# The Latest Advances in Technology-Enhanced Language Learning: An Overview of Studies on Vocabulary Acquisition

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## Abstract

*In the light of the student-centered learning paradigm, there is an understanding that traditional foreign language (FL) teaching techniques are not really sufficient any more. Therefore, numerous instructors develop innovative tools and devices or adapt already existing apps, platforms, and materials to support their students' acquisition of the necessary productive and receptive FL skills. Such use of devices and digitalized materials is referred to as technology-enhanced foreign language teaching/learning (TEFLL). This type of instruction is especially used for teaching/learning vocabulary, the knowledge of which is one of the prerequisites for being considered fluent in any given FL. Therefore, this paper focuses on studies that investigate FL vocabulary acquisition and report on successful learning outcome. It provides an overview of the most recent studies by analyzing research papers published throughout 2017. Content analysis is employed to reveal the most prevalent tendencies in regards to the (a) research methodology, (c) students' language proficiency, (d) specific tools used, and (e) content of the tasks.*

**Keywords***: Technology-enhanced language learning, foreign language, vocabulary acquisition, innovation in education;*

## 1. Introduction

Several years ago, it was indicated that the effectiveness of technology-enhanced learning (TEL) is questionable due to the lack of empirical proof [26]. However, recently, there have been numerous reports on the different levels of success and increased learning outcome due to innovative Information and Communication Technologies (ICTs) being used in educational contexts. Teachers develop their own ICTs or adapt what is already available. This way, their students' experience TEL, which can suit their needs when learning any subject, be it STEM [5] or foreign languages [15]. The current paper aims to throw light precisely on the latter, by focusing on FL vocabulary acquisition. The present survey provides an overview of the most recent studies that report successful learning outcomes because of employing various ICTs in teaching/learning FL vocabulary. It is important to better understand what educational factors make their use effective. Therefore, the forthcoming sections report on the (a) research methodology, (c) students' language proficiency, (d) specific tools used, and (e) content of the tasks.

The structure of the paper is as follows. Subsection 1.1. briefly explains the methodological approach. Section 2 provides background context. Section 3 contains the results and discussion. Section 4 concludes the survey.

### 1.1. Methods

The overview briefly reports on the latest studies on TEFL vocabulary learning. Following other scholars' approach, Google Scholar Metrics was used for accumulating a database of original research papers [9]. All the journals from the *Educational Technology* category were investigated by looking for a specific keyword, 'language learning'. Only original research papers published in 2017 were selected for the review. Content analysis is employed to analyze the total of 16 collected scientific papers.

## 2. Background context
### 2.1. The learning paradigm as a stimulus for innovation in education

There has been a change from authoritarian pedagogy [14] to student-centered learning, in which there are more possibilities to accommodate the students' needs regarding what, when, and how new knowledge is obtained [6], [14]. The latter phenomenon is called the learning paradigm. Such approach stimulates innovation in education and offers numerous benefits, including student engagement and improvement in learning results [19]. To really achieve that, new teaching methods

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and tools emerge and are introduced into daily teaching/learning environments. According to [21], providing support for students is the key function of student-centered education, and it can be enabled via TEL.

## 2.2. Technology-enhanced foreign language learning (TEFLL)

Even though the term 'technology-enhanced learning' may seem rather self-explanatory, there are different versions of the term (e.g. technology-assisted learning, technology-enriched learning, etc.), and scholars characterize the phenomenon quite differently, too. When trying to explain what TEL is, they tend to emphasize its most important features (see Fig. 1 below).
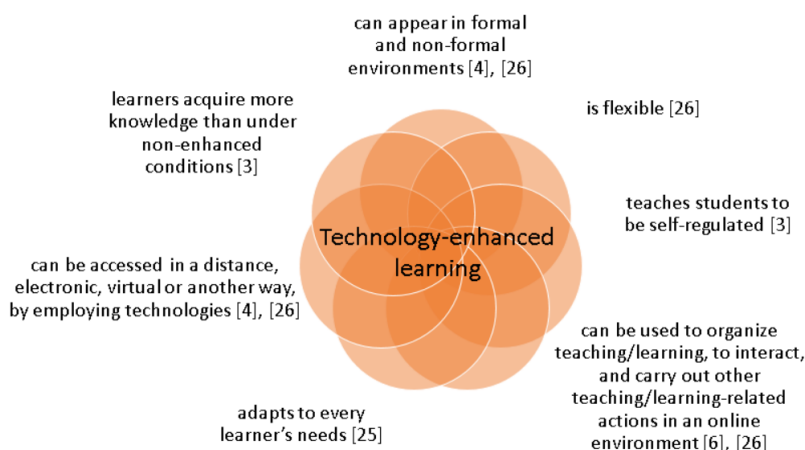


Fig. 1. The key features of technology-enhanced learning

The abovelisted features show that in its essence, TEL corresponds to the learning paradigm.

