FOREIGN LANGUAGES AND VIETNAMESE

APPLICATION OF DIGITAL TECHNOLOGIES IN ASSESSING LEARNERS' COMPETENCE IN ENGLISH LANGUAGE EDUCATION

TRAN THI LE DUNG*

ABSTRACT: The proliferation of digital technologies has reconfigured assessment paradigms in higher education, necessitating a shift toward competency-oriented and data-driven evaluation practices. This study investigates the integration of digital technologies into competency-based assessment for English-major students within Vietnamese higher education, addressing a critical gap in empirically grounded models of digital assessment in language education. Anchored in the theoretical frameworks of competency-based education, digital assessment, and learning analytics, the research employs a mixed-method design combining survey data, document analysis, and expert consultation. The findings demonstrate that digital assessment methods, particularly LMS-based systems and AI-supported tools, significantly enhance assessment validity, feedback immediacy, and learner personalization. However, systemic constraints persist, including uneven technological infrastructure, limited digital pedagogical competence among lecturers, and the absence of standardized assessment frameworks. The study contributes by proposing a theoretically grounded digital competency-based assessment model and offers strategic implications for advancing assessment reform in digitally transforming higher education contexts.

KEY WORDS: Digital assessment; English language education; competency-based; digital transformation; learning analytics

RECIEVED: March, 9th, 2026 EDITED: June, 24th, 2026

1. Introduction

In the context of globalization and the rapid development of information technologies, digital transformation has become an inevitable trend in higher education. Universities around the world are increasingly integrating digital technologies into management, teaching, and assessment activities in order to improve educational quality and respond to the demands of a knowledge-based society.

Within higher education systems, assessment is widely recognized as one of the most crucial components of the educational process. Assessment not only determines the extent to which learning objectives are achieved but also plays an essential role in regulating teaching practices and fostering students' learning processes. In contemporary educational programs, particularly those developed according to the Outcome-Based Education (OBE) approach, assessment activities are expected to focus on measuring learners' actual competencies rather than merely evaluating their ability to recall knowledge.

For English language programs, assessment is particularly significant because the objectives of these programs extend beyond the transmission of linguistic knowledge to the development of communicative competence, critical thinking, and the ability to use language effectively in various professional contexts. However, traditional assessment methods such as written examinations or face-to-face oral tests often present several limitations, including difficulties in comprehensively evaluating communicative competence, limited flexibility in organizing examinations, and insufficient utilization of learners' learning data.

The rapid development of digital technologies has opened up new opportunities for innovating

*Dr; Hanoi Open University; Email: tranledung1975@hou.edu.vn

assessment practices. Online learning platforms, Learning Management Systems (LMS), artificial intelligence-based assessment tools, and learning analytics systems enable instructors to design diverse assessment activities, collect real-time learning data, and provide timely feedback to learners.

In this context, examining the application of digital technologies in competency-based assessment for English-major students has become increasingly necessary. This study aims to clarify the theoretical foundations, analyze the current situation, and propose a model for integrating digital technologies into assessment practices in Vietnamese higher education institutions. By doing so, the research seeks to contribute to improving training quality and supporting the ongoing digital transformation of higher education.

2. Theoretical framework

2.1. Competency-based assessment in Higher education

In modern educational science, assessment is considered a core component of the teaching and learning process, serving not only to measure learning outcomes but also to guide and improve students' learning activities. According to Biggs and Tang (2011), assessment should be designed based on the principle of constructive alignment, whereby learning objectives, teaching strategies, and assessment methods are integrated into a coherent structure to ensure that learners achieve the intended learning outcomes of a program.

This perspective is also emphasized in Assessment in Higher Education by Boud and Falchikov (2007), which argues that assessment in higher education should not merely focus on classifying learning outcomes but should aim to develop learners' self-directed learning and self-assessment capacities. In contemporary educational contexts, assessment is increasingly viewed as an integral part of the learning process, enabling learners to recognize their progress and adjust their learning strategies accordingly.

Brookhart (2013) suggests that assessment in higher education can be categorized into two primary forms: summative assessment and formative assessment. Summative assessment is typically conducted at the end of a course in order to determine the extent to which learning objectives have been achieved. In contrast, formative assessment takes place throughout the learning process and provides timely feedback that helps learners improve their performance.

