

広島大学 高等教育研究開発センター 大学論集
第 38 集 (2006年度) 2007年 3 月発行 : 293-310

Features of Graduate Education in Japan and in the United States : A Comparative Study from the View of International Students

Yoshikazu OGAWA

Features of Graduate Education in Japan and in the United States: A Comparative Study from the View of International Students

Yoshikazu OGAWA *

Introduction

Since the '100,000 International Student Plan' was set forth in the 1980s, the policy has ever been recognized as an important national agenda in Japan. As the result of improving the service for international students, such as increasing the scholarship opportunities, and setting up the new sections for international student affairs in each university, the number, which was approximately 10,000 students at the beginning of the 1980s, has achieved steady increase to 50,000 by the beginning of the 1990s. The increase had stagnated in the second half of the 1990s, but it began to increase again rapidly in 2000, and finally reached 100,000 in 2003 (MEXT, 2003). Although the number is far from that of the 565,000 international students in the United States in 2003 (Institute of International Education, 2005), it apparently shows that Japanese higher education has contributed to training international students, and has had an impact on the higher education system in foreign countries, at least to some degree.

Previous studies pointed out, however, that Japanese higher education, at both the undergraduate and graduate levels, has often been criticized from Japanese researchers as well as from international students (Ebuchi, 1997; Kitamura, 1987; Iwao and Hagiwara, 1989). The negative comments included a variety of criticisms, such as the insufficiency of scholarships, the problem of it being hard to make friends with Japanese students, the problem of relationship between professors and students, the lack of systematic courses of study, offering insufficient classes in English, and so forth. In addition, focusing on graduate education, the criticisms are more serious. It has so far been suggested that Japanese graduate education has even lagged more behind, compared with undergraduate education. The main cause consists of two problems: the difficulties of obtaining doctoral degrees and unstructured courses of study (Nakayama, 1995; Umakoshi, 2002). It is a typical problem that while these are viewed as common sense in traditional Japanese graduate education, they hold very little meaning in other countries. In the environment that Japan has to compete within the international society, expanding graduate education and solving these problems will become a more and more urgent agenda in Japan (University Council, 1998).

In addition, the previous research has not shed light on the positive side or the effect of graduate education in Japan. International students spend a few or several years in the laboratories for study and those in engineering fields have, in fact, successfully graduated with doctoral degrees. Nevertheless, it has not been analyzed as to how they actually felt and what they learned under typical Japanese circumstances. They learn,

* Associate Professor, Graduate School of Education, Tohoku University

of course, not only the advanced knowledge and skills but also the attitude of other students and professors and the atmosphere in the laboratories. This atmosphere in the laboratories is called the academic culture in a broader meaning, and this paper especially focuses on this point.

The academic cultures or the climates of graduate schools in Japan is supposed to affect the research and instruction of professors who have returned to their mother countries both at the conscious or unconscious level. Through their current daily activities and opinions, I found that it was important not only to know their simple feelings about Japanese graduate education, but to extract how such influence gave impact to their graduate education activities in their mother countries. If Japanese graduate schools are willing to improve the quality of the graduate education under the international competitive environment, it is indispensable, through their opinions, to examine the uniqueness and obstacles of Japanese graduate education. This analysis can give us guidance as to how we can make the features of Japanese graduate education apparent.

Moreover, the features of Japanese graduate education will be made clearer through comparison with cases in the United States. There is the common feature that the countries from where many international students are studying in Japan and also have more students studying in the United States at the same time (Institute of International Education, 2005; Otsuka, 1991). Interestingly, many institutions in those countries actually have more professors who obtained their PhD in the United States (Umakoshi, 1991; Ministry of Education, Taiwan, 2003). Accordingly, it is indispensable to understand what these American educated PhD professors learned there and what kind of influence it had on the graduate education in their own countries.

The main source of this research came from my interview data conducted from November 2004 to November 2005 to the engineering professors in China (nineteen professors), Taiwan (eighteen professors), and South Korea (seventeen professors). It took about one hour in each case. I did the qualitative semi-structured interview to fifty four engineering professors regarding their past and present academic lives, and analyzed their answers based on several categories. This paper especially focuses on how they talked about their education and research experiences of studying abroad. The reason of focusing on three countries and an area was from the fact that more international graduate students in Japan study engineering fields and more than ninety percent of them come from these three countries and an area (RIHE, 2006). Professors with foreign PhD are ones who finished the doctoral courses and, accordingly, are considered to be appropriate informants from the point that they had much experience of the graduate education courses. This paper focuses on the differences between the United States and Japan, and, through the analysis, makes the features of Japanese graduate education or engineering education apparent. In other words, the purpose of this study is to make the characteristics of Japanese graduate education clear through the opinions and views of former international students.

