

Understanding Needs of Mining Students Learning English

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Abstract—The paper deals with the challenges in language education that technical universities face. The authors give a brief overview of linguistic auditing and offer a closer look at needs analysis in the context of teaching English for specific purposes. The authors suggest considering the potential of linguistic auditing as a tool for the profound needs analysis of the target professional situation and its impact on foreign languages syllabus design in technical universities. The paper also presents the results of a feedback questionnaire received from ex-mining students in this regard.

Keywords—*linguistic auditing; needs analysis; problem-solving approach; case studies; communicative competence*

I. INTRODUCTION

The system of higher education in Russia is currently undergoing vast changes with a view to impart competitive skills and global standards capabilities. English has become an essential part of nearly all businesses including mining industry. Mining industry in Russia is one of the most important business sectors for the national economy. Mining companies operating in Russia are mainly transnational corporations. They deal not only with minerals and mining technologies but are also involved in stock exchange activities. Therefore, a good command of English is often not just an option for mining people but a great advantage and a tool for career promotion [5].

Dynamic global changes in modern society require permanent innovative improvements in pursuit of maintaining higher standards of the Russian system of higher education. In Russia there are several Mining as well as Oil and Gas universities as Russia is a country with abundant natural resources resulting in high demand for mining professionals. Moreover, mining students in Russia have their English course in the first and second years when they are still not aware of all specific features of their future professional communication in English. Thus, it is a great challenge for English lecturers teaching mining students to understand their needs and tailor the course of English accordingly.

As is known, education should be for preparing students for life outside university classrooms, equipping them for the labour market and laying the foundation for an exciting job within a prosperous international company - as an employee or a future franchise partner. The Saint-Petersburg Mining University focuses on quality and employable training of its students as well as their greater adaptability and mobility in the market.

However, challenges in teaching English to mining students still remain acute as mining covers a wide range of fields – prospecting and exploration, extraction and even processing. Students dealing with these fields have different needs in terms of specific vocabulary, situations and topics of professional communication.

As linguistic environments and needs are becoming more diversified, so more careful and long-range teaching strategies must be employed to address these developments. The concept of English for specific purpose is particularly appropriate for teaching English to mining students. How the course of teaching English for specific purposes should be taught has always been a matter of controversy [7]. In ESP the student is seen as a language learner engaged either in academic, professional or occupational pursuits who uses English as a means to carry out those pursuits. ESP focuses on when, where and why students need the language either in study or workplace contexts.

The Saint-Petersburg Mining University trains specialists in various areas of mining – open pit mining, underground mining, mining safety, environmental protection and many other mining-related spheres. All students are required to learn a foreign language during the first and second years only according to their curriculum. It brings a number of challenges:

- 1) students have low motivation to learn English as they are not aware of its importance in the mining sector yet;

2) students choosing technical higher education often have a poor command of English as they focused on studying maths and physics at school;

3) students do not know the areas of application of English in their academic and professional life, so English for Specific Purposes seems to have vague prospects for their future [12].

Furthermore, ESP teaching places additional demands on lecturers in terms of designing courses because each mining company has a unique set of linguistic needs according to its type, size, place, vision and management style. ESP practitioners must choose appropriate foreign language teaching methods, develop market-oriented materials and implement them to satisfy professional needs of the future engineers [11].

Principles of linguistic auditing can provide strategic views and step-by-step schemes to resolve such key issues. The linguistic auditing, a term coined by Pilbeam (1979), can be defined as a variety of evaluative and information – gathering approaches to assess the level of communicative competence development [9]. The principal aim of researching the communication needs within the workplace is to determine how well employees can use English for professional purposes as well as to analyse weak points and linguistic problems which need to be solved both in the long run and on a short-term basis. A linguistic auditing which is carried out either periodically, or each time employees are involved in a new project, consists of the following stages:

1. intended objectives are proposed;
2. the specific language problems of employees are identified;
3. the necessary resources of the company are exploited;
4. the real use of English is examined;
5. results are analysed and a series of impartial recommendations are given to the staff in order to improve their current performance level [6].

Overall, the process of linguistic auditing aids the company in taking measures, through a series of strategic decisions, in order to modify and eventually improve those deficiencies encountered in the communication of their employees at work. It assures higher professional performance, which in turn provides the company with higher capacity through the effective foreign language use.

The Saint-Petersburg Mining University maintains cooperation with world-famous enterprises; it is the most adapted to modern conditions technical university. Therefore, a needs analysis, carried out within the business world itself has been accepted as a possible model with the prospect of the experiment. It may provide guidelines to follow when identifying employees' linguistic needs, as it consists of empirical research ensuring access to an analytical process termed as the linguistic auditing.

