

## **Use of Digital Technology in the Compilation of a Foreign Language Mobile Dictionary**

**By**

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### **Abstract**

In today's world, one of the key areas of improvement in the methodology of teaching foreign languages is the integration of digital innovative technologies in the education process. The purpose of the current paper is the analysis of a pilot project that aims at creating a German mobile dictionary using digital and corpus technologies. In this pedagogical experiment, there were 30 participants, all 4th- and 5th-year students of the Kazan Federal University who are majoring in the field of "Pedagogics (with two areas of specialization)". As a result of the study, the project of creating a dictionary in the German language was completed. As the students were developing this multi-functional dictionary using the EduScrum method, they also investigated the capabilities of corpus technologies. Listed in this article are the detailed algorithm of sprints, the template of a dictionary entry, and the overview of tools used for the preparation of training tasks. The list of recommended German text corpora for organizing the work on a dictionary entry is also provided. The survey conducted after the experimental training revealed the successes and the shortcomings of the project, the attitude of participants toward the creation of a dictionary; it also evaluated the effectiveness of the use of web-based services and platforms in the drafting a dictionary entry and methodological guidelines. The findings confirm the effectiveness of digital

innovative technologies in compiling a dictionary. The project was conducted with the help of corpus technologies according to the EduScrum method. It promotes the development of the 4C model components in students: It encourages collaboration and communication within the group, offers opportunities to critically approach the choice of material for creating a dictionary entry, and unlocks the students' creative abilities in the development of training exercises.

**Keywords:** Dictionary, corpus technologies, digital technologies, EduScrum method, foreign language.

## 1. Introduction

Modern education assumes that the teacher is both a medium providing unique information and a guide who assists in finding knowledge, who teaches his/her students to think critically and encourages their independent efforts. Currently, teaching within a paradigm of partnership and personalization has become possible, thanks in part to the abundant opportunities that are available through digital technologies. Corpus technologies and mobile applications in combination with the EduScrum method allow students to become co-authors and active participants in the educational process. Corpus and digital technologies are used by teachers in the development of didactic materials (Fandrych & Tschirner, 2007; Mukherjee, 2002; Shemshurenko et al., 2016; Gilmudinova et al., 2020; Bernardini, 2004.). The conceptual idea of this work is the proper use of digital technologies in the compilation of a mobile dictionary. A large amount of scientific research has focused on the issues and challenges of using the achievements of lexicography in education. In the Russian linguo-didactics, there have been case studies of compiling a learner's dictionary for students of various specializations. These case studies note the difficulties encountered in the process of collecting lexical units and selecting their corresponding equivalents (Omarova, 2017; Gafiyatova & Solnishkina, 2015). There is also a case study of compiling a culturological dictionary of British English (Karpova & Burlakova, 2005). In recent years, several studies have been conducted on the use of Wiki technologies while compiling a Wiki glossary of terms for certain specializations (Titova, 2011; Kharlamenko, 2016).

In other countries, several projects have been carried out, including the ones that were supported by the Institute of German Language in Mannheim (IDS). The objective of these projects was the compilation of a dictionary within the framework of studying German as a native language. Nolting and Radke describe the progress of the project "Schüler machen Wörterbücher – Wörterbücher machen schule" ("Children Make Dictionaries — Dictionaries Make Children"), resulting in the creation of the Denktionary dictionary using wiki-technologies (Nolting, 2018). Bartz emphasizes the possibilities of corpus technologies in compiling a dictionary during German language lessons (Bartz, 2013). The work of Didakowski and Radtke is of special interest. In their study, the DWDS corpus becomes the source of linguistic information for the Wiki dictionary of collocations. The study emphasizes the advantages of a word profile in DWDS due to the availability of statistical tools used for the analysis of the lexemes, and a rich database from a variety of sources (newspapers, magazines, film subtitles, oral speech) (Didakowski & Radtke, 2014).

