韓国と日本における写真測量分野での人間対技術力,教育及び研究の実情

大嶋, 太市 / Oshima, Taichi

(出版者 / Publisher)
法政大学工学部
(雑誌名 / Journal or Publication Title)
法政大学工学部研究集報 / 法政大学工学部研究集報
(巻 / Volume)
27
(開始ページ / Start Page)
87
(終了ページ / End Page)
94
(発行年 / Year)
1991-02
(URL)
https://doi.org/10.15002/00003895

韓国と日本における写真測量分野での人間対技術力、教育及び研究の実情

大嶋太市*

Inventory of Manpower, Education and Research Facilities in photogrammetry of South Korea and Japan

Taichi OSHIMA*

1. Introduction

ISPRS Working Group VI-1 is the group of inventory of manpower and education facilities chaired by Prof. A. J. Brandenberger, Laval University in CANADA. The countries of the sub-working group region are South Korea, Hong Kong, Macao and Japan. The author is in charge of distributing the questionnaire sent from Prof. A. J. Brandenberger to the above mentioned national delegates to making the inventory of informaitions of number of engineers, technicians and auxiliary personnals and the other related informations such as education and research facilities. I've sent the questionnaire to the national delegates and contacted several times. But I did not receive the answers yet except South Korea and Japan. Therefore I here want to report about South Korea and Japan.

2. Report of South Korea

(1) Educational Institutes, Enrollment, Courses and Graduates

In South Korea, there are 22 universities and colleges in which photogrammetry including remote sensing is taught and the duration of study program is one or two years. The names of courses are photogrammetry in undergraduate and remote sensing in graduate course. They are sometimes included in surveying course. The types of Degree are BS, MS and PhD, not all but several universities have only BS degree. The average number of graduates per year (last 5 years) are from 20 to 200 depending upon universities. However the BS graduates are 2 and PhD is 1 or nothing.

* Prof. Dr. College of Engineering, Hosei University, Koganei, Tokyo 〒184

(2) Educational Institutions and Research & Development organizations and its Equipment

The nine universities and Institutions are specially concerned to education and research. They are mainly accomodated with the metric camera (Wild P-31 etc.) and simple stereo-plotters. But the National Geographical Institute has Wild A-10, A-7 and B-8, Rectifier and Comparator. The five universities have the equipments of remote sensing such as M-301 Image Analysis system, Multi-spectral viewer and other Image Analysis System.

(3) Educational Institutes and Staff

As I've mentioned in (1), number of Institutions teaching photogrammetry including remote sensing is 22 and as the staff personnals are generally one professor and one teaching staff in one university. But the researchers are from one to six, the technical and auxiliary personnels are 1 or 2, in special case are 2 to 3, but 18 + 2 in the National Geographical Institute.

3. Report of Japan

(1) Educational Institutions, Enrollments, Courses and graduates

Educational institutions for surveying are divided into the following four groups.

A. Graduate school (MS : 2 years and PhD : 3 years)

B. University (4 years), Junior College (2 years) and Technical College (5 years) ----------Engineering Course

C. High school (3 years)----------Technician Course

D. Vocational Training School (1 or 2 years)-----Technician Course

A. University and College

There are no independent departments or courses specialized in surveying and mapping in Group A and B. The subjects of surveying are included in curricula of courses such as civil engineering, agricultural engineering, forestry engineering, geophysics, geography and so on. Graduates of the 301 courses in universities (of which 184 courses in national, 14 in public and 103 in private universities) and 42 courses in junior colleges and technical colleges are qualified for the official license of assistant surveyor by the survey law in Japan.

B. High School

In technical and agricultural high schools numbering about 500 in the whole country, subjects of basic survey technique are included in their curricula. In general, survey subjects of 3-6 units are compulsory (1 unit means 1750 minutes). Graduates must pass the National Survey Examination to get the licence of assitant surveyor.

C. Vocational Training School

There are three kinds of the training courses ;

(a) Ordinary courses in the Survey Department of the Construction College, Ministry of Construction.
(b) Hydrographic couses of the Maritime Safety College, Maritime safety Agency, Transportation Ministry.
(c) Private vocational survey schools (1-2 years)

Those who graduated from the above training schools finishing more than one year training in surveying are qualified for the licence of assistant surveyor by the law. Students of the above (a) and (b) are only goverment employees. Here are 13 private vocational survey schools which provide a large number of young survey technicians for private enterprises. They have 3 courses in 13 schools of which 15 courses are 1 year course and the remaining 19 are 2 year courses. In table 1, the compulsory subjects and number of hours of lecture and field practice are shown respectively. In addition to the compulsory subjects, curricula of more than 1400 hours include related subjects such as geometrical optics, electronic technology, geography, geology, geophysics, hydrogy, civil engineering etc.

Number of graduates of the 13 schools in recent three years are shown in Table 2. 3000-3500 students finished the courses a year during 1974-1982. Around 80 % of the graduates found work with survey, consultants or construction firms and the remainder with goverment bodies and others as shown in Table 3.

