

EFFECTIVE PROFESSIONAL COMMUNICATION IN ENGINEERING

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Abstract: *The economic, social, technical and scientific progress of our world set up the prerequisites for the globalization of English over the past century. English is used as a communication tool in various situations. Together with other branches of English for Specialized Purposes, English for engineering is part of the language used in international communication. The purpose of communication on a technical and scientific level is to convey information and to motivate professionals to attend to specific work tasks. EST (English for Science and Technology) describes objects and processes in technical areas of science and engineering. In consequence of globalization, EST teaching in Engineering and Science education has become mandatory and is given equal significance along with other basic and applied sciences. Given the demand for qualified engineers we need to consider the global economic context where said engineers have a pivotal role in conveying specialized information as accurately as possible. Enhancing one’s vocabulary is one of the most important ingredients of effective professional communication.*

Key words: EST, ESP, engineering jargon, professional communication

The economic, social, technical and scientific progress of our world set up the prerequisites for the globalization of English over the past century as a language that enables professional relations among the members of an international professional community on the one hand and communication and exchange of ideas between people who share the same profession or area of expertise but not the same mother tongue as well. The purpose of this paper is to highlight some aspects of the necessity to use the engineering jargon in English in the context of international communication in the pertaining field.

According to the *Engineering Handbook: A Guide to Written Communication for Engineering Students* of the A&M University of Texas, “jargon should only be used when talking to people within a subject or particular profession because it allows communication to be clear and precise. Using jargon in papers where the audience is not familiar with the subject makes the writing imprecise, confusing, condescending, or intimidating to the reader because the audience is not familiar with the words and phrases. For instance, to the average person ATM means automated teller machine, but to an electrical engineer it means asynchronous transfer mode. Jargon is necessary for technical papers of specialized fields to provide clear and concise information. There is common jargon between general fields in engineering, and within specific fields of engineering such as mechanical, nuclear, or electrical engineering”. [1]

Discipline-specific concepts are part of the very identity of each field of science. They are the tenets of communicating facts and methods in the subject matter in a consensual way. Moreover,

scientific debates add to the further development of the conceptual system itself, for example, by reshaping taxonomies or introducing new concepts. In the technical discourse, specialists turn to specific technical terms, complementing their vocabulary with everyday words and thus making up technical-language utterances. Adequate comprehension of the subject matter specialized language at an appropriate level along with a good use thereof contributes decisively to basic scientific education.

The job of an engineer, for instance, entails a wide range of qualifications and aptitudes: beside professional knowledge, an engineer should also possess a series of social skills, such as the capability to work in a (multinational) team and mastery of team management if applicable, the capacity to identify, assess and mitigate occupational hazards while also responding to co-workers’ concerns regarding professional and safety issues as well as an effective communicative and argumentation competence. In an international environment, this involves both a good command of General English as learned in elementary education and of Engineering English as studied on a higher education level.

“Engineering is the application of mathematics and scientific, economic, social, and practical knowledge in order to invent, innovate, design, build, maintain, research, and improve structures, machines, tools, systems, components, materials, processes, solutions, and organizations. The discipline of engineering is extremely broad and encompasses a range of more specialized fields of engineering, each with a more specific emphasis on particular areas of applied science, technology and types of application. Engineering

is a broad discipline which is often broken down into several sub-disciplines. These disciplines concern themselves with differing areas of engineering work. Although initially an engineer will usually be trained in a specific discipline, throughout an engineer's career the engineer may become multi-disciplined, having worked in several of the outlined areas. Engineering is often characterized as having four main branches: chemical engineering, civil engineering, electrical engineering and mechanical engineering. Beyond these “Big Four”, a number of other branches are recognized. Historically, naval [or marine] engineering and mining engineering were [also] major branches”. [2] “Marine engineering is the discipline of applying engineering sciences, including mechanical engineering, electrical engineering, electronic engineering, and computer science, to the development, design, operation and maintenance of watercraft propulsion and on-board systems and oceanographic technology. It includes but is not limited to power and propulsion plants, machinery, piping, automation and control systems for marine vehicles of any kind.” [3]

Within the purview of this paper, marine engineering is a good example for a domain where professionals, i.e. marine engineers, pursue their career worldwide, in an international working environment. Thus, English is used as a communication tool in various situations. Most of the world's major international organizations and their publications in the field of engineering rely on English as their “lingua franca”. No matter how brilliant or creative an engineer is, if he/she is unable to give proof of his/her worth and expertise before his/her domestic and foreign co-workers or supervisors alike, then all his/her performance and merits would unperceived and unaccredited. Therefore, a non-native engineering speaker of English may experience difficulties arising from his/her lack of a substantial knowledge of English in their occupational area. English has been definitely established internationally as an academic lingua franca, particularly in the field of engineering and natural sciences.

