

THE URGENT NEED OF MODERN ENGINEER*

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Abstract: This article explores how English Education in technical university should be renewed and is based on the belief that language mediation plays a significant role for human development and learning. This paper supports the idea that English has become the global language because it has become a vital part of international society, culture and the economy. Whether you're aiming to be a professor or a reporter, a doctor or a banker, communicative competence can give you what it takes to succeed. Teaching should not only focus on the development of linguistic knowledge but also help to foster students' abilities to learn and think independently as their awareness of identity.

In response to the need of world-wide qualification of engineering graduates there is a list of common engineering criteria which requires foreign language acquisition among other things. Engineering is the application of scientific or mathematical principles to develop economical solutions to technical problems, creating products, facilities, and structures that are useful to people.

One who practices engineering is called an engineer. Engineers use imagination, judgment, and reasoning to apply science, technology, mathematics, and practical experience. The result is the design, production, and operation of useful objects or processes. The broad discipline of engineering encompasses a range of specialized subdisciplines that focus on the issues associated with developing a specific kind of product, or using a specific type of technology but nowadays it is impossible to do it without English.

As with all modern scientific and technological endeavours, computers and software play an increasingly important role in engineer education. Numerical methods and simulations can help predict design performance more accurately than previous approximations. Using computer-aided design software, engineers are able to more easily create drawings and models of their designs. Computer models of designs can be checked for flaws without having to make expensive and time-consuming prototypes. The computer also allows increased reuse of previously developed designs, by supplying an engineer with a library of predefined parts ready to be used in designs. Computers can also be used as part of the manufacturing process, controlling machines and ensuring a constant level of quality and similarity in the products but it is impossible to do it without English.

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There are significant parallels between engineering and medicine. Both fields are well known for their pragmatism – the solution to real world problems often requires moving forward before phenomena are completely understood in a more rigorous scientific sense and therefore experimental and empirical knowledge is an integral part of both. The human body although biological has many functions similar to a machine. The heart for example functions much like a pump, the skeleton is like a linked structure with levers etc. This similarity has led to the development of the field of biomedical engineering that utilizes concepts developed in both disciplines but over two-thirds of the world's scientists write their papers in English.

There are also close connections between the activity of engineers and artists; they are direct in some fields, for example, architecture, landscape architecture and industrial design (these disciplines are included in a University's Faculty of Engineering); and indirect in others. Artistic and engineering creativity may be fundamentally connected as the case of Leonardo Da Vinci indicates. If engineer is interested in science, business, medicine, literature and music and he wants to be up to date with progress in those fields, he must always read the latest publications in English and know the latest information about the question he is interested in.

So engineers are challenged to develop something new. They have to make decisions on a wide range of problems but it is impossible to do it without English as an indispensable means of international and professional communication.

English is so widespread nowadays because it has become the standard language for all kinds of international communication. It is used as an official or semi-official language in over 60 countries. It is either dominant or well-established in all 6 continents. It is the main language of books, newspapers, airports and air-traffic control, international business and academic conferences, science, technology, medicine, diplomacy, sports international competitions, pop music and advertising. Three-quarters of the world's mail is written in English. Of all the information in the world's electronic retrieval systems, 80 % is stored in English. English radio programmes are received by over 150 million in 120 countries.

The growth in political, scientific, economic, cultural and educational contacts with different countries has set the scene for a renewed interest in foreign language studies. Language teachers will have to work very hard in order to satisfy this interest: they have to change dramatically their inadequate and outdated teaching methods and produce new, effective ones. In order to perform all these tasks, which may look humble but are in fact extremely difficult and complex, many questions have to be settled; the most urgent of these is: how to teach future engineers? The knowledge of English has become an objective social need because for millions of people the English language is now a tool of their trade. Businessmen, tradesmen, engineers, scientists and scholars all over the world must know English because it is the international means of exchange of information and experience. It has become a platitude that one may go almost anywhere with no other linguistic equipment. The rapid transfer of information has become the principal feature of globalisation. The recent and most powerful global information factor is now the Internet. Technical problems and barriers of distance separating peoples do not exist any longer. All this is quite obvious.

While English has become increasingly popular as a subject to study, there has also been a great increase in the demand, outside education, for people who can speak English well. Under such circumstances, education system needs higher standards, clear accountability, flexible personnel practices and innovation. Foreign language teachers have found themselves in the focus of public attention and on the one hand, more important and, on the other, more vulnerable.

