higher education plays an essential role in the HRD process by students acquiring knowledge through learning, by transmitting knowledge to students (through teaching) and fostering research and innovation.

At present there are three categories of university, 86 national universities⁽¹⁰⁾, which were originally established by the government (national university corporations), 93 public universities, which are established by local public entities or public university corporations, and 607 four years private universities (Table 1), which are established by educational corporations and private initiatives.

The government subsidizes private universities only 10 percent of their administrative budgets. Other budgetary costs are financed by tuition fees. Private colleges and universities need to recruit at least 50 percent of their full student quota to receive government subsidies. By the early 2000s, the central government maintained strong regulation and control of the scale, budget, and organizational structures of each college and university. In 2004, all national and public universities became national and public university corporations under the education law and faculty members in these universities were deemed civil servants.

The Fundamental Law on Education was revised in 2006, as much had changed since the law was adopted in 1947. Amano Ikuo, Professor Emeritus in the University of Tokyo, explained the shift toward ‘universal’ access to higher education as Japanese higher education being in the mature stage of universal access. To date the number of higher education institutions and their total

(10) All national universities, which were previously part of the Ministry, have been reorganized as corporations since 2004.

Table 1: Trend of Enrollment of Higher Education in Japan

FY	Junior college			University			Undergraduate		Graduate	
	College	Teachers	Students	Total	Na.	Pub.	Teachers	Students	Master	Doctorate
1960	280	6,394	83,457	245	72	33	44,434	626,421	3,460	2,223
1970	479	15,320	263,219	382	75	33	76,275	1,406,521	12,357	3,336
1980	517	16,372	371,124	446	93	34	102,989	1,835,312	16,844	4,669
1990	593	20,489	479,389	507	96	39	123,838	2,133,362	30,733	7,813
2000	572	16,752	327,680	649	99	72	150,563	2,740,023	70,336	17,023
2005	488	11,960	219,355	726	87	86	161,690	2,865,051	77,557	17,553
2010	395	9,657	155,273	778	86	95	174,403	2,887,414	82,310	16,471
2015	346	8,266	132,681	779	86	89	182,723	2,860,210	71,965	15,283
2016	341	8,140	128,460	777	86	91	184,248	2,873,624	72,380	14,972
2017	337	7,924	123,949	780	86	90	185,343	2,890,880	73,441	14,766
2018	331	7,660	119,035	782	86	93	187,163	2,909,159	74,091	14,903
2019	326	7,440	113,013	786	86	93	187,862	2,918,668	72,574	14,976

Note: *Na. (National), Pub. (Public) University include undergraduate and graduate schools.

Source: *Monbukagakaku Hyakusho* several issues.

enrollments have increased dramatically. In 1955, only 10.1 percent of high school graduates entered universities. That number only slightly increased to 10.3 percent in 1960, 23.6 percent in 1970, and 37.4 percent in 1980. Although there has been a continuing decline in the number of 18-year-olds in the population since the early 1990s, there has been steady growth in the rate of higher education enrolment in Japan. In 2019, there were 2.91 million students in total at 786 universities (86 national, 93 public, and 607 private), and approximately 113,013 students in total at the 337 junior colleges (Table 1).

It increased to more than fifty percent in the 21st century, to 51.5 percent in 2005, 55.1 percent in 2013 (Amano, 2014), and 57.3 percent in 2017 (GOJ, 2018, 173). In Japan, a developed country, the ratio of high school graduates who enter university is not so high, less than 60 percent, and undergraduates who go on to graduate schools is very low. The number of students in graduate and post-graduate education is shown in Table 2 below. According to the Programme for International Student Assessment (OECD-PISA), graduate education in Japan is under-developed compared to European countries and the United States with only slightly more than seven percent of Japanese

undergraduates going on to graduate school as compared to thirteen percent of American undergraduates (OECD-PISA).

Table 2: Trend of Higher Education and Research

Year	Graduation from Graduate Schools		Researcher of Different Type of Institutions							
			Business Organization		NGOs, NPOs		Universities		Total	
	Master	PhD	Ins.	Researchers	Ins.	Researchers	Ins.	Researchers	Ins.	Researchers
2007	73,993	16,801	18,737	483,339	1,057	42,033	3,410	301,193	23,204	826,565
2008	73,881	16,281	22,370	483,728	1,040	41,071	3,498	302,492	26,908	827,291
2009	73,811	16,463	17,029	492,805	1,008	40,322	3,521	305,847	21,558	838,974
2010	73,220	15,842	14,003	490,494	994	40,812	3,575	308,987	18,572	840,293
2011	74,680	15,892	14,666	490,538	953	40,231	3,604	312,099	19,223	842,868
2012	78,711	16,260	11,677	490,920	940	39,598	3,631	313,912	16,248	844,430
2013	76,511	16,445	12,673	481,425	965	39,032	3,638	315,244	17,276	835,701
2014	73,154	16,003	11,670	485,318	954	38,578	3,626	317,658	16,250	841,554
2015	71,301	15,684	15,073	506,134	946	39,215	3,657	321,571	19,676	866,920
2016	71,016	15,773	15,375	486,198	950	38,795	3,645	322,100	19,970	847,093
2017	71,187	15,658	18,739	488,828	940	38,643	3,673	326,233	23,352	853,704
2018	71,446	15,658	14,721	498,732	933	38,863	3,696	329,355	19,350	866,950
2019	73,169	15,578	13,842	504,746	933	38,863	3,739	331,427	18,514	875,036

Notes: Ins. (Institutions),

Sources: Different Annual Reports, MEXT website.

