EXPERIENCES OF TEACHING LITERARY SEARCH AT THE FACULTY OF MECHANICAL ENGINEERING

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In our age technics, scientific knowledge and practical experience are developing with an extraordinary speed. As a consequence, knowledge material is also continually growing. According to the data of KENT [1] about 2000 books, journals, reports and other documents are published in each minute of the day and the approximate volume of them is one milliard and fifty million pages.

It is, of course, not indifferent whether the existent scientific and professional informations reach the specialists (experts) in need of them. In this relation we can quote the statement of KENT [2] again saying that in the United States — on account of the difficulty to acquire scientific informations — 45 cents of each dollar become wasted.

In the forthcoming let us survey the reasons why a specialist must be well informed.

1. *Gathering professional literary information is an element of engineering work.* In the course of the engineer's creative activity, after the two first work phases, i.e. recognition of the problems and their incorporation into the system of the learned theoretical material, as a third follows the summing up of the existing results. It is only after this that the tasks of working out the principal solution of the problem, of the necessary calculations, planning and laboratory measuring, etc. can come into consideration.

2. *Characteristic features in Hungary.* In the preceding we have dealt with the example from USA as to the efficiency of the acquired scientific information. The possibilities and the economic resources of small countries are limited, therefore to be well informed in the professional literature is an imperative need.

3. *Collective research methods of our age.* Earlier the personal character of the research work was fairly predominant. The rate of development, however, was by far not similar to that of the present. Let us see an example of our day. If the task is to develop a program-controlled milling machine, then, in corre-

spondence with the part problems, experts in machine design, tool design, electrical engineering, form design and technology will co-operate according to a strictly co-ordinated technical, organizational and term program. The research and design activity thus concentrated demands an exact and up-to-date knowledge of the respective special literature.

4. *Quick obsolescence of knowledge.* One or two generations ago the knowledge acquired at the university had an adequate stability for engineers. But the technical revolution of our days results in the quick obsolescence of the knowledge. Therefore the engineers working in education, research and practice thrive to constant refreshment and modernization of their knowledge.

5. *Quantitative increase of informations.* Regarding the quantitative increase of informations, an utmost progressive development in each special literature is experienced peculiar to each field. This emerges as a practical problem both in the daily work of the libraries and in research.

6. *Scattering of special literature.* The quantitative increase of the special literature has led to a new phenomenon, namely to the scattering of special literature. S. C. BRADFORD [3], the well-known specialist in documentation states as a result of his scientific investigation that about the half of the publications relating to the individual special fields is published in journals which are not belonging to the special field in question.

But let us see also the results of investigation in our country. A 10 years' collection strongly selected in the field of material testing in mechanical engineering contains 684 papers. These papers were published in altogether 211 journals among which there was only one publishing 81 articles; thus it can be considered as the basic journal of the subject matter. It should be noted that the 684 articles were published in 13 different languages [4].

7. *The rapid development of technics has also transformed the sources of information.* Beside the traditional matter as books, journals, standards, patents, the so-called non-traditional documents come forward, such as research reports, theses, films, magnetic tapes, etc. These new kinds of documents are stored according to a definite system and are available for the researchers, specialists and others interested.

It is obvious that orientation in the special literature, knowledge of the modern library technics and documentation have become a necessity for the specialists.

The most important requirement of the university education is that the specialists graduating from the university — in the possession of the acquired fundamental principles and special knowledge — should be able to solve the emerging problems by means of a systematical use of the special literature.

In the service of this objective our Library began to prepare and organize the education in literary search several years ago. Our first task was to write a manual containing the methods of literary search work and the necessary data.

As to the data we thought, in the first place, of the most important manuals, lexicons, abstracting and special journals of mechanical engineering and its adjoining sciences. The material is ready and published [5].

In the meantime we elaborated the programme and methods of education. We planned the instruction altogether in 10 lessons from which four are for lectures and twice three for practical exercises in groups. The programme (syllabus) of the instruction is the following:

1. Lectures:

1. *Role of the special literature in the university studies, research and production*
   Necessity of being informed in the special literature on account of
   a) collective research methods developed in our age,
   b) quick obsolescence of knowledge,
   c) quantitative increase of knowledge,
   d) scattering of special literature.
   Tendencies of modern information:
   a) in libraries,
   b) in institutions and organizations of information.
   Circumscriptions of collection interest and library cooperation.