1. Coursework

(1) United States

Each graduate program has a course of study with direction, and students move with the course, acquiring credits of classes. The course is roughly divided into two stages: the coursework of the first stage and the stage of dissertation writing (including an experiment) of the second half (Gumport, 1992). Students are required to accumulate credits needed for graduation with core and elective classes through the coursework, and after that, they have to pass the comprehension examination proving that they have acquired required knowledge and skills or have to complete dissertations for proving that they have research abilities (Conrad and Millar, 1992).

Previous studies pointed out that one of the distinguished features of American graduate education was the coursework (Sasaki, 1997; Kariya, 1992; Nakayama, 1995). In fact, many professors who had gained experience in the U. S. were much about this issue in more detail in my interview research. The feature of their answers is summarized by the following three points. First, individual classes have clear aims and targets and the coursework shows how students should take courses toward degree acquisition.

Professor A: Regulation and contents of the coursework are clear. To do this first and that next is clear for all students. You finish your coursework at first and next you have to take a comprehensive examination. After that, you complete your dissertation and finally take a dissertation defense. It is the most important, but if you pass it, you will receive a doctoral degree.

The contents of classes, examinations and comprehensive examination are all open for everybody, and, therefore, it is rare for students to get lost on master's or doctoral courses (Conrad and Eagan, 1990).

Second, the coursework places the burden on the students.

Professor B: Homework was imposed by each session, which also has a quiz during class. The quiz made up with beginning 20 minutes of the whole 150 minutes of class. The quiz made me understand the class contents deeply. Others were the same. But preparing for the quiz was tiresome.

Professor C: Although I had the experience of the coursework in my mother country, it was different from that of the standard in the United States. The demand standards were very high. There were lots of homework and projects and they created much of a burden. In the United States, I felt tired in spite of taking only three classes in a semester. I was under much pressure But I was able to learn many things.

These opinions imply that the courses were a heavy burden on the students. The quizzes are often done in each session, in addition to a midterm and final examination (report). Occasionally students have to make groups to do project activities in class. Also, as many reminiscences show, students had to have many reading assignments every week.

Third, students found it difficult to get high academic grades at the end of class, in which various examinations are carried out for every stage of a class in addition to the midterm and final examinations. Students have to take a series of examinations in order to show that they really understand the contents. If they did not pass the tests, they finally would have to drop out of the program. It is actually quite a severe selective process. For example, Professor D remarked about the severity from his/her own experience.

Professor D: I studied for a total of five years. The first three years were spent in coursework Regarding the examinations, I had a written examination at the end of the first year and an oral examination at the end of the second year, and I became a PhD candidate. This process was very difficult. The program contained 45 students at the beginning, but when it ended, the number had decreased little by little until there were only 22.

It is from the reason of clear evaluation standards and requirements in each class that graduate programs can adopt these strict policies. Students have to drop out unless they meet the minimum requirement in this system, which can maintain the quality and work out the programs well. The more important things, however, are that no one is denied the coursework, saying that “*understand the class contents deeply,*” and that “*I was able to learn many things,*” although Professor B and C feel that “*tiresome*” and placed “*much pressure*”.

(2) Japan

In the case of the master’s courses in Japan, students are required to take 30 credit classes or more and to complete the master’s thesis or relevant papers for graduation (Article , School Education Act). In other words, like the United States, the master’s course can be divided into two stages: coursework and thesis. First, how did former international students recognize the Japanese coursework?

Professor E: The graduate classes in Japan were not so good. Although there were various classes offered, Japanese professors were quite busy and almost all classes were presentation style Professors hardly did lectures in front of the blackboard They had seldom prepared for classes. It was often the case that each chapter of a photocopied book in English was assigned to each student, and he or she made a report about the contents in their classes.

Professor F: Almost all graduate classes were in the style of seminar Professors did not pay attention to classes. They were not concerned with the classes. Research papers were the most important.

Professor G: The disadvantage was that since professors mainly did their own research and lectures were also mainly about their experimental results, I feel that their lectures were lacking in basic parts.

