



Identifying student needs in English for information technology at the post-secondary level

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ABSTRACT

Mastering English language skills has been indispensable in every sphere of life and profession. Information Technology (IT) is no exception as it perpetually develops and changes. The present study is a survey aiming at identifying the English language needs of IT specialists working both domestically and abroad by involving 85 alumni from three Kazakhstani IT institutes. The data were collected through a needs analysis questionnaire for post-secondary level ESP courses and were analyzed through descriptive percentages. The study's results revealed that reading, listening, and speaking were essential skills for IT professionals for successful performance at work. Reading technical documentation and professional blogs aids specialists in solving common challenges in their industry, whereas listening and watching professionally oriented videos increase their qualifications. Additionally, the study implies that there may have been a mismatch between university-level ESP curricula and professional English language proficiency.

Keywords: language needs; reading skills; listening skills; speaking skills, ESP

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INTRODUCTION

Since the highly developing IT field raises the demand for acquiring the English language and mastering it at a high level, one of the key competencies of future specialists is mastering good communication skills in English in professional contexts. To develop such skills, teaching English for general purposes has not been viewed as effective anymore. In the past, linguists focused on describing only the linguistic features of a language until ESP scholars started to study the ways of using the language in real-life communication in the 20th century. As Hutchinson and Waters (1987) pointed out, depending on the context, the English language could be used differently, which led to the idea of delivering language to different groups of learners based on their needs. For this reason, in the late 1980s, ESP became a separate branch of ELT with its methodology and research. According to Hutchinson and Waters (1987, p. 53), in this approach to language teaching, all decisions as to content and method are based on the learner's motivation and needs. As it is seen, ESP is based mainly on learners' future professional needs. In addition, Dudley-Evans and St. John (1998) pointed out that ESP teaching should mirror the methodology of the discipline it serves, and the wayshows interact may differ from those used in General English (GE). They categorized the characteristics of ESP into absolute and variable ones (Dudley-Evans & St. John, 1998). Fundamental characteristics mean that ESP is designed to meet the learners' specific needs and uses the underlying methodology and activities of the disciplines it serves. In addition to this, ESP red on language skills (grammar, lexis, register) and discourse. Conversely, variable characteristics

imply the relation of ESP to specific disciplines, its different methodology from General English, and explicit teaching situations. This also means that ESP is likely to be designed for adult learners at either the post-secondary level or as part of their professional training.

As mentioned before, the main features of ESP course design are based on learners' specific needs. Hence, conducting thorough needs analysis before the ESP courses should be the main criteria for curriculum development. One of the ways to do this is to collaborate with the alums. There are several reasons for this. First, they have experience using the language in the workplace. Secondly, it is much easier for teachers to contact them. Next, these alumni work in their home country and abroad. Last, they are likely familiar with the existing ESP course content and can give valuable recommendations for further development of the course due to experience.

The research conducted in this paper aims to show essential language needs for future IT specialists and give some recommendations for ESP instructors on how to improve the course. The topicality of the given research is the lack of relevant studies in defining the language needs of IT specialists in Kazakhstan. In the majority of technical universities in the country, ESP courses are mostly taught as General English courses focusing on memorizing specific terminology, which is an additional problem for IT students since it is not focused on developing English communication competencies in their professional field. Therefore, the authors believe that the obtained research should serve as a bedrock for developing an effective needs-based ESP course at Kazakh universities.

In teaching ESP, teachers usually have in mind the programs designed to meet the immediate and specific needs of learners. Concerning the assessment of learner needs, Abrar-ul-Hassan (2012), former TESOL ESP-IS Chair, said the following about a needs analysis (NA): "Needs are gaps between program goals and the learner's proficiency at that stage, which is defined with reference to communicative functions and discourse communities." According to Witkin and Altschuld (1995, p. 4), needs analysis is a set of systematic procedures carried out to define priorities in order to make decisions about programs or improvements in the organization and allocation of resources. On the other hand, Brown (1995) defines needs analysis as the activities involved in gathering information as the basis for developing a curriculum that meets the learning needs of students. Brown's definition of needs analysis relates to the hypothesis postulated in this paper because once the needs have been identified, they can serve as a basis for developing tests, materials, teaching activities, and evaluation strategies which will, in turn, improve students' knowledge of the professional language.

According to West (1994, p. 68), needs analysis is what learners will entail with the foreign language in the target circumstances and how learners might best master the target language during the training period. In the same vein, Hamp-Lyons (2001) claims that needs analysis is a fundamental component of the ESP approach regarding course design. The emergence of ESP, with emphasis on needs analysis, as a starting point in language program design, is an important factor in the development of current approaches to language curriculum development (Richards & Rogers, 2002). Generally, needs analysis plays a pivotal role in designing effective teaching material for ESP courses because it is the process of identifying the general and specific language needs which can be addressed in developing the content of a language syllabus (Richards & Rogers, 1986, p. 154).