The relevance of this study lies in the introduction of a multi-functional dictionary which combines linguistic, sociocultural, and methodical components. This dictionary was developed as a mobile application and was created by the students with the use of digital technologies.

## 2. Methods

The following methods were used to achieve the goals of the study: analysis of the scientific materials in the field of corpus linguistics and lexicography as used in the teaching of foreign languages; EduScrum method for organizing project activities; a student survey with its goal to become aware of the attitudes toward the work of compiling a dictionary using corpus technologies.

## 3. Results and Discussion

The experiment of project implementation that had as its goal the creation of a mobile dictionary was conducted during the 2019-2020 academic year. Fourth- and fifth-year students at the Institute of Philology and Intercultural Communication of the Kazan Federal University participated in the project. These students are majoring in the field of "Pedagogic Education (with two areas of specialization)." During the introductory stage, an OnSeT online initial testing was conducted to determine the level of German language proficiency, since level B1 on the European scale is required to work with the text corpora. A questionnaire to establish students' ICT competence was also administered.

The introductory survey found that while 96% of students have fairly stable internet access, only 10% of respondents are familiar with text corpora, and yet more than 75% use the Duden Online Dictionary for educational purposes. 85% of students are familiar with test design sites which they used to create a set of tasks and exercises during their student teaching practice. However, none of the students-respondents was familiar with Glide, a mobile application tool. Thus, the results of the questionnaire make the following conclusion plausible: Students have sufficient ICT competencies to perform the work of compiling a dictionary.

The main phase of the experiment began in September 2019. The organizational phase includes an explanation of choosing the EduScrum method and its attributes for the compilation of the dictionary, an examination of the text corpora and the tools necessary for creating the content of a dictionary entry. The introductory part of the experiment included extensive preparatory work, as students lacked practical experience with data sets and the Glide developer tool for creating a mobile application. Students signed up for Trello, a platform which would later serve as a scrum board. There they marked completed assignments and recorded newly scheduled tasks. Such a board serves as a self-monitoring element, since the students are responsible for marking the progress of the project, as well as a time-management tool that helps with scheduling of who should perform a task and when.

The main phase consists of sprints, during which the main work on the dictionary was conducted: both linguistic information (word meaning, idioms, collocation) and sociocultural data were collected. In addition, methodological material was developed that would be used for trial of the gathered factual material. All data was put into a Google table that served as a database.

During the final phase, groups presented the final product in the form of a mobile dictionary and offered constructive ideas on the presentations of their classmates. After the completion of the project, a survey was conducted to determine the effectiveness of the experiment.

The algorithm of work on the mobile dictionary is constructed in the form of a series of sprints both in the classroom and during their independent work. Table 1 lists the content of the sprints.

**Table 1.** Description of sprints used while developing a mobile dictionary

Sprints	Contents
Sprint 1. Organizational phase. Part 1	Introduction to the EduSCRUM method, the organizational phase of the dictionary compilation project, and the setting of goals. Dividing the group into teams, selecting a scrum master. Familiarization with the German corpora: Digitale Wörterbuch der deutschen Sprache (DWDS) and Wortschatz-Portal Leipzig, and their toolkits.
Sprint 2. Organizational phase. Part 2	Overview of the design tools for creating training tests. Introduction to the Glide developer's tool for creating mobile applications. Signing up with Trello, which will be used as a scrum board.
Sprint 3. Main phase Sprint 4-13. Main phase Linguistic and linguo-culturological components of the dictionary	Introduction and discussion of a dictionary entry template. Working on dictionary entries, searching for information in the corpora. Self-check and the instructor's supervision, content correction.
Sprint 14-18. Main phase Methodological component of the dictionary	Work on creating training exercises using interactive technologies. Self-check and the instructor's supervision, content correction. Placement of materials on the Glide platform.
Final phase	Presentation and discussion of the results of the project, final review of outcomes, and debriefing.