These opinions show clearly that the professors have a negative view toward the graduate classes in Japan. In the case of doctoral programs, they have no classes or offer only a few classes, such as research direction. They virtually have no coursework (Ushiogi, 1993). Accordingly, it is natural that professors involved had no positive or negative impressions concerning doctoral programs, commenting that “they were able to get the necessary credits without knowing them.”

What is the feature of the coursework in Japan from these opinions, then? First, all classes, either in the name of lecture or seminar, were the same style of seminar education. “Presentation style” which Professor E suggested was the so-called the typical seminar style education, meaning that every student is assigned one by one for each chapter of a book in advance, and make presentation about the contents in class.

Second, in order to continue the style, students have to master basic knowledge and skills at the stage of undergraduate courses. In the seminar style education, students learn advanced knowledge rather than basic knowledge and also the contents are different from session to session. Therefore, students without basic knowledge can not learn effectively in this style, and it is often the reason for comments, such as “*lacking in basic parts*” by Professor G.

Third, however, they do not deny the seminar style education itself. Rather, what they point out is Japanese professors’ attitude toward classes. Frankly speaking, former international students have the impression that Japanese professors were not concerned with classes. That is, they feel that, in order to compensate their negligence and to conceal insufficiency of the preparation for classes, Japanese professors required students to make presentation about the contents of chapters. If it is true, classes are naturally to be without planning ahead, and there will be no systematic method in the contents. Students even suspected that professors make students translate books into Japanese which professors want to read.

These opinions suggest that former international students take graduate classes only for graduation, and, accordingly, there are no big differences between taking and not taking classes. Supposing that no impression remains about the importance of coursework in their mind, the first half of a course does not work out well in Japanese graduate education.

2. Research Direction

(1) Japan

Having no systematic coursework does not mean that the graduate schools in Japan have abandoned their role as educational institutions. Instead, they perform educational activities in the typical Japanese way. It is the seminar education in a laboratory setting. The former international students, who do not have the memories of coursework, have vivid memories of seminars and talk much about this topic in detail. What kind

of system is the seminar, then?

Professor H: There are two kinds of the seminar: reading journal papers and making presentations about our own experiment results. Regarding experiment results, when we get some meaningful results, we make a presentation about it in front of our members. Also, about journal papers, we read papers in famous journals in advance and report on them.

As Professor H explains, there are two kinds of seminars. The former one is that each student is required to read the latest journal papers to learn latest research trends and information. Each time, one or two students made presentations about them and followed by discussing the contents.

The latter one is to make reports of students' experimental progress and results. In the case of engineering schools, each student takes charge of a part of a professor's research project and does experiment respectively. Through research activities along with doing experiments, students are able to finally complete their course with their doctoral dissertations. At the seminar, students explain the state of the experiments in front of other members and share the information and problems together through discussion. Even students who there, but not giving reports, are stimulated by other's presentations, knowing who are the laziest persons as well as their problems and new information. Therefore, it can be said that the seminar education contains research direction for dissertation from the viewpoint of the student.

It took two to six hours - in many cases it was four hours - to hold this type of seminar every week. As an example, many seminars in Japan included both kinds - the first two hours spent on journal paper reports and the remaining two hours spent on experiment reports. There was another style adopted in other seminars - one time for experiment reports and the remaining three times for journal paper reports for the month.

There were a few cases of the seminar being held once every two weeks, once a month, or twice a week, but in most cases they were regularly held once a week - for example, on Friday afternoon or on Monday morning. All members of a laboratory - from senior undergraduate students to graduate students and all faculty members had to attend the seminar. According to the informants, some cases are credited as official classes, but most cases are noncredit informal classes. In either case, all members had to attend the seminar as virtually 'required classes'.

Since, for international students, this type of seminar began right from the time of entering a graduate school, the seminar in Japan can be regarded as being equivalent to an American coursework. However, the purpose and the reality of the seminar differ from the American coursework. First, the purpose of the seminar is to learn advanced knowledge rather than basic knowledge. As their respondents point out that at the seminar they could acquire deep, advanced knowledge, being oriented toward depth in a small academic field, not covering a wide academic field. Moreover, as the seminar is an informal class, the qualities and contents depend considerably on professors or the laboratory. In fact, the frequency and meeting time of the seminars differed from laboratory to laboratory, according to what the informants said.

What did former international students learn from the seminar education? The following professors I talked to summarize this point in detail.