IV. Problems and Reforms in Educational Sectors

Japan has faced and faces a range of challenges including; devastating nuclear reactor meltdowns, world wars, numerous earthquakes, tsunamis, countless typhoons, and regional conflicts that threaten the supply of essential goods. The country has never before experienced an event like COVID-19 and its impacts, which have become the single greatest threat to the continuity of society, many businesses and hampered the education sector vis-a-vis human resources. As mentioned above, Japanese higher education is facing some very big problems especially demographically. According to census statistics, the number of 18-year-olds in Japan peaked at 2.05 million in 1992, fell steadily to 1.2 million in 2015 and is expected to fall below 1 million by 2031. Every year

falling birthrates have meant a rapidly shrinking young population resulting in more than half of the total of four years 607 private universities being unable to fill their quotas.

1. Some Important Issues⁽¹¹⁾

Higher education institutions are serving the needs of society. There has been increasing pressure in higher education institutions to put emphasis on the academic achievements of teaching, learning and research at those institutions.

COVID-19 however, has ‘paused’ Japan and the world with people struggling to survive on many fronts; socially, economically, mentally and others. And the number of people suffering and dying is growing. As a consequence of COVID-19, the Government of Japan first declared a state of emergency on April 7, 2020 under the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response. In addition, after placing seven prefectures under a state of emergency, on April 16th the same measures were extended to all prefectures. As a result, all educational institutes were closed (to various degrees) until after spring vacation of 2021, which caused unexpected rush to move almost all lessons to an online/remote mode. There are currently over 3 million students enrolled in higher education throughout Japan. Of the 786 universities and junior colleges, almost all are private with 86 national universities and 93 universities established through local governments, as mentioned above. As of July 1, 2020 all universities started their spring classes, and around 90 percent of universities are now

(11) This section follows mainly Amano’s and Brown studies, Japan International Cooperation Agency (JICA), the MEXT. Amano’s research spans numerous educational issues ranging from the entrance examination system, the ‘credentialization’ of Japanese society, job placement after university, and specialized tertiary institutions, to more general explanations of the Japanese education system. Most of his recent research, including *Challenges to Japanese Universities*, focuses on higher education and university reform.

conducting distance learning classes in some form or other (MEXT, 2020a).

Since the first case of COVID-19 was reported on 16th January 2020, Japan has been experiencing a “fourth wave” of positive cases through April and May in 2021. In the current fourth wave, the number of new confirmed COVID-19 cases has been increasing a daily average of 4,000 to 5,000 positive cases nationwide, similar to the third wave at the end of 2020. These numbers are much higher than what has been recorded during most of the pandemic. At the time of writing (The end, May, 2021), Japan had recorded over 700,000 positive cases and deaths more 12,000 persons of COVID-19 and pandemic fatigue and the situation is exacerbated since so few persons have been fully vaccinated⁽¹²⁾. Under these circumstances the government declared third state of emergency over the coronavirus pandemic. Tokyo, Osaka, Aichi, Fukuoka and several other prefectures are currently under a state of emergency. This time emergency measures are scheduled to end on May 31, 2021 but they are likely to be extended (The Japan Times, May 21, 2021).

Brian (2002), mentioned that the overall purpose of Japanese higher education is to; teach morals (*dotoku*), common sense (*joshiki*), cultivate human nature to become good people, and to teach self-cultivation. He also noted that this level of education is for young people: to learn about junior / senior (*kohai/ sempai*) relations, friendships, and new things, is character building, it helps them to grow as people. They also acquire culture to enrich their knowledge; to contribute to society, to understand what others think about the future, expand perspectives, become adults, and members of society, and prepare to go out into society (*shakai ni deru koto*) (Brian, 2002, 215-216). In addition, obtaining a

(12) As of May 21st, Japan has approved the use of the Moderna and AstraZeneca vaccines.

Those over the age of 18 should be eligible for the Moderna vaccine but the Japanese government has decided to initially pause the rollout of the AstraZeneca vaccine until they understand better the side effects. This is of particular importance to the government as they have put in place a law to treat for free any potential health problems coronavirus vaccines cause (The Japan Times, May 21, 2021).

university degree (*daigaku sotsugyo*) prevents students from being ashamed when entering society (Brian, 2002, 216).

With the decrease in tertiary enrolments, there has been a decline in the talent and skills within the Japanese workforce, precisely when they are more crucial than ever in an increasingly globalized, knowledge-based society. Together with the present global trends in marketization and privatization, and growing international competitiveness in the quality of teaching and research activities there are some important issues which are discussed below.

1) Admissions Related Issues

University admissions applicants need to graduate from high school (12 years education from elementary to high school or equivalent), and have to pass rigorous, competitive entrance exams, which high school students have to spend a long time studying for. As mentioned above, entrance to public and national universities is based on two entrance examinations: the highly competitive National Center for University Entrance Examination which is also called the 'Center Test' which has changed from 2021 and a new one called the 'Common Test'. First applicants must sit the Center Test and then an examination set by the university they wish to attend. All national and public universities have a first term exam (*Zenki nittei shiken*) and a second term exam (*kōki nittei shaken*) on the same day as the entrance exam. Applicants have limited change and opportunity for entrance exam for national and public university. Applicants to private universities also need to take entrance examinations. As a result, the competition for entry into the high level and to top-ranking universities has been a major reason/cause for (psychological) stress for both children and parents.

