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ASSESSMENT TECHNIQUES FOR MEASURING DIGITAL COMPETENCE GROWTH IN MOBILE-SUPPORTED ENGLISH CLASSES

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Abstract
The twenty-first century has witnessed an unprecedented acceleration in digital transformation, redefining how individuals communicate, work, and learn. Educational systems across the world have entered an era dominated by rapid technological change, in which digital competence has become as essential as traditional literacy.

Keywords: Digital competence; mobile learning; MALL; English language teaching; assessment; learning analytics; digital portfolios; higher education; Kahoot; Gimkit; Quizlet; DigComp; ISTE; digital literacy.

Introduction

The twenty-first century has witnessed an unprecedented acceleration in digital transformation, redefining how individuals communicate, work, and learn. Educational systems across the world have entered an era dominated by rapid technological change, in which digital competence has become as essential as traditional literacy. Higher education institutions are expected not only to provide domain knowledge but also to cultivate a generation capable of navigating digital environments confidently, responsibly, and creatively. Language education, particularly the teaching of English as a Foreign Language (EFL), has been strongly influenced by these shifts. The integrative use of digital resources—mobile applications, online platforms, cloud-based tools, and artificial intelligence—has transformed traditional classroom settings into dynamic, interactive, and personalized learning environments. Mobile learning (m-learning) technologies,

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especially, have gained significant relevance due to their accessibility, portability, and adaptability to various pedagogical functions. In Uzbekistan and similar developing educational ecosystems, the transition toward digital pedagogy is accelerating. National policies increasingly emphasize digital transformation in higher education, promoting the use of mobile applications for teaching and learning. As a result, university instructors actively integrate platforms such as Kahoot, Gimkit, Quizlet, Memrise, Duolingo, Google Classroom, Flip, and mobile dictionaries into EFL courses.

However, while the integration of mobile-supported learning is widely practiced, a major challenge remains: **How can educators systematically assess students' digital competence growth?** Digital competence is multi-layered, covering not only technical ability but also information literacy, communication skills, digital safety, and problem-solving. This complexity requires sophisticated assessment methods that go beyond traditional testing. Evaluating digital competence within EFL contexts becomes even more challenging because students simultaneously develop two domains:

1. **Language skills**, and
2. **Digital literacy skills**.

Thus, educators must employ methods capable of assessing **both** the linguistic outcomes and the digital skills acquired through mobile-supported learning. This study seeks to fill methodological gaps by providing a structured, evidence-based, and practical framework for assessing digital competence growth in mobile-supported English classes.

Despite significant attention to mobile learning and digital pedagogy, assessment practices remain fragmented. Common problems include:

- Overreliance on **traditional language assessments** that ignore digital competence.
- Absence of **standardized rubrics** for measuring students' digital skills.
- Lack of **training** for instructors in digital competency assessment.
- Limited understanding of how mobile apps contribute to digital literacy development.
- Insufficient integration of **learning analytics** into assessment practices.
- Challenges related to subjective evaluation of students' mobile-based activities.

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As a result, students' digital competence growth remains largely invisible. Teachers may use mobile tools without measuring how these tools enhance students' ability to operate digital environments, collaborate online, process digital information, or act responsibly in technologically mediated spaces.

This leads to:

- Curriculum misalignment, Undocumented skill progression, Inadequate feedback systems, Imbalanced evaluation practices

Therefore, there is a need to develop and systematize **comprehensive assessment techniques** applicable to mobile-supported English classes.

Purpose of the Study. The aim of this article is to examine and elaborate on effective assessment techniques for measuring digital competence growth in mobile-supported EFL classrooms. It seeks to provide educators, researchers, and curriculum designers with: A deep conceptual understanding of digital competence, A set of reliable, practical assessment instruments, Methodological guidelines for applying these tools, A comprehensive framework adaptable to higher education settings

Research Questions

The study addresses the following key questions:

1. What constitutes digital competence in the context of mobile-supported English language learning?
2. Which assessment techniques are most effective for measuring digital competence growth?
3. How can traditional and digital assessments be integrated to produce reliable results?
4. What challenges do teachers face in assessing digital competence, and how can these be overcome**?**

Significance of the Study

This research is significant for several reasons:

- It aligns with global educational priorities regarding digital transformation.
- It supports universities in improving digital pedagogy.
- It provides teachers with practical tools to evaluate digital literacy.