Professor I: [Regarding the advantage of the seminar,] I can point out two or three. First, we felt more tension during a seminar where several or more persons came together, rather than studying by ourselves with a plan, or talking with a professor. The merit of a seminar is to be able to listen to other's opinions. First, the atmosphere of a seminar is full of tension felt by those in attendance. We can listen to others' opinions. The other is ... the one who is giving the presentation has the responsibility to be on time, showing consideration to those in attendance.

As these opinions suggest, participating in seminars allow more opportunities to exchange and to develop ideas, rather than when considering something independently. It is also an advantage to absorb important up to date knowledge or information in wider fields, by listening to other presentations. Moreover, there is also an advantage in the seminar that, in order to avoid embarrassing situations, even students who are apt to yield to temptations to do things other than study, can keep the motivation in the long run in order to receive academic degrees, if the meeting time is set up in the seminar where all members are forced to make presentations regularly in a tense atmosphere. In fact, many respondents tell the stories of their having a struggle with English books at least one week before the seminar day or struggling to analyze experimental data. They continue to experience such a life for three or four years and finally can obtain academic degrees.

(2) United States

In fact, in the United States, the name 'seminar' is listed in the course catalogues. It is one of the graduate classes in a coursework and consists of mainly reading important literature. It is a credited class of ten to fifteen weeks for those who need to take the class, although some former international students in my interview mentioned that some 'seminars' were a lecture by visiting professors. The purpose is similar to the point of reading important literature, but the reality is different from the viewpoint of all members in a laboratory attending the seminar without regard to be given the credits. Moreover, the U. S. seminar is not an opportunity to experiment results like the Japanese seminar.

If we look for something in American graduate schools, which are close to the Japanese seminar, it would be similar to a group meeting. Many graduate students of engineering in the United States help a professor to conduct his/her research as a research assistant (RA), and instead they receive tuition remission and a stipend in general. That is, the professor employs students by means of his/her research fund (Gumport, 1998). The image is the radial pattern, where a professor is in the center, and graduate students are located in a circle around the professor, from the statements of many informants. The number of the students depends on the amount of research funds. If there are lots of research fund, a professor can employ many students. The general tendency, however, is to be relatively small in size. According to the informants, a professor has about

five graduate students.

The contents of the group meetings are basically the same as the Japanese seminar in reporting experimental results in front of professors and other students. In addition, it is common in both the U. S. group meetings and Japanese seminars that the experimental results finally lead to the dissertation.

Professor J: The meeting was to report to our professor concerning our experimental progress the past week. We make presentations to our professor and he checks them.

This informant tells that it takes about one hour for many group meetings and a professor check the progress of the students' experiment there. The check is a kind of research direction, but what is completely different from Japan was that the group meeting style is an exceptional one, not common in American graduate schools. In many cases, there are no group meetings and instead research direction and experiment report is done on one to one basis. The relationship between a professor and a student affects the relationship among students. Although several students help the research of a professor, they do not understand the overall picture in general - that is, what kind of research the professor conducts as a whole. Namely, without group meetings, students have no opportunity to know what other students are doing. On the other hand, in the case of Japan, it becomes quite obvious what other students are doing and how far their research is progressing through seminars.

Professor K: My professor did one to one correspondence with doctoral students when he had time, he came to our room to talk a little bit We did not have a set meeting time.

In the case of one to one meetings or individual meetings, it takes less time - fifteen to thirty minutes for one meeting just to check the students' research progress briefly. The meetings are also likely to be irregular. Interestingly enough, although informants completed dissertations under the guidance of advisor professors, they do not remember the guidance in detail - group meetings or individual meetings. In other words, they did not have difficult experiences; such as being scolded by professors at the seminar or being told that they spent too much time in collecting the data from experiments. Nor did they have recollections of reading books together as voluntary study groups of students, or of parties among the members. Actually, they did experience such parties at their graduate student days.

The styles of research direction affect the types of dissertations. In the case of relatively small size of the research group - one professor and two or three students, it is necessary for professors to look for the niche of research areas that even a few persons can control without much money. They usually do not use large-scale experimental devices to collect data. Accordingly, students usually pick up dissertation themes in this line. In fact, concerning dissertations, most of them are simulation studies by using the computer and are little experimental studies with large scale devices.

