

Teaching English to Programming Students through IT Programming Based Courses and Materials in Uzbekistan

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Annotation: *The majority of computer programming languages are designed based on the English language, and use sequences of phrases, words and punctuations as the core of coding. Lack of English skills can create problems in the way of both learning and creating codes. The aim of this study is to investigate the importance of English language in programming, and suggesting sources which teaches English language based on programming courses. An overview of current research in the field is discussed and qualitative research was undertaken to find out which the English skills are required to create a project to teach English to potential coders and current programmers.*

Keywords: Teaching English, English as Second Language, IT-based English courses, Programming based English courses.

1. Introduction.

In this digital era, it is hard to ignore the necessity of teaching English, in the meantime, teaching English through Programming based courses for IT programmers lead to far beneficial results. Programming is highly demanded sector in all phases of the modern society from business to education. It will be the most important skill to get the attention of employers soon. All major tech companies, from Google to Facebook, aggressively compete to hire gifted young coders. In the Silicon Valley area, for example, some reports suggest engineering graduates from Stanford University expect their starting salary to be nothing less than \$100,000-120,000 (Holden, 2017). In Uzbekistan, demand for programmers is much higher than ever before. While average salary per person is about 2, 3 million sum (\$230) (QO`MITASI, 2020), organizations provide relatively high salary for programmers, on average from \$500 to \$1500, since specialized programmers are scarce and highly demanded in marketplace. (codeclass.uz, 2020) all processes are being turned into automat system. The programming language is English language; therefore, teaching English for IT purposes should be highlighted. English language is the soul and skeleton of programming. If students want to be a successful programmer, they should learn both programming and English languages at the same time. *“At the time, learning Latin in order to learn how to write was as logical as learning English in order to code is today”*. (McCulloch, 2019) There are some arguments that why should learn English which consumes plenty of time, rather than creating programming languages in different native languages. There are several programming languages which are created in other languages such as, Python (Netherlands). Nevertheless, attempting to use other languages for coding could bring some unpleasant results such as; it can cut off necessary communication among coders who already use English for coding. This is because programmers need to communicate about their code. That is easy if there is a standard, and the standard is easy – it is English. Having English keywords keep the programming abstracted from normal language for us... *“We do not want local language keywords”* for programming. Anyone who has made their own programming language at university and tried local keywords will agree with me on how confusing it is to read the code. English language seems to be well-adapted for programming. In most native languages, finding concise equivalent of keywords can really be a burden. Some languages might measure up but some languages cannot just stand the test. (Studios, 2018). *‘The reason for this could be similar to why the majority of musical terms are in Italian, because a large portion of the most important early composers from the Renaissance to the Baroque period were Italian, and that period is when many of these terms were used to describe brand new ideas for the first time. Fourteen of the 25 largest tech companies in the world hail from the U.S., including seven of the top 10: Apple, Microsoft, Alphabet, Intel, IBM, Cisco Systems and Oracle.* (Mandl, 2016) Hence, there is no way in achieving higher results in programming without learning english. Furthermore, *‘Coding in English Class – Perfect Pair’*. (Brown 2016) Programming and English languages have much in common. At first glance it is invisible, in fact, required skills to learn English effectively, problem-solving, logic, critical thinking, can be shaped easily by teaching programming. Coders analyze and discuss critical thinking and problem solving processes which can lead to meaningful language practice. Teaching English through authentic coding or IT based course materials can both save the time and produce bilingual coders. There are so many websites, courses which are tailored to teach IT skills by teaching English language simultaneously. For example, english4IT.com, English For It Students (Малашенко, 2014), Oxford English for Information Technology (Eric H. Glendinning, John McEwan, 2019) and YouTube videos are precious sources to learn both coding and English languages at the same time. They are easy to follow, well-created. However, they can be appropriate for the students who have high level of English comprehension skills. In Uzbekistan, majority of IT programming learners’ main concern is overcoming English language based barriers as most of them have basic level of English. That is why; those foreign materials and courses are

not being used by majority of programming students. According to survey results among current IT programmers in Uzbekistan, majority of students are not even aware of such IT based courses.

Considering challenges for the students who are non-native speakers of English since memorizing and using keywords in programming is a great problem, creating specific course which teaches both English and programming will be invaluable job for the development of programming in Uzbekistan. Therefore, this study learns current courses and recourses which teach both English and programming languages, and the results will be in the form of project that teaches English language in different level of Programmer students in Uzbekistan.

