Japan's Changing Vocational and Technical Education

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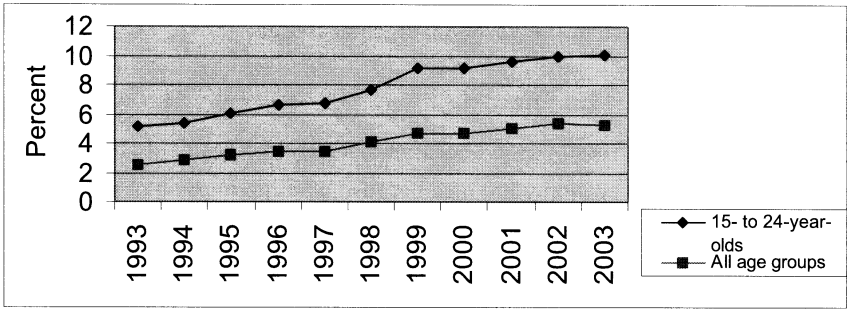
This paper explores the need for the Japanese education system to expand both the definition and the use of vocational and technical education. This need has arisen because of a changing international economy as well as the current state of the Japanese economy. Public dissatisfaction with certain aspects of the present education system has also helped to focus attention on the need for change. The challenges of overcoming a less than desired image of vocational and technical education, the lack of trained teachers, and the cost of equipping schools are discussed. Finally, an example is given of how a high school, beginning with the 2003-2004 school year, implemented a new curriculum that maintains traditional general education but at the same time allows students to study home health care in the vocational/technical area.

Japan has come to a crossroads in education not only as a result of changes in its society and domestic economy but also because of shifts in the global economy. General education is non-contextualized; this is in contrast to vocational and technical education. General or abstract education propelled Japan to become one of the leading economies in the world. In an economy that was expanding and in need of college-educated individuals, high school education in abstract ideas helped to prepare students for college or university (Iwamoto, 1994). After graduating from secondary or tertiary education, new employees went through intense training at their companies to gain specific skills and knowledge (United Nations International Project on Technical and Vocational Education [UNEVOC], 1995). As employees were traditionally employed for life (Alarid & Wang, 1997), companies expected initial training costs to be worth the expense because of the long-term benefits. Life-long employment has, however, proven to be less feasible in today's global environment. Furthermore, companies can no

longer afford the training that has been done in the past. As a result, industry has reduced training programs and is starting to recruit employees who already have some work qualifications.

While the overall 2003 unemployment rate of 5.3 percent, down from 5.4 percent in 2002, was still considered high for Japan, the unemployment rate in 2003 for 15- to 24-year-olds was 10.1 percent (Ministry of Public Management, Home Affairs, Posts and Telecommunication, 2004). Furthermore, over the past 10 years, unemployment for this age group has steadily increased from 5.1 percent in 1993 to 10.1 percent in 2003, a five percent increase (Ministry of Public Management, Home Affairs, Posts and Telecommunication, 2004) (see Figure 1). This higher unemployment rate reflects the reality that young adults have a difficult time finding employment. Changing the education of young adults will provide them with the skills necessary to gain employment.

Figure 1. Japanese Unemployment Rate



Note. Data from Ministry of Public Management, Home Affairs, Posts and Telecommunication, 2004.

Considering these shifts in the Japanese and world economies, the use of high school general academics needs to change if Japan is going to continue to be an economic leader. The Japanese Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho) seems to support this concept, as it has implemented plans to decentralize and deregulate education to allow for adaptability to the quickly changing global environment (Muta, 2000). Similarly,

Japanese high school education needs to adapt to the country's current economy by integrating vocational and technical education into general education courses.

Background

Japanese high school education is divided into general education courses (73 percent of all schools as of May 2001) and into specialized subject courses, including vocational or technical education (Ministry of Education, Culture, Sports, Science and Technology, n.d. a). General education in Japan, as in many industrialized nations, is designed to give students abstract knowledge in preparation for a university education. On the other hand, most Japanese vocational or technical high schools train students for industries such as agriculture, fishery, and manufacturing (United States Department of Education, 1998). Although attending a vocational or technical high school does not prohibit these students from entering tertiary education, the current university entrance examination system makes it difficult.