Professor L: There are two different ones. One is we need experimental work. In that case, we have to make necessary machinery. We have to buy something else. In that case, we need a lot of money. We need government research money or company money. Definitely we need. The other case is a theory work with computer analysis. In that case, we just need paper, computer paper. There is a computer work. We do not have any problems using the computer system in a university. We do not pay much. We just pay a little bit. In that case, a professor does not need money.

Professor L mentioned that his dissertation was categorized as the latter one - theoretical research. At least, as far as my informants of U. S. experiences are concerned, many dissertations were categorized as this type of research. In other words, the research consists of calculation and simulation studies by computer, and they do not assemble their own experimental devices for themselves unlike international students of Japan do. Therefore, the respondents of the U. S. experiences have little recollection of using experimental devices to collect data, since many were theory oriented studies, there are few stories related to experimental devices.

Moreover, when students faced problems, they were to discuss the problem with an advisor (Gumpert, 1993). The more they face problems, the more often they had opportunities to talk with him/her. Accordingly, they do not have impressions of 'distant' professors nor strict professors. The professors in the United States seem gentle and kind to students although they look like serious in research activities, at least from the viewpoint of international students.

Professor M: The door is open. So I can go anytime I want to discuss my research work.

Professor N: He was very kind. He treated me like his son. I still keep in touch with him.

Professor O: He was like a colleague.

One reason why such opinions come out is that the scale of a group is small and there is only one professor in a group. For students, a person they rely on is a professor. Therefore, they feel 'closeness' mentally to a professor and like their policy of not closely directing them in details, which makes for a warm atmosphere.

3. Seminar vs. Coursework

(1) Japan

As is mentioned, In the case of Japan, the unit of a laboratory is equivalent to a group in American graduate schools. In fact, the seminar education as the most popular educational form is actually done in each laboratory. The laboratory has a peculiar culture and controls members' activities. While the American group is loosely coupled or on one to one basis, the Japanese lab is completely the opposite.

Professor P: I go to my lab at nine in the morning every day, and till late at night. Probably it is eleven or twelve o'clock at night

Such comment does not come only from this professor P, but almost all the answers were like this, saying 'I was at the lab without time to sleep.' Their culture shock begins from the time of encountering this peculiar culture of the laboratory. It is not an exaggeration to say their studying-abroad in Japan consists of living in the laboratories. Therefore, it is not strange for them to recall their recollections of such things as parties and trip of the lab. In their mind, studying abroad does not mean to study at a laboratory rather than at a university.

This lab, which is equivalent to a chair, consists of a few professors and more students, maintaining a pyramidal structure. According to the respondents, the number in a lab is about fifteen to twenty as a whole - from undergraduate students to professors. It has the dense hierarchical order. International students soon recognize that unless making the human relations in this lab smoother, their research activities will not be successful, namely, they can not get doctoral degrees. Because the international students of my informants could master the culture in the laboratory, they gave positive answers to my questions. Some respondents mentioned, however, that friends who were not accustomed to these rules, dropped out.

Unlike the small sized groups in the United States, the laboratory in Japan has a few professors and more students. In this environment, students are likely to feel that a chair holding professor's existence is distant from them. When they face experimental problems, for example, they have to ask technical officials or research associates first for help. A full professor or advisor is the last person that students in a laboratory would ask. In this way, there are various rules in each laboratory and there is also the hierarchical structure of senior and junior members, where students often feel the distance between their advisor and themselves. In addition, the mental 'distance' to professors is connected to the feeling of dignity. That is one of the reasons why international students feel frightened with professors.

Professor Q: He has absolute authority.

Professor R: We had to prepare for the seminar. It was a heavy burden on us. My professor was a fearful person. I felt like I could not sleep at night unless the preparation for class was completely ready.

Professor S: (at the time of the seminar) There was a professor. I felt afraid of.

The seminar, which is managed respectively by each laboratory of a fearful chair holding professor, has the system of working effectively by checking each other. The situation under which each member periodically has to make presentations in front of other members make students nervous but helps to motivate them. But all faculty members in a lab take care of students through the seminar until their graduation. The reason why they can spend time for students is because there are a few faculty members in each chair who take charge

of different roles, such as a professor who gives main guidelines or one who take care of the daily activities of students. Accordingly, under such strict supervision of professors and mutual surveillance of members, students can continue to study at doctoral courses till graduation.

(2) *United States*

While the mutual surveillance has the power toward the course completion in Japan, the power in the United States was a strict grade system, which also maintains the motivation of the students. Students are under the pressure of various tests in the courses, and it sometimes happens that students can not help dropping out for the reason of low grades. Also, even if they do not have to drop out, their grades affect the scholarship system of tuition remission or stipend - this is an important factor for not lowering their motivation (Nakayama, 1995).