II. METHODS AND RESULTS

The case study was carried out at two enterprises located in Leningrad region. "BazelCement - Pikalevo", a limited liability company and Tikhvin Freight Car Building Plant had been chosen as research centers on the basis of having common features and similar facilities of measurement and analysis.

In order to have an idea of the actual situation of the English language use in professional communication nowadays, a questionnaire was created and sent to engineers. There were five questions related to the use of English within the workplace in this questionnaire. The responses were compared and percentage analysis was carried out.

Taking into account non-linguistic education degree of engineers being interviewed, we posed the following questions:

1. *Do you think English is important during university study?*

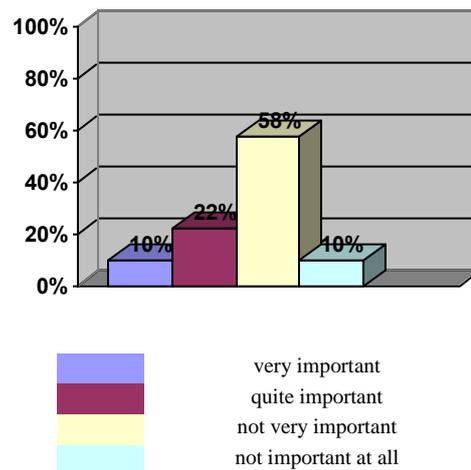


Fig. 1. Importance of English

As a result, the majority of engineers polled think that English is not given the importance it deserves, while only the remaining 10% think that this foreign language is considered to be very important.

2. *Do you consider the communicative competence obtained at the university to be useful?*

Another aspect, which strongly draws our attention, is that 78% of those asked feel that, while studying at university, they did not learn English in a way, which helped them to make use of it in their workplace. Relatively few can understand the gist of some professional issues in English, though not in detail, and only 2 per cent of the sample are able to use English at near-native levels in a wide range of professional settings.

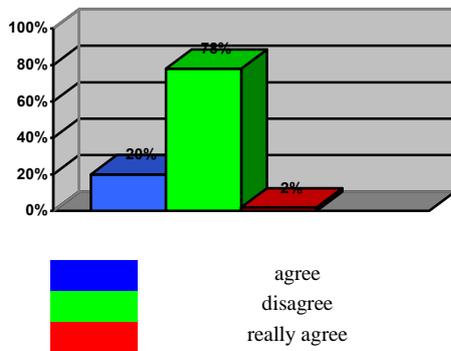


Fig. 2. Efficiency of English

3. Were you satisfied with the approaches of teaching foreign languages while studying at university?

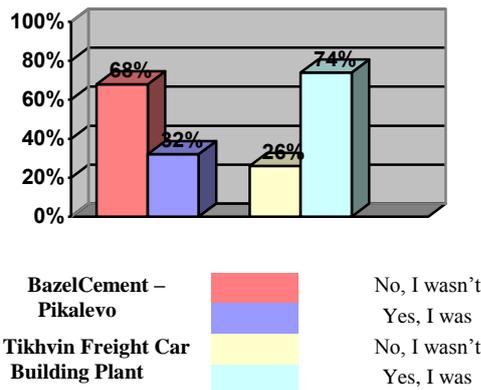


Fig. 3. Students' expectations

The bar chart shows the attitude of graduates towards the foreign language training techniques used at university. According to the survey conducted sensitivity to teaching approaches differs at the enterprises being investigated. At the Freight Car Building Plant the number of university graduates who were satisfied with teaching techniques is 74 per cent of all engineers surveyed that is higher than at BazelCement - Pikalevo company.

4. What is your level of English?

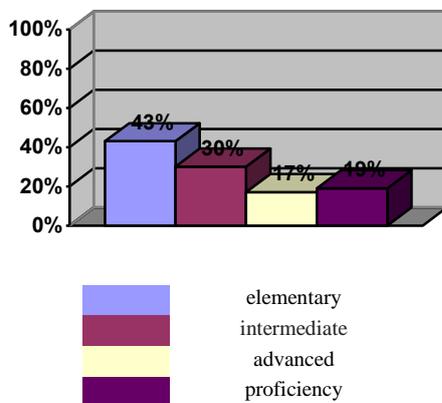


Fig. 4. Level of English

When analysing the answers given to the question above, in which we asked respondents to assess their knowledge of English, we can see that, even though employees working at Tikhvin Freight Car Building Plant frequently have opportunities to put their English into practice, only 36% of those polled think they have a high level of English language proficiency. 30% say their level is an intermediate one, and the remaining 43% admit to be basic users.