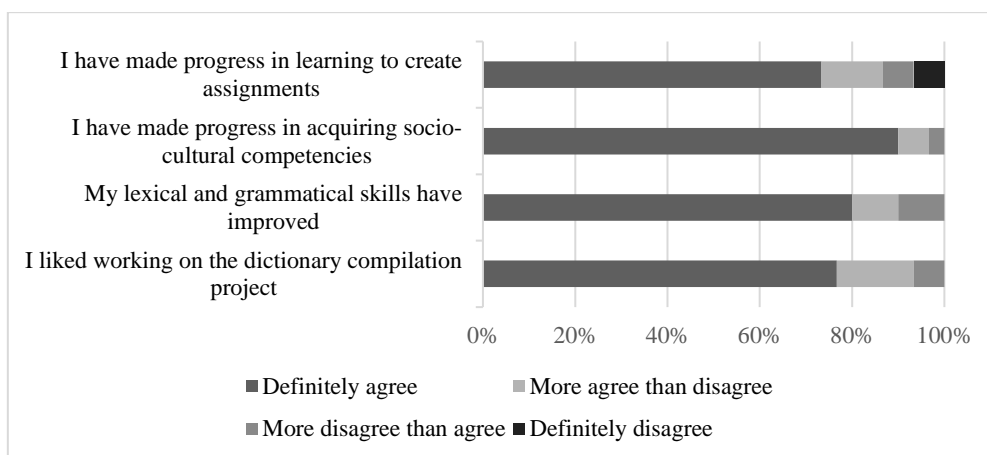
The organizational part of the work, consisting of two sprints, and the methodological part of the main phase were completed during the lectures and the seminars of the class "Methodology of teaching and education in the field of foreign languages." The main phase of work on the dictionary entries took place during the class "Practical course of a foreign language." At the beginning of each class, students were encouraged to discuss the work on the project for 15-20 minutes, to share the updates on the completed tasks and to adjust the work trajectory.

During the third sprint, the mega structure of the dictionary was confirmed. It consists of three parts: an introduction, a word list and a list of resources used. The micro-structure of a dictionary entry and the tools used are presented in Table 2.

**Table 2.** The components of a dictionary entry and the necessary tools for creating content

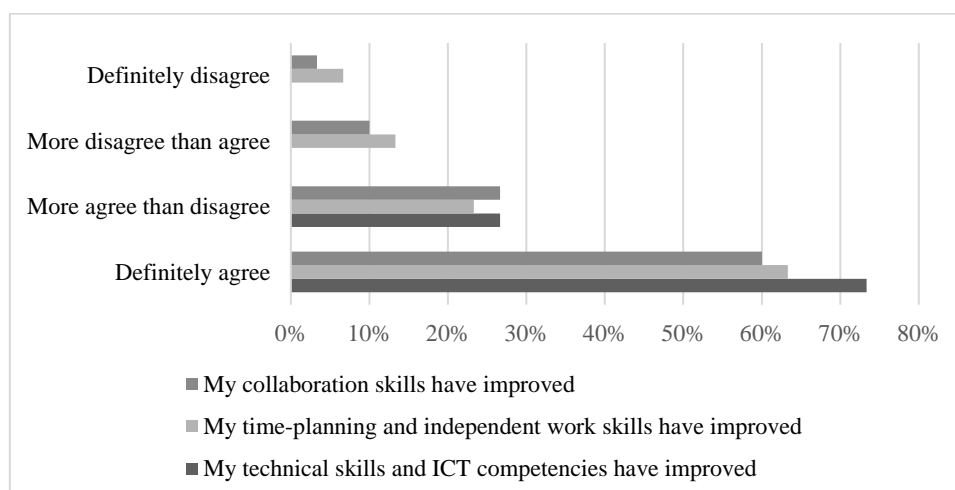
Dictionary entry elements	Content creation tools
	Linguistic information
Meaning of the word	
Etymology of the word	Duden electronic dictionary, the German language corpus Digitales Wörterbuch der deutschen Sprache (DWDS), Wortschatz-Portal Leipzig
The collocation profile of the word	
Examples of word use	
Tasks	The methodological part German corpus Digitale Wörterbuch der deutschen Sprache (DWDS), tools for creating training tasks (LearningApps, Kahoot, OnlineTestPad, Quizzz, Clastime)