When discussing the needs analysis, it is relevant to know the types of needs because identifying the right types of needs is very useful for developing effective content for an ESP course. For instance, Hutchinson and Waters (1987) divided needs into two categories: target needs (what learners need to do in target situations) and learning needs (what learners need to do to learn). The target needs are necessities, lacks, and wants. According to Nation & Macalister (2010), necessities are required knowledge, lacks include present knowledge, and wants are subjective needs. In this point of view, necessities are the most important in developing ESP courses and are the bedrock for further content development. In addition to these types of needs, there are also other needs mentioned by other scholars. For instance, Brindley (1989) describes needs as objective and subjective, target situation/goal-oriented and learning, process-oriented and product-oriented, whereas Berwick (1989) classifies them into perceived and felt needs. The objective and perceived

needs represent outsiders: sponsors, teachers, and employers, whereas subjective and felt needs refer to insiders (cognitive and affective factors).

Simply put, the ability to present their product in front of investors or negotiate with business partners refers to the objective and perceived needs, whereas speaking confidently on professional topics refers to subjective and felt needs. As for product-oriented and process-oriented needs, the former is related to the target situation, while the latter is related to the learning situation. In the same vein, Dudley Evans & St. John (1998) classified language needs into Target Situation Analysis (TSA), Learning Situation Analysis (LSA), and Present Situation Analysis (PSA). In this regard, TSA refers to the language requirements in the professional or academic setting. According to Robinson (apud Rahman (2015)) a needs analysis, which focuses on students' needs at the end of a language course, is called TSA, and it includes six main questions, such as the purposes for which the language is needed, how the language is used, and the content areas, who is involved in the communication process, the context in which the language will be used, and the time when the language will be used.

As far as LSA is concerned, it mainly focuses on what learners want to learn. According to Dudley-Evans and St. John (1998), LSA is an effective way of skills and language learning. As Songhori (2008) stated, PSA has several goals by providing information from many sources. As stated in Rahman (2015), three basic sources of information were suggested: the learners, the language-teaching establishment, and the 'user-institution' (for instance, the student's place of work). For each of these, an ESP practitioner seeks information regarding learners' respective levels of ability, resources, and views on language teaching and learning. Dudley-Evans & St. John (1998) claim that PSA evaluates strengths and weaknesses in language, skills, and learning experiences whereas Hyland (2006) states that PSA provides both objective data (age, proficiency, previous learning experience) and subjective information (self-perceived needs, weaknesses, and strengths). Therefore, PSA refers to identifying students' current level of proficiency (including lack), while TSA attempts to identify what students need to do in a target situation.

In light of our current discussion, according to Basri et al. (2020), one of the differences between ESP and General English (GE) is that GE focuses on all four language skills (listening, reading, writing, and speaking) while ESP focuses on the main skills development after the needs analysis of learners has been identified. Conducting a detailed analysis of students' language needs can be motivating in learning ESP because students learn English through the relevant content. In this regard, Strother (2005) mentions that ESP includes dual-purpose education in which students learn relevant content while improving their English skills, with a high level of motivation since they are studying subjects that they actually like. This is confirmed by Hutauruk (2015), who says that ESP derives from the need to use language as a tool in facilitating success in professional life. Hong (2018) supports this idea by saying that "such a combination is highly motivating because students are able to apply what they learn in their English classes to their main field of study, whether it be accounting, business management, economics, computer science or tourism. Being able to use the vocabulary and structures that they learn in a meaningful context reinforces what is taught and increases their motivation" (p. 388). This author also believes that ESP assesses needs and integrates motivation, subject matter, and content for the teaching of relevant skills.

Generally, all scholars agree that conducting a needs analysis before developing and implementing any ESP courses is essential and an integral part of ESP. The majority of scholars such as Basturkmen (2010), Brown (1995, 2009), Long (2005), Hyland (2006), Richards (2001), Graves (1999), Dudley-Evans and St John (1998), and West (1997) agree that questionnaires, observations, interviews, and analysis of authentic spoken and written texts are all instruments which could be used to investigate needs. Analysis of authentic texts is also useful and usually involves analyzing written texts or audio and video recordings of lectures, meetings, or classroom activities, as it provides information about the target situation by identifying the linguistic features of the situation (Dudley-Evans & St John, 1998). According to Brown (1995), authentic texts may exist inside or outside the program location. For instance, examining students' past evaluation is an example of information found inside the program location, while conducting a literature review is an exam of information that can be located outside. Lastly, needs analysis plays a critical role in

developing ESP courses by taking into account the earning, present, and target situations of learners while defining the right linguistic needs of students is one of the key skills of every educator.