In recent years there have been a number of scandals at some of Japan's top universities, including Tokyo University and Osaka University, involving professors who falsified data. Bribery and cheating scandals have been

uncovered too. In 2008, 19 professors at Yokohama City University admitted receiving about 5.7 million yen in cash gifts from students for granting them doctorates. In the same year a Tokyo University associate professor was dismissed for leaking questions from the university's entrance examination. In addition, Tokyo's Medical University manipulated entrance exam scores to restrict the number of female doctors. Pregnancy, maternity leave and raising children, in the eyes of the university management, mean women are a bad investment for Japan (The Japan Times, August 8, 2018).

2) Teaching and Learning Related Issues

It is common that teachers face many problems while teaching, such as problems relating to school programs, subject specialization, positive/proactive class environments, teaching strategies, and students' achievement. Teachers, interestingly, can conduct their own research on different instructional topics. Topics that may be considered by teachers at the individual level are: student success, classroom behaviors and curricular practices and lesson planning. Specific topics or areas of interest may be organizational structure, testing practices and grading. On the individual level, teachers typically formulate research questions or topics based on the day-to-day challenges in their classrooms. These questions or topics may focus on grade level curriculum instructional materials, teaching practices, assessment or learning styles. Are the results from the research done by teachers used in a positive way to improve the teaching/learning of those involved. According to the OECD, higher education in Japan which is taught in Japanese by Japanese faculty members has begun to achieve results of international significance in the natural sciences, engineering, and medicine.

Therefore, many educational curricula need to be tried in a competitive manner. Teachers are asked to personalize learning experiences to ensure that every student has a chance to succeed and to deal with increasing diversity in

their classrooms and differences in learning styles. In universities or colleges, the teachers usually just lectures, and the students just listen, without asking questions or debating. Even in the rare case that a Japanese class is set up in the format of a debate, the students won't give their opinions until the teacher calls on them specifically.

Most national universities employ a variation of a five-scale grading system, are S (Superior, 90 to 100), A (Above Average, 80 to 89), B (Average, 70 to 78), C (Below Average, 60 to 69), D or F (Fail, 0 to 59). Students performing at an inadequate level are given an F and are encouraged to retake the same subject(s) in the following semesters. As from 2016, most Japanese universities had also adopted a grade point average (GPA) system. However, there are some private universities and colleges, whereby simply assignment, attending classes, students can get credits. Some courses don't even require students to show up, and instead just ask them to write a report and turn it in at the end of the semester to pass the class. As a result, a lot of students spend their time participating in club activities or recreation, and doing part-time jobs. As higher education needs to play an important role in establishing a new sense of normalcy following the COVID-19 pandemic, many universities have introduced online learning for the first time and are exploring different methods of delivery. The students have also had to adapt to teaching and learning methods, which are for many of them, new and largely unfamiliar. These changes have certainly caused a degree of inconvenience, but they have also prompted new examples of educational innovation. For those getting back to in-person lessons, there are a variety of measures that are being implemented to keep students safe, including teachers wearing masks and face shields, reduced class sizes, social distancing within the classrooms, ventilated rooms, and disinfecting between lessons.

3) Education Quality Related Issues

The measurement of education quality is very difficult. It varies from university to university and institute to institute. According to Nusche, until the end of the 20th century, the quality of the input (through staff, libraries, laboratory equipment, and facilities) to higher education was generally assumed to determine the quality of its output (graduates and research). In recent years, however, with renewed thinking, it is argued that quality input does not necessarily guarantee quality output (Nusche, 2008). The only sure way to assess education quality is to evaluate the outcomes of education as measured by student learning achievement. Ezra Vogel stated that Japanese universities have an important function in certifying students, but faculty devotion to teaching and to students is limited, student preparations are far less than prior to entrance examinations, analytic rigor in the classroom is lacking, and attendance is poor (Ushioji, 1986, 28).

According to a survey of students from private universities, by the Benesse Corporation, 73 percent spend less than three hours a week on preparation, revision, and homework outside class and 20 percent spent no time at all and 81 percent of students studied material beyond the curriculum requirements for less than 3 hours a week with 32 percent spending no time at all.

Japanese universities have become places in which no learning goes on outside the classroom (Kariya, 2011, 73) MEXT mentioned, Japanese university students' average study time of 4.6 hours per day is very short compared with that of students in other countries. In addition, according to Brian (2002), higher education in Japan is characterized as giving guardians the opportunity to purchase diplomas for their children rather than allowing the latter to study for degrees as independent and full-fledged adults, and as ironic as it may sound, Brian stated, one elderly Japanese has told me that when they attended school before 1945 (or not long afterward) they were taught to think critically and to be independent: Today's students are different - they do not represent true Japanese

education, (Brian, 2002, 238).

Kariya mentioned another problem, early job hunting, and suggested that four-year universities are allowing many students to graduate with just three years of education. The unique Japanese system of *shushoku katsudo* (job hunting), long the country's predominant recruitment practice, has meant that university education and the job market are more intimately connected in Japan than they are almost anywhere else in the world. Under the system, companies recruit exclusively from among new or soon-to-be university graduates, rarely hiring older job seekers. Once hired, these new university graduates often remain at the same company for life, with pay highly correlated with seniority, a system of employment known as *shūshin koyō* (lifetime employment). This is because most students are busy looking for jobs from the second half of their third year, leaving them no time to attend classes. Almost all private universities have no alternative but to considered this attitude from their students (Kariya, 2011, 69-94).

