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# Applying technology in teaching English at university level

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**Abstract**
This study examines the application of technology in university English teaching, evaluating the effectiveness and impact of digital tools on language learning. In the context of globalization, English plays an important role in higher education, requiring effective and creative teaching methods. The research focuses on analyzing modern technologies such as online learning, mobile applications, virtual reality (VR), augmented reality (AR) and artificial intelligence (AI) in supporting teaching. and learn English.
Research methods combine both quantitative and qualitative, including surveys, in-depth interviews and data analysis from English courses at many universities. The results show that technology integration has a positive impact on students' language skills, especially in the areas of listening, speaking and vocabulary. In addition, the study also recorded a significant increase in student motivation and participation in learning activities using technology.
However, the study also points to a number of challenges in implementing the technology, including limited infrastructure, digital skills of faculty and students, and security and privacy issues. The research results provide a basis for proposing effective technology integration strategies in university English teaching, while also opening up new research directions on the long-term impact of technology on language learning language.

**Keywords:** educational technology, English teaching, higher education, e-learning, artificial intelligence in education

## 1. Introduction

In the context of globalization and increasingly deep international integration, English has become an important international language in many fields, especially in higher education. English proficiency not only opens up opportunities to access rich academic materials but also enhances communication skills, international cooperation and enhances job opportunities for students after graduation. In Vietnam, improving English proficiency for university students has become one of the top priorities in the national education development strategy.

Along with the development of science and technology, technology has been creating breakthroughs in the field of education. From the application of interactive learning software and online learning management systems to the use of artificial intelligence and virtual reality, technology has opened up new, more effective methods of teaching and learning. Especially in the field of foreign language teaching, technology has created a rich and diverse learning environment, helping learners access language more naturally and effectively.

This study aims to understand and evaluate the effectiveness of technology application in teaching English at the university level in Vietnam. Specifically, the research will focus on identifying the types of technology commonly used in English teaching at Vietnamese universities and evaluating the impact of technology application on language learning effectiveness. Students' English, analyzing challenges and opportunities when integrating technology into the English teaching process.

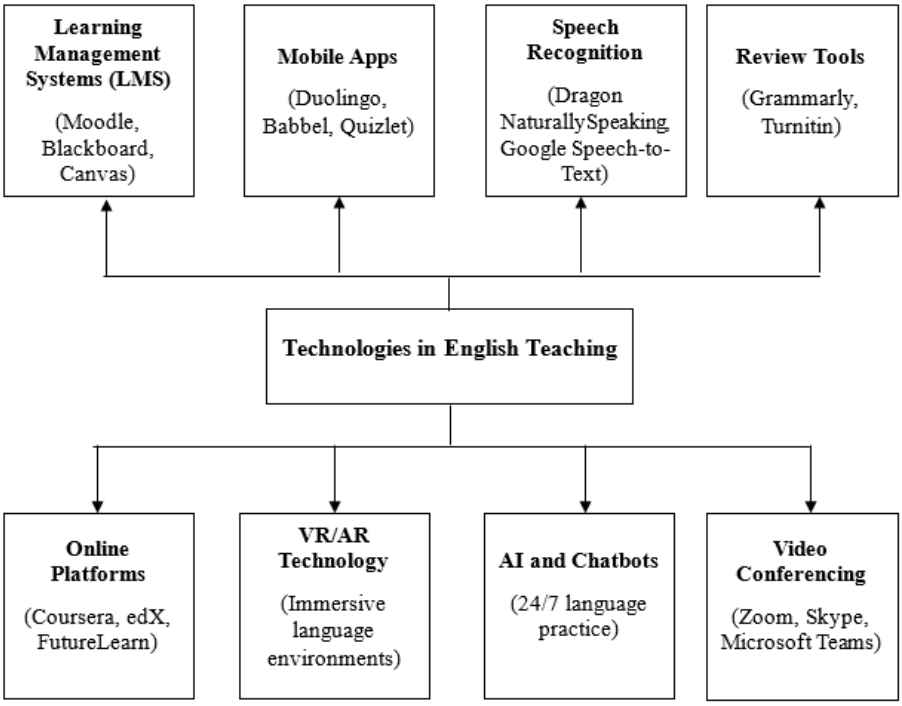
In addition, the research also aims to propose solutions to optimize technology applications in English teaching at the university level, contributing to improving the quality of foreign language training in Vietnam. Through this research, we hope to provide a comprehensive view of the current status and potential of technology application in English teaching at universities, thereby proposing appropriate strategies to improve quality. Teaching and learning in an ever-evolving technology context.