METHOD

In this case study, a descriptive survey was used as a data collection tool, which allowed us to collect responses from a fair number of respondents from around the world. The respondents of the survey were alumni from three different IT universities in Kazakhstan (Suleyman Demirel University (SDU), Information Technologies University (ITU), and Kazakh British Technical University (KBTU),) where IT disciplines are taught in English. The survey was conducted among 85 alumni who graduated between 2009 and 2020. The participants work in Kazakhstan and abroad, namely in the Netherlands, Belarus, Australia, the USA, Singapore, France, Luxembourg, Spain, Germany, Switzerland, Estonia, the UK, and Russia. The questionnaire comprised 11 questions (see Appendix 1) relating to the needs analysis in the ESP course at the post-secondary level. Data were then analyzed through descriptive percentages

FINDING AND DISCUSSION

Findings

The obtained results from the survey are presented in Table 1-5. The respondents were all Kazakh nationals who work both in Kazakhstan and abroad. The alums from the three universities in Table 1. were purposefully chosen to participate since their university courses were delivered in the English language.

Table 1. Percentages of respondents from three universities

University Name	Percentage
International Information Technologies University (IITU)	53.6 %
Suleyman Demirel University (SDU)	31%
Kazakh British Technical University (KBTU)	15.4 %

Based on the obtained results, the majority of respondents (53.6%) were from International Information Technologies University (IITU), more than a third (31%) of respondents were from Suleyman Demirel University (SDU), and 15.4% were from Kazakh British Technical University (KBTU). When seen from the country where they serve, there were 14 countries revealed, but the majority of them work in the home country.

Table 2. Place of work

Country	Percentage
Kazakhstan	79.9%
Others*	20.1%

Note: * (Netherlands, Belarus, Australia, USA, Singapore, France, Luxembourg, Spain, Germany, Switzerland, Estonia, UK, and Russia)

Table 2 shows that most alumni work in Kazakhstan (79.9%), while 20.1% of them work in different countries, and as revealed, there are several reasons for this. Firstly, there was a shortage of IT specialists in Kazakhstan, and they could find jobs immediately after graduation. Secondly, it was quite difficult to get a job in a foreign country, especially in the countries listed above, due to visa sponsorship. The data illustrated below show that even working in the home country where English is not a first or second language, IT specialists need to have good English language competencies to succeed in their careers.

The next finding deals with specialists' majors in IT. There are three fields of study they selected, as presented in Table 3.

Table 3. Majors taken by respondents

Major subjects	Percentage
Computer Science and Software Engineering	57.1 %
Information Systems	28.5%
Mathematical Computer Modelling	14.4%

As seen in Table 3, Computer Science, Software Engineering, and Information Systems specialties are majors in demand and are selected by a large number of students. More than half (57.1%) of the IT specialists selected Computer Science and Software Engineering, less than a third (28.5) are in favor of Information Systems, and 14% others are majoring in Mathematical Computer Modelling. Besides, the participating alums were known to hold various positions in their workplace, as presented in Table 4.

Table 4. Job positions of the alumni

Job position	Percentage
Software engineer	40.3 %
Developer	33%
CEO	6.1 %
Project manager	4.8%
Assistant	6.1%
Others	9.8%

The results, as listed in Table 4, demonstrate that a large number of alums, who graduated from the three universities, work either as software engineers or developers. Software engineer is the top position, while IT developer comes second. The rest of them are working as CEOs, project managers, assistants, and others. Such findings mean that the content of the ESP curriculum can be based on the language needs of specialists working in these positions. Regarding English language skills, they need to perform at work and write their answers. The questionnaire listed some options for them to choose from, including (1) listening to different online tutorials/webinars/lectures; (2) speaking to colleagues/partners in front of an audience; (3) reading scientific articles/technical guidelines/instructions/blogs, and (4) writing official letters/scientific articles/reports. The result of this item is enumerated in Table 5.

