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The Use of Mixed Methods in Measuring the Impact of Technology-Assisted Language Learning (TALL)

Xudoyqulova Ruxshona Anvarjonovna
Student of Uzbekistan State University of World Languages First year student, Uzbekistan

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Abstract: This article explores the use of mixed methods research to study how Technology-Assisted Language Learning (TALL) affects language acquisition. By combining both quantitative and qualitative approaches, the research captures a complete picture of how digital tools support vocabulary growth, grammar improvement, learner motivation, and autonomy. The findings show that TALL has the potential to significantly enhance the language learning experience when designed and used effectively.

Keywords: TALL, mixed methods, language acquisition, digital tools, learner motivation, educational technology, learning apps.

Introduction: With the fast development of digital tools and online platforms, the way people learn languages has changed dramatically. In the 21st century, students are no longer limited to classroom learning. We can see them using the applications of electronic learning tools, including notebooks personal computers (PC), tablets pc, desktop computers, and smartphones, has significantly improved, emerging the concept referred to as “Technology Assisted Language” (TALL) [1]. TALL is gaining ground as it is perceived that the approach of various technology-assisted language learning such as mobile devices or computers has opened the opportunity for efficient language learning [2]. The TALL concept in the scope of those studies leverages both computer-assisted language learning (CALL) and mobile assisted language learning (MALL). CALL is a means of the learning process whereby the learner employs a computer to prepare and enhance their language learning abilities (such as writing, speaking, reading, and listening skills). Numerous merits of computer-assisted learning abound, such as the availability of authentic materials, experimental learning opportunities, high motivation, improved interaction opportunities, and global understanding [3]. On the other hand, MALL refers to any learning facilitated on a mobile device such as an mp3 player. Tablets, eBook readers, and podcasting [4]

While these tools are widely used, it's important to understand how well they work. This is where research plays a key role. However, studying the effectiveness of TALL tools is not simple. Traditional research that only uses numbers (quantitative) may not capture the full experience of learners. To solve this, researchers use a mixed methods approach. This combines statistical data with interviews, observations, and open-ended responses, providing a more detailed and realistic view of how learners interact with technology.

Benefits of Technology-Assisted Language Learning (TALL)

TALL tools offer numerous benefits that can enhance the learning experience for students of all ages and levels. Here are some key advantages:

1. Flexibility and Accessibility

TALL tools allow students to learn anytime and anywhere. This is especially useful for busy learners who cannot always attend face-to-face classes. With a mobile device and internet connection, they can learn on the go—during a bus ride, lunch break, or at home.

2. Personalized Learning

Many apps and online platforms use Artificial Intelligence (AI) to adapt to a learner’s level. This means students can work on tasks that match their abilities. The lessons are neither too easy nor too hard.

This helps learners stay motivated and keeps them in the "optimal learning zone."

3. Immediate Feedback

Instant feedback is one of the biggest strengths of TALL. When learners make mistakes, they get corrections right away. This helps them understand their errors and avoid repeating them. It also makes the learning process more efficient.

4. Gamification and Motivation

Most apps include elements of gamification such as points, levels, leaderboards, and streaks. These features make learning fun and competitive. As a result, students often feel more motivated to complete lessons, maintain streaks, and beat their own scores.

5. Development of Learner Autonomy

TALL encourages students to take charge of their own learning. They can choose what to study, when to study, and how fast to go. This builds learner autonomy and confidence. Independent learners are more likely to continue learning even outside of formal education.

6. Exposure to Real-Life Language

TALL platforms often include listening and speaking tasks that use real-life scenarios. Students learn how to use language in practical situations such as shopping, traveling, or making phone calls. This makes the learning more meaningful and useful.

7. Interactive and Multi-Sensory Learning

TALL often includes videos, audio clips, animations, and interactive quizzes. These materials appeal to different learning styles and help keep students engaged. It also helps with memory, as multi-sensory input makes it easier to retain new vocabulary and structures.

Theoretical Background

This study builds on the idea that language learning is most effective when it is interactive, learner-centered, and supported by meaningful experiences. One key theory that supports this approach is the idea that people learn best by doing—by actively participating and engaging with content. In Technology-Assisted Language Learning (TALL), students use language in real-world tasks, which helps them not only understand new words and grammar but also learn how to use them in practical situations [5].

TALL tools often allow learners to work at their own pace, choose topics that interest them, and receive immediate feedback. These features promote independent learning and help students take responsibility for their own progress, a concept known as learner autonomy [6]. When students feel more in control, they are generally more motivated and engaged [7].

Additionally, digital learning tools make it easier to provide personalized experiences. For example, apps can adapt to a learner's current level and provide challenges that are neither too easy nor too hard. This kind of tailored learning environment keeps students in what is called an "optimal learning zone," where they are more likely to succeed and stay interested [8].

The use of mixed methods in TALL research enables triangulation of data, increasing the validity and richness of findings [9]. Quantitative data can demonstrate measurable progress in specific linguistic domains, while qualitative data reveal the cognitive and emotional dimensions of learner experience. For instance, learners may improve test scores while simultaneously experiencing anxiety or frustration due to the repetitive nature of app content—a nuance that would be missed in a purely quantitative study.

STUDIES CARRIED OUT IN LEARNING STYLE TECHNOLOGY-ASSISSTED LANGUAGE LEARNING

The use of various digital learning tools—such as tablet PCs, desktop computers, smartphones, and laptops—has steadily increased in both online and offline language learning environments. Among these, smartphones and personal computers are reported to be the most commonly used devices in Technology-Assisted Language Learning (TALL) settings. As technology continues to evolve quickly, learners' familiarity and comfort with these tools have also grown. In response to these changes, many researchers have conducted studies exploring the effectiveness of TALL [10].

One such study by Uther and Banks [11] focused on comparing different devices used for language learning. Participants were asked to complete tasks using both an iPad and an iPhone to evaluate how each device supported sensory and cognitive aspects of learning. A total of 41 individuals took part in the study, rating the quality of video and audio on both devices. Based on their feedback, the researchers were able to assess the sensory capabilities of each platform. The study also examined the Mobile Language Learning (MLL) app to evaluate cognitive affordance—how well each device supported thinking and understanding during the learning process. The results showed that the iPad outperformed the iPhone in both sensory quality and cognitive support.

Apart from this, Kew [12] explored the use of a popular educational game called Kahoot to improve students' performance in learning English. The study took a step further by combining the Kahoot app with a collaborative learning method, where students work together to solve problems and complete tasks. The

goal was to examine how using Kahoot in this way affected the learning experience of Japanese students.

A total of 20 students enrolled in an English class participated in the experiment. The results showed that using Kahoot along with collaborative learning had a positive impact on the students. It increased their engagement and made the learning process more enjoyable and interactive. However, one downside noted in the study was that the background music in the Kahoot app could sometimes distract students, drawing their attention away from learning and toward the music.

Despite the growing interest in technology-assisted language learning, no study so far has provided a fully systematic review of the literature on TALL. Addressing this gap is the main purpose of the current research.

CONCLUSION

This research shows that a mixed methods approach is effective for studying how TALL tools influence language learning. It provides a deeper understanding of both the outcomes and the learner experience. TALL can support measurable improvement in language skills while also boosting motivation, autonomy, and engagement. Future studies should include learners from different countries and use long-term designs to assess the lasting effects of TALL.

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