Recent studies also highlight the increasing importance of formative assessment in enhancing learning effectiveness. Nicol and Macfarlane-Dick (2006) argue that feedback plays a crucial role in helping learners recognize the gap between their current performance and their desired learning goals. Similarly, Hattie (2009), in the influential work Visible Learning, identifies feedback as one of the most powerful factors affecting students' academic achievement.

In the context of digital transformation in education, assessment practices are increasingly integrated with digital technologies to enhance efficiency and flexibility. This shift reflects a transition from traditional assessment models toward technology-enhanced and data-driven assessment systems.

2.2. Competency-based assessment in foreign language education

In foreign language education, competency-based assessment is considered an essential approach for measuring learners' ability to use language effectively in real-life communicative contexts. According to Brown and Abeywickrama (2019) in Language Assessment: Principles and Classroom Practices, language assessment should be designed based on four fundamental principles: reliability, validity, practicality, and authenticity. Among these principles, authenticity plays a particularly important role in ensuring that assessment tasks reflect real communicative situations.

Alderson (2005) further argues that language assessment should be constructed around meaningful communicative tasks in which learners are required to employ multiple language skills to address practical situations. This perspective suggests that assessing language competence cannot rely solely on objective test formats such as multiple-choice questions but should incorporate a variety of assessment forms, including essays, presentations, and project-based learning tasks.

One of the most influential frameworks in language competence assessment is the Common European Framework of Reference for Languages (CEFR). According to the Council of Europe (2020), language competence consists of several components, including linguistic competence, sociolinguistic competence, and strategic competence [8]. These components should be reflected in assessment activities to ensure a comprehensive evaluation of learners' communicative abilities.

In university-level English language programs, adopting a competency-based assessment approach requires significant innovation in assessment design. Assessment tasks should reflect learners' ability to use language in both academic and professional contexts while also encouraging the development of critical thinking and effective communication skills.

2.3. Digital technologies in assessment

The development of digital technologies has significantly transformed assessment practices in higher education. Redecker and Johannessen (2013) argue that digital technologies enable more flexible assessment models compared with traditional approaches while also allowing systematic collection and analysis of learners' performance data.

LMS allow instructors to design online tests, manage question banks, and monitor students' learning progress. Laurillard (2012) emphasizes that digital learning platforms create interactive learning environments in which assessment activities are integrated throughout the entire learning process.

In language education, digital technologies are also widely applied through computer-based language assessment systems. Chapelle and Douglas (2021) suggest that computer-based testing can improve the accuracy of evaluating language skills such as listening and reading while simultaneously providing immediate feedback to learners.

Recent studies also indicate that artificial intelligence is increasingly playing an important role in language assessment. Chapelle (2019) notes that AI-based systems can analyze learners' written texts, evaluate pronunciation, and generate detailed feedback to support language development.

2.4. Learning analytics and adaptive assessment

One of the most important trends in digital education is the use of learning analytics to improve teaching and assessment processes. Siemens and Long (2011) argue that learning analytics enables the collection and analysis of learners' behavioral data, thereby supporting evidence-based decision-making in education.

Learning data can provide valuable insights into students' learning progress, including their participation in learning activities, the time spent completing assignments, and their assessment results. Based on these data, instructors can identify learning difficulties and implement appropriate support strategies.

Furthermore, learning data can also be used to develop adaptive assessment systems. According to Pellegrino and Hilton (2012), adaptive assessment dynamically adjusts the difficulty level of assessment tasks based on learners' abilities, thereby improving the accuracy of evaluation results.

In foreign language education, integrating learning analytics with digital assessment tools enables instructors to continuously monitor the development of learners' language competencies and implement personalized teaching strategies.

2.5. Conceptual model and research hypotheses

Building upon the preceding theoretical discussions, this study develops an integrated conceptual model to examine how digital technologies influence the effectiveness of competency-based assessment in English language education. While prior studies have explored individual dimensions such as digital assessment tools, formative feedback, or learning analytics, there remains a lack of comprehensive frameworks that simultaneously account for technological, pedagogical, and human factors within a unified analytical structure. This limitation is particularly evident in the context of Vietnamese higher education, where empirical models linking digital transformation to assessment effectiveness are still underdeveloped.

To address this gap, the present study synthesizes insights from competency-based assessment theory, digital assessment frameworks, and learning analytics to construct a multidimensional model. The proposed framework conceptualizes assessment effectiveness not merely as an outcome of technological adoption but as the result of complex interactions between infrastructure readiness, instructional capacity, pedagogical design, and feedback mechanisms.