The United States Department of Education (1998) studied the Japanese educational system and noted that university entrance examinations shape high school instruction. The report also found that students attending vocational or technical high schools who endeavor to enter university often attend cram schools. These private schools, called *juku*, tutor students in school subjects after school and on weekends. Although students from general education high schools also attend *juku*, the reason for attending is different. While vocational and technical high school students attend *juku* to attain knowledge that they lack for entrance examinations, general education high school students attend *juku* to improve their comprehension of subject content and their test-taking skills. Consequently, the "washback effect," the negative influence of the entrance examination system on high school curricula, has been widely criticized. Noting how the washback effect is not limited to high school curricula, J.D. Brown (Leonard, 1998, para. 13) noted that *juku* "gain customers by having a proven track record with certain exams."

As a result of this emphasis in Japanese secondary education on entrance examination material, there is little time to spend on studies that are considered

nonessential for entrance examinations. Although testing should reflect how subjects are learned and what is learned (Heaton, 1988), this process is reversed in Japan. University entrance examination content is the determining factor in the creation of the high school curricula. As vocational and technical education is currently defined, Japanese university entrance examinations do not test these subjects (Nishinosono, 1997). Consequently, the majority of high school students do not study vocational and technical material. Instead, the focus of education is on more abstract knowledge such as mathematical formulas and reading comprehension. For example, the English test in the Central Examination for university entrance does not have a listening component, although one is scheduled to be implemented in 2006 (Monbukagakusho, 2002). Entrance examinations could be changed to include the same subjects--math, science, English, the social sciences, and Japanese--but with questions that are more contextualized.

Traditionally, Japanese students who do not enter post-secondary education directly from high school find their employment options and mobility limited. Although this is slowly changing with the introduction of lifelong learning and "the expansion of access to higher education ... for adult applicants" (Monbukagakusho, n.d. b, Expansion, para. 3), there are still many obstacles and social stigmas associated with entering post-secondary education later in life. In addition, Japanese employers have traditionally employed new graduates rather than people who have been unemployed for a period of time (United States Department of Education, 1998). This unofficial policy has become more noticeable during the post-bubble economy of the past 10 years. Presently, students who do not begin working soon after graduation will continue to have trouble finding employment (Genda & Kurosawa, 2000). As a result, for the approximately 28 percent of the high school students who do not advance to post-secondary education (Japan Information Network, 2002), the integration of more vocational and technical education into the high school curricula is desirable.

Why Vocational and Technical Education

As countries become more interrelated, not only corporations but also educational institutions need to adapt to the changing international environment. The Japanese public has been frustrated, however, with the unhurried response of its educational system to internationalization (UNEVOC, 1995). Teachers, parents, and students in Japan have also complained that current education needs to change so that it is more focused on a balanced education rather than primarily preparing students for university entrance examinations (United States Department of Education, 1998). Fujita's paper (2000, p. 47) on school reform reflected this sentiment when he stated that the mass media and critics believe that "children are being damaged by too much education and distorted schooling." By concentrating on test preparation, Japanese education is not providing students with knowledge and skills that can be used outside of academia.

The report of the 1997 United Nations International Project on Technical and Vocational Education (UNEVOC) emphasized that Japanese educational authorities need to change the high school and post-secondary school systems to include more vocational and technical elements. Theoretically, the establishment of integrated course programs that allow students to select subjects based on their interests and future goals allows individual students to study in the vocational or technical area while at the same time retaining the general education subjects that will be necessary for entry into university (Monbukagakusho, 2000). Because only two percent of Japanese high school students were enrolled in integrated courses as of May 2001 (Monbukagakusho, n.d. a), the necessity of further reform is apparent. General education should not, however, be eliminated but should instead include subjects with real-world applications.