Then, what do former international students feel that they learned from the coursework under such a strict system?

Professor T: Without coursework, we will learn only a needed portion of the depth of knowledge need every time we face problems. On the other hand, in coursework we will learn broad based knowledge. In the case of medical doctors of ophthalmology, for example, they learn about the heart, ear and other things. Also within their specialty of the eyeball, there are 100 or more topics they must study. You will get a PhD only by studying small parts of the eye in dissertation. However, you will need more comprehensive knowledge. This is especially true when you are employed in a company. In future work, you may mainly deal with the heart and the leg instead of the eye. We need to gain wider knowledge and to gain a wider vision by coursework.

In this way, Professor T explained the meaning of coursework, compared with the case of medical doctors. The doctor of ophthalmology studied eyes thoroughly and must have become a PhD. However, the knowledge of other portions of the body, such as the heart and the legs, is also indispensable to continue on in his pursuit as a doctor. That is, it is necessary for medical doctors to study various varieties on subjects for their future. If they study necessary knowledge in advance as a graduate student, they can accomplish much by using it. The following statement suggests the importance of this point from the research side.

Professor U: The strength of the U.S. graduate schools and the power are in the systematic curriculum or coursework In the United States, you have to master three mathematics with or without regard to research topics. You have to study mathematics, even if mathematics is unnecessary in dissertations. This is very important and a strong point You may need mathematics in ten years, to do other research. When I faced a certain problem, I did not find it difficult because I had a background of coursework in the United States. Without coursework, in Japan you have to study other things later on learn the basis. That

does not work very well.

This professor U concretely explained the relationship between engineering and mathematics, mentioning that for engineering students, mathematics is the foundation and is an important subject. If you do not study fundamental mathematics, you can not find the solutions for new problems. The coursework becomes useful for the future. That is, it is almost impossible for elder professors to acquire new approaches, and therefore, you need to have a wide field of study as soon as possible to deal with new problems in the future. In this sense, the coursework can be regarded as a kind of preparatory type education, aiming at expanding a person's width of knowledge.

Moreover, Professor V emphasizes the significances of coursework from the viewpoint of experiments.

Professor V: Without coursework, we do not know how to manage the data of experiments. If you take coursework, you can have the tool for it. You have the clue as to how to arrange the data. This is a powerful tool. It is directly connected to the creativity of research.

The suggestion of Professor V that, without knowing the methodology, you cannot analyze the data, is the same as the opinion of Professor U. Thus Professor P recognizes coursework more positively as the analytical tool rather than just basic power.

In addition, as Professor U mentions, if students acquire not only one research method but various methods, they can approach the subjects from various perspectives, which will be connected to new analysis and interpretation of the data and may contribute to the creativity of research. It is interesting that both Professor U and V regard coursework as the source of power. They feel that American graduate education offers the power to them in the early stage of a whole course, and that the power is a key for becoming independent researchers. That is to say, they recognize that the feature of the American graduate education is to encourage students to be independent researchers as early as possible.

Professor W: We did not have any rules. Because we all wanted to finish the work quickly, however, we did it as soon as possible. My adviser did not order how many hours we have to work. What he only said was the deadline of the work, not saying we have to work one hour or twenty hours. It did not matter. He did not care.

Professor X: When I had a problem, I considered at first how to solve the problem for myself. When a machine is broken, for example, I asked a maker to solve it. I had little time to ask my professor for help. My boss did not look for me. I was independent. Except for an academic problem, for example, some problems, I could ask him. One time, he made me go to his office at night to discuss the experimental issues for one hour. But rarely did he look for me, neither did I look for him.

On the other hand, they did not have vivid recollections at that stage of dissertation writing. One reason is that their dissertations are theory oriented in the computer, and rarely did they encounter experimental problems which students in Japan often do. And another reason is that advisors did not give constant advice regarding research activities of students, as former international students also referred to. The culture of American graduate education is that of independence - think and conduct matters independently, as their comments inform me.

Conclusion

This study explored the features of Japanese and the American graduate school education through the interviews to conduct a study of former international students' experiences in both countries. It found that the United States has the feature of emphasizing coursework at the beginning parts of the whole course, while Japan has the feature of informal seminar education.

