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 by Ferenc Dobo

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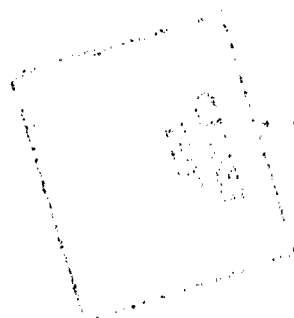
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POLYTECHNICAL HIGHER EDUCATION IN KOREA

Following is a translation of an article by Ferenc Dobo, assistant professor at the Technical University of Construction Industry and Communication, in Felsőoktatási Szemle (Review of Higher Education) Budapest, 1960, vol. 9, No. 5, May, pp 345-348

Not so long ago I was a guest of the "Ministry of Education and Arts" in Korea. In my program, visits at the institutions of higher education were many, although I could not endeavor a completeness due to the shortness of time. Firstly, I wished to become acquainted with the technical universities, but ultimately I was able to glance into almost every branch of education.

In the past decades, during Japanese rule according to the colonial status of Korea, there was no real higher education. In Seoul, there was an incomplete university where a few sons of the Korean bourgeois who were Japanophil were allowed to study. The Korean youngsters could obtain a full university education in Japan only. After the liberation, the education began to have a rapid development in all fields. In the development, a great interruption came with the last war. Terrible losses occurred in human life and in material, and thus also in the schools. After the armistice, preceding the residential houses and many public buildings, first the educational institutions were rebuilt. Everything had to be created from nothing. The building of schools has also started in a social way, old and young took part in it. In the area of the Korean Democratic Republic where during Japanese occupation not a single institution of higher education existed, now 3 polytechnical, 3 medical, 2 agricultural, 1 philosophical university as well as several teacher's training colleges are operating. The number of students is 33,000 (1958).

At present the organization of education is the following: - there are 4-year public schools, 3-year junior grade and 3-year higher grade middle schools (high schools). These can be attended not only in a series one after the other, but also separately. It is frequent that the public school and the junior middle school are connected, and the senior middle school is separate. After finishing 10 classes (grades), the students arrive at the university being about 18 years of age.

The equipment of the universities is still deficient, and many tools of demonstration must be improvised by the students themselves.

The bulk of the students is of worker-peasant origin, and with a few exceptions all are on scholarship. The sum of scholarship is 400 to 500 von, the senior students will get more. The monthly scholarship of the dependents of the State (war orphans) is 1500 von. In addition to the

scholarship, for social allotment they receive clothes, notebooks from the university. During their student years they are not allowed to marry. The students are in much closer connection with the university than in Hungary:- 90 to 95% of them is living in students' hostel, and all of them board at the "mensa" (academic messhall). Their students' hostel is a much more restricted organization than our student's homes:- their management is not autonomic, but it is directed by the organs of the university.

In Korea I have visited the following more important institutions of higher education:

The UNIVERSITY OF AGRARIAN SCIENCES was built, or rather rebuilt, in a picturesque environment near the city of Vonsan, a town which was completely annihilated during the war. The main building was already standing before the war, but it was destroyed by bombing. Here, education is conducted at the following branches:

agrarian sciences; cultivation of silkworm; irrigation and machine utilization; organization of agricultural plants; organization of forestry plants; forestry; fishery. (For the understanding of the fishery branch one must know that more than one half of the borders of Korea is formed by the sea, and that the fish is playing a very important role in the people's nutrition).

In the agricultural sciences, the term of instruction is 4-5 years, depending upon the branch of study. At the University, at 38 chairs, 170 teachers are providing the instruction. Among them, there are 5 academicians, and 15 others who have a scientific degree. The number of students is 2500 at the daylight shift, among them 350 are women. The University has a 20,000-volume library one third of which is technical literature in foreign languages, mostly Soviet Russian. The University owns a 100 ha model farm, 10 ha orchard, 5 ha silkworm cultivating area, and 150 ha forest. The farm is not only for the practice of the students, but it also provides the food requirements of the "mensa". In the city of Kange, there is a separate Zootechnical and Veterinary Medical School with 900 students. This institution was segregated from the Vonsan University in 1955. Since then, their possible recombination has been also considered.

