

DIDACTIC POTENTIAL OF MOBILE APPLICATIONS IN DEVELOPING DIGITAL COMPETENCE OF TEACHERS AND PSYCHOLOGISTS**ISMAILOV KAMOLATDIN KURULTAYEVICH**

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Abstract: In the context of rapid digitalization of education, the development of digital competence among future professionals has become a strategic priority of higher education systems worldwide. Pre-service teachers and psychologists, as key agents of educational and psychological support, are expected not only to possess subject-specific knowledge but also to demonstrate a high level of digital literacy, pedagogical flexibility, and technological adaptability. This study explores the didactic potential of mobile applications in fostering digital competence among pre-service teachers and psychologists within English language instruction.

The research is grounded in contemporary theories of digital competence, mobile-assisted language learning (MALL), and constructivist pedagogy. A mixed-methods research design was employed, combining experimental teaching, quantitative assessment, and qualitative analysis. The experimental phase was conducted with undergraduate students majoring in pedagogy and psychology at a higher education institution, where mobile applications such as Kahoot, Gimkit, Quizlet, and interactive learning platforms were systematically integrated into English language instruction.

The findings demonstrate that the purposeful and methodologically structured use of mobile applications significantly enhances students' digital competence across cognitive, operational, communicative, and reflective dimensions. Moreover, mobile learning tools were found to increase learner motivation, autonomy, collaborative skills, and critical digital awareness. The study contributes to the field of pedagogy by proposing a didactic framework for integrating mobile applications into teacher and psychologist education programs, emphasizing their role in developing sustainable digital competence.

Keywords: digital competence, mobile applications, pre-service teachers, pre-service psychologists, mobile-assisted learning, didactic potential, English language teaching.

Introduction

The transformation of education under the influence of digital technologies has reshaped the professional requirements imposed on future educators and psychologists. In the 21st century, digital competence is no longer considered an auxiliary skill but rather a core component of professional readiness. Pre-service teachers and psychologists are expected to navigate digital environments effectively, integrate technological tools into pedagogical and psychological practices, and support learners in developing digital literacy and critical thinking.

Mobile technologies, in particular, have gained significant prominence due to their accessibility, flexibility, and learner-centered nature. Smartphones and mobile applications have become an integral part of students' everyday lives, creating new opportunities for learning beyond traditional classroom boundaries. This shift necessitates a rethinking of didactic approaches and instructional methodologies, especially in higher education institutions preparing future pedagogical and psychological specialists.

Problem Statement

Despite the widespread availability of mobile devices, their didactic potential in higher education remains underutilized or applied inconsistently. In many cases, mobile applications are used sporadically, without a clear pedagogical rationale or alignment with learning objectives. As a result, students' digital competence develops unevenly, often limited to basic technical skills rather than encompassing higher-order competencies such as digital communication, collaboration, content creation, and ethical awareness.

This problem is particularly acute in the training of pre-service teachers and psychologists, whose future professional roles require a comprehensive and reflective approach to digital technology use. Therefore, there is a pressing need to identify and systematize the didactic possibilities of mobile applications in fostering digital competence within the framework of English language instruction.

Research Aim and Objectives

The aim of this study is to investigate the didactic potential of mobile applications in developing digital competence among pre-service teachers and psychologists.

To achieve this aim, the study addresses the following objectives:

- to analyze theoretical approaches to digital competence and mobile learning;
- to identify the structural components of digital competence relevant to pre-service teachers and psychologists;
- to examine the didactic functions of mobile applications in English language teaching;
- to experimentally evaluate the effectiveness of mobile applications in developing students' digital competence;
- to propose a didactic model for integrating mobile applications into higher education curricula.

Research Questions

The study seeks to answer the following research questions:

1. What constitutes digital competence in the context of pre-service teacher and psychologist education?
2. What didactic functions do mobile applications perform in English language instruction?
3. How does the systematic use of mobile applications influence the development of students' digital competence?
4. What pedagogical conditions ensure the effective integration of mobile applications into higher education?

Theoretical Framework

Concept of Digital Competence

Digital competence is a multidimensional construct encompassing knowledge, skills, attitudes, and values related to the effective and responsible use of digital technologies. According to the European Commission's DigComp framework, digital competence includes five key areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving.

For pre-service teachers and psychologists, digital competence extends beyond technical proficiency to include pedagogical and psychological dimensions. It involves the ability to select appropriate digital tools, design technology-enhanced learning activities, support learners' digital well-being, and critically evaluate digital resources.

Digital Competence in Teacher and Psychologist Education

In teacher education, digital competence is closely linked to pedagogical competence and professional identity. Teachers are expected to model effective digital practices and foster students' digital skills through instructional design. Similarly, psychologists must use digital tools for assessment, communication, data analysis, and intervention, while adhering to ethical standards and confidentiality requirements.