2. Literature review

2.1. Similar skills to learn both Programming and English languages.

Programming languages' nature is more or less similar to natural languages. The first common thing for both is their function as both programming and natural languages are used for communication. If programmer learns one or two programming languages, learning third programming language will be much easier for him/her. Likewise, first and second natural languages can be harder to learn compared to third one. For example, to the one who know English, learning Latin-based languages can be much easier such as German, French, and Italian. After learning basic and PHP, comprehension in other programming languages (C, C++, MATLAB, JavaScript etc.) will be much more straightforward. The roots of all languages are quite similar such as parts of speech (adjectives, adverbs, nouns etc.), although they seem different from each other. Similarly, syntax of all programming languages is a bit different though base expressions are way the same across all programming languages. (Kumar, 2012)

Coding is similar to English writing in many ways. In coding, the sequence of blocks is really essential. Furthermore, computer programmers have their own grammar rules which are known as syntax. Logic is required to write a piece of great comparative essay as in the same way coding. (Brown, 2016) Laura Bradley claims that at first glance, coding seems not to fit English classroom. However, in the same line with learning English, to acquire coding one must learn its vocabulary. There are several reasons why English and coding should be taught in the same class:

- ✓ builds problem-solving skills and logical thinking
- ✓ opens new avenues to creativity
- ✓ gives students a foundation for success in 21st century careers
- ✓ reinforces our own curriculum through a different lens
- ✓ helps students understand how their own technology works
- ✓ opens their eyes to potential careers

Above-mentioned skills are required to acquire any natural language including English. (Bradley, 2017)

2.2. Current IT based courses and materials to learn English.

Learning English to use it in a meaningful context can be a great motivation to acquire the language in a faster way. **English4IT.com** ((English4IT, 2005-2021)) is one of the best online sources to learn IT topics such as software, hardware, programming, coding, databases, and networks through teaching reading, writing, speaking, spelling and listening in English. That course looks like an "Interactive online textbook". Upon completion of the course, user can get a certificate. This course is also user friendly as the one can get to this course by mobile phones, desktop, tablet, or a smart phone. Creators of the course labelled the course to different level of English learners from beginner to advanced. This course meets the requirements of CEFR (Common European Framework of Reference for Languages) scale.

English for Information Technology (Kucharska-Raczunas Anna, Maciejewska Jolanta, 2012) is a course book which teaches English through Information Technologies materials. This course book is aimed at the students who know English at B2 level or higher than this. This coursebook helps the learners to expand their vocabulary and improve their English skills at the same time learning e-science. Online lectures are also available which can be accessed by internet. Students can improve their pronunciation and listening comprehension as well.

Oxford English for Information Technology (Eric H. Glendinning, John McEwan) is course for students who learns IT skills. This books teaches reading, writing, listening, pronunciation, vocabulary through authentic materials such as real interviews IT professionals, materials from textbooks, newspapers, magazines, web pages etc.

Another project, *English For Skills Vocational English For ICT* (Griselda Lushi, Daniela Nuredini, Tatjana Vucani, Dorina Rapti, Fozilet Simoni, 2012), launched in Albania aimed at designing and creating a new curricular structure to teach English at vocational colleges. This project enables students to communicate in English freely relying on the knowledge got from the teaching materials linked to ICT.

YES English & Coding (studio, 2021) is a new summer interactive coding English course to teach English 15 hours and coding 10 hours. This course is accessible to everyone who knows English at least A2 level. There is another project which aim at teaching English combining coding is that *English plus Coding in London!* (School, 2021) This course teaches English skills through required coding types. Students learn Android Application Development with App Inventor, Python, Game Programming with Java, Tech Entrepreneurships, and Prototyping and Design through teaching English language simultaneously.

3. Method

The objective of proposing the qualitative method is to find whether programmers' English language comprehension and programming levels are related to each other. So, qualitative data obtained through interviews in the focus groups among group of high-quality web-programmers, IT specialists and amateur software programming learners. This research is mostly undertaken by phone interview and online voice mails in the form of audio. (table 1)

Table 1.

№1	Questions	Responses(common) on average
1	What is your level of English?	45% - do not know English but understand basically such as they can read, and count; 30%- know English language in the level of working comprehension such as they can communicate in familiar situations, read and write easier topics, pronounce words and aware of general English. The rest of programmers have high level of English language. They can use English professionally in an academic context.
2	What language did you use to learn programming? Why?	They all claimed that they used Uzbek language to learn programming in a basic level although further learning of programming was impossible for them in their native language. Students who know English in a basic level used Russian to learn programming while others who know English in a higher level learnt programming in English.
3	How long it took from you to learn programming?	Advanced programmers claimed that they have been learning programming for years although other not proficient programmers learnt programming from min. 3 to 6 months or further.
4	What is the importance of English language in programming?	Nearly all programmers gave the following reasons: <ul style="list-style-type: none"> - Demanded codes and programs are in English language; - Scarce courses and materials in Uzbek language to learn programming; - Abundance of free effective courses and materials in English language;