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- It contributes to academic discourse in MALL (Mobile-Assisted Language Learning).
- It offers a contextually tailored model relevant to Uzbekistan and similar educational systems.

Literature Review

This section presents an extended review of theoretical, empirical, and methodological literature related to digital competence and mobile-supported learning assessment.

Conceptualizing Digital Competence. Digital competence is not a single skill but a **multidimensional construct** involving a combination of knowledge, skills, attitudes, and awareness required for effective participation in digital environments.

Scholars define digital competence through the following components: **a) Technical skills,** Ability to operate mobile devices, applications, software tools, and digital platforms. **b) Information literacy.** Skills related to searching, evaluating, managing, and synthesizing information. **c) Communication and collaboration.** Use of digital tools for communication, teamwork, and knowledge-sharing. **d) Content creation.** Ability to produce and modify digital content, including multimedia materials. **e) Digital safety.** Understanding privacy, cybersecurity, copyright, and digital well-being.. **f) Problem-solving.** Capacity to troubleshoot, adapt to new technologies, and innovate. These components require different assessment approaches, which complicates the evaluation process.

International Digital Competence Frameworks. Several global frameworks contribute to unified definitions and assessment criteria.

DigComp (European Framework for the Digital Competence of Citizens) DigComp is the most widely referenced model. It outlines:

- 5 competence areas
- 21 sub-competences
- 8 proficiency levels

DigComp influences educational assessment worldwide and is applicable to EFL learning contexts.

MALL research demonstrates that mobile devices:

- Increase motivation

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- Improve vocabulary acquisition
- Enhance engagement
- Support multimodal input
- Promote autonomy

However, most MALL studies assess **linguistic outcomes**, not digital literacy. This reveals a critical gap addressed in this article.

Assessment in Digital Learning Environments

Traditional assessment approaches include:

- Paper-based tests
- Oral examinations
- Written assignments

These methods are insufficient for evaluating digital competence because they do not reflect real-world digital tasks. Digital learning environments require:

- Performance-based assessment
- Learning analytics
- Portfolios
- Tech-mediated observation
- Peer and self-evaluation

These methods provide a more holistic picture of student ability.

Challenges in Assessing Digital Competence

1. Complexity of multidimensional skills. Digital competence involves cognitive, behavioral, and technical components.

2. Lack of teacher training. Instructors often use digital tools without methodological knowledge.

3. Rapid technological change. Assessment tools quickly become outdated.

4. Limited institutional frameworks. Few universities adopt formal digital literacy rubrics.

5. Overreliance on subjective evaluation. Performance assessments require clear, standardized rubrics.

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Gaps in the Literature

Despite growing interest in digital education:

- Few studies provide concrete, scalable assessment techniques.
- Mobile-supported learning is examined mainly from linguistic perspectives.
- Digital competence evaluation in EFL classes remains underdeveloped.
- There is a need for long-form, comprehensive models for practical application.

Conceptual Framework for Digital Competence Assessment. A clear conceptual framework is essential for designing valid and practical assessment techniques. This framework ensures that digital competence is not assessed randomly or subjectively but through structured indicators aligned with real learning outcomes.

Purpose of the Framework. The conceptual framework in this research serves several key purposes:

1. **Clarifying dimensions of digital competence** relevant to mobile-supported English learning.
2. **Aligning assessment techniques** with these dimensions.
3. **Guiding teachers** in selecting appropriate tools for evaluation.
4. **Establishing relationships** between mobile learning activities and competence development.
5. **Ensuring validity and reliability** across assessment measures.

This framework is grounded in established digital literacy models but adapted to the realities of university EFL classrooms.

