

Manuscript

SUMMARY

Author is one of the members of the Programme Council of the Hungarian National Medium-Term Research Plan and directs the project on the education/training process in higher education. One of the main objectives of the project is to find the way of concerting the demands of industry with the education/training process. There are problems which should be discussed again and again: e.g. whether fresh-graduates should be ready-made specialists or "tenderfoots" with prospects, what the correlation is between the scholastic and the actual specialization etc. In Hungary strong effort can be detected as far as the reform of higher education is concerned. In such a case even the old questions should be revised: maybe the evident answers given to those before wouldn't be confirmed today. A general survey of the whole problem of education/training process will be made in the period of 1986-1989.

The Hungarian government has recently sanctioned a National Plan of Research. The Plan includes a programme with the title: "Researches into the development of higher education". One of the main point of this programme concerns education/training process.

There are at least three relevant problems that should be solved in the course of research:

There are at least three relevant problems that should be solved in the course of research:

i. What are the social forces and relations that influence the content, structure and mechanisms of the training process in higher education?

ii. What is the impact of the education/training process on the evolution of society and on the development of the individual?

iii. What content, mechanisms and structure are necessary in the training process so that the demands of our social evolution can be met adequately?

The project should cover the following eight main fields:

1. Planning the subject-matter - planning the profession.

2. Arranging the subject-matter vertically - planning the training process.

3. Arranging the subject-matter horizontally - forming the subjects.

4. Arranging the subject-matter in matrix - constructing the curriculum.

5. Timing the presentation of the subject-matter - composing the time-table.

6. The elements of training process.

7. Human relations in the training process.

8. Development methods of the training process.

The first of them is connected with the themes of this conference. It would be worth dealing with series of the questions which should be answered in the course of research:

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• What overlaps and differences can be detected between the professional knowledge of an experienced engineer working with years in the industry and the subject-matter of instruction being in force at the university?

• What should the content and composition of subject-matter taught at the university be compared with the content and composition of the knowledge of an experienced engineer?

• What is the optimum proportion of book-learning and skill-developing in the training process?

⊗ What correlation is there between the departmentalization, sectioning, e.g. the scholastic specialization realised at the university by choosing subjects or modules or branch, and the actual specialization pursued later on in the industry? Maybe just a slight one?

⊗ What type of scholastic specialization is needed in education: specialization in accordance with the object of engineering activity (e.g. automobile, machine-tool, building machine etc. in mechanical engineering or telecommunication, computer, automatic control, power station etc. in electrical engineering) or specialization in accordance with the kind of engineering activity (e.g. design, research, production, organization, commerce, teaching etc.), or both?

⊗ Can we (or should we) consider scholastic specialization of this or that type a goal or just a didactical means, or both?

⊗ How close a connection is there between the scholastic specialization of this or that type and the marks of personality (individual abilities, dispositions, motivations, interest, inclination etc.)?

⊗ What is the connection between the effectiveness of skill-developing and the type, the measure and the beginning of scholastic specialization?

⊗ What is a good sequence: early scholastic (not actual!) specialization by the object (if it is needed) and postponed one by the kind of activity or in a reverse order? Is there any use of postponing scholastic specialization by the object?

⊗ May scholastic specialization by the object remain just a didactical means giving examples for skill-developing and for application of theory or may it influence one's vocational career in the industry?

⊗ Do the different fields of engineering (mechanical, civil, electrical etc.) have same need for scholastic specialization?

• Does an early scholastic specialization by the object decrease the convertibility of theoretical knowledge?

• Can specialist education be at the same time a generalist education?

• What influence can the type and measure of scholastic specialization exert on the efficiency of training process?

• Is the university or the student who is assume responsibility for the selection of the subjects, that is for scholastic specialization?

• What are the advantages and disadvantages of the curriculum defined by the university and not by the student?

• What is the role of the optionals and the modules?

The other seven fields of the programme will only be introduced by one or two questions each.

Field 2. Arranging the subject-matter vertically - planning the training process: In what sequence and in what proportion must the theoretical and the practical, the abstract and the concrete, the general and the special elements of the subject-matter be arranged? In deductive, conductive or inductive curriculum structure? In what composition must the "difficult" and the "easy" be vertically arranged? Which is the best: the degressive, constant or progressive requirement system?

Field 3. Arranging the subject-matter horizontally - forming the subjects: What are the advantages of the classical subjects reflecting mechanically the classification of the sciences as compared to the integrated subjects created with a view to didactics?

Field 4. Arranging the subject-matter in matrix - constructing the curriculum: Is the curriculum a set of subjects, of modules or of subject-packets?

Field 5. Timing the presentation of subject-matter - composing the time-table: How many subjects must be simultaneous taught and for how long? Is there any sense to combine normal and intensive courses during one term?

Field 6. The elements of training process: How can the lecture, the seminar, the text-book, the examination, the laboratory, the research etc. be most effective in their mutual action?

Field 7. Human relations in the training process: What are the active and passive roles of the student in the planning of his education and in the training process itself?

Field 8. Development methods of the training process: Is the development of the training process a business of the faculty, of the government, of the student or of the whole society?

No doubt, these questions have already been answered several times and in several ways, and most of the questions have several good answers, though some of them are contradictory.

The training process must be treated as a system, whose elements can be different but must always be in accordance with each other. The training process changes slowly and the historical background mustn't be disregarded, either.

In Hungary there seems to be a strong effort to reform the training process. Nobody wants to re-find known things. The first step, according to the program, is to collect and consider all the known and hidden issues and reports of international and national researches, the experiments and hypotheses, the opinions and expertises in the field of training process. About ten complex studies of 200-300 pages each are expected to be prepared by the teams consisting of practising faculty members of different colleges and universities. The authors will be selected by competition this year. The studies must be elaborated in ten months. The next year's lesson will be the synthesis of the studies and the detailing of the outline of further research.