

Corporate School and Management Philosophy from the Viewpoint of Technology Transfer

Kuniko Mochimaru

Lecturer, Josai University

Abstract

The purpose of this study is to examine the history and current state of corporate schools and search for relationships between corporate schools and management philosophies in light of intra-company technology transfer. The results of case studies on three electric companies and on five automotive companies indicate the importance of corporate schools in aiding technology transfer within companies and in keeping companies competitive in the global market. Generally, a company's management philosophy supports its corporate school.

Key Words: corporate school, technology transfer, global market, management philosophy, international experience, leading technician, leading position.

Introduction

The basis of today's high level of technology in Japanese manufacturing companies can be traced back to the 1950's through the early 1970's. As can be seen in NHK's TV program "Project X," engineers and technicians played a great role in developing the technical expertise of Japanese companies, during those decades, so called "high economic growth era." In those days, the percentage of college students was low, about 10% to 30% (Ministry of Education, Culture, Sports, Science and Technology, 2004; p. 9). Not all of the students with good scores at school went on to college. Some of them didn't even go on to high school. Even so, Japanese companies still had hardworking and skillful workers. These companies also had a strong will to educate young workers. Many large companies used to have their own technical schools which accepted junior high graduates. Students of these corporate schools were called "Yōseikō," or trainees.

Nowadays nearly 100% of junior high school graduates go on to high school and almost 50% of high school graduates go on to college. It means that high school graduates with high academic scores normally go to college instead of working in factories like their 1960's counterparts. High school students with high scores in science tend to major in scientific and mechanical fields at college, and this is not always good for manufacturing industries because some of these students may not enjoy manufacturing. On the other hand, those who are interested in manufacturing may study in other departments because of their lower academic scores, and they are unlikely to work in manufacturing industries after graduation. In addition to this, those workers who had been educated at corporate technical schools started retiring a few years ago. Several fatal factory accidents occurred in the late 1990's and early 2000's at various manufacturing sites in Japan, including Bridgestone and Mitsubishi Motors. The failure of transferring technical know-how from skilled workers to younger workers in those

factories can be considered to be a contributing factor to these accidents. It should be noted that in the first meeting of Quality Improvement Committee of Technical Professional School/Technical Junior College Curriculum in Nagano Prefecture, Mr. Hagimoto of Tamagawa Seiki Co. regretted that the company discontinued its corporate school (Nagano Prefecture, January 28, 2004). According to the Japan Electrical Industries Association, corporate schools are very effective in developing young technicians (2003). The corporate school is, in a sense, a means of educating employees with less academic experience. It has been hypothesized that improving the ability of those employees will bring about economic and social advancement in this current knowledge-based society, strengthen social solidarity, and develop a more stable society. How true is this hypothesis? Currently, there is no such philosophy or policy (Ito, 2004).

The purpose of this study is twofold: to examine the past and current state of corporate schools in light of technology transfer and to make connections between the means of transfer of technical skills and a company's management philosophy.

Methodology

Regarding the history of Japanese corporate schools, *A 100-year History of Industry Training* (Japan Industry Training Association, 1971) covers the events from the early era of corporate schools until the early 1970's. To obtain information regarding the current state of corporate schools, company web sites have been consulted. Inquiries to HRM and PR departments and managers of corporate schools have been made in order to obtain additional information. Illustrations of each of the schools examined are presented as case studies for analysis. The companies with corporate schools have been chosen from the auto and electrical industries, both of which have been the foremost Japanese industries in the global market since the mid-1980's. Hitachi, Matsushita, and Sony represent the electrical industry, and Toyota, Nissan, Honda, Mazda, and Fuji Heavy represent the automotive industry. Although the study is limited to the corporate schools for these companies, the sample is broad enough to analyze the trend of corporate schools in Japan and make generalizations and conclusions.