The INDUSTRIAL UNIVERSITY at Hamhun, in the vicinity of a huge chemical combine, is mainly educating chemical engineers. Even the machine engineering branch is devoted to chemical machines.

The branches of the University are: anorganic chemistry; silicate industry; food industry; organic chemistry; mechanical engineering. Here, 22 chairs provide the instruction, and 3 workshops (cabinets) and 42 laboratories help the work of the students. The period of daily instruction is 6 hours. This University was founded still before the war. Bombings completely destroyed the buildings. During the war, it evacuated to a smaller village and it worked in a tunnel system on account of the bombing American airplanes. The bulk of its teaching staff and students had also performed military service in the front line. The institution

moved to its present location in 1955. Since then the construction is continuous, yet the buildings are still hardly able to accommodate the ca. 1600 daytime students.

The UNIVERSITY OF CONSTRUCTION INDUSTRY in Phenjan segregated from the Polytechnical University in 1955. Its 1750 students study on 9 branches. The student strength and sphere of work of the individual branches is as follows:

Construction industry branch: 700 students; their chief sphere is the execution of architectural building and architectural statics.

Construction branch: 300 students. Here, they are mainly engaged in the planning of overground buildings (architect).

Hydro-power construction branch: 230 students. Their main working fields are: supply of drinking water; sewage; river regulation; utilization of water power; planning of marine harbors and their execution.

Transportation construction branch: 220 students. Their working field is the planning and execution of highway, railroad, tunnel bridge construction. In the 10th semester they separate according to the planned diploma.

Construction geological branch: 50 students. Their task is: planning and execution of foundations (substructures).

Geodetic and cartographic branch: 100 students. They are engaged in surveying and staking out engineering jobs, and in map making. The branch is separated in the 5th semester into two: surveyer (staker) and mapper.

Town construction branch: 120 students. Their more important fields are: city planning, city regulation, operation of city plants.

Economy branch of construction industry: 30 students. They study the economic planning of constructions (engineer-economist).

The curriculum extends to 10 semesters in the above mentioned branches.

Technical teacher's training branch. It was formed during my study travel. The number of its students was still unknown. The students of this branch, after graduation from the Construction technological School, will finish the Higher Technical School of Construction Industry, then they have one year at this branch. After finishing their studies, they are appointed teachers in the Construction Technological School.

The University has 113 teachers. At present, it has two buildings available for instruction. One has 3 floors, and was built in 1955; it has mainly chairs and workshops (training rooms); the other has 4 floors, and was built in 1958, it has rooms for student circles, auditories, and a few chairs. The latter building is being further enlarged. Immediately at the buildings of instruction there are two large student's hostels and the "mensa".

For illustration, I show the teacher's plan of the transportation construction branch (See attached Table).

TABLE

	lectures	laboratory	practice (exercise)	1	2	3	4	5	6	7	8	9	10
Bases of Marxism-Leninism	96	-	36	4	5	-	-	-	-	-	-	-	-
History of Korean Workers' Party	100	-	32	-	-	4	5	-	-	-	-	-	-
Political economy	100	-	32	-	-	-	-	8	6	-	-	-	-
Defense of country	40	-	-	-	-	-	-	-	-	5	-	-	-
Russian language	-	-	330	6	6	6	4	-	-	-	-	-	-
Mathematics	200	-	160	8	8	4	4	-	-	-	-	-	-
Physical education	-	-	94	2	2	2	-	-	-	-	-	-	-
Chemistry	60	30	-	4	2	-	-	-	-	-	-	-	-
Drawing and map reading	60	-	140	8	3	2	-	-	-	-	-	-	-
Geodetics	56	-	34	4	2	-	-	-	-	-	-	-	-
Physics	120	40	20	-	4	4	4	-	-	-	-	-	-
Mechanics	70	-	20	-	4	2	-	-	-	-	-	-	-
Statics	120	20	50	-	-	4	6	3	-	-	-	-	-
Building material	70	50	-	-	-	4	4	-	-	-	-	-	-
Engineering geology	40	20	-	-	-	4	-	-	-	-	-	-	-
Electrotechnology	50	10	-	-	-	4	-	-	-	-	-	-	-
Construction machines	84	-	16	-	-	-	5	2	-	-	-	-	-
Hydrology & Hydraulics	70	10	20	-	-	-	-	7	-	-	-	-	-
Substructure	60	10	10	-	-	-	-	4	6	-	-	-	-
Statics of structures	60	-	50	-	-	-	-	4	6	8	-	-	-
Execution of constructions	110	-	30	-	-	-	-	8	6	-	-	-	-
Engineering structures	140	6	14	-	-	-	-	10	10	4	-	-	-
Road building	140	-	30	-	-	-	-	-	7	10	4	4	-
Tunnel construction	170	-	30	-	-	-	-	-	6	6	8	4	-
Railroad construction	180	-	-	-	-	-	-	-	-	-	8	8	6
Bridge construction	190	-	30	-	-	-	-	-	-	-	8	8	10
Economy of construction	50	-	10	-	-	-	-	-	-	-	6	-	-
Organization of construction	40	-	20	-	-	-	-	-	-	-	-	6	-
Accident prevention	40	-	-	-	-	-	-	-	-	-	-	4	-
Number of examination	-	-	-	3	3	3	4	-	4	-	3	-	3
Number of reports	-	-	-	3	5	6	3	4	2	2	2	4	2

