
Japanese High Schools: Our New Cross-Town Rivals

We have much to learn from Japan's technical schools, where students are carefully prepared to enter high-paying industry jobs.

LARRY PETERSEN

As I sat listening to our superintendent outline the tenets of the newly enacted and quite revolutionary *Oregon Education Act for the 21st Century*, I could hardly contain my excitement. I had long talked about the need for what I called "200 Day Wonders" — the new American students who would go to school for as many days in a year as their European counterparts. Here was a law that mandated a 185-day school year by 1996 and a 220-day year by 2010. It all seemed quite natural to me, having had my first teaching experience in a British school in rural West Africa. The law also provided for statewide performance-based assessments at grades 3, 5, 8, and 10; again a self-evident necessity, as any European or Asian educator would recognize. How wonderfully progressive and how long in coming!

But as we discussed the law further, I started to feel unsettled. I was pleased to hear about the requirement for a Certificate of Initial Mastery at the end of the 10th grade — a specification that could have been plucked right out of Ira Magaziner's *America's Choice: High Skills or Low Wages*, a work I applaud. But when the new law started to discuss the future of the 70 percent of our students who will not go on to college, the language became

fuzzy. There were references to "new opportunities for skilled technological training," with no hint as to where these opportunities might exist.

The fine print meandered into a cascade of councils and study committees. None of the programs could be financed unless the legislature subsequently provided the funds. This left us in the hands of the same legislature that had failed to find a substitute source of funding for Oregon's schools after last year's passage of Measure 5, a draconian tax limitation. My thoughts turned to the issue Ira Magaziner and others have pointed out: the United States is the only industrialized nation with no system of trade/technology schools or apprenticeship programs.

The Japanese Educational Dreadnoughts

As the superintendent's meeting continued, my mind drifted back to my tour of Japanese technical and comprehensive high schools and the specter of the new educational dreadnoughts known as Oita Media Technology High School and Hita Rinko High School of Forestry in Kyshu. Oita is one of the most remote and rural of Japan's 49 states, with a population of 2.8 million, almost identical to that of Oregon. Like Oregon, Oita is

dependent on electronics, forestry, fishing, and farming. It is fully as green as Oregon and even rains as much, but there the comparisons end, especially when it comes to education.

Nowhere does the gap between the U.S. and Japanese educational systems stand out in sharper relief than in Japan's technical schools. These are the contemporary "ships" of her proud new "fleet," upon which Japan has lavished the "peace dividend" that came with the end of World War II. Her graduates will ply our economic waters for decades to come. In the summer of 1988, I was invited to visit 15 modern Japanese schools, including the first and most advanced version of the Japanese concept of a "media technology high school." These media technology schools are now stationed in every one of Japan's prefectures. The first American principal to visit several of these schools, my visit was as the guest of the overseas Japanese School Board of Portland, Oregon.

Oita High School

Oita Media Technology High School was a Kafkaesque experience for me. I felt alternately thrilled and threatened by the expansive array of equipment in this vocational educator's dream of a school. Although I visited the school in July, classes were in session. As in all Japanese schools, students go to 210 weekday and 35 Saturday half-day sessions per year. The school year begins April 1 and ends in the middle of March. At the time of my visit to Oita Tech, only 300 10th grade students inhabited this massive school.

The Japanese Ministry of Education ("Momboshu") was allowing the school to evolve one grade per year, as many American high schools did earlier in this century. Students were admitted to this technical high school only through competitive exams. As a result, students were from many communities of Oita Prefecture on the southern island of Kyushu. Some students commuted long distances and others actually boarded in the area so that they might attend the school.

Classrooms in any technical high school are generally larger than those in comprehensive schools in Japan, but this school was built to enormous dimensions. The first computer room I visited was approximately three times the size of a generic American classroom, but every bit of space was utilized. There were 40 student stations in this room, each equipped with two computers and a printer. Each computer had both on-line and off-line capability. While I visited, the students were taking on-line instruction from the teacher's host computer at the front of the room, while working on assignments off-line using the other computer. When students were finished they would print the completed assignment and go on to the next task. Virtually the only sound you heard in the room was from the printers, an eerie sensation in such a large room filled with so many students. Two such rooms were already completed and in use in this rapidly evolving structure.

I then was shown the drafting room that was being put together for the next school year. As the vice principal took the dust covers off each station, I noticed that buried in the white opaque surface of the drafting boards were fine filaments at different levels, forming ever-smaller matrices. Through an interpreter, the vice prin-

cipal explained that the 40 boards in the room would be fiber-optically illuminated by the instructor working on the big board, an upscale version of each student's board. The teacher could not only illuminate students' minds with designs, he could actually illuminate their drafting boards at the same time. I often wonder what feats the 11th graders have accomplished with that equipment since my visit.

The next room I visited was the Computer Assisted Design (CAD) classroom where students were working with sophisticated electronic circuit designs. The principal made it clear that while the students were learning this type of work via the computer, they also put circuits together by hand — "below decks," in the "blue-collar" section of the school. Students actually changed into blue shirts before they went downstairs into the industrial section of the school, switching back into their white-collar uniforms when they came up to the technical section.