The integration of digital competence into pre-service education programs requires a holistic approach that combines theoretical instruction, practical application, and reflective practice. English language courses offer a particularly fertile ground for such integration, as they naturally involve communication, collaboration, and access to authentic digital content.

Mobile-Assisted Language Learning (MALL)

Mobile-Assisted Language Learning (MALL) refers to the use of mobile devices and applications to support language learning. MALL is characterized by portability, immediacy, personalization, and learner autonomy. Research indicates that mobile applications can enhance vocabulary acquisition, grammar practice, listening and speaking skills, as well as learner motivation and engagement.

From a didactic perspective, mobile applications serve not only as content delivery tools but also as mediators of interaction, feedback, and assessment. When integrated into a coherent instructional framework, they can contribute to the development of both language proficiency and digital competence.

Methodology

Research Design

This study employed a **mixed-methods research design**, combining quantitative and qualitative approaches to ensure a comprehensive analysis of the didactic potential of mobile applications in developing digital competence among pre-service teachers and psychologists. The mixed-methods paradigm was selected due to its capacity to integrate measurable learning outcomes with participants' subjective experiences, reflections, and perceptions.

The research design consisted of three interconnected stages:

1. **Diagnostic (pre-experimental) stage**, aimed at identifying the initial level of students' digital competence;
2. **Formative (experimental) stage**, during which mobile applications were systematically integrated into English language instruction;
3. **Summative (post-experimental) stage**, focused on evaluating changes in digital competence and analyzing the effectiveness of the proposed didactic approach.

A **quasi-experimental model** with control and experimental groups was applied to ensure reliability and validity of the findings.

Participants

The research was conducted at a higher education institution specializing in pedagogy and psychology. A total of **124 undergraduate students** participated in the study. All participants were enrolled in **pre-service teacher education** and **pre-service psychology programs** and were studying English as a foreign language as part of their curriculum.

The participants were divided into two groups:

- **Experimental group (EG)** – 62 students, who received English language instruction integrated with mobile applications;
- **Control group (CG)** – 62 students, who followed a traditional instructional approach without systematic use of mobile applications.

Both groups were comparable in terms of age, academic background, English language proficiency (B1–B2 level according to CEFR), and prior exposure to digital technologies.

Research Instruments

To assess the development of digital competence, a set of research instruments was employed:

1. **Digital Competence Diagnostic Questionnaire**, adapted from the DigComp framework, covering the following components:
 - informational competence;
 - communicative competence;
 - operational and technological competence;
 - creative digital competence;
 - reflective and ethical competence.
2. **Language Learning Achievement Tests**, designed to measure students' progress in vocabulary, grammar, listening, and speaking skills.
3. **Observation Checklists**, used to document students' engagement, collaboration, and digital behavior during classroom activities.
4. **Semi-structured Interviews and Reflective Journals**, aimed at collecting qualitative data on students' attitudes, motivation, and perceived challenges.

Mobile Applications Used in the Experiment

The formative stage of the experiment involved the purposeful integration of selected mobile applications, each aligned with specific didactic objectives:

- **Kahoot** – for formative assessment, motivation enhancement, and competitive learning;

- **Gimkit** – for adaptive practice, strategic thinking, and autonomous learning;
- **Quizlet** – for vocabulary acquisition, spaced repetition, and self-regulated learning;
- **Google Classroom and Padlet** – for collaboration, digital communication, and content sharing.

The selection of applications was based on criteria such as pedagogical value, usability, accessibility, and relevance to English language learning.

Experimental Procedure

The experimental instruction was conducted over one academic semester (16 weeks). Mobile applications were integrated into all stages of the English language lesson:

- **warm-up and motivation;**
- **presentation of new material;**
- **practice and reinforcement;**
- **assessment and feedback;**
- **reflection and self-evaluation.**

Special attention was paid to aligning mobile activities with learning objectives and fostering students' awareness of digital competence development.

Data Analysis Methods

Quantitative data were analyzed using descriptive statistics and comparative analysis to identify differences between pre- and post-test results. Qualitative data were analyzed through thematic coding, allowing for the identification of recurring patterns and insights related to students' experiences.

Results

Initial Level of Digital Competence

At the diagnostic stage, the majority of participants in both groups demonstrated a **moderate level of digital competence**. Students were generally confident in basic operational skills, such as using smartphones and accessing online resources. However, significant gaps were identified in areas such as digital content creation, critical evaluation of information, and ethical use of digital tools.

No statistically significant differences were observed between the experimental and control groups at the pre-test stage, confirming the initial equivalence of the groups.