Table 5. The most important language skills in the workplace

Use of English at work	Percentage
Listening to online tutorials	29.8%
Speaking to my colleagues	17.2%
Reading technical documents/articles	33.6%
Writing official letters	18.5%
Others	0.9%

As shown in Table 5, most specialists (33.6%) in the IT field use the English language to read scientific articles, technical guidelines, instructions, or blogs. It demonstrates that reading comprehension of subject-specific content is the most essential for specialists in the given field. Next, 29.8% of participants selected listening to different online tutorials, webinars, or lectures as the main language skill in English in their daily professional life. A similar number of respondents (18.5% and 17.2%) answered that they use the English language to write official letters, scientific articles, or reports and to speak to colleagues, partners, or publicly. Furthermore, 0.9% of respondents think English is needed for overseas job interviews.

Table 6. The most effective parts of the ESP course at home university

Part of the course	Percentage
Content	28 %
Grammar	11.5 %
Vocabulary	23.9%
Projects	22.9%
Assignments	9.6%
Others	4.1%

In terms of their experience in taking ESP courses, this study found several points, as listed in Table 6. First of all, it seems that 28% of alums are satisfied with the effectiveness of the ESP course content they took at their universities. Projects and professional vocabulary benefited 22.9% and 23.9% of participants. However, the assignments and grammar they had during their university study were perceived as the least effective for them in practice. On the next item about the least effective parts of the ESP course taken, the findings are likely consistent with Table 6.

Table 7. The least effective parts of the ESP course at the university

Part of the course	Percentage
Assignments	38.4%
Grammar	25.5%
Projects	13.8%
Vocabulary	13.8%
Content	8.5%

In Table 7, it is evident that respondents did not find assignments in ESP courses useful in their careers. Besides, 25.5% of participants did not see the effectiveness of grammar learned in their ESP classes. An equal number of respondents (13.8%) think that presentation skills in projects and vocabulary units taught at university were irrelevant to their job. When asked to rate their past ESP course in terms of authenticity, this study found that the alums have diverse opinions.

Table 8. Evaluation of the ESP course by alumni

Points	Percentage
1	10.7%
2	21.4%
3	38.1%
4	20.2%
5	9.5%

The given table shows that 38.1% of respondents viewed the ESP course at the university as close to the real world and gave it 3 points out of 5. In the second position, 21.4% of participants gave two points out of 5 for the authenticity of their ESP course. Only 9.5% of graduates think that the effectiveness of their course can be rated 5, and 5 (10.7%) others gave it one point. Lastly, the respondents were also asked to give their recommendations for improving university ESP courses based on their work experience.

Table 9. Recommendations to improve an ESP course

Recommendations	Percentage
More time for students to communicate	26.4%
Including case studies in the curriculum	23.7%
More reading (technical documents)	23.7%
Specific vocabulary	12.7%
Adaptation of listening skills to different accents	10.7%
Writing official documents	12.7%
Others	2.8%

According to the results in Table 9, 27.1% of participants recommended focusing more on speaking, whereas an equal percentage (24.3%) of respondents suggested including more case studies into the curriculum and subject-specific texts like technical documents, manuals, and professional blogs. More subject-related vocabulary was recommended by 13.5% of respondents. A few (11.9%) respondents suggested including listening tasks with different accents. Only 3 participants view that more attention should be given to writing skills (official letters, reports, etc.). The survey results show that all four English language skills (speaking, listening, writing, and reading) are imperative for IT specialists in the workplace. A statistically significant difference was observed between what the ESP curriculum offers students and what they need at work. There was no statistically significant difference between responses regarding improvement of the existing ESP courses, where respondents said that the course should be focused more on speaking, working on case studies, and reading subject-specific texts.

Discussion

The obtained data indicate the actual English language needs of the future IT specialists in Kazakhstan. Based on the survey results, the essential language need for IT professionals is apparent in reading, listening, and speaking. The specialists in this field read almost daily to solve challenging problems while coding or developing internet applications. It means that they refer to international websites or professional blogs written in English to obtain the most recent information on the web. Therefore, it is recommended that ESP instructors adapt more authentic texts from international websites such as Stack Overflow, Reddit, and Code Project, as they provide plenty of original texts from different professional discussions related to the IT sphere. Besides, using such materials in the classroom allows instructors to teach subject-specific vocabulary and integrate grammar lessons with specific structures in technical discourses.

Another essential language skill, according to the results, is listening. The specialists in this field must improve their professional qualifications in dynamically progressing areas. Therefore, they must watch different online English tutorials about new IT trends. In performing this task, a high level of listening comprehension is important. The results also clearly show how to improve current ESP courses. Interestingly, alumni were mostly satisfied with the content and terminology they studied during the ESP course and the different kinds of projects they worked on during the studies. Still, the respondents recommended the inclusion of more diversified subject-specific terminology.