2. *Traditional types of publications and their use*
   a) Books
   - works giving comprehensive survey and fundamental concepts: university text-books and manuals ÷
   - works of several volumes, series
   - monographs, studies
   - encyclopedias, lexicons
   - other handbooks
   - dictionaries
   - scientific and other directories
   - collections of data and materials
   - atlases

   b) Periodical publications
   - special journals, their significance and role
   - official journals, gazettes
   - publications of scientific societies (associations), research institutes, universities, e.g.:
   - yearbooks (annuals)
   - administrative publications
   - reports
   - time-tables
   - programmes
   - certain documents of congresses, conferences, etc.

c) *Other types of publications*
- lecture notes
- theses (dissertations) and published lists
- research reports
- standards, collections of standards, lists of standards
- patents
- business publications, in the first place booklets

3. *Use of libraries. Bibliographies. Documentary services*

a) Using the holdings of libraries and institutes of information by the help of catalogues
- Card catalogue and catalogue in book form
- Data on the catalogue card: author, title, imprint, etc.
- Authors' catalogue. Fundamental principles of arranging in alphabetical order
- Classified catalogue (systematic UDC and alphabetical subject catalogue)
- Periodical catalogues: alphabetical, classified catalogues
- Catalogue of articles (catalogues made by punch cards and computer)
- Central catalogue

b) Bibliographies

Concept, role, significance of bibliography

Types: general
national (Hungarian National Bibliography)
special
recommendatory
current
retrospective
bibliographies of periodicals, repertories (of articles)
bibliographies of bibliographies
concealed bibliographies

View-points of searching in bibliographies.

c) Documentary services
- abstracting journals, abstracts, repertories
- card services
- quick informations
- lists of translations
- digests of technical and economic literature on specific subjects
- service by card survey
- subject surveying service
- service of reproduction.

4. *Literary search, gathering and processing of material*

a) Ethical questions in relation with intellectual creations: industrial protection — protection of copyright.

b) Gathering material to a given question, subject. Drafting of research plan.

c) Technique of intellectual work. Reading, making notes, arrangement of notes, their storage. Systematization of the material. Final construction of the paper. Wording, style, orthography.

d) Preparation of manuscript.
Material, form of the manuscript. Typing. Requirements for the manuscript. Title-page. Verso of the title-page. Table of contents, indices of names and subjects.
Subscriptions of figures. Tables.
Quotations. Foot-notes, references. Formal rules of bibliographical description. Preparation to printing. Instructions relating to setting. Marks of correction. Points of view of style and orthography. Printer's proof.

II. *Exercises.* The exercises are practices in relation with the thesis of the diploma work of the students.

1—2—3. lessons

1. *Determination of classified number and practice in catalogue use*

a) Exact description of three well-known university textbooks.

b) Finding the books in the classified catalogue.

2. *Use of the catalogue of journal articles*

a) Looking up three articles on a given subject-matter.

b) Finding classified number, putting down data of catalogue cards of journal articles.

3. *Use of Műszaki Lapszemle* (Technical Abstracting Journal)

a) Ordering the translation of a foreign article on a given subject.

4—5—6. lessons

1. *Use of abstracting journals*

a) Introducing the manual Gépészeti Irodalomkutatás (Literary Search in Mechanical Engineering).

b) Finding the subject heading (English—German—Russian) of the theme.

c) Putting down the necessary reference data from the corresponding abstracting journal.

2. *Use of other documents*
   a) Use of standards.
   b) Finding dissertations to a given thesis.
   c) Use of the serial catalogue of the Mérnöki Továbbképző Intézet (Institute for Postgraduate Engineering Education).
   d) Finding instructional films to a given thesis.
   e) Services of reproduction.
3. *Consultation* (in relation with the literature of the diploma work).

We held a course of literary search in mechanical engineering for the first time in the academic year 1967/1968 for fifth year students facultatively, in the first period of the semestre of making their diploma work.

At the exercises our aim was that the students — beside becoming acquainted with the sources and methods — should gather literary data useful for the theses of their own diploma project. In this way we endeavoured to concentrate the attention of the students to their task in a maximum degree.

Part of the participants was asked for opinion by questionnaires. (The 36 persons completing the questionnaires are about 10 per cent of the course.) According to the investigation every one of the students estimated the introduction of the instruction at hand as useful; but 31 of them would think more expedient to deliver it in the third year rather than in the fifth year. Nearly all the students expressed the opinion that the duration of the practical instruction was not sufficient. With the exception of two students, they found the manual and the methods satisfactory, or good. The practical instruction was given by Sándor BISZTRAY, Univ. Assistant, and József CSÁT, scientific collaborator of the Central Library.

With the introduction of education of special literature search our Library contributes significantly to the improvement of the independent work of the engineers graduating from our University and — as a parergon — we have worked out good methods for use in the reference work as well and, at the same time, we have published adequate manuals.

Summary

In the academic year 1967/1968 the Central Library of the Technical University of Budapest introduced the instruction of literary search in the field of mechanical engineering in altogether 10 lessons. The 4-hour-lecture — beside presenting the library processing of books, periodicals and other types of publication — dealt with the bibliographies and documentational services. During the short time at hand we dealt with the problems of the technique of intellectual work, reading, making notes, systematization as well. During the 6-hour practical instruction the students became acquainted with the use of the different catalogues, abstracting journals, services of reproduction. The students stood for the usefulness of the instruction but expressed their view that literary search should be instructed in the third year with more time for practice.

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