## 3. Results and Discussion

### 3.1. Research methodology

Out of the 16 selected papers, 14 address learning English; the other two FLs are German and Malay. The studies are based on (quasi)experimental research design, in which the effectiveness of TELL tools is proven by comparing experimental and control groups. As the researchers are at the same time FL instructors, they used convenient samples, within the timespan of their FL course. The sample sizes and to what level of education they belong can be seen in Table 1.

As small samples dominate (and they are mostly from Asian background), the results are not necessarily reliable and generalizable, thus future studies should be carried out with more (diverse) participants, and especially during a longer period of time.

### 3.2. Language proficiency

Not all studies take into account or report on their participants' language proficiency. According to the papers that do reveal the students' initial language proficiency, the FLs were taught from beginner to advanced students. The studies could have benefitted more from taking into account the students' proficiency and achievement, because they are highly likely to have an impact on the learning outcome. For instance, [13] indicates that the augmented reality tasks employed were the most beneficial to the low-achievers. It would be of use to better understand what educational factors make the TELL process effective to be able to increase all students' learning results regardless their different learning styles or abilities.

### 3.3. The tools used and the content of the tasks

There are more tools developed by the researchers rather than repurposed already existing platforms (see Table 2). Among the developed tools, educational games and reading-related tools dominate. The adapted tools vary from reading- to communication-based platforms. The researchers do not indicate whether the tasks that they designed were with their students' diverse language proficiency or learning styles in mind.

To learn or practice the recently covered vocabulary, the participants of the investigations had to complete various tasks on their smartphones, tablets, or computers after receiving instructions first. Once acquainted to the technology, students could carry out the tasks on their own, hence engaging in self-directed learning.

Table 1. The level of education, range of sample sizes, and number of studies

| Level of education | Range of sample sizes | Number of studies |
|---|---|---|
| Primary | 63 | 1 |
| Secondary | 16-105 | 5 |
| Tertiary | 14-138 | 10 |

Table 2. The levels of novelty and types of technology-enhanced tools used for learning foreign language vocabulary

| Level of novelty | Type of technology-enhanced tool |
|---|---|
| Developed | Educational game |
| | Augmented reality educational game |
| | Virtual environment |
| | Context aware system |
| | Mobile vocabulary assistant system |
| | e-book |
| | Digital reading materials with e-glosses |
| | e-portfolio |
| | Jisgsaw tasks |
| Adapted | Video game *World of Warcraft* |
| | e-book |
| | Vine videos |
| | WhatsApp |

The tasks can be ascribed into nine categories that can be seen in Fig. 2. Students acquired and/or practiced new lexis by participating in discussions, analyzing information about the vocabulary items, and carrying out such creative tasks as producing videos.

Not all of the tools encompass the nine types of tasks. It seems plausible to teach the student all important aspects of a word, i.e. its form, pronunciation, meaning, and function. However, as the majority of the tools are designed by language instructors, who are not necessarily well-skilled when it comes to really complicated technical (or even design-related) parts of developing apps and likewise, expecting this would be too far-fetched. Nonetheless, this opens a niche for interdisciplinary cooperation between instructors of different subjects across the curriculum.



**Linguistic analysis**
• Collecting information about words, analyzing word parts
• Defining and describing words

**Communication-based**
• Virtual group tours, discussions, and learning
• Communicating on course assignments
• Discussing pictures

**Cognition-based**
• Puzzles
• Assonance to native language
• Inferring the meaning
• Answering questions

**Creativity-based**
• Making videos
• Taking photos

**Pronunciation**
• Pronouncing new vocabulary items

**Listening**
• Listening and repeating
• Listening and acting accordingly

**Spelling**
• Drag and drop

**Reading**
• Reading comprehension

**Revision**
• Revising course material

Fig. 2. Task categories and examples of the task content

The content of the tasks also requires students to practice other skills, such as teamwork, meaning-making, analysis, and creativity. They also learn to work at their own pace, find relevant information, and become self-reliant learners with increased digital literacy skills. Such array of competences that students improve or acquire while learning FL vocabulary through ICTs helps them obtain some of the most desired skills and competences of a 21st century citizen [11].

## 4.    Conclusion

This paper has provided a brief and concise overview of the recent developments in TEFLL, with a particular focus on vocabulary acquisition. The studies were of experimental nature and the largest part was conducted on tertiary education students. The researchers, FL instructors, proved to be really creative, innovative, and resourceful as they either developed their own technology-enhanced tools or they adapted/repurposed some already ICTs. The tools engaged students in a variety of tasks that not only aim to teach and practice some vocabulary items, but require them to be creative, cooperative, and self-directed learners as well. In the light of the abovementioned, the technology-enhanced FL

vocabulary learning tools correspond to the learning paradigm and show or at least promise increased learning outcome. However, additional research with more defined variables (e.g. students' language proficiency, digital literacy, learning motivation and achievement, etc.) is needed to reveal the true potential and success factors of technology-enhanced FL vocabulary learning.

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