Specifically, TI is considered the foundational condition that enables the deployment of digital assessment systems. Without adequate technological readiness, including stable platforms and accessible digital tools, the implementation of technology-enhanced assessment remains constrained. However, infrastructure alone is insufficient to ensure effectiveness. Its impact is mediated by how technology is pedagogically utilized within assessment practices.

In this regard, lecturers' digital competence (DC) plays a critical role. As active agents in the assessment process, instructors must possess not only technical skills but also pedagogical knowledge to integrate digital tools meaningfully into assessment design. This aligns with contemporary views in educational technology, which emphasize that human capacity is a key determinant of successful digital transformation.

Furthermore, digital assessment methods (DA) represent the pedagogical dimension of the model. These methods encompass the design, diversity, and authenticity of assessment tasks supported by digital technologies. From a competency-based perspective, assessment methods must reflect real-world language use and enable learners to demonstrate integrated communicative abilities. Therefore, the effectiveness of digital assessment is strongly dependent on the extent to which assessment design aligns with competency-based principles.

Another essential component is learning feedback (LF), which captures the formative function of assessment. Feedback mechanisms, particularly those enabled by digital platforms, facilitate timely and personalized responses to learners' performance. As highlighted in the literature, feedback serves as a critical link between assessment and learning, allowing students to identify gaps and regulate their learning processes.

The dependent construct, assessment effectiveness (AE), is defined as the degree to which assessment practices accurately measure learners' competencies while simultaneously supporting learning improvement. This dual perspective reflects the evolving understanding of assessment as both a measurement tool and a learning facilitator.

Based on this conceptualization, the study posits that assessment effectiveness is influenced by both technological and pedagogical factors, with varying degrees of impact. The model assumes that while technological infrastructure provides necessary support, pedagogical elements—particularly assessment design and feedback play a more decisive role in determining outcomes.

Accordingly, the following hypotheses are proposed:

H1: Technology infrastructure has a positive effect on assessment effectiveness.

H2: Lecturers' digital competence positively influences assessment effectiveness.

H3: Digital assessment methods have a significant positive impact on assessment effectiveness.

H4: Learning feedback positively affects assessment effectiveness.

Collectively, these hypotheses reflect a theoretically grounded expectation that effective digital competency-based assessment emerges from the alignment of technological readiness, instructional capability, and pedagogical innovation. The proposed model thus provides a coherent analytical framework for subsequent empirical testing using Structural Equation Modeling, enabling the study to quantify the relative influence of each factor and to identify the key drivers of assessment effectiveness in digitally transforming higher education contexts.

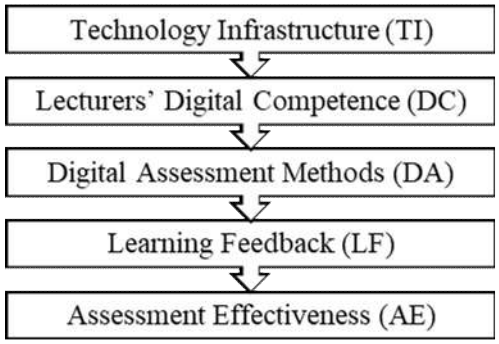

Figure 1. *Conceptual model of digital competency-based assessment*

The model conceptualizes assessment effectiveness as a function of both technological and pedagogical factors. While technology infrastructure provides the foundational conditions, lecturers' digital competence and digital assessment methods represent key mediating mechanisms through which technology is translated into effective assessment practices. Learning feedback further operationalizes the formative dimension of assessment, ultimately contributing to improved assessment effectiveness.

3. Methodology

3.1. Research approach

This study adopts a mixed-method research approach, integrating both quantitative and qualitative perspectives to provide a comprehensive examination of digital technology integration in competency-based assessment within English language education. The use of a mixed-method design is justified by the complexity of the research problem, which requires not only statistical validation of relationships among variables but also contextual interpretation of pedagogical practices and institutional conditions.

The research is conceptually grounded in three interrelated theoretical frameworks.

First, competency-based assessment (CBA) emphasizes the evaluation of learners' ability to apply knowledge and skills in authentic contexts aligned with defined learning outcomes.

Second, digital assessment theory highlights the transformative role of digital technologies in enhancing the efficiency, flexibility, and scalability of assessment processes.