After the completion of the project work, a survey was conducted to determine the attitude of students toward the project of dictionary compilation. It should be emphasized that students note the positive influence of the work of creating a dictionary on the development of their lexical-grammatical skills and their sociocultural competence. The project gave them confidence in preparing various tasks and exercises, and in general they liked the work that they had completed (Fig. 1).



**Fig. 1.** Results of the post-experiment surveys of students' attitudes toward the dictionary compilation project using the EduScrum method based on corpus technologies

The project includes not only educational objectives, but also interaction between team members during the process of compilation of the dictionary. The results suggest that students acquired overall competence (the aptitude to engage in social interaction within the group and to fulfill their role on the team; and their time-management skills) and professional expertise (improved computer skills as a means of finding, processing and managing information; the know-how of working with electronic dictionaries and other electronic resources in order to find solutions to various linguistic and methodological tasks) (fig. 2).



**Fig. 2.** Results of the post-experiment surveys of students' attitudes toward the dictionary compilation project using the EduScrum method

Table 3 presents the positive and negative aspects of the project of compiling a dictionary, as reported by the students.

**Table 3.** Students' answers to the questions, "What did you like / dislike about the project of compiling a dictionary?"

Positive aspects	<ul style="list-style-type: none"> <li>- the implementation of new digital technologies during class time</li> <li>- the option to choose the material for a dictionary entry</li> <li>- the compilation of didactic materials</li> <li>- the division of work into sprints</li> <li>- contemporary approach</li> <li>- technical failures of online platforms</li> </ul>
Negative aspects	<ul style="list-style-type: none"> <li>- communication and interaction difficulties within the group</li> <li>- difficulties of organizing independent work within the group</li> <li>- at first it was difficult to master the modern technology, but the instructions for use made the work easier</li> </ul>

## 4. Summary

During the work on the dictionary, students were given an opportunity to be real researchers and teacher-methodologists. According to the questionnaire responses, the dictionary compilation project that was based on the EduScrum method and that utilized corpus technologies, develops components of the "4C" model: creativity, critical thinking, communication, collaboration.

Students note that due to the exposure to the dictionary compilation project, their attitude towards the use of dictionaries has profoundly changed. While previously they would simply look for a translation of a word, after the project they make a conscious effort to explore the meaning, the word usage and etymology more deeply. The main advantage of the mobile dictionary is the quick access to information, and the combination of linguistic and methodological components.

A number of factors should be considered when conducting such projects: Participants should have at least minimal experience in the creation of exercises and tasks and have an arsenal of platforms and services that are used to prepare didactic materials for the formative evaluation.

It should be noted that the instructor is encouraged to pay close attention to the student interactions within the working group. Should any organizational, distributional, or executional problems arise, assistance should be offered to the students. It could be a conversation that attempts to discover the main points of a conflict and to suggest a possible solution.

The dictionary compilation project encouraged the acquisition of independent learning skills by the students. These outcomes also revealed the effectiveness of digital technologies for didactic purposes in a real-life situation of a foreign language class. The results of the research confirm once again the need to expand the range of innovative methods and techniques used in the daily practice of teachers of foreign languages.

## 5. Conclusions

The results of the research prove the effectiveness of a mobile dictionary compilation project that uses text corpora tools. First, there is the positive impact of the project on professional competencies (students' acquiring a system of linguistic knowledge, their

proficiency in the use of the latest methods and technologies in teaching foreign languages and in diagnostics). Second, the project had a profound effect on the versatile competencies of the students (their ability to search for, to conduct critical analysis of and to synthesize information retrieved; their improved social interaction skills and their motivation to fulfill their role on the team).

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