Literature Survey

The corporate training systems in the early twentieth century in Japan are illustrated in *A 100-year History of Industry Training* (Japan Industry Training Association, 1971). Table 1 shows the characteristics of corporate schools in 1915. The purpose of such schools was to facilitate technological advancement and retain labor within companies. The success of such schools depended on the placement of the trainees in the affiliated companies or the promotion of trained employees from line workers to "staff" class after graduation. The schools with curricula similar to ordinary schools were lower rated because they were less effective at enabling employees to be promoted after graduation. Finding barriers between the staff and themselves, the trainees became discouraged and moved to other companies.

It took fifteen years to solve this kind of problem at Yahata Steel. After Yahata and five other steel companies merged to become Nippon Steel Company, a company education office was founded in 1942. Former students of the Yahata Technical School now had the opportunity to enter its engineering school. This meant that the trainees of Yahata Technical School could be promoted as engineers, the highest position for those in technical fields.

Table 1 Corporate Technical Training Institutions as of 1915

| Companies | Schools | Foundation | Age of students | Required academic background | Duration of training | Required years after graduation | Comments |
|---------------------|--|------------|-----------------|------------------------------|----------------------|---------------------------------|----------------------------|
| Nagasaki Shipyard | Mitsubishi Heavy Ind. Prep School | Oct. 1899 | 12-15 | RES or more | 3 years | | |
| Kanebo | Central Training School | 1905 | 15 or older | HES or more | 1 year | | Selected from male workers |
| Japan Railway | Central School | June 1909 | | JHS or more | 18 mos. or less | 3 | |
| Japan Railway | Regular Course, Local School | June 1906 | | HES | 6 mos. or longer | | |
| Mitsui Mining | Mitsui Mechanical School | Aug. 1907 | | HES or more | 3 years | | |
| Yahata Steel | Regular course, Young Technician Training School | Mar. 1910 | 14-16 | HES | 2 years | 6 | |
| Hitachi Mfg. | Apprentice Training School | Apr. 1910 | 14-17 | HES | Age of 20 | | |
| Nikko Copper Mfg. | Apprentice School | Apr. 1913 | 17 or younger | HES or more | 2 years | 3 | |
| Ashio Copper Mining | Industrial School | Apr. 1913 | 12 or older | HES or more | 2 years | 3 | |
| Sumitomo | Private Technical School | Oct. 1915 | | RES | 4 | | |
| Shibaura Mfg. | Technical Training School | 1914 | | | Some Period | | New Employees |

RES: Regular Elementary School / HES: High Elementary School / JHS: Junior High School
 Source: Japan Industry Training Association, *A 100-year History of Industry Training*, 1971; p. 189.

After World War II, various kinds of education and training systems were imported from the U. S. Most of these were for managerial people. As in the early twentieth century, postwar industries needed a high number of technicians in that era of rapid technological evolution. From late 1950's through early 1960's, 55 corporate schools of various types, including three institutions founded before WWII, were operated (JITA, 1971; p. 389).

Over time, the need for training has changed. From 1965 to 1970, the need for training

young employees increased in every position except in middle management. It was predicted that from 1970 to 1975, the need for top executives would drastically increase while the need for new employees and line managers would decrease (JITA, 1971; p.423).

In the mid-1990's companies shifted the focus of their training programs from company sponsored schools to self-organized educational programs. This is the result of limited corporate financial resources to continue paying for employee education and personal needs. It is also true that the diversified needs of corporations today require diversified programs tailored to individual trainees. Hence, it can be inferred that the importance of corporate schools involved in technology transfer gradually dropped during this period.

Now the current situation of technology training and education at Japanese companies will be discussed. The following questions will be considered:

1. What is the role of the corporate school among other training programs in transferring technological skills to new employees?
2. Does the management philosophy of the company justify keeping the operation of its corporate school?
3. In what ways did the management philosophy and societal change influence the activities of corporate schools?

To find answers to the above questions, several case studies in the electrical and automotive industries will be examined. Both the electrical and automotive industries are considered to be the foremost Japanese industries in the world.

CASE STUDIES

HITACHI, LIMITED

Hitachi Technical Senior School (Hitachi Kogyo Senshu Gakkou)

Hitachi started their corporate school early on in 1910 as an apprentice school. Currently, they have both a high school and college program, both run by the Hitachi General Education Center. It is said that the students are all male because of the nature of the technology of manufacturing heavy electric machines for industry use.