As Tenopir and King show in their exhaustive research of the *Communication Patterns of Engineers*, “innovation never happens in a vacuum; innovation requires communication. Just as work on the cutting edge of engineering and science has become more technical and complex, so too has the process of communicating. In becoming so, communication has unfortunately also become more complex and cumbersome for many of the engineers. Engineering is increasingly collaborative, multidisciplinary, and global, but the goals of engineering projects are becoming progressively more refined and specialized. [...] In the quest to make all stages of

research, development, design, and production as efficient and effective as possible, it is important to possess a clear understanding of how engineers determine their information needs, fill them, use the information, and share their own resulting information. By discovering these patterns and systematizing that knowledge, communication can be improved and communication at all stages of engineering work can be made more effective. This, in turn, increases the potential for high-quality progress in engineering endeavours.” [4] As every profession in every field of science has its own jargon for communication, engineering is, of course, no exception. It has an exhaustive specific terminology for each and every branch and sub-field of expertise. Engineering English falls under the category of ESP (English for Specific Purposes). One of the most important goals of an ESP course should be to impart professional communication skills, providing students the capacity to communicate in English in accordance with the circumstances, the aim and the specific roles of the participants in the communication process. A foreign language teaching strategy applied to communicative needs begins with a consideration of what students are likely to have to achieve in the foreign language and then incorporates the vocabulary and grammar needed to attain these functions. According to Gray and Klapper in their article on *Key Aspects of Teaching and Learning*, a communicative course is “characterized by the following:

- grammar as a facilitator of communication
- phased development from pre-communicative to free communicative exercises
- inductive learning of grammar
- maximum use of the target language
- a focus on meaning
- language used for a purpose
- the foregrounding of learners' needs
- personalisation of language
- the creative use of language
- learner interaction
- the use of authentic language and materials
- a mixed-skills approach to teaching and assessment.

Advanced and skilful communication can only take place when learners have assimilated a range of complex structures together with understanding of their application and potential effects within a wide range of situations. One of the major tenets of a communicative approach is that of optimum use of the target language for instruction and interaction. If the language is not used whenever viable within the learning process, then not only is its status as a means of communication severely undermined, but learners are also denied their only genuine stimulus for developing coping strategies and learning to negotiate meaning. In addition, being surrounded by examples of the language in real

situations exposes them to a far wider range of patterns and vocabulary than they would otherwise experience. Communicative language teaching involves the integration of the four language skills of listening, speaking, reading and writing. Real-life language incorporates a mixture of skills: we engage in conversations which require both listening and speaking; we respond to written stimuli by filling in forms, writing letters, making notes or discussing the content of our reading with others. Modern methods of teaching and assessment recognise this interdependence of skills and incorporate it into tasks for learners rather than creating artificial distinctions.” [5]

Together with other branches of English for Specialized Purposes, English for engineering is part of the language used in international communication. EST (English for Science and Technology) describes objects and processes in technical areas of science and engineering. EST as a branch of ESP is rather focused on the communicative context than on grammar rules and structures. Engineers are usually more driven to learn terms that are closely associated with their particular subject matter domain. Vocabulary in this respect plays a paramount role in ESP, and it implies the technical terms and phrases of a specialized discourse. The purpose of communication on a technical and scientific level is to convey information and to motivate professionals to attend to specific work tasks. In order to fulfil their tasks, specialists need to be able to recognize and comprehend diverse language forms in the engineering specific discourse. Therefore, in the process of teaching EST, a lecturer needs to presents students not only with written texts, but also with speech utterances that would enable them to genuinely perceive the dynamics of communication. At the same time, in consequence of globalization, EST teaching in Engineering and Science education has become mandatory and is given equal significance along with other basic and applied sciences. While focusing on professional language socialization, educators should support students in becoming more competitive and adaptable on the world labour market.

However, not all students are the same, so lecturers sometimes are compelled to adapt themselves and their teaching methods so as to cope with the differences in the foreign language

levels of various students. Beside the different standards and demands at the schools of origin of students and poor training in English, higher education lecturers are sometimes also confronted with an insufficient number of hours per week according to inconsistent curricula. The professionally targeted education in English in technical universities should consequently be aligned with the latest achievements in the pertaining field and tightly connected with the future engineers’ interests in terms of a worldwide pursued career. This is a crucial element in professional communication. In order to meet the requirements of their future profession in an international working environment, students need to have a good command of their English engineering discourse. Thus, EST curricula in technical higher institutions should take into account the peculiarities of the professional activities of future engineers by including authentic text materials and also various types of class activities such as problem-solving exercises, role-plays, crossword puzzles and case studies that can stimulate eloquent communication, promote team-work, encourage creative thinking and provide possibilities for students to interact with each other.

In conclusion, communication is the key to professional socialization and, with a view to the scope of the present paper, communicative competence, i.e. the ability to conduct a dialogue in English gives engineers the possibility to develop both professionally and socially. The job of an engineer employed in a multinational working environment involves a variety of activities requiring professional communication in English, such as assigning tasks, reading and writing reports and/or technical documentation, taking part in team meetings – most of which within time constraints. Given the demand for qualified engineers we need to consider the global economic context where said engineers have a pivotal role in conveying specialized information as accurately as possible. Enhancing one’s vocabulary is one of the most important ingredients of effective professional communication.

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