The situation with foreign language teaching in Russian Universities is in some ways different from that of many European countries. In Russia, students in all speciali-

ties have foreign languages on the curriculum as an obligatory subject for two years out of the average five years of the full course. Thus, our students not only want to learn foreign languages, but also have to learn them because students of any subject, any discipline must learn a foreign language as part of their syllabus. At the beginning of the university course of foreign language teaching it is necessary to formulate its actual and realistic aims and tasks. Students must know from the start what variety of the foreign language, and to what extent, they are going to master it. Many students get bitterly disappointed and lose interest in foreign language studies because they were not duly informed that it is not possible (if you are not a genius, but these are scarce) in the limited period of learning – 2-hours per week for 2 years – to master a foreign language, to acquire all the various skills: reading special literature, newspapers, fiction, writing scientific papers, understanding the lyrics of songs, everyday speech, etc. The tasks of foreign language teaching must be formulated from the beginning: to teach students a foreign language for special purposes, i.e. as an actual means of communication among specialists of different countries, meaning both - oral and written kinds of communication. In other words, foreign language teaching is oriented towards mastering skills for professional communication, and teaching language for special purposes (**LSP**).

Another important aspect to be taken into consideration is distinguishing between passive, aimed at recognition (reading, comprehension) and active, aimed at production (speaking, writing) forms of language use. The distinction is essential because these two forms require different means and methods of teaching and – most importantly – different teaching materials. In the past, teaching styles were very teacher-centered. The traditional purpose of English Education in Russia has as only passing examinations. The emphasis to learn English was on grammar, reading, and writing skills that dominate the most part of the examinations. The purpose of English curriculum in our country was to train students to read and write English, relying on grammatical analysis and translation to and from Russian as the primary methods. To achieve this, students practiced a lot of drills and repetitions so that they could get accustomed to grammar that was also the key to translate analytically to and from Russian in reading and writing.

There were almost no opportunities for students to discuss, provide their opinions, or do group problem solving. As for teacher quality, a high level of English proficient was not necessarily required. Teachers needed to have basic grammar knowledge of English, but they were not required to have skillful conversation abilities.

In recent years the Russian Ministry of Education has been emphasizing a renewed vision of English language education. However, teacher-educators may need to approach English language teaching from a different perspective that incorporates more opportunities for authentic language use during communicative, goal-oriented activities in smaller classrooms. In other words, foreign language teaching is concerned, first and foremost, with satisfying the real needs of the students and not with revealing the knowledge of the teacher. The intensive and efficient teaching of grammar, vocabulary, translation, etc. must be scientifically grounded and concentrate only on those items which students actually need for the purposes specified at the beginning of the university course. This is an important statement which in theory is universally accepted but in practice is hardly ever followed. For instance, teaching grammar is a very essential part of foreign language teaching. However, very often grammar is taught par excellence, in its full splendour, regardless of the actual aims of teaching, of the actual skills to be acquired. Paradoxically, teachers concentrate their (and the students') efforts on those complicated and cumbersome grammar structures which are hardly ever used. The difference between seeing a difficult grammatical form in the text and actually using it is often disregarded and different grammar points are taught with equal enthusiasm. Most textbooks repeat the same definitions which are colourless and difficult to understand

because they are «universal», i.e. written regardless of the nationality of the learner. Grammar books must take into account on the one hand the peculiarities of the «LSP» in question, and, on the other, the characteristic features of the grammar of the student's mother tongue.

The problem of teaching vocabulary may seem to be, theoretically speaking, easier. For a start there are quite a number of different Englishes spoken in our present world, then there are many different English-speaking cultures to choose from. LSP teaching implies teaching the vocabulary of a special text. However, there are no easy points as far as living human languages are concerned. Indeed, the vocabulary of a special text consists of three strata, three layers: general words, scientific words, and terms. Basic general words must have been learnt before the University. Terms are the gist, the essence of the speciality and are usually better known by students than by teachers. The emphasis, consequently, is on the scientific vocabulary which is, as it were, the skeleton of every special text. However, the general vocabulary is never taught properly at school and has to be acquired at the University level, especially now that the demand for so-called colloquial language has become so great since the prospects of direct, live contacts with foreigners have become so real. This is one more problem to think about.

A very important point in any language course is the actual words to be studied, the topics to be discussed and learnt, the thematic choice of language to be activated. The educational experience of a language course is determined, first and foremost, by the thematic and situational value of the layer of language to be studied. And the most important parameter here is again the need of a student: how much will the student need these words, will he or she have many opportunities to use them, how high is this bit of vocabulary on the student's list of priorities? From this point of view many topics seem doubtful as far as Russian students of foreign languages are concerned. That is why the majority of foreign language teaching materials – audio, video, etc. courses are of very limited value for our students.