PARTS OF THE SUBJECT OF "ENGINEERING STRUCTURES"

Wooden structures	26	-	4	-	-	-	-	-	6	-	-	-	-
Stone and reinforced concrete structures	68	6	6	-	-	-	-	-	4	7	-	-	-
Steel structures	46	-	4	-	-	-	-	-	3	4	-	-	-

At the Construction Industrial University, the general characteristics of the curricula of the different branches are these:

a) The complete period of instruction is 4000 hours as the average, that is, it shows a shortage of about 1000 hours in comparison with our similar curricula. This shortage is only illusory, since there (in Korea) the 5-year period of instruction is better filled up than in Hungary. The average is 36 hours per week, and out of the 4000 hours, about 2400 are for lectures, the rest is for seminars and practice.

b) In contrast with the shorter period of instruction, the long productive practice is striking; its average length is 50 weeks.

c) During the complete period of instruction, 31 subjects are delivered as an average; 24 examinations, 34 reports, 2-3 rigorous tests, and finally a defense of the diploma are prescribed.

Unfortunately, the curriculum is rather frequently changed even in Korea since even there the higher education passed through the overzealous specialization, then through the contraction whose ways are also well known in Hungary. The forms of instruction are these: lecture, laboratory, seminar or practice, productive practice.

The lecture thoroughly informs about the theoretical subject, and it can be easily stenographed. The published notes will again inform only about the theory and about the most important practical solutions.

Measuring exercises in the laboratory are for the subjects of chemistry, building materials and substructure.

At the seminar, the students practice the learned material with arithmetical examples, and the measuring with instruments in case of instrumental topics.

The productive exercise (practice) is an organic portion of the education. Here, the students become acquainted with the practical application of the theories described at the lectures, and with the usual structural solutions. For the promotion of this, the instructors will also travel to the site of exercise, and twice a week they read lectures. This factor explains why it is possible to teach an identical instruction material during a period of instruction which is 1000 hours shorter than ours. Productive exercise according to the present curriculum is three times, in the 6th, the 8th and the 10th semesters, with a duration of 14-14-resp. 22 weeks. During this period the students participate in the production. At the final productive practice, they are already working at their final (future) working place, and they will finish their plan of diploma at that place.

The forms of recitation of the instructive material are:

a) verbal, or written hearing (examination) at the seminar in connection with arithmetical examples;

b) account, in case of subjects extending for several semesters, at the end of the semester when the subject is further continued, and the plan of instruction does not prescribe an examination;

c) examination, usually as the end of individual subjects, but in case of subjects running through several semesters it can be also prescribed in the meantime;

d) state examination. This is conducted before a State Examining Committee, and it includes several related subjects;

e) defense of diploma plan. Before the examination or account, the assigned draft or other intra-semester assignments have to be submitted. At present, one draft is required per semester in case of subjects of planning. This is usually a larger assignment, with measurements, and with several sections.

As a conclusion let me say just this: In Korea the sympathy and interest is great towards Hungary. The students have inquired with special emphasis about the social work of their Hungarian colleagues, about the connection of the university students and the production. Their questions showed that in their country the relation of education and production is wholly different, and modern. About this relationship I should like to give an account next time.

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