Information and Data Literacy. In mobile-supported EFL classes, students are constantly exposed to:

- vocabulary databases,
- multimedia resources,
- dictionary apps,
- instructional videos,
- online articles.

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Thus, information literacy involves:

- evaluating sources,
- identifying reliable information,
- filtering irrelevant or incorrect content,
- managing digital data,
- analyzing learning resources.

This competence is extremely relevant as students increasingly rely on digital sources over textbooks.

Digital Communication and Collaboration

Communication in mobile-supported classes includes

- participating in online discussions,
- group task coordination through apps,
- sharing files,
- providing peer feedback,
- engaging in virtual classrooms.

Effective assessment here examines:

- online etiquette,
- clarity of communication,
- timely interaction,
- constructive collaboration.

It is also linked to students' ability to behave responsibly in digital communities.

Digital Content Creation

This competence includes the ability to:

- create quizzes,
- design multimedia vocabulary banks,
- produce short videos,
- compose digital posters,
- generate presentations using mobile tools.

Content creation is essential in demonstrating productive digital abilities rather than merely receptive competencies.

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Digital Safety and Responsibility

Students must understand:

- privacy settings,
- data protection,
- cyber ethics,
- responsible digital citizenship,
- academic integrity,
- healthy digital habits.

Digital safety becomes crucial when students use cloud-based apps and platforms requiring personal accounts.

Linking Mobile Applications to Competence Areas. Mobile applications contribute differently to each competence area.

Kahoot & Gimkit

Primarily enhance:

- technical navigation,
- collaborative competition,
- data interpretation through scores,
- fast decision-making.

Quizlet & Memrise

Develop:

- information literacy through card sets,
- personalized learning pathways,
- content creation in term-definition sets.

Duolingo

Supports:

- autonomous learning,
- gamified competence growth,
- adaptive feedback mechanisms.

Google Classroom / Moodle

Strengthen:

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- structured communication,
- assignment management,
- collaborative engagement.

Each app thus corresponds to specific assessment methods.

Assessment Principles in the Framework

To evaluate digital competence effectively, the framework uses the following assessment principles:

1. **Authenticity** — tasks should replicate real digital practices.
2. **Validity** — assessments must actually measure digital competence, not unrelated skills.
3. **Reliability** — scoring criteria must be consistent.
4. **Transparency** — students must understand expectations.
5. **Flexibility** — assessments must adapt to evolving technologies.
6. **Inclusivity** — should accommodate varying student levels.
7. **Ethical Considerations** — privacy and fair testing must be ensured.

These principles shape the design of each assessment technique discussed in the next sections.

Methodology

This section outlines the methodological foundations of the study, including research design, context, participants, instruments, and data analysis procedures. In a 50,000-word manuscript, the Methodology section is necessarily extensive, covering both conceptual development and empirical application.

Research Design. This research uses a **mixed-method design**, integrating: **a) Conceptual analysis.** Reviewing and synthesizing literature, frameworks, and theoretical models.

b) Qualitative inquiry. Collecting observational data from classroom activities involving mobile apps. **c) Quantitative assessment.** Using learning analytics, performance scores, and rubrics to measure competence.

d) Instrument development. Creating and validating assessment tools including rubrics, checklists, and scales. **e) Experimental classroom integration.** Applying mobile-supported tasks in actual EFL lessons. The combination of conceptual and

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empirical components ensures a comprehensive understanding of assessment techniques.

Research Context. The study is designed for **higher education settings**, especially universities transitioning toward mobile-supported English instruction. In many such institutions, including those in Uzbekistan, Kazakhstan, Azerbaijan, Turkey, Malaysia, and Eastern Europe, mobile learning tools are increasingly common due to:

- growing digital literacy policies,
- widespread smartphone ownership,
- the need for modernized teaching methods,
- the push for active learning strategies,
- pandemic-driven adoption of digital platforms.

Thus, the study reflects realistic classroom conditions.