There are of course, good students, professors, and departments, especially in the science and engineering programs, which supposedly are of better quality than the social sciences and humanities. This having been said, a higher number of students study social sciences and humanities. Quality teaching in higher education matters for student learning outcomes. But fostering quality teaching needs higher education institutions to ensure that the education they offer meets the expectations of students and the requirements of employers, both today and for the future (Hénard and Roseveare, 2012).

According to Fukukawa (1999), Tokyo University is the Harvard of Japan in the fields of science and technology. However, a different picture emerges in university rankings. In the Times Higher Education World University Rankings of 2010, Japan's top institution Tokyo University was ranked 26th and Kyoto University the nation's second-best, was 57th. In 2011, Tokyo University was ranked 30th down from 26th in 2010. Its worst-ever ranking in 2018 shows that

the University of Tokyo, ranks 46th and Kyoto University, at 74th. In 2019 the University of Tokyo ranking rose up to 42nd and Kyoto University ranked 65. They are the only two Japanese universities among the top 100 institutions in the world. According to the Program for International Student Assessment (PISA) in 2015, which evaluates the learning achievement of students, Japan ranked second in scientific literacy following Singapore, eighth in reading comprehension after South Korea and fifth in mathematical literacy behind Taiwan (Deguchi, 2018). The higher education institutions are struggling and the ranking of Japanese universities is on a downward trajectory, while, other Asian nations and regions are growing fast like Singapore, Hong Kong, China and South Korea.

The students' ability and will are also of great importance, as well as what type of education he or she receives in junior and senior high school. Deguchi Haruaki is the president of Ritsumeikan Asia Pacific University in Beppu, and noted that – education problems lie at the level of higher education in Japan specifically with high school education. A significant number of high school students in Japan attend *juku* (cram schools). There are nearly 50,000 *juku* in Japan – surpassing the combined number of elementary, junior high and high schools at 35,000 (Deguchi, 2018). *Juku* only teach students to pass the Center Test or Common Test (noted above). According to a MEXT survey on education spending in 2016, 35 percent of students at publicly run high schools and 44 percent of those at private high schools attend *juku* (Deguchi, 2018).

There are faculty staff in Japan who still don't know how to use computers. There are also a fair number of administrative staff who have no idea what a hard-drive or cloud storage is. Worst of all, some communication systems have been set up so oddly, if at all, that people cannot (quickly) share information with each other on campus. In practice, the ability of each teacher to continue teaching largely depends on their experience with digital resources and technology.

Students are unlikely to commit large amounts of time and money on online content. Students go to universities to meet (great) people, have inspiring conversations with faculty, collaborate with researchers in laboratories and experience the social life on campus. To remain relevant, universities will need to re-invent learning environments so that digitalization expands and complements, but does not replace, student-teacher and student-student relationships.

4) Scholarship and Financing Related Issues

Annual school fees for private universities used to be six to seven times higher than that of national universities, currently it's about double. Parents' social status, including their occupations and incomes, significantly affect the kind of education children receive so there are families who are unable to send their children to private universities because of their economic situations. According to Tachibana (2011), the university enrollment ratio according to parents' household incomes, was 28.2 percent for households with 2-million-yen income or less and 62.8 percent for those with 12 million yen or more, verifying the fact that university enrollment more than doubles for households with high parental incomes. This leads to an inequality of educational opportunities and a relatively low standard of academic research in private universities that have to depend on tuition fees for their incomes (OECD, website). One reason is because Japanese universities – traditionally the research powerhouses of Asia – depend heavily on government R&D spending, but the nation has been undergoing deflation and economic stagnation for more than 20 years. That means less funding for research and thereby fewer innovations. In response, MEXT established an emergency student financial support program to provide cash handouts to financially struggling students so that they will not have to abandon their studies. About 430,000 students, including international students, have been targeted for this program (MEXT,

2020a).

Due to the existence of a huge number of private higher education institutions, which are basically dependent on tuition and fees, public expenditure on higher education as a proportion of GDP is lower in Japan than in many other OECD countries. As a result, the parents of 80 percent of Japanese students who are enrolled at private universities, must contribute far more to their educational expenses, which is a high personal/financial burden. Students, and in most cases their families, will have to continue to bear the costs associated with their higher education. Many students pursuing higher education have been hit hard financially due to either their own loss of income or family members' loss of income as a result of pandemic-related job losses. Since the beginning of the COVID-19 pandemic, the rise in unemployment, particularly among non-permanent workers, has seen a sharp increase.

2. Reforms of Higher Education

Due to the above issues, policy makers in Japan have realized that quality of higher education is a very important consideration in the development of human resources and implementing numerous plans, policies, and regulations. According to MEXT, (2004), various factors have underlined the necessity for higher education reform. 'Liberalization,' 'diversity,' and 'individualization' have become the 'slogans' of university reform. Amano (2010) has pointed out that behind such catchwords– individualization (*koseika*), diversification (*tayooka*), and 'zest for living' (*ikiru chikara*)– is the central ideology of 'deregulation' (*kisei kanwa*).

The development of education and training and the availability of professionals and facilities, like teachers, instructors, schools, colleges, university and others. While encouraging individual universities to revise the structure of their undergraduate education in accordance with their own objectives, the government is also urging institutions to conduct self-monitoring

and self-evaluation to make their teaching and research activities more accountable and to ensure their educational quality. Japan's universities have undergone much reform in terms of the relations between universities and government. Some of the important reforms are as follows.