Indeed, choosing the subjects for a foreign language course for Russians one should take into consideration the actual social, cultural and historical situation in the country. In most countries the courses are meant mainly for people intending to have some real, active, live contacts with foreign-speaking people and foreign-speaking countries. From this point of view all the hotel, bank, post office, launderette, etc. topics are quite reasonable. The situation in our country is still quite different, even now with all the new prospects, all the new contacts, private invitation travelling, etc. Most of them (the absolute majority) study a foreign language not because they mean or plan to go to a foreign country, but because they either want to know English for their profession, for «special purposes» (to read special professional papers and talk to their colleagues – not only shop, as they are human) or they want it as part of culture to be able to read and speak everyday English (or sing songs – for young people), or both. They need more general things (introductions, apologies, refusals, agreeing-disagreeing, assessments, suggestions, etc.) and more general human, less specific situations.

Thus, the problems of what to teach (as opposed to how to teach) is extremely topical and urgent nowadays. Answering this question largely depends on the aims of the foreign language course, on the skills that are meant to be acquired. The optimal teaching material for acquiring «passive skills», skills of recognition (mostly reading special texts in our case) should be presented by topical, informative texts. The efficiency of these texts is increased when they have a special learner's commentary – both linguistic and extralinguistic. The question of commenting upon extralinguistic facts is much more delicate and complicated. Indeed, teaching LSP to specialists in this subject is a difficult and unenviable task because the students know the subject matter of the text under "study better than the teacher, and often it is the latter who needs this kind of extralinguistic explanation.

And the last (but by no means least) aspect – psychological. Learning a foreign language, like no other subject, requires a special psychological approach, the atmosphere of relaxation, trust even love and faith. Indeed, learning a strange language, a strange world picture, strange (often alien) mentality is a difficult psychological barrier for many learners. Teaching foreign languages to university students of non-philological subjects is complicated by the fact that for these students a foreign language is not part of their special, professional education which may result in a lack of motivation.

The programme Education in the 21-st Century sets out the University's policy aimed at achieving qualitatively new standards in teaching English. Therefore, the status of English as a subject on the university curriculum has also risen. It is also interesting to note that our country is gradually moving into the international community, both socially and economically, and this has led to a great increase in the demand for English: the language of international business and tourism. So second language acquisition is a major factor in socio-economic, scientific, technical and cultural progress of our country. That's why it is necessary for students to catch up with globalization and English plays an important role as the common international language.

From the areas which might need to be changed in order to improve the effectiveness of ELT at the University, the respondents give the preference to the change in the number of timetable hours, teaching materials and methods and clearly, for there to be effective change they must be developed in unison.

Needless to say, the overall objects of foreign languages (chiefly English) are to develop students' basic practical communication abilities such as listening and speaking, depending on the understanding of language and culture, and fostering a positive attitude toward communication through foreign languages.

That is why we are focusing on the actual use of English rather than its linguistic properties. Moreover, it is necessary to stress that through education, teachers have to help students develop ability to learn and think independently. As a result, teachers no longer have to focus on grammar and translation skills, but they need to provide useful activities for students to have opportunities to learn how to develop independently so that they can apply it to other occasions and to think about what they have just learned so that they can extend their belief, view of the world, awareness of identity as well as social and cultural awareness.

Furthermore, we would indicate that teachers need to deepen students' understanding from a wider perspective, enhance their awareness of being Russian living in a global community, and cultivate a spirit of international cooperation. Language teachers have the responsibility to teach the English language, but they also have to foster students' self and cultural awareness through well-balanced teaching. Language teaching no longer entails just teaching a language, but it also encompasses how we address and foster our students' potential to develop as a global citizen within a local context.

So we not only address enhancing students' self and cultural awareness, but also the strengthening the motivation for English learning. With higher motivation, students can develop their language knowledge and hopefully they can find their own purpose for learning English in their communities or the world.

More importantly, we emphasize the improvement of English language ability with Russian language ability. This concept is necessary for students because fostering students' abilities to express themselves appropriately and understand accurately in Russian as well as enhance their communication abilities in English. The Russian language is their basis of all intellectual activities. Thus, teachers have to consider the role of students' first language and the impact of their «first culture» on learning English as well. It introduces new features to challenge our students and ensure that learning English is interesting and motivating. We combine the best of traditional methods with more recent approaches, to help students use English both accurately and fluently.