High School Program

Hitachi Technical Senior School is a three-year technical high school where the graduates will earn high school diplomas through an arrangement with Science Technical High School, a long distance school system. It is also a vocational training institution where one can learn practical knowledge in electricity, electronics, machines, or welding.

All the students live in a dormitory during their high school years. The maximum enrollment of students per grade is 60. Although the school has a website recruiting students from every part of Japan, the students are mainly from the Tohoku area. Each student gets an 80,000-yen scholarship per month to cover the cost of textbooks, school supplies, field trips, and dormitory fees. School fees are also paid from the scholarship.

The school curriculum consists of practical subjects and academic subjects. Classes are held seven hours during the day, Monday through Friday.

The school aims to develop technicians who have both a broad background and leadership ability in production. During the three year program the students experience a two-week home-stay abroad and a half-year factory internship in addition to regular school life in order

to accomplish the above goal. After graduation, all the graduates will work for one of the Hitachi companies. In this period of high unemployment, the appeal of this school is that all the graduates will find jobs at Hitachi, one of the leading companies in Japan. The school also has started training some students to participate in the Technical Olympics in 2004.

College Program

This program was recently founded in April 2004 to develop future technical leaders. Its educational philosophy is to encourage the students to develop humanistic subjective thinking. The maximum enrollment of the one-year program is 14, all in the Mechanical Engineering Department. The school fee is 700,000 yen. The graduates will be assigned to one of the Hitachi companies.

Management Philosophy

“Contribute to the society through technology” has been the management philosophy of Hitachi since its founding in 1910. Hitachi has developed its pioneer spirit on the basis of “Harmony” and “Sincerity”.

MATSUSHITA ELECTRIC COMPANY

Matsushita Electric Technical College

The late Konesuke Matsushita established the company training institute in 1934 in order to train its salespeople.

Currently, Matsushita Electric Technical College aims to develop core production staff people who have technological knowledge and skills that can keep up with ongoing technological innovations, who have the ability to develop the best products in the 21st century with a global perspective, and who also contribute to society through manufacturing. It seeks to develop energetic core production staff people who have a multidisciplinary focus and skills encompassing multiple fields. This college has three different two-year programs: Matsushita Electric Technical College for teaching mechanical and electronics technology to young manufacturing staff people, the Product Development (Mono Zukuri) System Technology Program for technical college and university graduates, and the Material Processing Technology Program for mastering advanced technology. All three educational institutions are certified as training institutions either by the Ministry of Health, Labour and Welfare or by the Osaka Municipal Government. They all accept students only from within the company.

Matsushita Electric Technical College

Matsushita Electric Technical College has the following three education policies:

- 1) Exhibiting creativity through self-development
- 2) Emphasizing basics and improving problem solving ability
- 3) Having a global view and emphasis in human development

Its curriculum consists of systematic and practical professional education and some basic subjects such as mathematics, English and physical education as needed by the students. The curriculum includes lectures by the company’s executives and factory visits. This college has educated foreign employees for foreign operations and enjoys a good reputation. The students are all expected to live in a dormitory and learn to work together as a group.

Product Development (Mono Zukuri) System Technology Program / Material/Processing Technology Program (Osaka Government)

Both programs have the following three education policies:

- 1) Emphasis on initiative in problem solving
- 2) Systematic and practical product manufacturing
- 3) Both professional and humanistic education

The curriculum includes English instruction, factory visits, and a four-week training course at Matsushita factories in South East Asia.

Management Philosophy

Matsushita Electric Company's philosophy regarding their corporate school is indicated in its brochure. "Building people before building products" is one of the fundamentals of Matsushita Electric's management philosophy.

TOYOTA

Toyota Kogyo Gakuen (Toyota Technical Skills Academy)

Toyota started their corporate school in 1938, one year after its foundation. Currently they have a high school program and one-year professional program after high school. The latter was added in 1990. The school moved to a new building in 2002. The number of graduates is about 15,000, and about 8,000 still work in Toyota factories all over the world. Now the school has both female and male students because many women work at production sites in Toyota.

