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PROJECT-BASED APPROACH IN TEACHING ENGLISH TO IT STUDENTS: TRANSLATION AND FORMATTING OF THE DOCUMENTATION OF A REAL OPEN-SOURCE PROJECT AS A LEARNING TASK

Abstract: *the project-based approach makes foreign language learning closer to real professional activity. The article proposes a learning project in which IT students translate and format the documentation of a real open-source project and submit it to the project as a pull request. To evaluate the suitability of such material, the documentation of six open-source projects (1,686 files, 1.32 million words) was analyzed. Its volume ranged from 8.7 to 501 thousand words, and every 1,000 words contained 33–57 inline code fragments that must not be translated. Stages, roles and assessment criteria of the project are described.*

Keywords: *project-based learning, English for specific purposes, IT students, translation, technical documentation, open-source software, GitHub.*

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ПРОЕКТНЫЙ ПОДХОД В ОБУЧЕНИИ АНГЛИЙСКОМУ ДЛЯ IT-СТУДЕНТОВ: ПЕРЕВОД И ОФОРМЛЕНИЕ ДОКУМЕНТАЦИИ РЕАЛЬНОГО OPEN-SOURCE ПРОЕКТА КАК УЧЕБНАЯ ЗАДАЧА

Аннотация: *проектный подход приближает изучение иностранного языка к реальной профессиональной деятельности. В статье предлагается учебный проект, в котором студенты IT-направлений переводят и оформляют документацию реального проекта с открытым исходным кодом и передают её в проект в виде запроса на слияние (pull request). Чтобы оценить пригодность такого материала, проанализирована документация шести open-source проектов (1686 файлов, 1,32 млн слов). Её объём составил от 8,7 до 501 тыс. слов, а на каждую 1000 слов приходилось 33–57 фрагментов кода в тексте, которые нельзя переводить. Описаны этапы, роли участников и критерии оценивания проекта.*

Ключевые слова: *проектное обучение, английский язык для специальных целей, студенты IT-направлений, перевод, техническая документация, открытое программное обеспечение, GitHub.*

Introduction.

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The project method is one of the main learner-centred approaches in foreign language teaching: students solve a practical problem, use the language as a tool and present a real product [4; 6]. In translator education, D. Kiraly showed that authentic translation projects carried out in collaboration develop professional competence better than isolated exercises [3]. For IT students, the most natural authentic material is the documentation of open-source software. Such projects are developed publicly on platforms like GitHub, where anyone can propose a change as a pull request that is reviewed by the maintainers [1], and many of them have community translations; for example, the Russian translation of the book «The Rust Programming Language» is developed by volunteers in an open repository [5]. Participation in such work combines language practice with the professional skills of version control and teamwork, which corresponds to the needs-based approach of English for specific purposes [2].

The aim of this study is to evaluate the documentation of open-source projects as material for a learning project and to propose the organization of such a project.

Materials and methods

The documentation of six open-source projects was downloaded from their public repositories: the Flask web framework, the book «The Rust Programming Language», Visual Studio Code, the Requests library, Git and Docker. For each project, the number of files and words of running text was counted, as well as the elements that must be preserved during translation: lines of code blocks, inline code fragments and links per 1,000 words. The results were used to determine the volume of work and the formatting skills required, and to design the stages, roles and assessment criteria of the project.

Results

The results of the analysis are shown in Table 1. The volume of documentation varied by almost two orders of magnitude: from 8.7 thousand words in Requests to 501 thousand words in Docker. If each student translates 2,000–2,500 words during a semester, a group of four can translate the whole documentation of a small project like Requests, but only selected sections of large projects.

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All projects contained many elements that must not be translated. Inline code fragments, such as names of functions, commands and options, occurred 33–57 times per 1,000 words, i.e. approximately every 20–30 words; code blocks ranged from 11.5 lines per 1,000 words in the Rust book to 329.5 lines in the Git manual pages, and links from 0.6 to 28.7. The texts were written in Markdown, reStructuredText or AsciiDoc, so the translator must preserve the markup exactly, otherwise the documentation cannot be built.

Table 1

Volume and non-translatable elements of open-source documentation

Project	Files	Words, thousand	Code lines per 1,000 words	Inline code per 1,000 words	Links per 1,000 words
Flask	76	50.0	25.5	44.8	11.8
Rust book	112	157.7	11.5	56.8	3.1
Visual Studio Code	371	470.5	23.9	32.9	21.9
Requests	15	8.7	66.4	45.5	11.7
Git	253	132.4	329.5	37.4	0.6
Docker	859	501.0	49.1	47.9	28.7

Discussion.

Since such a project trains both translation and formatting, we propose the following organization. At the first stage, the group chooses a project with a small documentation or a section of a large one and studies its contribution rules. At the second stage, students compile a glossary of terms and agree on how to translate them and what to leave in English (for example, *repository* is rendered as «репозиторий», while names of commands remain unchanged). At the third stage, each student translates his or her part, and the translations are cross-checked by a partner. At the fourth stage, the text is formatted in the markup language of the project and the documentation is built to check that nothing is broken. At the fifth stage, the group submits a pull request in English, answers the comments of reviewers and makes corrections. The roles of translator, terminologist, editor and contact person for the maintainers rotate between the students. The work is assessed by the accuracy of translation, consistency of terminology, preservation of markup and quality of communication with the maintainers. The main risks are the large volume of some projects and the possi-

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bility that maintainers do not accept a translation; therefore, projects with existing translation programs should be preferred. The proposed project has not yet been tested in teaching, and its effect should be evaluated in future studies.

Conclusion.

The documentation of open-source projects is a suitable authentic material for project-based English teaching for IT students: small projects can be translated completely by a group of students, and the high density of code and links makes formatting an essential part of the task, which combines language learning with real professional practice.

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