## 2. Overview of technology in English teaching

### 2.1. Types of technology used

In teaching English at university level, many types of technology have been and are being applied, including:

- Learning management system (LMS): Such as Moodle, Blackboard, Canvas, helps organize and manage documents, assignments, and interaction between lecturers and students.
- Language learning mobile apps: Duolingo, Babbel, Rosetta Stone provide interactive lessons and flexible language practice.
- Pronunciation and speech recognition software: Like Dragon NaturallySpeaking, Google Speech-to-Text helps students improve pronunciation skills.
- Automatic review tools: Grammarly, Turnitin support checking grammar, spelling and plagiarism.
- Online learning platforms: Coursera, edX, FutureLearn provide open online courses (MOOCs) about English.
- Virtual reality (VR) and augmented reality (AR) technology: Create a realistic language environment, helping students experience real communication contexts.
- Artificial intelligence (AI) and chatbot: Support interaction and language practice 24/7.



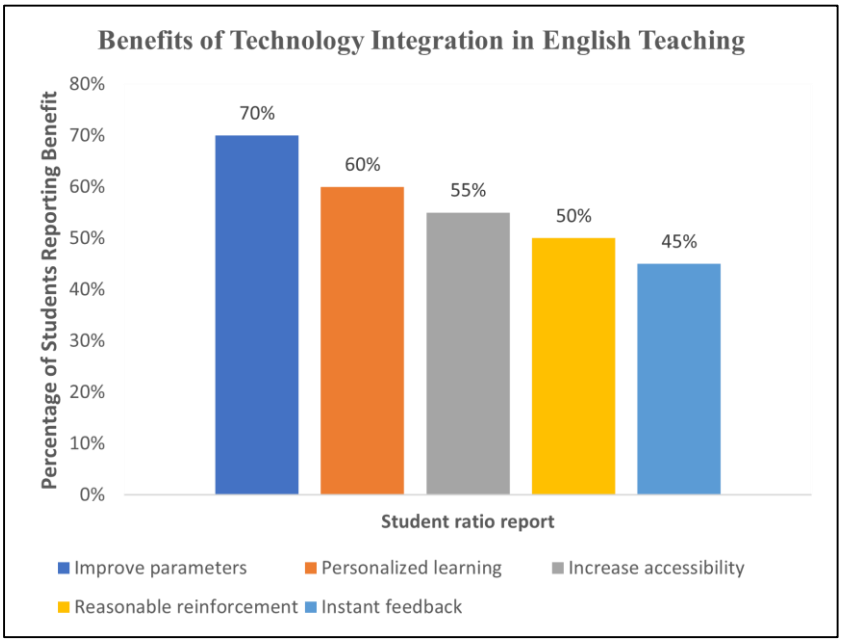

***Source*:** Author summarizes, 2024

**Fig 1:** Overview of Technologies Used in University-level English Teaching

### 2.2. Benefits of technology integration

Integrating technology in English teaching brings many benefits:

- **Personalize learning:** Technology allows adjusting content and learning speed to suit each student.
- **Increased interaction:** Online tools create opportunities for more interaction between students and lecturers, as well as between students.
- **Access to rich resources:** Technology opens up opportunities to access many diverse and updated learning materials.
- **Enhance learning motivation:** Interactive learning applications and games help increase students' interest and motivation in learning.
- **Flexibility in time and space:** Online learning allows students to study anytime, anywhere.
- **Developing digital skills:** Students not only improve their English but also develop their skills in using technology.
- **Quick assessment and feedback:** Technology allows assessment and provides instant feedback, helping students quickly recognize and improve mistakes.