1) Administrative Reform

The administration systems in Japanese universities and other higher education institutions differs to most other countries in many significant ways. The employees of the institutions are responsible for the maintenance and supervision of them. The National University Corporation Law and the School Education Act includes detailed clarification of the roles and authority of university presidents, vice presidents and faculties. Faculty meetings can't have role the people at the meetings do. Japanese national universities, which used to be a part of the government organization, had various problems deriving from their legal status as state facilities. Revisions to strengthened the leadership of university presidents while weakening the authority of faculties. There are some important activities like; faculty meetings, faculty development, active learning, project base learning and others. In recent years, the leadership and power of university presidents in Japan has been increasing as university governance reform is being implemented. The management style of the university organization is changing from the traditional collegial model to the corporation-like top-down model. According to Deguchi (2018) university management should be left in the hands of specialists in the field, and teachers should concentrate on education and research. To improve the quality of teaching and research, teachers should be evaluated from multiple angles. These evaluations will introduce competition, and competition will bring progress. The mission for universities going forward should be to create curricula that can interest and excite the students.

2) Curricula

Curriculum reform, which was initiated in 1991, began with deregulation of the ‘Standards for Establishment of Universities’ and the consequent delegation of power and autonomy to each individual national university for the design and implementation of curricula according to their own missions, goals, and objectives. The ‘Standards for the Establishment of Universities’ has since been revised. Under the revision, the basic principles for university curriculums were outlined, the practice in particular of requiring students to obtain a minimum number of credits in each subject area was discontinued, and the formulation of the curriculum was made more flexible. Each university was given greater discretion to construct curricula independently. Taking the opportunity presented by this revision, universities adopted measures such as abolishing the general education requirement in curricula or reducing teaching of foreign languages or physical education. On the other side of the coin, as to the expansion of discretion, universities were placed under an obligation to maintain and report their educational and research activities, through a detailed self-monitoring and self-evaluation system.

3) Adoption of the GPA

Over the last decade a majority of institutions of higher education have implemented reforms including the introduction of first-year seminars made up small groups of students, and active learning styles. Due to the universalization of higher education, it is becoming increasingly difficult to maintain quality simply through selection at enrollment as most students of legal age are accepted into university. As a result, the focus of quality assurance policies at Japanese higher education institutions has shifted from the entrance stage to the exit stage. Adoption of the grade point average (GPA) system; curriculum and diploma policies; and acceleration of faculty development are further examples of quality assurance initiatives. In 2009, it was reported that 49.2 percent of

universities and colleges had introduced GPA systems and had developed rigorous grade control systems (MEXT, 2012). A GPA is generated by taking the grades' numerical values (GP), multiplying them by the number of credit points the units are worth, and dividing the sum by the total credit value of the units undertaken. Some universities employ six grades (S, A, B, C, D and F) for credit.

4) Global University Program

The Japanese government implemented the Global Human Resources Project in order to foster Japanese university graduates with a global perspective, independent thinking skills, creativity and understanding of different cultural values, through industry, academia and governmental collaboration (Huang, 2018, 110). There are a number of programs which have been introduced, the program of Centers of Excellence in the 21st Century (COE21), The Future of Higher Education in Japan (2005), The Basic Plan for Education Promotion (2008), and On Constructing Undergraduate Education (2008). With the changing global environment and increasing international competitions, the demand for higher education graduates with exceptional knowledge and skills is expected to increase worldwide. Under these circumstances the Japanese government setup the Asian Gateway Initiatives in 2007, the Plan of 300,000 Foreign Students in 2008, and Global 30 in 2009. As one way of attracting more international students to Japan, in 2009 the government launched the Global 30 program, it was aiming at accepting 300,000 foreign students by 2020 but due to COVID-19, the goal could not be realized. In order to achieve the goal, 13 universities, including seven national and six private, were selected to implement the program. With additional funding from the national government, these universities are required to accept many more international students as well as to develop new English-taught degree programs. With the implementation of the Global 30 Project, the number of foreign students in

Japan had increased from 140,000 to 200,000 by 2015. However, the majority of these students have come/come/came from China (45 percent in, 2015), presenting a considerable nationality imbalance. The OECD average for international students enrolled on undergraduate and graduate programs is almost 8 percent, in Japan it is currently under 3 percent. While over 40 percent of teaching staff in Oxford and Cambridge and over 30 percent in Harvard come from other countries, in Japan the proportion is currently just over 4 percent. Part of the reason behind the lagging number of professors and researchers from foreign countries are the strict regulations of Japanese institutions (John, Kawamura and Naganuma, 2016, VII).

According to Roger Goodman, terms like internationalization and globalization carry multiple meanings and are interpreted in varying ways by individual actors, sometimes in very different ways from those anticipated by the architects of the programs themselves. The Japanese term *kokusaika* or internationalization has become one of the most fashionable concepts in educational discourse in Japan since the mid-1980s. While internationalization initiatives have been carried out since 1950, major policies were not implemented until 1980. The *New York Times* (July 29, 2012) points out that internationalization of Japanese universities has been slow. Until 1982, it was impossible for foreigners to be full-time faculty members at national universities. Even now contracts only last up to three years and foreigners are denied the right to apply for top administrative positions like dean or president (Umakoshi, 1997, 259-273).