Including vocational and technical elements in general secondary education curricula will improve education in Japan because the students will gain a more in-depth understanding of all subjects taught in school. Vocational and technical instruction often gives new knowledge a contextual base (Raizen, 1994). Consequently, this interrelated learning allows students to apply

knowledge to new, abstract information, thereby expanding not only their knowledge but also their skill base. In the process, they acquire transferable skills, "skills which are not directly related to the subject matter of the course, but which can be applied in a wide range of contexts" (Leng, Shave, Schauer, Muehlbacher, & Aiken, 1999, p. 36). Transferable skills include, but are not limited to, self-learning and self-management, learning skills, information handling skills, teamwork, problem solving, information technology skills, organization skills, communication, and presentation skills (Haigh & Kilmartin, 1999; Whittle & Eaton, 2001). Examining the list of transferable skills, it is obvious that they are not only necessary for students who will continue to tertiary education but are also vital for those who will be employed immediately after high school graduation. Raizen (1994) noted, for example, that all employees need problem-solving skills and troubleshooting abilities.

By integrating vocational and technical education into traditional education, students are given controlled, real-world experiences in which to apply knowledge. In addition, when students understand that they must find a solution to a current, working-world problem, there is added interest because the material presents a meaningful situation rather than an abstract one (Raizen, 1994). For example, building an Internet homepage focuses on practical education that requires technical application but also draws on knowledge acquired from traditional subjects. At the same time that specific computer skills are learned, the students utilize writing and communication skills. Logic and mathematical formulas are also used. In addition, students can apply general business knowledge to calculate the billing of time spent on the homepage's development as well as determine theoretical costs (e.g., salaries, electricity, water, building rent). Decision-making is tested when students consider the costs and benefits of upgrading computer equipment to improve production. All of the transferable skills utilized during the construction of a Web site are examples of general knowledge in running a business that can be applied to various sectors in the working world (UNEVOC, 1997). Practical applications such as these improve university-bound students' ability to understand abstract concepts. Similarly, employment-bound students and future vocational or technical college

students benefit from more theoretical studies that expand their ability to search for less obvious conclusions in their work.

Transferable Skills for Japanese Students

All students will benefit from learning information technology (IT) skills, one of the abilities often mentioned in the literature on transferable skills. Confidence in the use of computers and technology is increasingly important for people to remain employable (Ramsey, 1997). Unfortunately, Japanese high school students use computers infrequently. Saotome (2001, p. 14) noted that beginning with the 2003 school year, the new curricula required "students to study new subjects related to computer and information-processing skills," courses which until now have not been taught to general education high school students. In spite of this, an informal survey of acquaintances teaching at various local high schools indicated that the mandate has not yet been universally implemented.

Studying IT allows students to develop other transferable skills. Computer manipulation allows the learner to see the results of changes made to the computer program code. In this way, students can teach themselves by experimenting. The learning process also gives learners confidence in understanding broad uses of computers. A proficient employee must be able to perform different jobs; therefore, the processes of self-training, of detecting mistakes, and of improving on past errors are important transferable skills.

Another transferable skill is communication. All Japanese students can benefit from proficiency in English as a means of communication. Language is not only grammatical structures but also the social, political, cultural, and religious environments of the language and the opinions of those using the language (Wardhaugh, 2002). While studying a second language, therefore, students become aware of cultural assumptions and differences that can lead to misunderstanding. Furthermore, English, as a lingua franca, allows students to communicate with other nonnative speakers. Finally, because English is an international language, the ability to use English is a transferable skill that Japanese corporations are increasingly using as a measure for promotion (McCurry, 2003).

A practical application of transferable skills can be observed in the field of home health care. While not applicable to the entire high school student body, adding this course of study to some Japanese high school curricula could prove beneficial to many students. As the average age of the Japanese population continues to increase and more people who are elderly are living apart from their children, the need for home health care assistants is expected to grow dramatically. In 1995, for instance, 39 percent of Japan's population was over 65 years of age. By 2025, however, this segment of the population will account for 57 percent of the total population (IMIDAS, 2001). Health care assistants are less expensive to hire than licensed nurses, so it is anticipated that the demand for health care assistants will continue to increase. As a result of the increase in need for elderly health care, several high schools throughout Japan have implemented home health care courses, often within the structure of general education. An example is given later in this paper.