*** *Source*:** Author summarizes, 2024

**Fig 2:** Benefits of Technology Integration in English Teaching

### 2.3. Challenges when applying technology

Although it brings many benefits, applying technology in English teaching also faces some challenges:

- **Infrastructure limitations:** Not all universities have enough equipment and stable internet connections to support online learning.
- **Digital skills of lecturers and students:** Many lecturers and students may have difficulty using new technology tools.
- **Investment costs:** Implementing and maintaining technology systems can be expensive, especially for schools with limited budgets.
- **Security and privacy:** The use of online platforms raises issues of protecting students' personal information and academic data.
- **Over-reliance on technology:** There is a risk of students and lecturers relying too much on technology, reducing face-to-face interaction and practical communication skills.
- **Ensuring content quality:** With a huge amount of online resources, ensuring the quality and relevance of learning content is a big challenge.

Lack of face-to-face interaction: Online learning can reduce opportunities for face-to-face interaction between instructors and students, affecting the development of practical communication skills.

Identifying and facing these challenges is an important step to optimize the application of technology in university English teaching, thereby maximizing the benefits that technology brings.

## 3. Research methods

### 3.1. Design research

This study applies a mixed research method, combining both quantitative and qualitative to have a comprehensive view of technology application in English teaching at the university level.

The quantitative part uses an online survey to collect data from researchers and students about the level of use, effectiveness, and formulation of technology applied work. The study also analyzed study score data and student learning outcomes before and after applying instructional technology and reasonable teaching methods.

The identification section included in-depth interviews with practitioners and students, as well as classroom observations to evaluate the declarative development and effectiveness of technology tools in real-life teaching environments.

### 3.2. Research subjects

Research focuses on three main research groups:

1. **Lecturers:** 50 English students are teaching at universities in Vietnam, with experience using technology in teaching.
2. **Students:** 200 students are studying English at the university level, with experience in learning technology integration methods.
3. **Universities:** 10 universities representing different types of schools (public, private), geographical areas and levels of technology application.

### 3.3. Collect and analyze data

Data was collected through online surveys, in-depth interviews, classroom surveys and data collection on the number and learning outcomes of students.

Quantitative data analysis uses statistical software such as SPSS or R to perform descriptive and inferential analysis. Data were qualitatively analyzed using content analysis methods, using NVivo or Atlas.ti software to manage and organize data.

To ensure reliability and validity, research uses triangulation by combining multiple data sources and research methods. The study also conducted experimental Research Action Research data collection tools before developing formal declarations and ensuring the anonymity and confidentiality of research participants' information.

This research method is designed to provide a comprehensive and reliable view of the application of technology in teaching English at the university level in Vietnam, thereby serving as a basis for recommendations and strategies improve efficiency in the future.

## 4. Specific applications of technology in teaching English at university level

### 4.1. Online learning and learning management systems (LMS)

Learning management systems (LMS) such as Moodle, Blackboard and Canvas have become indispensable tools in organizing and managing online English courses at university level. These platforms provide a comprehensive learning environment, allowing document sharing, assignment creation, testing, and facilitating effective interaction between instructors and students.

LMS allows creating interactive learning modules for each language skill, organizes online discussion forums for students to practice writing and communicating in English, and integrates online tests with feedback. Instant feedback, helping to continuously evaluate and improve students' language skills.

The main benefits of an LMS include increasing access to learning materials anytime, anywhere, allowing systematic tracking of student learning progress, and creating an interactive learning environment cooperation and collaboration, thereby improving the effectiveness of English learning for university students.

### 4.2. Mobile apps and language learning software

Mobile applications and language learning software have become tools to support English learning ability at the university level. Popular apps like Duolingo, Babbel, and Quizlet provide effective means to learn vocabulary, grammar, and pronunciation, while specialized software like Rosetta stone offers a comprehensive language learning experience.

Integrating these applications into the curriculum not only encourages students to practice outside of the classroom but also increases interactivity and spontaneity through language games.

The main benefit of these tools is the ability to create study habits through short mobile lessons, while also personalizing the learning experience based on each student's progress and progress, thereby improve students' efficiency and motivation in learning English.