The survey showed that case study discussions and bringing real-workplace situations into the ESP classroom for in-class discussions would be more beneficial for developing students' communicative and critical thinking skills. The same findings were discovered in the study by Balaei and Ahour (2018) on students' needs in Indonesia's multi-complexity purpose. They discovered that communicative skills in the class and office were considered essential to acquire. Generally, according to the needs analysis shown in the survey, the ESP course could be further developed by including authentic professional reading materials, different case study tasks, and authentic audio and video materials, just as Tarnopolsky (2009) pointed out. For example, websites such as DP Solutions, Lazorpoint, and Science soft offer plenty of real-life cases with their solutions, which can be effectively integrated into ESP classrooms to develop learners' communicative skills.

Interestingly, the respondents highlighted accent adaptation as one of the necessary parts of the course. According to Dogancay and Hardman (2017), English language teachers must be aware of the varieties of English that students are likely to encounter outside of classrooms, and they should teach them the sociolinguistic tools to navigate across a variety of Englishes. For instance, YouTube offers various types of online tutorials for IT engineers presented by both native and non-native speakers of English. Therefore, it is recommended to select video materials not only with native speakers' online tutorials but also videos with different speakers from India, China, Singapore, etc.

Also, according to respondents, some other assignments they were given in ESP class were not valuable at work (such as presentations and vocabulary not related to IT), and they should serve

as a reminder to ESP instructors to review the tasks they assign to their students. According to Gulikers et al. (2005), as quoted from Huang (2002), two principles can motivate adults in the learning process. The first principle is a problem-solving orientation of the task. Students are more engaged when they solve problems in real life. The second principle is that learners are more motivated when they gain knowledge that helps them to solve problems in their professional careers order to achieve more effective results, it is recommended to collaborate closely with subject teachers as it is usually quite challenging for ESP instructors to develop content which is maximum close to the student's professional area.

Similarly, the study by Eka (2021) shows that regardless of the technical abilities an IT worker possesses, they must develop language skills to effectively interact with colleagues through online channels, community discussions, presentations, and text comprehension, among other things. There is an ever-increasing need for top-level personal skills among IT professionals in the group, not only among IT peers but also through academic and corporate boundaries. Consequently, developing communicative skills in English facilitates successful workplace collaborations, and proficiency in English remains essential for organizations and professional achievements.

In ESP contexts, by analyzing their language needs, English instructors may precisely identify where the students expect the greatest assistance related to their lifestyle and work. Teachers may also evaluate students' overall competence level based on their proficiency samples and participation in any classroom discussion. Once English lecturers understand students' requirements and present skill levels, they may identify knowledge gaps and establish goals for their development. Therefore, based on the obtained results, the following language needs could prove useful for IT specialists in their future careers.

Table 10. Language Needs of IT Specialists

Domain of Needs	Description
Listening comprehension	<ol style="list-style-type: none"> 1. Comprehension of different English pronunciations (accents) in authentic video and audio materials in professional discourse to improve their professional qualifications 2. Understanding video or phone calls of foreign colleagues while negotiating different situations related to their professional field 3. Listening to academic discourse
Reading comprehension	<ol style="list-style-type: none"> 1. Comprehension of technical documentation, guidelines, and manuals 2. Comprehension of professional blogs to find solutions of occurred errors in programming or coding 3. Comprehension of different authentic materials in the subject area
Spoken language	<ol style="list-style-type: none"> 1. Taking active participation in the discussions by using professional terminology 2. Making presentations on subject-specific topics using professional terminology 3. Practicing business negotiations 4. Answering job interview questions
Written language	<ol style="list-style-type: none"> 1. Writing official letters 2. Writing professional reports 3. Writing cover letters 4. Writing tender documentation

In conclusion, the obtained data should be taken into account by educators when considering how to modify and modernize the existing ESP curriculum at Kazakh universities, and it should contribute to a clearer understanding of IT specialists' needs.

CONCLUSION

English is the lingua franca of today's globalized world, making communication across cultures easier. In the IT industry, an employee's ability to communicate fluently in English with team members and partners from different countries can help reach higher productivity and set goals. Since all computer programs are made in English, a good command of the language is essential to understand these programs and avoid confusion.

As the IT field inevitably changes and expands, needs analysis in ESP courses has become inevitable. For this reason, the purpose of the current study was to identify the English language needs of Kazakh IT specialists at home and abroad. The results of this research show that IT specialists need all four English language skills (speaking, listening, writing, and reading,) some to greater and some to a lesser extent but equally important. By including different authentic materials in the ESP course, such as short video clips, professional texts, and case studies for discussions, ESP instructors should improve essential skills that are necessary for future IT specialists, which should serve as a solid ground for developing or modifying current ESP courses for the IT students not only in Kazakhstan.

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