In 2014 the Japanese government introduced another national project, the Top Global University Project. This projects aim was to enhance the international compatibility and competitiveness of higher education in Japan. It provides intensive financial support for selected universities that are expected to press forward with comprehensive internationalization and university reform. There are two types of institution in the project. Type A (Top Type, 13 universities) is

for world-class universities that have the potential to be ranked in the top 100 according to global university rankings. Type B (Global Traction Type, 24 universities) is for innovative universities that will continue to lead the internationalization of Japanese society, based on continuous improvement to their current internationalization efforts, which include government and Japanese higher learning institutes are actively trying to increase the number of foreign students by offering scholarships and making the path to admissions much easier.

However, it is reported that the central government allocated 7.7 billion yen annually to selected universities for 10 years (MEXT website). As noted above, the Top Global University Program Project—with funding to 37 Japanese universities for internationalization was introduced – and the innovative *Tobitate*⁽¹³⁾ ! study abroad program, which was initiated in 2015 were both designed to help Japan meet targets which included doubling the number of inbound and outbound students in 2020. According to the MEXT, Japanese language institutes, more than 312,000 international students traveled to Japan to study in 2019. During 2015, all national universities were classified into three new categories: universities with world-class teaching and research; universities with world-class teaching and research in specific fields; and universities contributing to revitalizing the local economy. Universities were then to be evaluated and funded based on standards devised for each category. The new system was put into operation in 2018, with university presidents also given additional funding and autonomy to manage institutions (MEXT website).

(13) *Tobitate* study abroad program expanded and extended to senior secondary students in 2015 – to date 100 Japanese companies have donated over \$100 million to expand the pool of scholarships (Australian government, Department of Education and Training), <https://internationaleducation.gov.au/international-network/japan/countryoverview/pages/countryoverview.aspx>

5) Graduate Schools

The increasing demand for people with advanced degrees saw the number of individuals going on to graduate school rise from under-graduate 626,421 students, Master 3,460 students and Doctorate 2,223 students in 1960, under-graduate 2,887,414 students, Master 82,310 students and Doctorate 16,471 student in 2010. In 2019 to under-graduate 2,918,668 students increased but graduate school students declined to Master 72,574 students and Doctorate 14,976 student in 2019 (Table 1). The biggest reason for this is the lack of opportunities for postgraduate studies in the humanities and social sciences. According to the MEXT, 56.6 percent were studying one of the natural sciences or engineering, agriculture, or medicine, with engineering alone representing 41.5 percent. This structure means that graduate schools lack the strength and arguably the ability to train human resources in fields other than the sciences and engineering. The highest number of students enroll as undergraduates in Social Science courses, followed by Engineering, with the third largest in the field of Human Science (MEXT, Website). However, under the COVID-19, Japan has been increasing the demand for IT and knowledge-based educated, high skilled and professional human resources. Educational institutions started online to ensure education was not disrupted by COVID-19 measures. IT involved in distant learning and contribute to the education sector.

V. Innovative Strategies in Education for Human Resources

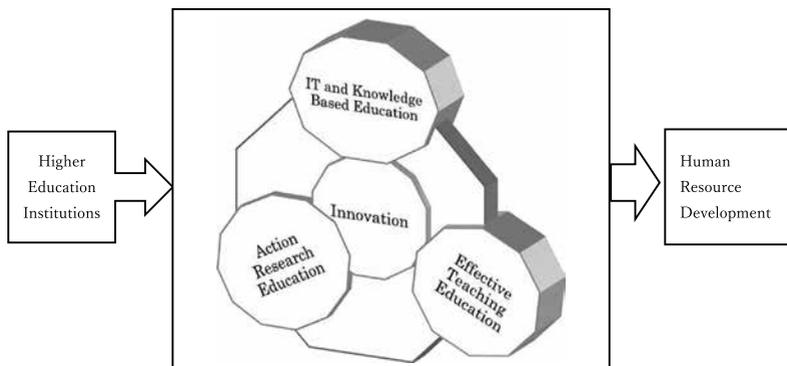
The role of innovation in not only the sciences and technology but also in the fields of social and liberal science development, has prompted many disciplinarians to return to the work of Joseph Schumpeter. He described development as an historical process of structural changes, substantially driven by innovation. This concept of economic and social evolution, which defines the nature and extent of the impact of innovation, has lately become one of the most

frequently applied theories on the economic and social sciences. Schumpeter believed that, in the long term, economic evolution contributes to an improved standard of living. It is essential, however, to understand what socio-political reactions are evoked throughout HRD.

According to Murphy, Japanese education has four main objectives. First, equipping graduates with the literacy and numeracy skills demanded of a developed, industrialized economy; second, socializing Japanese children in the attitudes and behavior expected of highly bureaucratized economic organizations; third, acting as a sorting mechanism in selecting persons eligible for potential future membership in Japan's political and economic elite and, fourth, constructing the foundations for social networks that would serve crucial purposes in later life in the key senior management task of binding organizations to each other (Murphy, 2014, 133). A large number of graduated students especially bachelor holders, do not feel ready enough to work in their related fields. The country needs useful and capable human resources with fundamental knowledge and skills who can lead the society. Under these circumstances, it may well be innovative to find solutions. The innovative strategies cycle can contribute to the higher education in undergraduate and graduate schools and also provide several strategies regarding HRD (Figure 1).