High School Program

Toyota Kogyo Gakuen is three-year technical high school where graduates will earn high school diplomas in mechanical studies through an agreement with Science Technical High School, similar to the agreement with Hitachi Technical Senior School.

While the school has dormitory, the students can also choose to live off-campus. The class size is 70. There is no school fee. The students are paid 112,000-139,000 yen monthly depending upon their year in school and 190,000-364,000 yen in the summer and winter.

The school curriculum consists of academic subjects and specialized studies varying among the 9 programs. The school aims at developing technicians having fundamental skills and knowledge, a willingness to make products with well-balanced mentality and a global outlook.

Toyota needs technicians who can teach and mentor foreign technicians, so they are planning to organize a global training team with approximately 2,000 skilled technicians to train overseas employees and transfer the Toyota "Kaizen" philosophy to them by inviting them to Japan (Saitama Newspaper, May 4, 2004).

This school also has educational overseas tour program (similar to Hitachi's) in order to develop global personnel. The school is also proud of having educated students who have won medals in the Technical Olympics.

All the graduates work in Toyota factories. Graduates can enter the Toyota Technical Institute after one year of experience working at Toyota.

Professional Program

This one-year program develops specialists in aspects of manufacturing at Toyota. The

students enrolled in this program also live in a dormitory designed for the professional program. They are paid more than the students in the high school program: 140,000 yen monthly and about 400,000 yen as a bonus. The graduates are expected to work immediately after graduation in their profession.

Management Philosophy

The school was established on the founder Toyoda Shoichiro's belief that making products means making personnel.

MAZDA

Mazda Technical College

Mazda Technical College started as Toyo Young Men's School in 1938. A one-year technical training program started in 1981 and evolved into the two-year Mazda Technical College, which opened in 1988.

Its goal is to educate technical engineers leading Mazda in the future to have a broad range of technological and engineering skills and a humanistic approach.

There are 64 students enrolled per academic year. They are mix of recent high school graduates and young employees in their early 20's selected from production sites from within the company. The ratio of new graduates to current employees is about 3 or 4 to 1. Even if a potential student fails the entrance exam, he or she might be employed at Mazda as a production technician.

The curriculum consists of practical training, mechanical and electrical education, social science courses, factory training, and several factory visits. After graduation the students will be assigned to production sites such as factories and maintenance and inspection sections.

Management Philosophy

The origin of the company name is found in the name of its founder, Matsuda Jujiro, and also in Ahura Mazda, the name of an ancient god in West Asia for wisdom, reason, and harmony. The company wishes for world peace and enlightenment in the automotive industry. The company's vision statement was written in 1999 and has three elements: vision, mission and value as follows.

Vision: The creation of new value and the best cars and services will always give our customers joy and excitement.

Mission: The customers have a voice that should be actively listened to and responded to with passion, pride and speed. Creative products and service meeting and exceeding customer expectations will be provided.

Value: Honesty, customer service, creativity, and effective and quick action will be valued. Positive employees and teamwork will be respected. Positive action toward the environment, safety and society will be taken.

After all, the greatest joy will be given to the people of Mazda.

SONY

Shouhoku Junior College

Sony started Sony Atsugi High School in 1965 to educate young workers and discontinued the school in 1975. In order to replace the high school, Shouhoku Junior College was founded in 1974 in order to respond to the demand for higher education in Japanese society.

The words that Mr. Masaru Ibuka, the founder of Sony, gave in its opening ceremony remain as the philosophy of this college. That is, the college gives the students not only the knowledge but also the humanity necessary to lead in society.

Shouhoku Junior College has four programs: information media, life produce, general business, and nursing. The graduates have been employed not only by Sony and its affiliated companies but also by many other companies. In this sense, Shouhoku Junior College cannot be categorized as being just a corporate school. In actuality, the Shouhoku Junior College is certified by Ministry of Education, Culture, Sports, Science and Technology, so in this sense it is a bona fide junior college.