Challenges to Overcome

There are obstacles to overcome in implementing vocational and technical education in Japan. A primary challenge is to change the unfavorable image of vocational and technical education. Another impediment is the lack of trained teachers in this area. To integrate elements of vocational and technical education into general education courses, a third restraint is the cost of equipping high schools. None of these obstacles are insurmountable, but it will take time to overcome them.

Unfavorable Image

As has been the case in Australia (Boston, 1998), changing the view that vocational and technical education in Japan is second-class is a formidable challenge. In the late 1960s and 1970s, skilled labor was needed for industries in Japan (Nishinosono, 1997). After that, industries decided that more engineers and university-educated employees were necessary. These new positions were seen as preferable because of better salaries and cleaner working conditions (Nishinosono, 1997). As a result, many Japanese still have a less positive image

of traditional vocational and technical education (e.g., agriculture and fishing), sometimes associating it with blue-collar jobs in industry. By contextualizing general education with vocational and technical education, students will no longer have to choose between the two. This may contribute to a more positive perception of vocational and technical education as well as decrease the previously discussed complaints about the over-emphasis on exam-driven material.

The public definition of vocational and technical education must also be redefined and broadened to include computer skills, the English language, and skills that can be used in future employment but that are not considered blue collar in nature. The United States Department of Education's report (1998) found that some mathematics classes at vocational and technical high schools, for example, are very applicable to entrance examination preparation. Information such as this may help promote the integration of vocational and technical education into traditional curricula. Japan's sluggish economy may also help elevate the image of vocational and technical education since high school students and parents will begin to view vocational and technical courses as a means of obtaining post-graduation employment. Improved employability and increased general knowledge of the real world may contribute to a reversal of the inferior impression many Japanese have of vocational and technical education.

Training Teachers

The 1997 UNEVOC report asserted that it is imperative for educators to improve connections with the world of work. As more money is spent on training in industries, the profitability of companies, both large and small, decreases (Genda & Kurosawa, 2000). Because of financial considerations, Japanese industry continues to decrease the level of in-house training. The education system must, therefore, develop curricula to better educate future employees. A lack of trained teachers in specific fields will, however, handicap the development of appropriate curricula integrating vocational and technical education in Japan. To overcome this, the close relationships that high schools currently have with companies for the job placement of students after graduation (Genda & Kurosawa, 2000) can be

expanded to include the training of teachers. As instructors and administrators gain a new understanding of the work world, they will also discover and develop teaching techniques and applications to improve vocational and technical education (Thomas, 1997).

In the same way that Australia uses short-term placement of teachers in industry to provide current experience in vocational or technical fields (Thomas, 1997), Japanese high school instructors can receive training directly from industry. There is, in fact, already a precedent of allowing teachers temporary leave for instruction-related training. Selected Japanese teachers of English attend three-month intensive English programs to improve language skills while at the same time studying new teaching pedagogy. Following Australia's pattern (Price, 1991), teachers' placement in industry can be as short as two days or as long as six months. Now that there are no longer classes on Saturday, teachers can use this time to shadow key people or learn a new skill in industry. In order to save money, large Japanese factories and companies often operate on Saturday when electrical costs are lower. As such, finding a company for Saturday training should not be a hindrance. During this placement, a teacher will gain current knowledge of how a particular industry conducts business and/or manufactures products.

Equipping Schools

During the 1970s, many Japanese vocational and technical high schools were equipped with the best, most current technology, but the equipment has not been updated (United States Department of Education, 1998). In addition, Japanese schools have not been equipped with computers and access to the Internet as quickly as in other countries. Although in 2002, upper secondary schools had, on average, one computer for every 8.36 students (Japan Information Network, 2002), this figure is misleading. Access is often restricted, with only a handful of students allowed to use the computers. Additionally, many of the computers are not connected to the Internet, although this is slowly changing as schools update and expand their computer facilities and provide greater access to the students.