The pandemic presents an opportunity to remind ourselves of the skills students need in this unpredictable world such as informed decision making, creative problem solving, and perhaps above all, adaptability. According to Joseph Stiglitz, Carmen Reinhart of Harvard University, and many other researchers, stated, a number of changes will occur in the post-COVID-19 world: international cooperation will become enhanced, economic globalization will stagnate, and political, economic, and social standards will all be different (Deloitte, 2020). To ensure those skills remain a priority for all students, resilience must be built into our educational systems as well. There has also been a nationwide push to encourage the use of hybrid teaching and instruction

Figure 1: Innovative Strategies Cycle of Higher Education



Source: Compiled by author

as well as online teaching and learning activities in higher education. Table 3, gives the results of a recent survey by the MEXT which suggests that about 90 percent of education programmes are being provided online or through a combination of face-to-face and virtual methods in the vast majority of universities. The primary and most significant area of initiatives has been to favor the implementation of emergency technological solutions for teaching continuity.

The innovative strategies cycle of higher education, provides three major innovative strategies (Figure 1): (i) knowledge-based education, (ii) effective teaching education, and (iii) action research education. Implementing innovative

Table 3: Class Delivery During COVID-19 in Japan

Institutions	Face to face Class	Hybrid Class	Online Class
National University	0 (0%)	8 (9.3%)	78 (90.7%)
Public University	0 (0%)	7 (8.4%)	76 (91.6%)
Private University	26 (4.1%)	44 (6.9%)	568 (89%)
Technical College	1 (1.7%)	0 (0%)	56 (98.2%)
Total	27 (3.1)	59 (6.8%)	778 (90%)

Source: Ishikura, Nakano and Kondo (2020, 1-2)

strategies of higher education will contribute to; university–industry linkages, productivity improvements and the promotion of knowledge based economic activities, technical knowledge and skills. These innovative strategies will be briefly discussed below.

The rapid shutdown of educational institutions across the country and around the world has forced educational systems to adapt to a new reality, by moving it to distance-learning platforms. And while it has not certain what lasting pedagogical changes will result from the shift from physical classrooms to virtual-learning platforms such as Zoom and Google Meet, educators will need to reflect deeply on how their roles have changed, and how these technologies can be better applied in the future. The MEXT is advocating to increase access to open free, online educational resources and digital learning platforms for teachers and students.

Education is geared toward learning and knowledge creation. Its product is developed learners. In all cases, however, the goals are in terms of knowledge, as well as skills and values, and knowledge increments on the part of learners. This establishes a sharp divide between education and other sectors such as IT, a divide that has implications for the respective sectors' relationships to their knowledge bases.

1) IT and Knowledge Based Education

Technology has impacted almost every aspect of life today, and education is no exception. In many ways, technology has profoundly changed education. For one, technology has greatly expanded access to education. And surprisingly the COVID-19 pandemic has brought about opportunities for communication and collaboration, which have expanded because of technology. Traditionally, Japanese classrooms have been relatively isolated, and collaboration has been limited to other students in the same classroom or building. Today, technology enables forms of communication and collaboration undreamt of in the past.

IT and knowledge-based education is an approach to learning that takes advantage of knowledge to create authentic, meaningful and engaging personalized learning for students. More specifically, students acquire knowledge from not only from textbooks, in classrooms, and through research, but they also act with their societies and communities, through personal experience, mass-media, presentations and debates, seminars, conferences, assignments, workshops and others sources. Knowledge based education in higher educational institutions attempts to access, assess, adapt, and adopt higher education to drive the innovation that leads to productivity gains and economic growth. Knowledge has become the most important factor in economic development and knowledge assets are considered essential for economic growth, competitive advantage, and human development and quality of human life (Malhotra, 2003). According to the OECD-PISA, the quality of workers' skills and knowledge has a significant impact on the economic and social future of developed nations (OECD-PISA, 2003, website). In the knowledge economy⁽¹⁴⁾ knowledge-based capabilities are the key to competitive advantage. At the firm level, this places the enterprise's people, their knowledge and innovative capacity at the heart of strategic potential, and organizations that excel in attracting, creating, managing and sustaining knowledge capabilities are advantaged (Whicker & Andrews, 2004).

In most universities, in line with traditional faculty or academic development activities focusing primarily on new and young faculty and staff, all faculty members, administrative staff and students are required to take training courses in how to deal with changing academic environments, how to master new technology and digital skills and how to protect data privacy, data security and avoid violating copyright. The amendment law of the Copyright Act of Japan

(14) The knowledge economy specialized labor force is characterized as computer literate and well-trained in handling data, developing algorithms and simulated models, and innovating on processes and systems.

took effect from 1 January 2019, which introduces the compensation scheme for digital material distribution without permission of copyright owners in principle. The Japanese Government will implement this law immediately and look into providing necessary support for reducing the compensation burden for full-scale implementation (The Nishimura & Asahi website, www.jurists.co.jp.)

2) Effective Teaching in Higher Education

A lot of research has focused on teaching effectiveness which has been defined as that which produces beneficial and purposeful student learning through the use of appropriate procedures. This definition includes both teaching and learning with effective teaching being the creation of situations in which appropriate learning occurs; and shaping those situations is what successful teachers have learned to do effectively (Braskamp and Ory, 1994, 40).