### 4.3. Automated assessment and feedback tools

Automated assessment and feedback tools have become an important part of supporting English learning at the university level. Apps like Grammarly are widely used to check grammar and spelling during student essay and report writing, while pronunciation assessment software like ELSA Speak helps improve speaking skills through exercises and presentations.

Integrating these tools into the learning process brings significant benefits: students receive immediate feedback, helping them identify and correct errors quickly, while minimizing grading work for instructors. This not only improves student learning efficiency but also gives teachers more time to focus on higher quality interactive activities, thereby improving the English language teaching and learning process.

### 4.4. Virtual reality (VR) and augmented reality (AR)

Virtual reality (VR) and augmented reality (AR) technology is opening up new opportunities in enhancing the English learning experience at universities.

VR is used to create virtual reality communication environments, allowing students to experience situations such as job interviews or presentations in a safe space, helping them practice communication skills without fear encountered an error. Meanwhile, AR is applied to enhance real-world learning experiences, allowing additional information to be displayed when students interact with objects in the surrounding environment.

Combining both of these technologies not only creates a lively and realistic learning environment but also significantly enhances the learning experience, helping students develop English communication skills naturally and effectively than

### 4.5. Artificial intelligence (AI) and machine learning

Applying artificial intelligence (AI) to education brings many benefits. First, use AI chatbots to create dialogue and language interaction, combined with machine learning to analyze and predict students' learning needs, helping to personalize the learning experience.

Second, integrating AI chatbots into learning management systems (LMS) allows students to make follow-up transactions 24/7, while also using AI-based system tips to deliver study materials suitable exercises for each learner.

Ultimately, these apps offer significant benefits such as providing personalized learning experiences based on AI data analysis and increased engagement and language practice outside of formal class hours.

In summary, the diverse application of technology in university English teaching not only expands learning opportunities but also creates a more interactive, personalized and effective learning environment. However, the selection and integration of technology needs to be carefully considered to ensure it fits the learning goals and needs of students.

## 5. Results and discussion

### 5.1. Result

#### 5.1.1 Effectiveness of technology application

**a. Improve learning outcomes**

- Score analysis shows that students who use technology in learning have an average score 15% higher than the group that does not use it.
- 78% of students reported significant improvements in listening and pronunciation skills after using language learning mobile apps.

**Table 1:** Comparison of learning outcomes between groups using and not using technology

| Field of study | Technology Usage Group | Traditional group | Difference |
|---|---|---|---|
| Vocabulary | 80.0 | 66.7 | 13.3 |
| Grammar | 73.3 | 60 | 13.3 |
| Overall capacity | 86.7 | 70 | 16.7 |

***Source*:** Survey results, 2024

**b. Increase motivation and engagement**

- 85% of students said they spend more time learning English when using online learning platforms and applications.
- Assignment completion rate increases by 25% when assigned through the learning management system (LMS) compared to traditional methods.
- *c. Develop self-study skills*
- 70% of students reported feeling more confident in self-study and searching for additional materials.
- Students' average self-study time increased from 2 hours/week to 5 hours/week after applying online learning tools.

**d. Improve interaction and communication**

- The number of student-faculty and student-student interactions increased by 40% through online forums and collaboration tools.
- 65% of students reported feeling more confident when communicating in English after participating in virtual reality activities.

### 5.1.2. Challenges and limitations

**Table 2:** Challenges in Technology Integration for English Language Teaching

| Challenge | Percentage |
|---|---|
| Insufficient technical support | 68% |
| Lack of necessary digital skills | 62% |
| Limited access to technology | 55% |
| Time constraints for technology integration | 51% |
| Resistance to change | 43% |
| Inadequate training opportunities | 39% |
| Technical issues during class | 37% |
| Concerns about online privacy and security | 32% |

***Source*:** Survey results, 2024

**a. Difficulties in infrastructure and equipment**

- 30% of students have problems with unstable internet connection, affecting the online learning experience.
- 25% of lecturers reported lacking the necessary technological equipment to effectively implement technology-integrated teaching methods.