Management Philosophy

According to the founding prospectus that Mr. Ibuka drew up in 1946, the first and primary motive for setting up the company was to create a stable work environment where engineers who have a deep and profound appreciation for technology could realize their societal mission and work to their heart's content. This has evolved into today's SONY spirit seen in expressions such as "Do what other people do not do," "Advance one step ahead" and "Strive to make new products."

NISSAN

Nissan Technical College

This school aims to develop technicians with knowledge of electronics and computer-related technology. The school originated as an employee development center founded in 1937. It was reorganized into Nissan Technical College in 1983 through various changes.

The students are expected to be high school graduates and employees of Nissan or affiliated companies with more than two years of work experience in the company. The maximum enrollment is 60 students in each school year. Nissan aims to develop technicians who understand both high technology and people. The curriculum includes educational overseas tours, study tours of high-tech companies, volunteer activities, study camps, tutorial seminars, and mechanical contests. Some of the courses are open to the employees of member companies of the Electric Labor Union.

Management Philosophy

The simple management philosophy is to enrich people's lives. There is no mention about the relationship between technology and human resources development in the school literature.

HONDA

Honda International Technical School

This school, certified by the Ministry of Education, Culture, Sports, Science and Technology, was founded in 1976 to develop technicians in every field of the auto industry.

The graduates do not necessarily work for Honda. In this sense, the school might not be considered a corporate school. However, the survey revealed that it has an important characteristic of a corporate school: it is dedicated to the company.

Honda International Technical School has three programs: auto maintenance (320 students), system engineering (80 students), and advanced management in auto maintenance (40 students). All are two-year programs. The system engineering program trains students

who will be leading the production line. The school also accepts foreign students.

Management Philosophy

There are basic principles, a company principle, and management policies.

Basic principles

Respect for the individual and three joys: the joy of buying, the joy of selling, and the joy of creating.

Company principle

Maintaining a global outlook, we are dedicated to supplying products of the highest quality at a reasonable price in order to promote worldwide customer satisfaction.

Management Policies

Proceed always with ambition and youthfulness.

Respect sound theory, develop fresh ideas, and make the most effective use of time.

Enjoy your work and encourage open communication.

Strive constantly for a harmonious flow of work.

Be ever mindful of the value of research and endeavor.

FUJI HEAVY INDUSTRIES, INCORPORATED

Subaru Technical School

(Fuji Heavy Industries Ltd. Gumma Factory Senior Vocational Training School)

Subaru Technical School was founded in 1970. The maximum enrollment of the school is 240 in four programs: car maintenance, metal painting, plastic processing and mechanical processing in three production sites.

Although the maximum enrollment is 240 students, the actual number of students in 2003 was only 48. Currently, there are a small number of female students and there are no students from overseas. Instead, the instructors go to its only overseas factory in the U.S. to train its employees. Prospective students must have high school diploma.

The company selects and develops employees to participate in the Technical Olympics. In addition, the school holds an Idea Contest, which is also an opportunity to encourage employees be creative and operate in a creative atmosphere.

Management Philosophy

The corporate philosophy was established in November 1994.

1. We will strive to create advanced technology on an ongoing basis and provide consumers with distinctive products with the highest level of quality and customer satisfaction.
2. We will aim continuously to promote harmony between people, society and the environment while contributing to the prosperity of society.
3. We will look to the future with a global perspective and aim to foster a vibrant, progressive company.

Discussion and Analysis

Now the following questions raised previously will be discussed:

1. What is the role of corporate schools among other training programs in transferring technological skills to new employees?