5. Do you think that English is useful in your workplace?

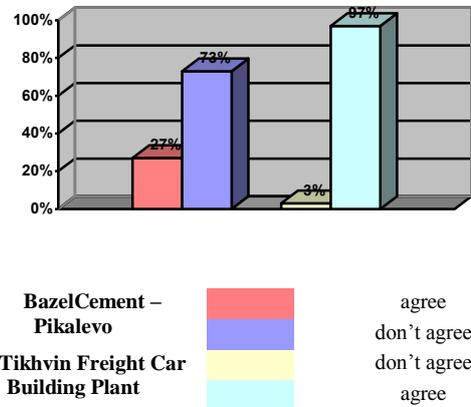


Fig. 5. Usage of English

The bar chart compares the number of engineers responded positively and negatively in two companies from 2017 to 2018. Just under 30% of employees in Pikalevo and 97% of engineers in Tikhvin say that English is useful in their workplaces. It can be seen that positive answers were totally higher at the freight cars plant than at BazelCement - Pikalevo Llc. throughout the whole time frame.

Generally speaking the above - mentioned questions are related somehow to the use employees make of English within their workplace. They were asked to obtain more details about the real application of ESP. We were able to examine the lacks, sometimes involuntarily unresolved, in the current English Language syllabus in the Mining University.

Thus all the relevant data obtained are far higher in Tikhvin than in Pikalevo throughout the whole questionnaire. This result is however due mainly to the fact that a lot of engineers working at Tikhvin Freight Car Building Plant are supposed to put the English language into practice every working day. This manufacturing center of United Wagon Company produces different designs of new generation gondolas, hoppers and platforms with the help of numerical control machine tools. When a group of Tikhvin employees was interviewed, the majority said they preferred the necessary equipment and software to be bought from foreign suppliers more often than from the local producers of electronic parts.

On the whole 62% of those interviewed affirm that they frequently speak English at work while only 10% use it very occasionally. The remaining 28% need to improve their foreign language communicative competence. BazelCement -

Pikalevo Llc remains the plant with the lowest percentage overall.

The purpose of such assessment is reflected in the possibility for the mining students to use it as a feedback on how they can improve their performance and for the lecturers on how they can adapt their teaching to meet the needs of their students. The graphs we enclose throw some light on our research findings.

The Saint-Petersburg Mining University is doing its utmost to provide the best learning opportunities. Hence it is crucial to clarify the current and predictable linguistic needs within the English course and to build clear visions and plans to respond to them. For that reason, lecturers of foreign languages must take into account their students' concern for learning English in taking decisions related to the content of teaching by investigating their fosterlings' / future specialists' linguistic needs.

Undoubtedly, it would be an exaggeration to assume that it is possible to predict all situations of professional communication in which mining students would use English. That is why it makes sense to structure the situations where English is involved according to two time periods – academic (university) life and professional (post-graduation) life. Of course, some situations will be relevant for both periods, e.g. meeting new people, delivering presentations, etc. This overlap is seen to be a good thing as students will be able to have more experience and thus feel more confident and relaxed in real-life situations.

To get detailed information about specific features of activities where English is involved it is necessary to carry out a needs analysis. The first mention of the term “needs analysis” was made in foreign literature on ESP and described as a survey aimed at getting information about the needs that students have [3]. It is also important to be aware of their wishes as this is an important tool to improve motivation. As a matter of fact, needs and wishes are often different but it is necessary to consider both of them in order to make learning effective.

The first step in conducting needs analysis is creating a questionnaire [8]. It is a set of questions for better understanding external and intrinsic reasons for learning English. As students may use English to pursue their academic and professional goals as well as social needs such as to talk to their friends, to communicate while being on holiday abroad, etc., two questionnaires were made up. The first one is focused on university life and everyday life activities (Questionnaire 1), the second one being about professional life (Questionnaire 2).

Two questionnaires are required because of two time periods discussed above - academic (university) life and professional (post-graduation) life. The first questionnaire is for students of all years – from freshmen to undergraduates. It is important to get as much information as possible as it will result in a more real and objective understanding of their needs, self-assessment and expectations from the English course. Questionnaire 2 is designed for post-graduate students, lecturers and research fellows of university. The aim of the

questionnaire is to collect data on how much English is involved into professional communication and activities. This information is valuable for those students who are going to do research now and in the future.

Questionnaire 1

English in my academic and future professional life

1. Tick the skills that you consider to be the most important and demanded in your future profession

Speaking skills	Listening skills	Writing skills	Reading skills	Translating skills
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2. Tick the skills that you are good at

Speaking skills	Listening skills	Writing skills	Reading skills	Translating skills
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3. To what extent are the skills you are acquiring in ESP course useful for your academic life?

Very useful	Fairly useful	Useful	Not really useful	Useless
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4. In your opinion, how good are you at learning English?

Very good	Fairly good	Good	Not really good	Bad
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5. In your opinion, what is the most difficult aspect of the university English course?

A lot of new terms	Difficult scientific and technical texts	Large amount of work	A lot of individual work	Everything is not too difficult
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6. In your opinion, which skills should be paid more attention to in English lessons?