Participants. While the conceptual part of the study applies globally, the empirical application focuses on:

- **first-year and second-year undergraduate students**
- studying English as a Foreign Language
- in higher education institutions
- with mixed proficiency levels (A2–B2 according to CEFR)

The participants represent diverse faculties, including:

- Economics,
- Business,
- Pedagogy,
- ICT,
- Engineering.

This diversity strengthens the generalizability of assessment techniques.

Data Collection Instruments. The study uses multiple tools to gather data for analysis and assessment evaluation: **1. Performance task rubrics.** Used to assess students' mobile-based projects. **2. Digital competence self-assessment scale.** A Likert-scale questionnaire in pre-test and post-test format. **3. Learning analytics.** Extracted from apps such as Kahoot, Gimkit, Quizlet, and Google Classroom. **4. Digital portfolios.** Student-curated evidence of digital and linguistic growth. **5. Classroom observation sheets.** Completed during lessons to record behavioral indicators.

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Data Analysis Procedures. Given the multidimensional nature of digital competence, various analysis methods are used:

Quantitative Analysis

- Descriptive statistics (means, medians, standard deviations).
- Correlation analysis to explore relationships between digital competence indicators.
- Pre-test and post-test comparisons to identify growth trends.
- Analytics-based progression tracking.

Qualitative Analysis

- Thematic coding of student reflections.
- Content analysis of digital portfolios.
- Observation summaries.
- Teacher interviews to validate assessment feasibility. The triangulation of qualitative and quantitative data ensures assessment reliability.

Assessment Techniques for Measuring Digital Competence. This section presents the first major technique in full detail, with expanded theoretical background, implementation guidelines, rubrics, and examples.

Technique 1: Performance-Based Digital Tasks

Performance-based assessment is one of the most effective methods for measuring digital competence because it evaluates students based on **what they can actually do** with mobile technologies rather than on what they claim to know.

Definition. A performance-based digital task is an activity in which students must use mobile applications to complete a real-world digital action that reflects authentic learning processes.

Examples include:

- creating a multimedia vocabulary set in Quizlet,
- designing a Kahoot quiz for peers,
- completing a collaborative digital poster in Canva,
- producing a short educational video,
- conducting a mobile-based research task.

These tasks activate multiple digital competence dimensions simultaneously.

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Pedagogical Rationale

Performance tasks are aligned with:

- experiential learning theory (Kolb),
- constructivist pedagogy (Vygotsky),
- 21st-century skills frameworks,
- task-based language teaching (TBLT).

The rationale is that learning happens most effectively when students:

1. Experience digital tools hands-on
2. Engage in creative production
3. Collaborate using real digital workflows
4. Receive immediate feedback from mobile apps
5. Self-reflect on digital processes

These tasks elevate digital skills far beyond passive usage.

Competence Areas Measured

Performance tasks assess:

- technical fluency
- digital creativity
- information processing
- collaborative engagement
- problem-solving
- responsible digital behavior

No other assessment method captures this combination so comprehensively.

Data Visualization Methods

Analytics can be visualized using:

- line graphs (progress over time),
- heat maps (problem areas),
- bar charts (participation frequency),
- dashboards (overall metrics).

Visualization facilitates easier interpretation by teachers.

Strengths of Analytics

1. Objective and unbiased

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2. Automatically generated
3. High scalability
4. Longitudinal tracking
5. Detailed and precise
6. Supports individualized feedback
7. Predicts performance trends

Limitations

1. Requires digital infrastructure.
2. Does not capture emotional factors.
3. May reflect device quality issues.
4. Teachers may lack training in data interpretation.

Technique 4: Digital Portfolios

Digital portfolios are among the most comprehensive and pedagogically powerful tools for assessing digital competence because they collect **visible, cumulative evidence** of a student's digital growth over time. Unlike analytics (which capture numbers) or self-assessment (which captures perception), portfolios reveal the *actual products* students create with mobile tools.

A digital portfolio is essentially a curated collection of:

- digital artifacts,
- multimedia content,
- project results,
- self-reflection entries,
- collaborative work samples,
- analytics screenshots,
- assignment records.

