

Wojciech Bielski

TEACHING ENGLISH FOR SCIENCE AND TECHNOLOGY

I. Language Registers

Language operates on different registers. The term itself belongs to the terminology of "institutional linguistics" which deals with the relation between a language and the people who use it. Within a language community, which is a group of people who regard themselves as using the same language, there are two main varieties of language: dialects and registers. A dialect is a variety of a language distinguished according to the user and in most cases it will depend on the region the member of a language community comes from. A register is a variety of a language distinguished according to its use<sup>1</sup>.

Registers are important factors of the functioning and effectiveness of a language. Language is used in different situations and according to them different registers are adopted. Halliday claims that while an individual tends to use one dialect only, he would use as many registers as there are situations demanding them<sup>2</sup>. It is the requirement of language effectiveness that makes us use the suitable register in each situation.

---

<sup>1</sup> M. A. K. Halliday, A. Mc Intosh, P. Stevens, The Linguistic Sciences and Language Teaching, London 1965.

<sup>2</sup> Ibidem.

## II. Teaching Reading EST

What are the consequences of the existence of registers in a language? We assume that knowledge about registers and their specific, restricted functions can help us to understand and organize the teaching process in foreign language teaching. Linguists generally agree that even native speakers vary greatly in the number and variety of fields of discourse they have mastered; Therefore we should recognize the value of such a 'restricted' or 'specialized' knowledge of English<sup>3</sup>.

This means that in cases where the science students are overworked and fully engaged in their original subject matter we should set a realistic goal for the teaching process i.e. mastering the ability to read English material concerned with the subject. Minimal goal as it may be, it seems better than setting up too many and too vast goals and reaching none. In most cases a science student is confronted with a written text<sup>4</sup>. This requires the appropriate choice of teaching techniques such as intensive reading, comprehension practice and, eventually, translation practice which seems to be winning back the favours of foreign language teachers.

Another issue is the kind of scientific English the teacher is to use for his purposes. Most authors agree that the purpose of a course in EST is to teach the basic language of scientific English. This basic language is made up of sentence patterns, structural words and non-structural vocabulary which are common to all scientific disciplines and form the essential framework upon which the special vocabulary of each discipline is superimposed<sup>5</sup>. The teacher is to concentrate on that "common framework" language not on specialised texts of a particular branch of science. A student of science is usually familiar with highly specialised terms; what he must acquire is know-

<sup>3</sup> R. Quirk, The Use of English, London 1962.

<sup>4</sup> J. Lutosławska, Reading Technical English, "English Teaching Forum" 1971, IX, 6, pp. 34-36; M. D. Pillieux, Teaching Scientific English, "English Teaching Forum" 1968, VI, 6.

<sup>5</sup> J. R. Ewer, G. Latorre, A Course in Basic Scientific English, London 1971.

ledge of the basic language of scientific English by means of which he will be able to use the specialized register of his branch of science.

This goal, however, simple and restricted as it may seem, causes a lot of trouble both to teachers and students. First of all, secondary school courses prove to be insufficient in preparing the student to undertake a course in EST. It is assumed that a student must have a general knowledge of English at an elementary level at least, before he becomes involved in EST. However, as most teachers observe, it is common that secondary school graduates fail to comprehend English scientific texts. This is a very serious obstacle and it must be handled in one way or another. Of course, it would be best to improve the effectiveness of the secondary school courses, but we would rather assume that nothing can yet be done about it. Therefore, an appropriate procedure on the level of higher education should be adopted. Some authors suggest that the teaching process should be divided into at least two stages, the first being an elementary course in basic English, the second - directed toward scientific purposes. Right as it is, the concept can be slightly altered by introducing scientifically oriented elements into the first stage of teaching.

We find a good example of such a procedure in "A Course in Basic Scientific English" by Ewer and Latorre. Their explanation of the simple present tense is not based on the usual concept of tense and time relationship but rather on the functioning of this particular tense in a larger context and on the level of generality of the information. The simple present tense is introduced in unit one with an explanation that it is used:

1) for actions in the present which happen usually habitually or generally, e.g. "He usually directs his attention towards problems which he notices have no satisfactory explanation";

2) for stating general truth, e.g. "science plays an important role in the societies in which we live"; or for stating scientific laws, e.g. "Water freezes at  $0^{\circ}\text{C}$ ";

3) for describing processes in a general way, e.g. "A scientist observes carefully, applies logical thought to his observations, tries to find relationships in data".

Such examples as well as the findings of many linguists and experienced teachers<sup>6</sup> help us therefore to formulate a set of assumptions on which the general scheme of the EST course should be based:

1. The elementary level of English should be the starting point. It works as an emergency operation due to the limited knowledge of English learnt at school.

2. The scope of the course must be restricted to the passive comprehension scientific texts as there are relatively few teaching hours available, and the needs of the students are limited at this point to reading scientific textbooks.