Table 2 Characteristics of Corporate Schools as of October 2004

| | Hitachi | Matsushita | Sony | Toyota | Nissan | Honda | Mazda | Fuji |
|------------------------------------|--|---|---|------------------------|---------------------------------------|-------------------------------------|--|--|
| <i>Entry Certification</i> | Jr. High (Scholarship) | High | High | Jr. High (Scholarship) | High | High | High | High |
| <i>Control Ministry</i> | Education LHW | LHW | Education | Education LHW | LHW | Education | LHW | LHW |
| <i>Gender</i> | male | both | both | both | both | both | both | both |
| <i>Programs*</i> | Electric Electronics Mechanics Welding | Electro-mechanical | *Information Media *Products for Life *General Business *Nursing | Electro-mechanical | Mechanical Systems Electro-mechanical | Auto maintenance System Engineering | Mechanical Systems Production Technology | Auto Maintenance Metal painting Processing Mechanical Processing |
| <i>Advanced Programs**</i> | Professional | 1.Creating System Technology 2.Material/Process Technology | Advanced; Life (Housing) | Professional | None | Management Study | None | None |
| <i>Maximum enrollment per year</i> | 50*/14** | 30* | 500*/35** | 60*/100** | 60 | 400*/40** | 64 | 240 |
| <i>Graduates</i> | Hitachi | Matsushita | other | Toyota | Nissan | other | Mazda | Fuji |
| <i>Technical Olympics</i> | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Dormitory</i> | Must | Must | None | Yes | Yes | Yes | Must | Yes |
| <i>Educational Overseas Tours</i> | Yes | Yes (A-Course) Training | Yes | Yes | Yes | Yes | None | None |
| <i>International Students</i> | None | Yes | Yes | Yes | None | Yes | Yes | None |

Marks — Junior High=Junior High School, High=High School
 Education=Ministry of Education, Culture, Sports, Science and Technology
 LHW=Ministry of Labor, Health and Welfare

2. Does the management philosophy of the company justify keeping the operation of its corporate school?
3. In what ways did the management philosophy and societal change influence the activities of corporate schools?

Table 2 shows the characteristics of the schools. These factors will be discussed and analyzed along with the above questions: entry certification, entry certification and regulatory ministry, gender, courses, reasons behind the establishment of advanced programs, maximum enrollment, Technical Olympics, life after graduation, dormitory life, educational overseas

tours, and international students.

Entry Certification

Only Hitachi and Toyota have corporate schools with junior high school graduates. The other corporate schools are for high school graduates. In Japan, almost 100% of junior high graduates go on to high school, so why do these two schools still accept junior high graduates? School staff people explain that they need skillful technicians trained while they are young because there are many things to master in order for them to become leading technicians. The corporate schools of Hitachi and Toyota are also high schools certified by Ministry of Education, Culture, Sports, Science and Technology, so the graduates will get high school diplomas. This is helpful to junior high school graduates who have financial difficulties in attending high school.

Entry Certification and Regulatory Ministry

The Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Health, Labor and Welfare regulate corporate schools. The schools controlled by the former entity are academic schools and the ones controlled by the latter are training institutions. The schools of Sony and of Honda are under the jurisdiction of the former; hence they are open to anyone. The corporate schools of Hitachi and Toyota for junior high school graduates function as both academic and training institutions.

This is related to the characteristics of the companies themselves. Both Hitachi and Toyota are manufacturing companies with a long history. They have determined that their mission in the industry is to develop leading technicians. Sony and Honda were founded after World War II and Mr. Masaru Ibuka and Mr. Soichiro Honda, the founders of the schools, had open minds. Both looked beyond Japan and started overseas projects earlier, and thus they became well-known in the world.

Gender

The post-war fundamental education law in Japan designated that all the schools were to have both male and female students. Yet in reality, single-sex schools still existed. In production sites, there were mostly men; however, women eventually came to work with male colleagues due to the Equal Employment Opportunity Law prohibiting gender discrimination. To add, many of them had experience in overseas production lines that had many female workers. These days, only Hitachi does not admit women to their corporate school due to the nature of the program subject material. As seen from the experiences of other companies, women might be admitted to this school in the future also.

Programs

The Sony school has the greatest variety of programs because the company has the greatest variety of products. Course titles affirm that automotive companies emphasize developing technicians at production sites while electrical companies emphasize developing computer control devices.

Reasons for the Establishment of Advanced Programs

Technological advancement and world competition are the main reasons for adding advanced programs. There is more knowledge to learn and more technology to master than before. Japanese companies in the electrical and automotive industries are world leaders in technology, which means that they have to teach their technicians in order to maintain the

quality of their products. They need technicians who have pride and self-confidence in their techniques in order to teach others. Most of the restructuring of corporate schools has taken place recently in order to cope with globalization.