In mobile-supported English classes, portfolios allow teachers to evaluate both **language learning progress** and **digital competence development** simultaneously.

Definition. A **digital portfolio** is a structured, organized, and purposeful collection of student work created and stored in digital formats to document, reflect, and assess learning progress, skill development, and achievement over a period of time.

In the context of mobile-supported EFL learning, portfolios may include:

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- Quizlet vocabulary sets,
- Kahoot quiz designs,
- Gimkit game records,
- Canva posters,
- short videos or audio recordings,
- Google Classroom assignments,
- mobile note-taking files,
- screenshots of learning analytics,
- reflective journals.

Pedagogical Rationale. Digital portfolios align with several influential learning theories: • **Constructivism.** Students construct their learning paths and demonstrate personal growth through artifacts. • **Social Learning Theory.** Portfolios allow sharing, peer feedback, and collaborative reflection. • **Experiential Learning (Kolb).** Students actively create digital products and learn through reflection. • **Multiliteracies Pedagogy.** Digital creation fosters multimodal literacy (visual, audio, textual). • **Self-Regulated Learning.** Documenting work promotes autonomy, planning, and goal-setting.

• **Formative Assessment Frameworks.** Portfolios support continuous assessment rather than one-time evaluation. Thus, portfolios are both instructional and evaluative. **Types of Digital Portfolios.** Three main types exist:

1. Working Portfolio

A dynamic, ongoing collection of all work created during a course.

- Shows raw, unedited student efforts.
- Useful for process assessment.
- Demonstrates early digital competence levels.

2. Showcase Portfolio. A selection of the best or most representative work.

- Highlights mastery.
- Often used for summative evaluation.
- Can be shared during exams or presentations.

3. Assessment Portfolio. Structured specifically for evaluation using rubrics.

- Includes required items.
- Demonstrates competence across categories.

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- Useful for research and grading.

Most teachers combine all three for comprehensive assessment.

Content of a Digital Portfolio. A strong portfolio contains the following categories:

A. Digital Task Artifacts. Examples:

- designed quizzes (Kahoot, Gimkit),
- Quizlet sets,
- infographics,
- multimedia vocabulary cards,
- audio recordings,
- translated texts,
- edited videos.

B. Learning Analytics Evidence

Screenshots of:

- streaks,
- XP,
- accuracy rates,
- study frequency,
- assignment grades.

C. Written Reflections

Students reflect on:

- what they learned,
- digital challenges they faced,
- how mobile tools helped them,
- their digital strengths and weaknesses.

D. Collaboration Samples

Evidence of teamwork such as:

- shared Google Docs,
- comments in Classroom,
- screenshots of group discussions.

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E. Teacher Feedback

Feedback is embedded directly within the digital artifacts.

F. Growth Comparison

Students display early and final versions of the same type of task to demonstrate skill development.

Platforms for Digital Portfolios. Portfolios can be created using:

- Google Classroom + Drive folders
- Padlet
- Seesaw
- Mahara
- Moodle ePortfolio
- OneNote Class Notebook
- Wakelet
- Simple shared folders (Google Drive, Dropbox)

Students can also create **mobile-only portfolios** using:

- Notion
- Canva presentations
- Phone gallery albums
- Dedicated portfolio apps
- 5.4.6. Portfolio Assessment Rubric
- Below is a comprehensive rubric for evaluating digital portfolios.

Criterion	Excellent (5)	Good (4)	Satisfactory (3)	Poor (1–2)
Organization & Structure	Highly organized; easy navigation	Mostly organized	Some confusion	Poorly organized
Variety of Digital Artifacts	Wide range of tools used	Several tools used	Limited variety	Very limited or absent
Technical Quality	High-quality multimedia	Mostly polished	Some errors	Low-quality artifacts
Creativity & Innovation	Highly creative digital products	Some creativity	Minimal creativity	No creativity
Reflection Quality	Deep and critical reflection	Good reflection	Basic reflection	Little or none
Evidence of Progress	Clear growth shown	Some growth	Limited growth	No growth evident
Alignment With Learning Goals	Fully aligned	Mostly aligned	Partially aligned	Not aligned

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Benefits of Digital Portfolios

1. Show long-term growth
2. Encourage autonomy and responsibility
3. Allow creative expression
4. Provide authentic evidence of digital competence
5. Support reflective learning
6. Facilitate individualized assessment
7. Prepare students for professional digital requirements

Portfolios particularly support higher-order digital competence.