The tour of the downstairs classrooms of this school featured sights more familiar to me — students using welding equipment, metal lathes (albeit computer controlled), and soldering irons to construct electronic devices. One such device gave me cause for envy: A student had constructed an extremely complex circuit board that was connected to switches feeding into a two-armed robot. Not only had this 10th grader constructed a small marvel, he also had programmed it to play a song. This seemed to belie the common stereotype of Japanese schools producing uncreative students.

Students who attend Oita do pay an educational price: In order to take technical classes, their academic curriculum in Japanese language, social studies, and English is

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restricted. In contrast to South Hita High down the road, a comprehensive school where over 90 percent of graduates will go on to college, Oita Media Technology High expects only 25 percent of its graduates to attend college. But even though they receive fewer hours of English instruction than students in comprehensive Japanese high schools, they are taught English by one of the more than 1,000 American English Teachers (AETs) in Japan. Technical students are far more likely to have to speak English in business than students in comprehensive schools, so their English pronunciation is important.

Hita Rinko High School of Forestry

Hita Rinko High School of Forestry is especially impressive to those of us from the Northwest, where timber is so vital to our very economic survival. In a nation that is 86 percent mountainous, managed forests are an excellent use of marginal land. This is especially true of the part of Kyushu around Hita, which is covered with neat rows of "sugi" or cedar trees.

When the trees reach a diameter of 14 inches, they are harvested and milled. Both the trees and the mills seemed Lilliputian by Oregon standards. Japan has no "big" trees; it is dependent on the United States and Malaysia for raw logs that are big enough to mill into good-sized planks and beams.

Kushu is the "timber country" in Japan, and Momboshu always maintains an articulated relationship between a region's schools and its indigenous industry. Rinko High provides the skilled labor for this area of the Japanese wood products industry. Rinko reflects Japan's long established tradition of industry-specific trade schools, a concept shunned by American educators since the 1930s. Students must take competitive examinations to enter the school, which has 1,000 students between 15 and 19 years of age, only 100 of whom are female. The school has a vast inventory of what would be considered "low" technology (yet expensive) equipment when compared to its neighbor, Oita Tech. When they graduate, students from Rinko are placed immediately in well-paid positions in the forestry industry.

An important technique learned by every student at Rinko is the production of large, perfect dimensional beams out of small pieces of scrap wood. When asked why they do this, the students told us it has to do with being ready for the day that the U.S. is going to close export of raw logs. I discussed with them a 1989 Oregon referendum indicating that 90 percent of the voters were opposed to the practice of selling unmilled logs to Japan, even though it costs loggers more to mill the raw logs at home than it does to sell unmilled logs to the Japanese, who pay top dollar. When I explained that this is because this practice has cost 70,000 high-paying mill jobs in the last decade



At Japan's Oita Media Technology High School, students explore advanced electronic circuit designs in the computer classroom (top photo); they also put circuits together manually in the "blue collar" division of the school (bottom photo).

in Oregon alone, the Japanese teacher at Rinko was sympathetic. After all, they are lumbermen, too! But he insists that the Japanese would never have allowed themselves to be subjected to this form of mercantilism.

When I asked the Japanese principals where they had purchased their

equipment and how much it cost, they couldn't answer me. The government provides their state-of-the-art equipment. These principals had never done capital equipment budgets in their entire careers. In fact, most did not seem conversant with the subject of budgets in general. My interpreter

explained that there was a "relationship" between industry and the Ministry of Education. Schools were provided with equipment at much lower than retail prices. In fact, industry provides equipment to all types of schools because industry leaders realize that it is to their benefit. Schools get the newest equipment as fast as it comes off the assembly line. In Japan, half of a school system's funds come from the federal government and the other half from the prefecture. My Japanese hosts were baffled when I told them that property taxes pay for school funding in most U.S. states.

Nintendo Economics

I talked to computer and financial experts in the United States who, after looking at my pictures and hearing about Oita Tech, estimated that such a school could be replicated here at a cost of between \$75,000,000 and \$100,000,000. The Japanese took the Jeffersonian wisdom that "education is the defense of the state" handed down to them by General MacArthur, modified it, and put it into production as only the Japanese can do. As a result, their school system is always first in line when it comes to Japanese federal funds — a far cry from our current situation in the United States.

We must not end up in a world where high school graduates in southern Oregon trade raw logs to high school graduates in southern Japan for sophisticated electronic devices, with a bill left over known as the trade deficit. This form of Nintendo economics is not only bad for the graduate in southern Oregon, but in the long run, it could be bad for the students at Oita Media Technology High School also. If we allow ourselves to become industrially unproductive and noncompetitive, frustration could turn to aggression.