The seminar education in Japan is supported by the chair members of ten or more people. International students of engineering in Japan lived most of their academic lives for research activities at laboratories, and the seminar education which periodically held by the members of laboratories there. The purpose was to absorb the latest knowledge in a field and to develop their ideas about the latest knowledge and their experimental results through discussions. This study shows that Japanese graduate education emphasizes more experimental activities as a group rather than individually. This educational system helps to preserve the professors' dignity and also the cross-monitoring system of students in order to maintain and keep the system working well. In addition, this study found that professors can be said to be close to their students in research activities because they are involved in students' experimental activities through seminar education to the end, although students tend to feel professors are distant from them in general.

On the other hand, the American graduate education is characterized as training that thoroughly offers basic knowledge and skills in the first half of a course. The motivation maintenance device was a strict grade system. This study shows that although they feel intimacy toward the professors in small size groups, professors tend to be distant from students in research activities, since they did not often give advice of students' dissertation so much, and quite a lot other professors shared the responsibilities of coursework. International students in the United States can be said to be more independent and isolated, because they do not have much opportunity of doing something together. Therefore, although many episodes show that the word 'severity' comes out in Japanese cases, the 'severity' may be true in American cases because the U.S. graduate schools seem to require more independency to students themselves in isolated environments.

Finally, it is interesting that many former international students recognize that Japanese graduate education means putting time and effort, or close supervision and help in education, and they feel that the system is not suitable for the graduate education in mother countries. The seminar education, which plays an important role in Japanese graduate education, is a luxury system of educating a small number of students gradually

over a long period of time. If the academic abilities and concerns for member students in a lab are diversified, however, the effects of seminar education are naturally different from student to student. It will be often the case that students without basic knowledge find it difficult to attend all the scheduled seminar meetings. Former international students in Japan even feel that in this environment of accepting more students, the graduate programs need to offer more a systematic curriculum like the lecture-centered one in the United States.

Reference

- Conrad, C. and Millar, S. (1992). Curriculum: Graduate. Clark, B. and Neave, G. (eds.). *The Encyclopedia of Higher Education*. Oxford: Pergomon Press, pp. 1557-1566.
- Conrad, C. and Eagan, D. (1990) Master's Degree Programs in American higher education. Smart, J. (ed.) *Higher Education: Handbook of Theory and Research*, 6. New York: Agathon Press, pp. 170-260.
- Ebuchi, K. (1997). *Daigaku Kokusaika no Kenkyu (College Internationalization)*. Tokyo: Tamagawa University Press.
- Gumport, P. J. (1998). Graduate Education and Research: Interdependence and strain. Altbach, P. , Berhahl, R. and Gumport, P. (eds.). *American Higher Education in the 21st Century*. Baltimore: Johns Hopkins University.
- Gumport, P. J. (1993). Graduate education and organized research in the United State. Clark, B.(ed.) *The research foundations of graduate education: Germany, Britain, France, United States, Japan*. (pp. 225-60). Los Angeles: University of California Press.
- Gumport, P. J. (1992). Graduate Education: Comparative Perspectives. Clark, B and Neave, G. (eds.) *The Encyclopedia of Higher Education*. Pergamon Press, pp. 1117-1127.
- Institute of International Education. (2005). *Open Doors*. Sewickley. PA: Institute of International Education.
- Iwao, S. and Hagiwara, S. (1989). *Nihon de Manabu Ryugakusei (International Students in Japan)*. Tokyo: Keisou Shobou.
- Kitamura, K. (1987). *Daigaku Kyouiku no Kokusaika (Internationalization of College Education)*. Tokyo: Tamagawa University Press.
- MEXT (Ministry of Education, Culture, Sports, Sciences and Technology) (2003). *Ryugakusei no Ukeire no Gaiyo (Conditions of International Students)*. Tokyo: MEXT.
- Ministry of Education, Taiwan (2003). *General Condition of Graduate Schools (Vol.1, 2,3)*. Taipei: Ministry of Eduycation. (in Chinese).
- Nakayama, S. (1995). Kokusai tekini mita Nihon no Daigakuin (Japanese graduate schools in international perspective). Ichikawa, S. and Kitamura, K.(eds.). *Gendai no daigakuin kyoiku (Contemporary graduate education)*. Tokyo: Tamagawa University Press, pp. 98-119.