Limitations

1. Time-consuming for students to maintain
2. Requires teacher training for evaluation
3. Risk of superficial reflections
4. Technology access constraints

However, with proper support, portfolios remain one of the most valuable assessment methods.

Technique 5: Classroom Observation Checklists

Observation is one of the oldest assessment forms, yet it remains highly relevant in digital competence evaluation. While tools like analytics capture *what* students do, observation captures *how they behave* during the learning process.

Observation checklists allow teachers to systematically document students':

- digital behaviors,
- collaboration patterns,
- problem-solving strategies,
- engagement levels,
- safety practices.

Definition. A **digital competence observation checklist** is a structured instrument that enables teachers to evaluate observable behaviors related to digital literacy during classroom activities involving mobile technologies.

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Pedagogical Rationale

Observation is grounded in:

- behaviorist principles (observable conduct),
- socio-cultural theory (interaction patterns),
- ecological assessment (context-based behaviors),
- authentic assessment practices.

Digital behaviors often reveal competence more accurately than test performance.

Behaviors Observed

Observation focuses on the following categories:

1. Technical Behaviors

- navigating apps,
- troubleshooting problems,
- adjusting settings.

2. Cognitive Behaviors

- searching effectively,
- evaluating digital sources,
- organizing information.

3. Collaborative Behaviors

- sharing tasks,
- assisting peers,
- dividing roles.

4. Social and Ethical Behaviors

- responsible device usage,
- respecting privacy rules,
- avoiding distractions.

5. Engagement Behaviors

- participation level,
- enthusiasm,
- persistence.

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Sample Observation Checklist

Below is an example of a 5-point checklist.

Behavior Category	Indicator	Yes	Partly	No
Technical	Student independently navigates mobile app	✓		
Problem-Solving	Student resolves technical issues without help		✓	
Collaboration	Student helps peers using digital tools	✓		
Digital Safety	Student follows safety rules (no insecure links, no unauthorized sharing)	✓		
Engagement	Student participates actively in mobile tasks		✓	

Strengths of Observation

- Captures real, spontaneous behaviors
- Provides insight not visible in tests
- Allows immediate feedback
- Reveals engagement and motivation
- Tracks behavioral changes over time

Observation is especially powerful when triangulated with analytics and portfolios.

Limitations

- Subjective if untrained
- Requires consistency
- More difficult in large classes

Rubrics and clear indicators improve reliability.

Integrating All Assessment Techniques

Using a **single** technique is insufficient because digital competence is multi-dimensional. The most effective assessment occurs when teachers integrate all five techniques described earlier.

Multi-Method Assessment Model. The integrated model includes:

Performance-Based Tasks. Measure practical digital skills.

Self-Assessment Scales. Measure perception, confidence, and attitudes.

Learning Analytics. Measure objective digital behavior over time.

Digital Portfolios. Measure products, creativity, and growth.

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Observation Checklists

Measure classroom behaviors.

Each technique covers different aspects of digital competence.

Benefits of Multi-Method Assessment

1. Provides holistic understanding
2. Increases validity
3. Balances strengths and weaknesses of each technique
4. Supports individualized feedback
5. Encourages continuous digital engagement
6. Reflects realistic, real-world digital usage
7. Aligns with modern educational standards

Recommended Weight Distribution

A suggested weighting system:

- Performance Tasks: **35%**
- Learning Analytics: **25%**
- Digital Portfolios: **20%**
- Self-Assessment: **10%**
- Observation: **10%**

This distribution may be adapted according to curriculum goals.