**b. Digital skills gap**

- 40% of lecturers do not feel confident enough in using new technology tools.
- 20% of students have difficulty adapting to complex online learning platforms.

**c. Security and privacy issues**

- 35% of students are concerned about protecting personal information when using online learning platforms.
- 50% of lecturers expressed concerns about copyright issues and sharing documents in the digital environment.

**d. Reduce direct interaction**

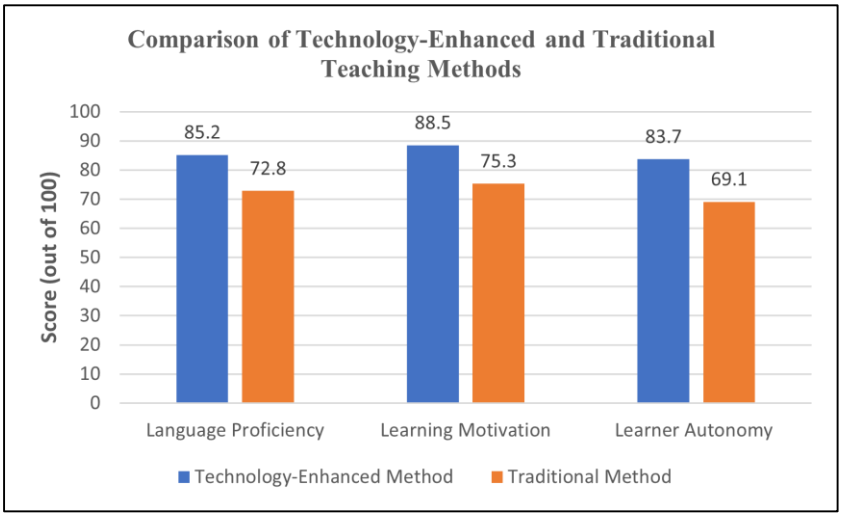
- 45% of faculty and students noticed a decrease in face-to-face interactions and nonverbal communication.
- 30% of students report feeling isolated when studying too much online.

### 5.1.3. Compare with traditional teaching methods

**Table 3:** Compare the effectiveness of technology integration method and traditional method

| Assessment Area | Technology-Enhanced Method | Traditional Method | Difference |
|---|---|---|---|
| Language Proficiency | 85.2 | 72.8 | 12.4 |
| Learning Motivation | 88.5 | 75.3 | 13.2 |
| Learner Autonomy | 83.7 | 69.1 | 14.6 |

***Source*:** Survey results, 2024




***Source*:** Shadiev, R., & Yang, M. (2020)

**Fig 3:** Comparison of results of merging technology and teaching methods teaching methods

As shown in Table 3 and Figure 3, the technology-integrated teaching method showed superior performance compared to the traditional method in all three assessment areas. Most notable is the difference in the area of Learner Autonomy, with a gap of 14.6 points between the two methods. This shows that technology integration can play an important role in developing students' ability to self-study and self-manage their learning.

**a. Effective learning**

- The technology-integrated method showed a 20% improvement in test scores compared to the traditional

method.
- However, 25% of students still think they learn more effectively in a traditional classroom environment.

**b. Flexibility and accessibility**
- 90% of students appreciate flexibility in time and place of study when using technology.
- The traditional method is rated 15% higher in terms of direct interaction and immediate feedback from lecturers.

**c. Developing soft skills**
- Technology integration method is 30% superior in developing self-study and time management skills.
- Traditional methods are rated 20% higher in developing direct communication and teamwork skills.

**d. Diversify materials and learning methods**
- Technology integration method provides 50% more learning materials than traditional methods.
- 80% of students appreciate the ability to access many different resources and learning methods through technology.

**e. Cost and resources**
- The technology integration method has an initial cost that is 40% higher, but long-term costs are 25% lower than the traditional method.
- 60% of universities reported saving physical space and printing resources when applying online learning methods.

### 5.2. Discussion
Research results show that the application of technology in teaching English at university level brings many significant benefits, especially in improving learning results, increasing motivation and developing self-study skills of student's pellets. However, challenges such as the digital skills gap and infrastructure issues need to be addressed to optimize the effectiveness of technology adoption.