The goal of education should be not only to pass exams but to raise students to think and develop their talents. Education can contribute to creative power, knowledge, independence, interest, and enlighten a sense of art and research in the HR. Students consider lectures to be one method of learning, a way to create new ideas, and are a good method of transferring knowledge in small classes, and serve as positive environments in which to develop creativity among students. Teacher education is moving away from training teachers to simply transfer knowledge and is preparing them to practice a new role of acquiring knowledge (Stewart, 2011). In other words, in the process of becoming and being a teacher, doing teacher research not only promotes reflection about personal performance in the classroom, but also seems to stimulate a valued process of self-assessment, in challenging future teachers to identify their personal strengths and weaknesses. According to Greenwood *et al* (2003) measures of effective teaching in higher education include: a) skill in using a variety of teaching methods, b) student-teacher relationships, c) evaluating, d) feedback and using designed lesson, e) class management, f)

organization, logical connection of subjects, g) having high expectations of learners, and h) planning. Thus, in order to help teachers successfully practice in this advanced role, teacher education should equip teachers with self-evaluation and problem-solving skills that are based on research-oriented education.

Teachers should also ‘discover’ talented students with potential for scientific and others work in their classes and pay them special attention in that subject, provide them more study materials, and recommend books and other resource materials for extending knowledge and understanding in and for certain fields and projects. There has always been emphasis on equal attention to research and teaching quality and establishing a bond between these two before making any decisions about class topics; however, studies show that the already given attention to research in universities does not meet the educational quality requirements.

3) Action Research⁽¹⁵⁾ Oriented Education

Action research can greatly impact on a teacher’s ability to effectively implement instruction. The success of higher education institutes revolves largely around quality of the research, faculty, and staff at these organizations, as well as their ability to raise funds for the institution and deliver a quality education to students (Hewitt, 2012). Higher education and its support are very important, because the graduates are supposed to have practice with current and specific work and should be interested in further research activities.

Nowadays, in many countries, there is great interest in promoting action research-oriented education in the teacher education curriculum (Burns, 2010). Action

(15) The term ‘action research’ was coined by Lewin Kurt in 1946, a German-American social psychologist who is widely considered to be the founder of his field. The basic principles of action research described ‘a comparative research on the conditions and effects of various forms of social action and research leading to social action’ that uses ‘a spiral of steps, each of which is composed of a circle of planning, action, and fact-finding about the result of the action’, (Lewin, 1946, 34-46).

research, like effective teaching is an effective problem-solving and self-evaluation tool, which can help teachers to improve the quality of their teaching skills and practice. Action research oriented education is a process of systematic inquiry that seeks to improve social issues affecting the lives of people. In teacher education, action research methodology offers a systematic approach to introducing innovations in teaching and learning. It seeks to do this by putting the teacher in the dual role of producer of educational theory, and user of that theory. This is both a way of acquiring knowledge higher-education teaching and learning, and a powerful way of improving teaching and learning practice (Burns, 2010).

Based on the above, teachers should be equipped with the skills and the methodological practice of action research for two reasons: First, by conducting action research, teachers can improve their teaching practices, solve their problems and evaluate their teaching performance. Second, teacher-researchers can develop their students' research skills and practices, and should be better able to evaluate their students' research projects. Hence, action research is a problem-solving and self-evaluation tool that can be widely applied in the educational field to help to improve the teaching quality and practices. Accordingly, teachers, as action researchers, are critical in the sense that they not only look for ways to improve their practice within the various constraints of the situation in which they are working, but are also critical change agents for those constraints, and of themselves.

Innovation is allowing universities to deliver on the promise of higher education. COVID-19 is thus an opportunity for higher education to develop online education further. It's also an opportunity to embrace online education as a delivery mode, using it to expand access and strengthen excellence in teaching and learning. Through examples like these, it is evident that educational innovation is receiving attention beyond the typical government-funded or non-profit-backed social project. For example, the Japanese government has decided to provide to RIKEN and Fujitsu the super-computer Fugaku⁽¹⁶⁾, which is for

research on simulations of airborne droplets and ventilation in classrooms, hospitals and [other public facilities] (MEXT, 2020b). The supercomputers provide for COVID-19 research through the cooperation of industry, government and academia. In the past decade, we have already seen a greater interest, and investment in education solutions and innovation coming from the private sector, which will hopefully continue and prove to be advantageous to all involved in higher education, students and teachers alike.

VI. Conclusion

The need for human resources becomes very important for strengthening competitiveness in an economy via abilities in the working process and education innovation. Throughout the last two decades there has been an increasing importance for innovation in education in Japan.

Many scholars have attributed the economic success of this industrialized society to a highly literate and well-educated population. Recent studies, however, have tended to be more critical of the Japanese educational system, often concluding that, without major reform, the Japanese school system would be unable to meet the needs of 21st century Japan (Goodman & Phillips, 2003). Most universities in Japan are acutely aware of the need for change and a considerable national effort is being made at institutional change. Particularly under the trying circumstances of the COVID-19 pandemic, in regards to higher education, educational institutions are also working on pursuing the best form of university education in the new normal, including a hybrid type of education that combines the advantages of both face-to-face and online learning.

The above analysis shows a strong functional relationship between the HRD

(16) RIKEN and Fujitsu are jointly developing the world's top-level supercomputer—the supercomputer Fugaku—capable of realizing high effective performance for a broad range of application software, with the goal of beginning full operation in fiscal year 2021.

and the cycle of innovative strategies being implemented in higher education. The higher educational institutions like the above will help the younger generation gear up for the economy and workplace of the future better than the lecture style, text-based, rote memorization approach still in effect. The innovative changed due to COVID-19 Japan and the world will have a good opportunity in future for education system and HRD strategies.

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