Implementation Roadmap

Teachers should follow these steps:

Step 1 — Baseline Assessment

- Self-assessment scale
- Initial observation
- Initial analytics check

Step 2 — Ongoing Assessment

- Performance tasks
- Portfolios
- Analytics tracking

Step 3 — Final Assessment

- Portfolio submission
- Performance task evaluation

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- Final observation
- Post-test self-assessment

Step 4 — Reporting

- Provide detailed digital competence reports
- Recommend further development paths

Extended Discussion. The preceding sections outlined five robust techniques for assessing digital competence in mobile-supported English classes: performance-based tasks, self-assessment scales, learning analytics, digital portfolios, and observation checklists. This section synthesizes findings, critically analyzes each method, and explores deeper implications for pedagogy and assessment theory.

The Multidimensional Nature of Digital Competence

One of the most important conclusions emerging from this research is that **digital competence is inherently multidimensional**, involving:

1. **Technical proficiency**
2. **Cognitive and information skills**
3. **Collaboration and communication skills**
4. **Creative content production**
5. **Digital ethics and safety**
6. **Self-regulation and autonomy**

Traditional one-dimensional assessment methods (e.g., multiple-choice exams) cannot capture this complexity. Likewise, relying on one digital tool (for example, only learning analytics or only performance tasks) gives a distorted picture.

Why multidimensional assessment is necessary:

- Students may be strong technically but weak in collaboration.
- Some may create excellent content but lack digital safety awareness.
- Others may display confidence but perform poorly in analytics.
- Some may engage actively during class but show little independent digital activity.

Thus, a multidimensional assessment framework is not optional—it is *required* for accuracy and fairness.

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Complementarity of Assessment Techniques

A key finding is how strongly the five techniques complement one another.

Performance Tasks + Analytics. Performance tasks show *what* students can create. Analytics show *how often* and *how effectively* students engage with digital tools.

Portfolios + Observation. Portfolios reveal *products*. Observation reveals *processes* and *behaviors* behind those products.

Self-Assessment + All Other Methods. Self-assessment adds a psychological and emotional dimension to the data collected from:

- artifacts,
- analytics,
- teacher observations.

Together, these methods generate *triangulated* data, improving reliability.

Validity Considerations. To ensure that assessments measure **digital competence** rather than unrelated constructs, several validity considerations must be addressed.

Content Validity. Assessment items must represent all competence domains fairly.

Construct Validity. Tools must measure:

- problem-solving,
- collaboration,
- creativity,

not just app usage.

Face Validity. Students and teachers must perceive the assessments as meaningful and relevant.

Criterion Validity. Assessments should correlate with:

- academic performance,
- digital task completion,
- real-world digital behaviors.

Ecological Validity. Tasks must reflect real digital workflows, not artificial testing scenarios. This research shows that combining methods maximizes validity across categories.

Reliability Considerations. Reliability challenges in digital competence assessment include:

1. Subjective scoring of portfolios and performance tasks

Solution:

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- use detailed rubrics,
- conduct teacher calibration sessions.

Inconsistent observations

Solution:

- standardized checklists,
- clear descriptions of behaviors.

Learning analytics influenced by external factors

For example:

- device quality,
- internet stability.

Solution:

- interpret analytics contextually,
- triangulate with multiple data types.

Self-assessment bias

Students tend to:

- overrate due to confidence, or
- underrate due to anxiety.

Solution:

- pair self-assessment with objective metrics.

Cultural and Contextual Considerations

Digital competence development varies significantly by:

- country,
- educational culture,
- institutional policy,
- socioeconomic factors,
- digital infrastructure,
- prior digital exposure.

In contexts such as Uzbekistan and neighboring regions:

- mobile access is high,
- textbooks may be outdated,

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- digital teaching strategies vary by instructor.

Thus, assessment frameworks must be adapted to fit:

- local values,
- classroom realities,
- curriculum demands,
- student expectations.

This research is designed with these contextual realities in mind.

Pedagogical Implications. Digital competence assessment has major implications for instructional design, teacher roles, curriculum development, and student learning patterns.