- Otsuka, Y. (1991). Chugokujin no Ryugaku Seisaku to Nicchu Kyouiku Kouryu (Studying Abroad Policy in China and Educational Exchange between Japan and China). Gondo, Y.(ed.). *Sekai no Ryugaku (Studying Abroad in the World)*. Tokyo: Toshindo, pp. 36-50.
- Sasaki, C. (1997). *Gakumon Ron (Academic Learning)*. Tokyo: University of Tokyo Press.
- Kariya, T. (1998). *Kawaru Nippon no Daigaku (Changing Japanese Universities)*. Tokyo: Tamagawa University Press.
- Umakoshi, T. (2002). Daigaku Kaikaku no Nikkan Hikaku (Comparative Study of University Reform between Japan and South Korea). *Kyouikugaku Nenpo*. Tokyo: Seori Shobo, pp. 49-69.
- Umakoshi, T. (1991). Kankokujin no Kaigai Ryugaku (Korean's Studying Abroad). Gondo, Y. (ed.). *Sekai no Ryugaku (Studying Abroad in the World)*. Tokyo: Toshindo, pp. 21-35.
- RIHE (Research Institute for Higher Education, Hiroshima University) (2006). *The Statistics of Japanese Higher Education (Third Edition)*. Higashi-hiroshima, Japan: Hiroshima University.
- University Council. (1998). *21 Seiki no Daigakuzou to Kongo no Kaikaku Housaku nitsuite (Universities in 21st century)*. Tokyo: University Council.
- University Council. (1996). *Daigakuin no Kyoiku Kenkyu no Situteki Kojo ni kanssite (Report regarding improvement of graduate education and research.)*. Tokyo: University Council.
- Ushioji, M. (1993). Graduate Education and Research Organization in Japan. B.R.Clark (ed.) *The Research Foundations of Graduate Education: Germany, Britain, France, United States, Japan*. Los Angeles: University of California Press, pp. 299-325.

* This study is a part of the project 'Academic Climate of Tohoku University' funded by the President of Tohoku University.

大学院教育の日米比較

— 留学生の視点から —

小 川 佳 万*

本論文は、日本もしくはアメリカの大学院に留学経験をもつ台湾・中国・韓国の工学系の大学教授陣に対して実施したインタビューの内容分析を通して日本の大学院教育の特質と問題点をアメリカのそれとの比較を通して明らかにすることを目的とした。調査の結果、両者はゼミ教育の日本に対して、コースワークのアメリカと特徴づけられることが明らかになった。

日本への留学経験のある教授陣は、当時の大学院で開講される授業科目によい印象をもっていない一方で、研究室のメンバー全員の参加が義務付けられたゼミには強烈な印象を現在でももっている。その教育内容は学生たちの実験結果の報告とそれに対する意見交換であり、またその分野の最先端の情報を得るためのジャーナル論文内容の報告にある。定期的に開かれるその時間は、学生たちに多大の負担と緊張感を強いるが、その一方でディスカッションを通して新しい事実から新しいアイデアを発展させたり、問題点を解決していくという充実感も同時に味あわせているようである。この教育システムをうまく機能させるためには、教授の威厳や学生同士のチェック体制が必要であり、そのため彼らは、教授は怖く遠い存在であると感じる傾向がある。ただし、そうした体制は、同時に学生に対して最後まで面倒をみることを意味し、より学生に接近しているとも言える。

他方、アメリカの大学院教育は、課程前半の基礎知識の習得を徹底的にトレーニングするコースワークにその特徴があった。このシステムは、成績評価を厳格にし、課程からの脱落という恐怖心をおおることによって効率的に機能していることがわかった。また学生と教授による研究集団は日本よりも小規模であるため教授へ親密感は育まれるが、博士論文と直結する個別の研究指導にそれほど時間を割いていないため、彼らの印象がコースワークほど残っていないことがわかった。したがってアメリカの大学院教育は、コースワークを徹底してプローチ方法を身につけさせ、早い時期から学生を自立させることを目的とする教育であると言える。この点で厳しさはアメリカの場合においてよりあてはまると考えられる。

興味深いことに、日本に留学経験のある教授陣は、日本のゼミ教育は少数の人数で構成される贅沢な制度であり、自分たちの教育活動にも取り入れたいと感じている。ただ、学力や関心が多様化する多くの学生を相手にする場合、ゼミ教育はふさわしくなく講義を中心に系統的なカリキュラムを提供する必要があるとも考えているのである。

*東北大学大学院教育学研究科助教授