5	Did your lack of English knowledge make any problems in learning programming? If so tell us.	Lack of English knowledge can cause <ul style="list-style-type: none"> - falling behind the news in the field; - less likely to make progress in their specialization; - slower learning process;
6	Why did you learn programming in English language?	<ul style="list-style-type: none"> - Without knowing English, programmer do not know what are they doing; - Programming language is the English language;

4. Problems aroused during the research

As the research was conducted through interview, there were some practical or technical problems. Most of the respondents gave unclear answers or did not get to the point of question. That problem was solved by generalizing the all answers. Besides, some respondents were reluctant to give answers or participate in an interview. They made excuses such as they have another more important tasks to do, or not recognizing researchers as breaking the privacy. Those problems were solved by asking official permission from organization.

5. Research analyses

Most of the respondents have basic levels of English language skills, they are unable to express their opinions to others. They hardly understand academic style of speech and readings in this language. We have a minority of respondents who have B1 and B2 level of English skills. Since almost all devices teach programming in English language, they nearly only used materials either in English language tools or in Russian language. YouTube video courses, web-sites which are special for web-programming learners are the common for all respondents while learning from university courses and educational centres is not so popular among the IT specialists. Only one respondent used books to study software programming. Learning process takes from 3 to 6 months to achieve to the beginner level in this stage where the respondents could apply their skills practically.

Surprisingly, majority of respondents claimed that not having adequate learning tools in Uzbek language or having little knowledge in English language are the main barrier for them to achieve their desired level in software programming. Lack of mentors in the field slowed down the pace of learning (among about 95% respondents). Some respondents even told that English language influences cognitively to study programming as it would be easier to memorize they were aware of meaning in the English language. Frequently, they have challenges with the slow speed of internet networks. Above mentioned problems are becoming a common headache for software programming learners. Researches showed that proficiency in English language is the clue to open all doors for programming as learning tools in this language are much more reliable, effective and constitutes almost 90% of all sources. Furthermore, basic terms of IT tools are in English language. Another reason for this is that exchanging ideas with other programmers in foreign languages heavily relied on English language skills. Researches revealed that learning tools in Uzbek language can only be employed to gain basic knowledge in the sphere which can be inadequate to apply into practical use. Some respondents even refused to give answers when they were asked is there any tool in Uzbek language which can be used to learn programming. Majority of respondents highly suggested that www.pdp.uz online platform which is created in Tashkent. Telegram social networks are also good place to learn programming such as channel [Tutorials.uz](https://www.tutorialspoint.com/). Respondents consider that learning tools in Uzbek language is not effective at all among programmers. Data analyses showed that translating English materials into Uzbek language, creating more Uzbek YouTube video classes would be cure to the scarce web-programmers of the country. If they had a chance they would create intensive courses, like [bot.camp](https://www.botcamp.uz/) which is offered by PDP academy at Tashkent, those have the basis to practical use. Researches indicated that the main problem of not just learners, but also high-quality specialists is the Language proficiency of English. Regarding information technologies fast-paced field, there is a high requirement from the specialists to catch up with latest news in the domain. Otherwise, they lose the necessity of their work in this modern competitive world. In fact, this is impossible without knowing English language. The respondents solve their language related problems by asking help from others or using internet translation materials, namely Google translation, online/offline dictionaries. But they claimed that English language is the matter of life and death in the field as almost all 90 % resources are available in English language. Since English language is the key in the field, potential developers should make a key which is comfortable, flexible, and reliable. According to prominent It specialists in Samarkand, B. Khamidov and A. Mardonov, English language comes first before math and logic in putting foundational stone in the field. They emphasized that if there is no specialists with high level of English proficiency, we are even unable to dream of potential IT developers. Most of respondents has a basic levels

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Conclusion

This research paper identified the correlation between IT students, programmers and coders' English comprehension and learning programming. The paper analyzed current courses and materials which teach English language with zero to advanced level. The proposed methodology contributed to the final conclusion which is high level of English comprehension for IT programmers, coders and specialists is utmost important. Therefore, creating an online course and course book which teaches English language for different level of learners in the context of programming will be highly effective. Undertaking a quantitative research among wider scope of IT specialists to identify which programming languages or codes should be included in our project would be highly effective. Teaching English for specific purposes helps us to kill two birds at one stone. Learners can save their time efficiently since they not only learn English language in a meaningful context but also the learners master at coding and programming.

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