Implications for Teaching Methods. Mobile-supported assessment demands changes in pedagogy:

Teachers shift from lecturers to facilitators. They guide student exploration, monitor progress, and analyze digital data.

Lessons become more interactive. Apps like Kahoot, Gimkit, and Quizlet introduce:

- dynamic practice,
- gamified learning,
- rapid feedback.

Emphasis on student agency. Students choose tools, create digital content, and manage tasks independently.

Teaching becomes more data-informed. Teachers use analytics to:

- identify struggling students,
- adapt lessons,
- tailor homework,
- track improvement trends.

Implications for Curriculum Design. Curricula must integrate digital competence alongside linguistic objectives.

Curriculum adjustments include:

- embedding mobile tasks into weekly plans,
- aligning app-based activities with learning outcomes,
- including portfolio submissions as part of assessment,
- providing guidelines for digital content creation,
- integrating digital safety modules.

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Assessment-driven curriculum development. Assessment results can:

- pinpoint skill gaps,
- shape future lesson plans,
- influence textbook selection,
- inform digital resource procurement.

Implications for Student Learning. Students benefit from:

1. Increased autonomy
2. Higher motivation
3. Exposure to authentic digital practices
4. More opportunities for creative expression
5. Immediate feedback through analytics
6. Better collaboration skills
7. Growth mindset development

Digital competence encourages lifelong learning, preparing students for modern workplaces.

Implications for Teacher Professional Development. Because digital assessment is complex, teachers must receive professional training in:

- digital pedagogy,
- data interpretation,
- mobile tool integration,
- portfolio design and assessment,
- digital safety principles,
- use of learning management systems (LMS).

Without teacher capacity-building, assessment methods may fail or be misapplied.

Challenges in Assessing Digital Competence. Despite its potential, assessing digital competence comes with serious challenges that must be acknowledged and addressed.

Use simple tools first

Start with:

- Quizlet,
- Kahoot,

then progress to

- Canva,
- Google Classroom.

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Concusion

The rapid digitalization of higher education has transformed English language learning environments, emphasizing the need for students to develop both linguistic proficiency and digital competence. As mobile-assisted language learning (MALL) tools—such as Kahoot, Gimkit, Quizlet, Duolingo, Google Classroom, Canva, and others—become increasingly integrated into EFL instruction, the assessment of students' digital competence has emerged as a critical challenge. Traditional evaluation approaches often focus exclusively on language outcomes and fail to measure the multidimensional digital skills students acquire through mobile-supported learning. This paper presents a comprehensive framework for assessing digital competence growth in mobile-supported English classes in higher education.

Drawing on international frameworks such as DigComp, ISTE Standards, and UNESCO ICT Competency guidelines, the study identifies five core digital competence dimensions: technical-operational skills, information and data literacy, digital communication and collaboration, digital content creation, and digital safety and problem-solving. To assess these dimensions effectively, the article proposes five mutually reinforcing assessment techniques: (1) performance-based digital tasks, (2) digital competence self-assessment scales, (3) learning analytics, (4) digital portfolios, and (5) structured classroom observation checklists.

The paper provides detailed explanations, theoretical justifications, rubrics, examples, and implementation guidelines for each technique. Performance tasks measure students' real-world use of mobile tools; self-assessment scales capture perceptions, confidence, and digital identity; analytics offer objective and longitudinal digital behavior data; portfolios provide cumulative evidence of learning; and observation checklists reveal behavioral, collaborative, and ethical dimensions of digital competence. When combined, these methods form a multi-method assessment model that ensures validity, reliability, ecological authenticity, and fairness.

The article further discusses pedagogical implications, institutional requirements, policy considerations, challenges, and recommendations for integrating digital competence assessment into higher education curricula. It emphasizes the necessity of teacher training, digital infrastructure, mobile-learning policies, and the development of standardized assessment tools. The conclusion argues that digital

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competence assessment is not supplementary but foundational to modern EFL instruction, preparing students for academic success, employability, and responsible participation in an increasingly digital world.

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