Equipping schools with current technology helps bring the workplace to the students, but it is costly. Close ties with industry can prove beneficial in reducing costs. Just as a business must keep costs down to be fiscally stable, controlling expenditures in public education allows programs to continue. If duplicated equipment or processes can be eliminated, cost efficiency and profitability improve. Because updating equipment and new software is expensive, one possible solution is for local industries to provide relevant hardware and software to schools. In this way, the schools can teach transferable skills and knowledge before students enter workplace training and/or further education. Another option is to form alliances with industry to conduct some of this education in a company setting rather than at school.

Structured workplace learning programs that allow students to receive some of their instruction at a local company rather than in the traditional classroom reduce the cost of equipping schools (Smith & Keating, 1997). Part-time jobs outside of school or a work-release program during school hours can accomplish this. With work-release programs, the company and the school develop a plan of specific skills that will be taught. Classes at school provide the initial knowledge as well as allow students to expand and apply knowledge after the real-world experience. Evaluation systems in the workplace and at the school are, however, necessary (Boston, 1998). Business can, for example, conduct the hands-on evaluation, which may entail the use of equipment that is only available at the company location. Schools, on the other hand, can conduct more abstract evaluations, including paper tests of operations that were learned and applications of this knowledge to other contexts. For workplace learning to be successful, schools must be more flexible in defining school hours (Raizen, 1994). Schools will have to view time spent at the workplace as class time. It will also be necessary to change current school policies that prohibit high school students from working part-time.

One Example of Implementation

In the 2003-2004 school year, one high school in the prefecture of Shimane, Japan, started courses in health care and in Japanese culture for the general education

students. By doing so, the benefits of vocational education were combined with the appeal of traditional general education. During the first year of high school, the general education students study home health care two hours a week. After the first year of high school, students choose to concentrate on either health care or Japanese culture for the last two years of high school. For example, during their third year of high school, the students in the health care course study home health care six hours per week, but they also take Japanese, math, English, and other classes associated with traditional high school education for 70 to 80 percent of their classroom time. In addition to receiving practical training at the high school, students go to health care facilities (e.g., retirement homes) during class time to receive additional practical training. Furthermore, to gain practical experience and to help prepare them for the working world, these students have the option of doing internships at health care facilities during the spring and summer holidays. By combining in-school education with off-campus learning, the school saves on equipment installation and the institutions will be training potential future employees as well as obtaining temporary volunteer staff during the spring and summer holidays.

Typically, two-thirds of the general education students from this school have entered the work force in blue-collar jobs after graduation, while one-third continued to post-secondary education, primarily vocational or technical colleges. The practical nature and appeal of the new home health care course was demonstrated when, at the end of the 2003-2004 school year, two-thirds of the general education first-year students elected to continue in the health care rather than the culture course. With the new program, students in the health care course will graduate from high school with the knowledge and skills to take the examination for the second-level home health care assistant license. This license provides students with the certification to work in retirement homes and other institutions. This, in turn, enables them to secure stable employment upon graduation. These health care graduates will, consequently, be able to start work immediately after high school or, alternatively, continue on to a two-year vocational college to obtain a national license that allows the caregiver to provide

more comprehensive care. As the duties become more specific, it is possible to receive higher wages.

This school provides an example of how vocational courses have been successfully integrated into general education. To do this, however, it was necessary for several teachers to first receive additional training. The school also had to install equipment, although by utilizing other resources (i.e., local health and welfare institutions) the cost was reduced.

Conclusion

In the past, vocational and technical education has been narrowly defined in Japan, but if computers, English, home health care, and industries outside of manufacturing and agriculture are included, the appeal of vocational and technical education will improve. As the high school in the previous example demonstrates, when education and industry work together, a win-win situation is created. The school supplies the students with a quality education and, at the same time, meets the need of the home health care industry for trained employees. The students receive a practical education, not only gaining understanding but also the ability to apply what they studied. They also have a higher probability of stable employment after high school. Whether these students begin to work directly after high school or wait until after they graduate from a post-secondary institution, industry will acquire a better workforce. In the same way, integrating computers, communicative skills, and other transferable skills into general education will provide Japanese high school students with a more well-rounded education that will better serve future employers and society.

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