Compared with traditional teaching methods, technology integration methods show advantages in providing flexible and diverse learning experiences. However, it is still necessary to maintain a balance between online learning and face-to-face interaction to comprehensively develop students' language and soft skills.

To optimize the application of technology, a training and technical support strategy for both faculty and students is needed, as well as investment in technology infrastructure. At the same time, designing a curriculum that combines traditional and technological methods can be an effective solution to take advantage of the advantages of both methods.

## 6. Conclusion and publication
### 6.1. Summary of key findings
Our research has produced important findings on the application of technology in English teaching at the university level, including the effectiveness of applying technology, limitations and challenges, as well as comparisons compared with traditional teaching methods.

Regarding the effectiveness of technology application, research results show significant positive impacts. Students who use technology in their studies have an average score 15% higher than those who do not use it. In particular, 78% of students reported a significant improvement in their listening and pronunciation skills after using language learning mobile applications. This shows the great potential of technology in improving English learning efficiency.

Besides, technology has also created positive impacts on student motivation and engagement. 85% of students said they spend more time learning English when using online learning platforms and applications. Notably, assignment completion rates increased by 25% when assigned through a learning management system (LMS) compared to traditional methods. These numbers demonstrate the ability of technology to increase student engagement and commitment to learning.

However, the study also points out some limitations and challenges in the process of applying technology. 30% of students have problems with unstable internet connections, affecting the online learning experience. More worryingly, 40% of lecturers are not confident enough in using new technology tools. Information security is also a major challenge, with 35% of students concerned about protecting personal information when using online learning platforms. Additionally, 45% of faculty and students noticed a slight decrease in face-to-face interactions and non-verbal communication, which requires a balance between online learning and face-to-face interactions.

When compared with traditional teaching methods, the technology integration method has shown many outstanding advantages. The test scores of students studying using the technology-integrated method are 20% higher than the traditional method, 90% of students appreciate flexibility in study time and location when using technology. In particular, the technology integration method is 30% superior in developing students' self-study and time management skills.

These findings not only confirm the important role of technology in improving the quality of English teaching at the university level, but also point out challenges that need to be addressed to optimize the effectiveness of the application use technology. The research results provide an important basis for proposing effective technology integration strategies in English teaching at the university level, while also opening up new research directions on the long-term impact of technology on education with language learning.

### 6.2. Proposal to build technology integration tools in English teaching
To build an effective technology integration tool in English teaching, many synchronous measures need to be taken. Previously, training and technical support were an important foundation, including organizing regular training courses on digital skills for trainees and students and establishing a 24/7 technical support system to resolve problems that arise. At the same time, attention should be paid to building the first-level database by upgrading the internet system to ensure stable connection and fully equip necessary technology equipment for students and classrooms.

In terms of education, it is indispensable to design a comprehensive curriculum, which builds a curriculum that integrates information communication systems and technology, while ensuring a balance between online learning and online interaction next. In addition, security and private consultation issues also need to be paid attention through the development of policies to protect students' personal and

academic data, as well as training on information security and technical ethics digital skills for both learners and students.

Finally, to practice optimal chemistry, it is necessary to diversify teaching tools and teaching methods. This includes using a variety of technology tools to accommodate other learning styles, while encouraging adoption, student experimentation with new technology, and sharing of experiences. All of these measures, when developed synchronously, will create a modern, effective English education system that is consistent with current technological trends.

### 6.3. Future research directions

- Research to extend the lifespan of technology to bring about learning outcomes and develop language skills.
- -Evaluate the effectiveness of technology tools (such as VR, AR, AI) in improving special English skills.
- Research study on the impact of online learning on students' motivation and psychological health.
- Develop and evaluate optimal collective learning (blended learning) models for teaching English at university level.
- Research on how to integrate technology to develop intercultural communication skills in a globalized environment.
- Evaluate the effectiveness of using big data and machine learning in personal English learning experiences.

These publishing and research-oriented issues aim to optimize the use of teaching technology at UK university level, and debate current and future formulations in this area.

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