Table 1 Compulsory subjects and hours

Course	Subjects	lecture	field practice
fundamental	Law and Regulation	20 hr	
	Introduction ofSurveying	40	
	Mathematics	120	
	Sum.	180	
Geodetic survey	Triangulation,traverse	120	120 hr
	Leveling	40	40
	Sum.	160	160
Topographic survey	Plane table survey	50	70
	Photogrammetry	80	80
	Sum.	130	150
Mapping	Map compilation	20	10
	Map projection	20	10
	Drafting	20	10
	Sum.	60	30
Applied survey	Road,River survey	40	40
Total		570	380

Table 2 Total Number of Graduate

year	new sudent	graduate
1982	3549	3102
1983	3400	2765
1984	2756	----

Table 3 Rate of Employment by sector

year	number of graduate	sector (%)					
		government	survey firm	consultant	construction firm	others	sum.
1982	3102	4.2	50.4	8.4	21.2	15.9	100
1983	2765	3.7	58.6		23.0	14.7	100

In university and graduate school, photogrammetry and remote sensing are taught partly, but some are very active. It depends upon the teacher principle. Photogrammetry and remote sensing are sometimes included in surveying couse. The average number of graduates per year in one university are 20 to 100, but graduate course is very few, 1 to 5. The Chiba University set up the courses of remote sensing which is only one exclusive course in national university of Japan.

Now there are 2 or 3 universities which are executing the courses of remote sensing under the name of information technological engineering (not exclusive course). But Tokai University (Private) has organized the full courses of remote sensing in optical engineering department and 4 credits with 2 hours／week are designated for the students and already 110 students were graduated in the past 5 years.

Iwate University, Tokyo university, Chiba University, Tokyo University of Science, kanazawa university of Technology and several universities have organized the course of remote sensing and given the lectures. Especially Tokyo University is regularly doing the lecture of remote sensing in English for the graduate students (half is Asian students out of 40 students) under the umbrella of cibil engineering course.

(2) Educational Institutes and Research & Development Organizations and its Equipment

About 25 universities and Institutes are actively doing the education and research & development, among them Tokyo University, Ochanomizu University, Tsukuba University, Chiba University, Okayama University, Iwate University of National University and Tokai University, Kanazawa University of Technology, Nihon University, Hiroshima University of Technology, Hosei University and so on, are actively doing research & development. The several universities have organized the center of remote sensing or informations and they are doing the exclusive research works and research works in group connecting to the central and local organizations domestically or internationally.

For the equipment, they are well accomodated with their own data processing

equipments such as HITAC M-200H and NEC, MS-140 in Tokai University, FACOM M-70, Data Recorder and receiving antenna from TIROS-N, meteological satellite in Tokyo University (Prof. Takagi's Lab.), TIAS 1060, TIAS 2000 ground receiving station in Tokai University, FACOM M170F, 2 NEXUS Graphics, 3 Photoron Digitizer, Hard Copy, X, Y Plotter in Tokyo University (Prof. Murai's Lab.), FIVIS Image Processing System (FACOM) Color Graphics, Optical Disk (Sony Co.) in Tsukuba University and so on.

(3) Staffs for teaching and researching

In Japan, the staffs for teaching and researching are not enough except several universities because there are no independent departments or courses specialized surveying, photgrammetry and remote sensing. However several universities are actively doing the research works with the enough staffs not only full time members but also members from companies and other Institutes, especially research members from Asian Countries are taking part actively for education and training. These tendency has incresed nowadays tremendously.

(4) Student vs. teacher number

The follwing shows the number of student per one teacher.

Table 4 Student no. vs one Teacheer

	Student No./one teacher	Student No./one group
University	35	6.6
Junior College	30	7.2
Tec.College	21	4.8
Tec.High School	13	5.6
Agr.High School	23	4.8

* One group means student no. for one group for practice.

This number includes only professor, ass. prof. and full time lecturer and does not include associates and assistants. The mean responsible share ratio for surveying teaching is 6 : 2 : 2 = (full time surveying teacher) : (full time teacher) : (part time teacher) in university, 8 : 2 : 0 in junior college and in case of technical college is 7 : 3 : 4.

4. Conclusion

I've discussed here about the present status of education in South Korea and Japan. I can say, at this stage there are a big difference in educational conditions among universities such as research facilities, organizations, staff and others. Some are very active with good facilities and enough staffs but some are not active with poor facilities and few staff. We need to organize the integrated course in photogrammetry and remote sensing together with 2 and 3 universities and to promote the cooperation in education and research works between universities and surveying companies, and also cooperation in education and training through the society, especially for the develeping countries. Prof. Ghosh in LAVAL UNIVERITY has organized the Asian Conference on education in Kuala lumpur, 1983, in Nigeria, 1982 and in American Region.

As Prof. Ghosh has reiterated, there are several high priority problems that would require our attention :

(1) A need for an international assesment of manpower in the fields of photogrammetry and remote sensing education and to have the oppotunities to exchange and how to solve these barriers encounting in each university and country.
(2) A need for developing unified curricula in each regional area.
(3) A need for collaborative researches and cooperation in sharing educational materials (hard－ and software) and teaching personnel.

Acknowledgement

I would like to thank Prof. S. Ghosh, Laval University and Prof. Shizuo Shimada, Saitama University for helping and giving the valuable suggestions.

Reference

1. International Archives of Photogrammery and Remote Sensing Vol. XXV, Part A6, Comm. VI, 1984 ISPRS

2. Proceedings of the Symposium on Photogrammetry and Remote Sensing in Economic Development
Sept. 1986, ISPRS Comm. VI, Nigeria
3. Educaiton in Japan
Ministry of Educaiton, 1982
4. Japan's Private Colleges and Universities
The Japan association of Private College and Universities, 1987