Japan's Educational Metamorphosis

In 1974, Japan was suffering from a teacher shortage. The reason: the metamorphosis from a pre-war Japan where only 17 percent of students completing the 9th grade went to high school, to a modern Japan where 96 percent of all students graduate from high school. This dramatic change put a strain on teaching resources. Yet in 1974, Japanese teachers were relatively poorly paid; and despite their high status in the general population, there did exist a saying among businessmen that roughly translated to, "those who can't do, teach."

Prime Minister Susuki, a great believer in public schools, took dramatic actions to solve the teacher shortage. Susuki demanded that the Diet pass legislation to double teachers' salaries, pegging them at about the 85th percentile of Japanese "salaryman," a status similar to that of engineers. Almost immediately after the Prime Minister's action, there were five applicants for every teaching opening. Only the very best could break into the profession. There are few disparaging remarks about teachers among businessmen in Japan these days.

Prime Minister Susuki and his

successors directly attributed the "Japanese Economic Miracle" to the high quality of the nation's school system. Constitutionally limited in the amount the nation spends on defense, Japan has lavished her resulting "peace dividend" on education and business while allowing the United States to provide for her national security. This strategy has had devastating effects on the balance of world trade and has been the subject of repeated complaints from our industries and government.

The Japanese will protest to Americans that in essence, "This is what you told us to do, and now you are mad at us!" After all, it was General MacArthur who specified the Japanese Constitution include these limitations: (1) Japan could only have a "self-defense force" and spend only 1 percent of the GNP on this force, (2) Japan must provide public education for all of its people so that an educated and informed electorate could become the bulwark of her new democracy, and (3) Japan must compete economically rather than militarily. The Japanese, who revered MacArthur almost as much as the Emperor, certainly honored his orders with characteristic thoroughness. □

Friedman and Lebard's *The Coming War with Japan*,¹ with its thesis of a hopelessly noncompetitive United States resorting to naval power to separate a ruthlessly competitive Japan from its sources of raw materials seems farfetched, but stranger things have happened in our mutual histories. This book has already sold 50,000 copies in Japan and is taken quite seriously by those with whom I corre-

spond in Oita. If we could only be proactive on this issue, it would avoid so much pain for our students who think the competition is the cross-town rival, rather than high school kids in Hamburg and Yokohama.

Clearly, the United States will not have a society where there is an interlocking relationship between public schools and huge private companies. The kinds of "sweetheart" arrange-

ments between Japanese governments and industry cannot and should not be replicated here. Nor should we have our typical complete separation between the efforts of industry and the public schools. Business partnerships with schools and efforts by great universities to influence urban schools have had their benefits, but they have not resulted in a clear path between the public school and the private sector for students to follow. Many argue that the translator of our disparate efforts in the industrial and technical areas should be that great American educational innovation, the community college. Certainly programs like our district's "2+2," which features high school instruction for 9th- and 10th-graders, followed by classes at local community colleges when the students are in the 11th and 12th grades, speak to the willingness of these institutions to work on these issues, but we must go farther.

The 1990 Carl D. Perkins Vocational and Applied Technology Education Act, which provides grants for high schools willing to work with a consortium of businesses and community colleges, promises new hope and firm direction. Similarly, the national move toward cooperative "Tech Prep" and "Applied Academics" programs, which are built upon a body of knowledge and skills identified by industry, is encouraging. We know what we need to do. The problem we continually come up against is a lack of money. Given an adequate budget, Oregon's new legislation could result in a promising future for our young people. But unlike our Japanese competitors, who now operate more than 100 factories and subsidiaries in the Portland area, our schools cannot depend on the federal government to provide 50 percent or more of our budgets.

An Early Warning Signal

We in Oregon, by virtue of being on that part of the American "outlands" that is also on the Pacific Rim, have gotten an early warning signal on the importance of work-related education. We have learned we must rapidly reclaim Jefferson's "education as defense" philosophy, which the Japanese already believe and practice so well, if our Oregon children are to prosper rather than be colonized.

The newly constructed Tualatin High School will open in the suburban Portland area in the fall of 1992. Our school features a progressive design that integrates technology and work-related education classrooms and labs with the science complex. Despite this, our \$15,000,000 high school with its \$30,000 Carl Perkins grant and excellent cooperation from the local community college and industries cannot sail out and successfully do battle with the new "Oita class" drearoughts — not without substantial

funding for all of the wonderfully progressive elements of the *Oregon Education Act of the 21st Century*. And our recent taxpayers' revolt in Oregon makes it unlikely that we will see the vast sums we need coming from the state level.

If the Japanese were smart enough to use much of their peace dividend on their schools, why can't we emulate them and use our peace dividend that will accrue from the end of the Cold War in a similar fashion? There is no reason why those much talked about "thousand points of light" should not emanate from the windows of well-equipped and excellently staffed classrooms. □

¹ See G. Friedman and M. Lebard, (1991), *The Coming War with Japan*, (New York: Teachers College Press).

Larry Pettersen is Principal, Tualatin High School, 9000 S.W. Durham Rd., Tigard, OR 97224.



Students who attend Japan's Hita Rinko High School of Forestry prepare for well-paid jobs in forestry. This computerized lathe is typical of equipment at the school.

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