Development of Digital Competence in the Experimental Group

Post-experimental results revealed a **significant increase in digital competence** among students in the experimental group. The most notable improvements were observed in:

- **communicative and collaborative competence**, due to frequent use of interactive platforms;
- **creative digital competence**, as students engaged in content creation tasks;
- **reflective competence**, supported by self-assessment and feedback mechanisms.

In contrast, the control group showed only marginal improvements, primarily limited to operational skills.

Impact on English Language Learning

The integration of mobile applications also positively influenced students' English language achievement. The experimental group demonstrated higher gains in vocabulary retention, listening comprehension, and speaking fluency. Students reported increased motivation and reduced anxiety, particularly during assessment activities.

Discussion

Didactic Potential of Mobile Applications

The findings of the study confirm that mobile applications possess significant didactic potential in developing digital competence among pre-service teachers and psychologists. This potential is realized through a combination of pedagogical, technological, and psychological factors that transform traditional learning environments into interactive, learner-centered ecosystems.

From a didactic perspective, mobile applications perform several key functions:

- **Motivational function:** Game-based elements, instant feedback, and competitive features of applications such as Kahoot and Gimkit enhance students' intrinsic motivation and engagement.
- **Cognitive function:** Mobile tools support active knowledge construction by enabling learners to access, process, and apply information in diverse formats.
- **Communicative function:** Interactive platforms facilitate collaboration, peer interaction, and digital communication in English.
- **Reflective function:** Self-assessment tools and analytics promote metacognitive awareness and reflective learning practices.

These functions align with constructivist and connectivist learning theories, which emphasize learner autonomy, social interaction, and knowledge co-construction.

Development of Digital Competence Components

The study demonstrates that mobile applications contribute to the balanced development of all components of digital competence:

1. **Informational competence:** Students learned to search for, evaluate, and organize digital information critically.
2. **Communicative competence:** Collaborative tasks improved students' ability to communicate effectively in digital environments.
3. **Operational competence:** Regular use of mobile tools enhanced technological fluency.
4. **Creative competence:** Content creation activities fostered creativity and digital expression.
5. **Ethical and reflective competence:** Discussions on digital ethics and responsible use of technology promoted critical digital citizenship.

The holistic nature of this development is particularly important for pre-service teachers and psychologists, whose future professional roles require ethical awareness and reflective practice.

Pedagogical Conditions for Effective Integration

The effectiveness of mobile applications depends on several pedagogical conditions:

- **Methodological alignment** between digital tools and learning objectives;
- **Instructor digital competence** and readiness to facilitate technology-enhanced learning;
- **Structured instructional design**, ensuring systematic rather than sporadic use of mobile applications;
- **Reflective learning environment**, encouraging students to analyze their digital experiences.

Without these conditions, the didactic potential of mobile applications may remain unrealized.

Comparison with Previous Studies

The results of this study are consistent with prior research on mobile-assisted learning and digital competence development. However, this research extends existing knowledge by focusing specifically on pre-service teachers and psychologists and by emphasizing the didactic dimension of mobile application use within English language instruction.

Didactic Model for Developing Digital Competence

Model Structure

Based on the research findings, a didactic model for developing digital competence through mobile applications was designed. The model consists of the following components:

- **Target component** (educational goals and expected outcomes);
- **Content component** (digital competence elements integrated into language learning);
- **Procedural component** (methods, forms, and mobile tools);
- **Evaluative component** (criteria and indicators of competence development);
- **Reflective component** (self-assessment and feedback mechanisms).

Model Implementation

The model emphasizes gradual progression from guided activities to autonomous learning. Mobile applications serve as mediators of learning rather than ends in themselves. The model can be adapted to various educational contexts and disciplines beyond English language teaching.

Conclusion

The rapid advancement of digital technologies has fundamentally transformed the educational landscape, placing new demands on higher education institutions and future professionals. This study has demonstrated that mobile applications, when integrated systematically and pedagogically, possess substantial didactic potential in developing digital competence among pre-service teachers and psychologists.

The research findings confirm that mobile-assisted instruction in English language learning contributes not only to language proficiency but also to the holistic development of digital competence. Students exposed to structured mobile learning environments showed significant improvement across informational, communicative, operational, creative, and reflective

dimensions of digital competence. This multidimensional development is particularly critical for future teachers and psychologists, whose professional effectiveness increasingly depends on their ability to navigate, evaluate, and ethically apply digital technologies.

The study highlights that digital competence development is most effective when mobile applications are used as pedagogical tools embedded within clearly defined instructional objectives, rather than as supplementary or entertainment-oriented resources. The integration of mobile technologies fosters learner autonomy, motivation, collaboration, and reflective practice, all of which are essential qualities of modern educational professionals.

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