However, English Education would benefit from a sociocultural perspective. Sociocultural approaches to learning and development were first organized and applied by L.S. Vygotsky in Russia in the 1920s and 1930s. They are based on the concept that learning can develop effectively when learners use their minds and available tools while engaged in activities. Language is, of course, one of the major tools, but other things like gesture can be included as well. Learning English broadens our mind and way of thinking. The sociocultural perspective encompasses social interaction as contingent upon language and gesture which are appropriated by the individual to form the instrumental tools for thinking and problem solving. There are four essential points related to sociocultural theory: mediation, thinking and speaking, zone of proximal development and interaction.

It is clear that the human mind is mediated. Mediation takes place as long as human beings have an opportunity to consider what they are doing or what they have just learned. This permits us to connect and extend our knowledge and skills for further learning which may affect our beliefs, views of the world, identity, and cultural and social awareness. In the process of speaking, they check whether their words or sentences are appropriate in each situation or not, whether their speaking is what they want to tell or not, how much they understand what they want to tell or what they have just listened to or learned, what their interlocutor's reaction (e.g., facial expression, verbal response) is and so on.

In addition, Vygotsky emphasized the essential role of zone of proximal development in learning. He defined it as the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with peers. According to the concept of zone of proximal development, learners can move into their next level with their peers' or teachers' assistance while using language as the primary tool during this activity.

In the zone of proximal development, we notice that it is indispensable for learners to interact with others because the zone of proximal development needs at least more than two people to actively develop. Vygotsky claimed that speech is the most widely used and important means employed by humans to organize social interaction, to regulate others, and to regulate oneself. With effective interaction, especially through speaking with their peers or teachers, learners naturally develop and extend their linguistic knowledge.

Sociocultural theory plays an important role in learning because it views learning as mediation. It points out that learners should mediate what know as well as how they learned during interaction with other people. Sociocultural theory frames learning effectively because it does not focus on only learning linguistic skills, but also on the way learners learn and the process they shape their identities, perspective, social and cultural awareness.

Изучение языка международного общения – потребность современного инженера

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Ключевые слова и фразы: всемирно-востребованная квалификация инженера; профессионально-ориентированная языковая подготовка; теория глобализации языка.

Аннотация: Предлагаемая статья рассматривает проблему обучения английскому языку в техническом университете, акцентируя внимание на обновлении его опосредованной функции в интеллектуальном совершенствовании человека. Авторы поддерживают идею становления английского языка в качестве доминирующего в глобальных процессах развития международного общества, культуры и экономики. Коммуникативная компетенция способствует формированию конкурентоспособного специалиста – профессора или журналиста, доктора или банкира. В основе обучения, помимо лингвистического аспекта языка, должна учитываться педагогическая стратегия формирования образованной личности, способной к адекватному самовыражению.

Erlernen der Sprache der internationalen Kommunikation – das Bedürfnis des gegenwärtigen Ingenieurs

Zusammenfassung: Der angebotene Artikel betrachtet das Problem der Ausbildung der englischen Sprache in der technischen Universität, betonend die Aufmerksamkeit auf der Erneuerung ihrer Funktion in der intellektuellen Vervollkommnung des Menschen. Die Autoren unterstützen die Idee des Entstehens der englischen Sprache als dominierenden in den globalen Prozessen der Entwicklung der internationalen Gesellschaft, der Kultur und der Wirtschaft. Der kommunikative Kompetenzbereich trägt zur Formierung des konkurrenzfähigen Spezialisten – des Professors oder des Journalisten, des Doktors oder des Bankiers bei. Aufgrund der Ausbildung, außer dem sprachwissenschaftlichen Aspekt der Sprache, soll die pädagogische Strategie der Formierung der gebildeten Persönlichkeit, die zum adäquaten Selbstausdruck fähig ist, berücksichtigt werden.

Etude de la langue de la communication internationale – nécessité urgente de l'ingénieur moderne

Résumé: L'article présenté aborde le problème de l'étude de la langue anglaise à l'université technique en faisant accent sur le renouvellement de la fonction indirecte du perfectionnement de l'intelligence humaine. Les auteurs exposent l'idée de la fondation de l'anglais comme dominant dans les processus globaux du développement de la société internationale et de l'économie. La compétence communicative contribue à la formation de la compétitivité du spécialiste – professeur ou journaliste, docteur ou banquier. A la base de l'enseignement, outre l'aspect linguistique de la langue, se trouve la stratégie pédagogique de la formation de la personne capable à l'autoexpression adéquate.