3. Contrastive study of the structures and translation are suggested as the best means to reach the goal.

4. Aural-oral approach is advisable only when the students are more advanced than average. In this case we can introduce active acquisition of the structures.

5. Our main interest lies in General Scientific English and its typical structures, not in the highly advanced texts of particular sciences.

6. It is very important to provide means motivating the students since English compared with the major subjects arouses little interest in itself.

7. As the English teachers are not science graduates they may require a short preparatory course in teaching EST.

### III. Teaching Writing EST

Different problems arise when a course in writing EST is to be organized. Who needs such a course? There will be mostly scientists at Technical Universities, or working for the Polish Academy of Sciences who either publish their papers in international scientific periodicals, or present their reports at international conferences. Being highly experienced and usually

---

<sup>6</sup> J. R. Ewer, G. Latorre, Preparing an English Course for Students of Science, "English Language Teaching" 1967, XXI; Ewer, Latorre, A Course...; R. A. Close, The English We Use for Science, London 1965; Lutosławski, op. cit.; T. P. Krzeszowski, Teaching English to Polish Learners, Warszawa 1970 and others.

widely versed in the literature of a subject they seem to have no trouble with the highly specialised lexicon. Their problem, however, is the inability to cope with rhetoric, grammatical structures and grammatical choice of written scientific English. We therefore propose a course in writing EST, a course whose scope would be formulated along the following assumptions:

1. Many mistakes made in the scientists' papers belong to the General English level. There is a tendency to misuse the word order in simple, compound and complex sentences, relative pronouns, sentence connectives and other fairly simple grammatical structures.

2. The use of English tenses, causes most trouble for the scientists. In this case we should proceed in two directions: first on the General English level, as it is common that the students do not understand the tense system itself. Then the teacher should work on the General Scientific English level, where it would be best to base the procedure on the findings of Lackstrom, Selinker, Trimble<sup>7</sup>, who stated how the rhetorical demands of the whole discourse affect the grammatical choice of a tense.

3. In teaching writing EST the problem of synonymous sentences should be emphasised so that the student would be able to present an idea in various ways.

4. The use of articles is another serious notion in teaching EST. Again the procedure should be based on the General English level, that is the general theory of articles in English should be taught and then with concentration on the typical uses of articles at the level of EST. In this case different degrees of generality of the text may be examined.

5. The EST prose is dominated by stative and passive constructions so the teaching process ought to lead to the active command of these constructions.

6. Another prominent feature of EST is the use of nominalizations instead of structures demanding an agent + process. Compare two examples:

---

<sup>7</sup> J. E. Lackstrom, L. Selinker, L. P. Trimble, Technical Rhetorical Principles and Grammatical Choice, "English Teaching Forum" 1973, XI, 3.

a) If we observe the process carefully,

b) Careful observation of the process,

where the latter construction would be preferred to the former.

7. The students must be taught the basic forms of paragraph organization in technical writing.

The final point of the paper is the practical organization of a course in writing EST. The course should be divided into several sections, each of them being a separate unit. A student going through each unit should produce a paragraph describing a particular process, phenomenon or experiment. These can be presented by means of pictures accompanied with a set of necessary technical information. The student would then proceed to a set of grammatical constructions necessary for the description. At this stage he would also make a decision on the tense he would be using in his paragraph. Afterwards he would choose the information that would serve as a "core idea" of the whole paragraph and this would be supported with the facts presented to him in the first stage of the procedure. This should be done in the form of a plan on which the paragraph would be based. Having written his paragraph the student would compare it with the "model paragraph" i.e. the actual description of the process taken from an English handbook. The differences should be discussed with the teacher, to discover whether they are incorrect grammatical choices in which case the rhetorical principles demanding the use of a particular construction should be pointed out. The general assumption is that an EST paragraph is rigid in form, therefore the student's version should be as close as possible to the model. The procedure presented here is naturally one of the methods to develop the active skill of writing scientific English.

Obviously many of the problems encountered in EST are common to general teaching practice. However the teaching methods and techniques adopted in EST are of an individual nature due to the specific features of scientific English.

Instytut Filologii Angielskiej  
Uniwersytetu Łódzkiego

Wojciech Bielski

NAUCZANIE NAUKOWEGO I TECHNICZNEGO REJESTRU  
JĘZYKA ANGIELSKIEGO

Artykuł omawia problemy związane z nauczaniem naukowego i technicznego rejestru języka angielskiego. W części pierwszej proponuje się ograniczenie zakresu nauczania studentów politechniki do umiejętności czytania naukowych i technicznych tekstów w języku angielskim. Część druga jest propozycją organizacji kursu pisania w języku angielskim dla pracowników naukowych politechniki i Polskiej Akademii Nauk. Ze względu na specyfikę naukowego i technicznego rejestru języka angielskiego proponuje się odpowiednie techniki nauczania, różniące się od technik powszechnie stosowanych w nauczaniu języka angielskiego.