Speaking skills	Listening skills	Writing skills	Reading skills	Translating skills
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7. Do you always do your English homework? If not, explain why.

8. Rank English among other subjects from 1 (least important) to 10 (most important).

9. In your opinion, is English a special or general knowledge subject? Why?

10. In your opinion, should English be optional or compulsory at the Mining University?

English in my everyday life

1. How often do you use English?

2. Who do you speak English to?

3. Do you often listen to songs in English? Do you know what they are about?

4. Do you ever read books/news/magazines in English? Why?

5. What other foreign languages can you speak?

6. What foreign languages can your friends speak?

7. Have you ever studied English privately? If yes, what was the reason or purpose?

8. Do you agree with the statement “It is important for an educated person to know English”? Why?

9. Would you like to be more proficient in English? How would you go about obtaining your goal?

10. Do you agree that knowing English is an advantage in the modern world?

Questionnaire 2

1. How often do you use English in your job?

2. Tick the proper box for situations when English is Very useful/Useful/Not useful.

Number	Situation	Very useful	Useful	Not useful
1	<i>Oral communication with foreign counterparts</i>			
2	<i>Writing a scientific paper in English</i>			
3	<i>Written communication with foreign counterparts</i>			
4	<i>Preparation and delivery of presentations</i>			
5	<i>Reading professional literature</i>			
6	<i>Applying for a grant</i>			
7	<i>Other</i>			

3. Does English help advance your career? If yes, how?

4. What would you recommend students to do in terms of learning English?

As previously stated this questionnaire enables some learning technologies to be examined objectively and updated in order to respond to the actual needs of the mining students. At the same time, there is still much room to discuss the ways to adjust theories to actual teaching practice. That is to say, in spite of the diversification of teaching strategies and linguistic environments the efficient English language teaching technologies are still limited. The training programs and materials need to be developed [2].

III. CONCLUSION

There are various teaching strategies to respond to students' linguistic needs, such as a problem solving approach. The essence of problem solving is to acquire methods of gaining new knowledge independently based on existing learners' knowledge and skills. Unlike traditional teaching methods the problem-solving makes students experience cognitive conflict. Thus, it is quite logical that this approach is particularly productive in teaching foreign languages nowadays. Its conceptual framework consists of the following stages: identification, classification, transformation, substitution, comparison.

Besides, mining industries have a stake in promoting the managerial and technical skills of their employees. That is why preparing students to communicate effectively in tasks prescribed by their future work situations is one of the key areas that come under technical skills.

To develop the students' ability to meet challenges independently it is necessary to work out some strategies of problem solving by means of professional issues communication in the foreign language. It contributes to moving the emphasis from the language task to true

communication. A problem-solving skill is considered as a strategic tool [10]. Researches highlight the following tasks of this approach:

- to make mining students understand the basics and the importance of professional communication;

- to train them in professional speaking by imparting the knowledge of the various situations they have to face as technical students and as professionals later;

- to equip them with the professional writing skills by giving training in writing reports, proposals, projects, business memos/e-mails, user manuals and product descriptions [4].

Problem solving should be first done under the lecturer guidance with explanations of each step. It is essential to choose meaningful, open-ended tasks that correspond to the students' professional needs and background knowledge.

Instructions:

1. Have students work in pairs.

2. As students are given the cards with tasks, the lecturer must keep track of their progress by drawing a diagram on the whiteboard.

3. When all problems are solved / role-played, discuss the concept.

Students should refer to a set of following challenging situations:

1. Is it possible to use a fire foam-producing machine when extinguishing burning electrical appliances?

2. What are the illumination intensity standards of the workplace of the numerical control machine tool operator?

3. How to transport caustics?

4. Can you determine the original bulb contents by odor of the chemical?

5. What are the regulations of stepladder use?

6. How to treat high iron cement?

7. Who is authorized to work with hoisting devices?

8. Which part of the machine tool must be grounded?

9. How to repair electrically-powered equipment?

To get some feedback, a survey was conducted. The questions were intended to elicit students' responses on the effectiveness of the course provided. Judging by their answers the mining students find it interesting and useful. The problem-solving approach creates a learning environment that fosters the development of the students' foreign language skills, makes them think, trains to solve unconventional tasks [1].

In sum, linguistic auditing is a guide to identifying foreign language communication needs in corporations for developing materials to satisfy professional concerns of mining students. When the needs are clear, the learning objectives can be defined in terms of specific aims under which the language

content is tailored to definite students' competence development stages. In its turn when specially designed materials are relevant to the needs of a particular student such training results can be impressive and students will prosper in their career whatever they do. That is why the teaching methods must be reviewed and educators train to adapt themselves to the changing environment.

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