Maximum Enrollment

The maximum enrollments of corporate schools that are regulated by Ministry of Labor, Health, and Welfare are usually smaller, which means that the companies develop the students as the elite at production sites. The advanced program of the Honda School is similar.

Technical Olympics

Winning in the Technical Olympics has been the ambition of technicians in many manufacturing companies. Participating in the Technical Olympics used to be a company's biggest event. Although nowadays it is not emphasized as much, it is still one of the most important events for manufacturing companies. All the companies surveyed participate in the Technical Olympics.

After Graduation

Most of the graduates are employed by the parent companies after graduation, except for those from the Sony and Honda schools because those graduates can choose to work for other companies as well. The merit of corporate schools in this age of high unemployment for junior high school graduates is that the graduates are employed by prominent companies such as Hitachi and Toyota. The problem experienced by pre-war corporate schools, the fact that many of the students moved to other companies, seems to have lessened today. The students of the schools with smaller enrollments are treated well after graduation, including having a good reputation, being welcomed into the alumni network, and receiving promotions.

Dormitory Life

Dorm life used to be common all over Japan not just in schools but also in companies as well. Nowadays young people prefer individual time. So while the students have to live in dormitories at Hitachi, Matsushita, and Mazda, Toyota does not require all the students live in dormitory. Nonetheless, the students often choose to live in dormitory because of financial reasons. All the schools or companies except Sony have dormitories. Sony, unlike other Japanese companies, has no dormitory either for bachelors or for families because it is their company policy not to be involved in the employees' personal lives. Japanese companies in general believe that dormitory life nurtures a collaborative spirit indispensable for manufacturing.

Educational Overseas Tours

The schools where the students study away from work for the duration of the school year organize educational overseas tours. The tour is not merely a trip for fun; it is a well-planned experience of production sites overseas or life with host families in foreign countries. In the case of Toyota, the trainers at production sites with English ability are highly valued. So it follows that the companies try to develop the English ability of future leaders before they are assigned to the production line. Even a little experience abroad will reduce hesitancy toward working with foreign employees. The students' experience abroad can also help widen their own views.

International Students

Many schools accept students from foreign countries, mainly from overseas production sites. These schools are responsible for developing elite technicians at overseas factories. This, in a sense, determines the fate of the company's global development. The companies with competent technicians are able to maintain the excellent quality of their companies' products and thus survive longer in the competitive global market.

Conclusions

The detailed analysis brought the answers to the questions raised in the beginning as follows:

1. What is the role of the corporate school among other training programs in transferring technological skills to new employees?

Without corporate schools it would be very difficult to transfer technology. Much knowledge and many techniques have accumulated since the beginning of the automotive and electrical industries, and these skills need to be transferred to the next generation. On-the-job training is not enough; independent time designated for training is necessary to transfer this vast amount of information.

2. Does the management philosophy of the company justify keeping the operation of its corporate school?

As most of the surveyed companies in their management philosophies emphasize technology development and developing human resources as a way to make good products, the corporate school is an indispensable part in realizing these philosophies.

3. In what ways did the management philosophy and societal change influence the activities of corporate schools?

The management philosophy and length of operation have determined the type of entry certification. The addition of advanced programs was brought about by two things: the volume of techniques and knowledge that need to be learned and mastered and the competitive global market which requires technical innovation.

The students' educational overseas tours and the presence of international students are results of global expansion in these industries. Accurate technology transfer is required to maintain the leading position of these companies in the global market.

Future Research

This study has revealed the efforts of the Japanese companies in maintaining a leading position in the global market. In addition, it is also important to know the situation of foreign companies trying to compete in the global market. Future research projects should compare Japanese companies and foreign companies on their means of technology transfer. The sample of the research should be expanded to include production sites overseas.

In addition, other Japanese companies need to be surveyed in order to make this research complete. This research surveyed stronger companies among other companies in Japan, and this may have concealed weaknesses and areas of improvement. Moreover, this additional research would be of benefit to companies by highlighting problems in technology transfer.

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