Third, learning analytics provides a data-driven perspective, focusing on the systematic collection and analysis of learner data to inform evidence-based decision-making in education.

The integration of these theoretical perspectives establishes a coherent analytical framework through which the study examines how digital technologies influence both the design and effectiveness of competency-based assessment practices in English language programs.

3.2. Research methods

3.2.1. Research design

The study employs a sequential explanatory mixed-method design, in which quantitative data collection and analysis are followed by qualitative exploration to further interpret and contextualize the findings. The quantitative phase serves to identify structural relationships among key variables influencing assessment effectiveness, while the qualitative phase provides deeper insights into the pedagogical and institutional factors underlying these relationships.

Drawing on the theoretical foundations of competency-based assessment, digital assessment, and learning analytics, the study proposes a conceptual research model consisting of four independent constructs and one dependent construct. The independent variables include:

- TI - referring to the availability and readiness of technological systems that support digital assessment activities.

- DC - representing instructors' ability to effectively utilize digital technologies in designing and implementing assessment tasks.
- DA - reflecting the diversity and pedagogical effectiveness of technology-supported assessment strategies.
- LF - referring to the timeliness, quality, and usefulness of feedback provided to learners during the assessment process.

The dependent variable is:

AE - representing the degree to which assessment practices accurately measure learners' competencies and contribute to improving learning outcomes.

The proposed model is used to examine the structural relationships between technological and pedagogical factors that influence the effectiveness of competency-based assessment in English language programs.

3.2.2. Research sample and data collection

Empirical data were collected through a structured questionnaire survey administered to lecturers and students majoring in English language studies at several higher education institutions in Vietnam. The inclusion of both lecturers and students enables the study to capture insights from both instructional and learner perspectives, thereby enhancing the comprehensiveness of the dataset.

A total of 210 valid responses were obtained, comprising 62 lecturers and 148 students. The sample was selected using a combination of convenience sampling and purposive sampling to ensure that participants possessed prior experience with digital learning platforms and online assessment tools in their teaching and learning activities.

The questionnaire was designed using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement items were adapted from established scales in previous research on digital assessment and educational technology and were subsequently contextualized to fit the environment of English language education in higher education institutions.

3.2.3. Measurement instruments

The measurement instrument consists of 22 observed variables grouped into five constructs:

- TI: This construct measures the extent to which institutions provide adequate technological resources and digital platforms to support assessment activities.
- DC: This variable reflects lecturers' ability to integrate digital tools into the design, implementation, and management of assessment tasks.
- DA: This construct evaluates the variety and pedagogical effectiveness of technology-enhanced assessment strategies.
- LF: This construct measures the quality, immediacy, and usefulness of feedback provided to learners through digital assessment systems.
- AE: This construct reflects the perceived accuracy, fairness, and usefulness of assessment practices in evaluating learners' competencies and supporting their learning progress.

The reliability and validity of the measurement scales were examined through statistical procedures prior to hypothesis testing.

3.2.4. Data analysis techniques

The collected data were analyzed using SPSS and AMOS statistical software through several analytical tages. First, Cronbach's Alpha reliability analysis was conducted to evaluate the internal consistency of the measurement scales. Second Exploratory Factor Analysis (EFA) was performed to identify the underlying factor structure of the observed variables and to ensure that the constructs were empirically distinguishable. Third, Confirmatory Factor Analysis (CFA) was conducted to assess the goodness-of-fit of the measurement model and to evaluate construct validity, including convergent and discriminant validity.Finally, Structural Equation Modeling (SEM) was employed to test the proposed research hypotheses and to estimate the structural relationships between the independent variables and assessment effectiveness.The application of SEM enables the simultaneous analysis of multiple

relationships among latent constructs, thereby providing a comprehensive understanding of the mechanisms through which digital technologies influence competency-based assessment in English language education.

4. Results and Discussion

4.1. Results

To examine the current state of digital technology application in competency-based assessment for students majoring in English language studies, the study conducted a questionnaire survey involving 210 participants, including 62 lecturers and 148 students who are currently engaged in teaching and learning activities at several higher education institutions.

The questionnaire was designed using a five-point Likert scale to measure the extent to which digital technologies are utilized in assessment practices, as well as lecturers' and students' perceptions regarding the effectiveness of technological tools in learning assessment.

The observed variables in the survey focused on four main aspects:

(i) the level of use of digital technological tools in assessment activities;

(ii) the extent of digital technology integration in assessing language skills;

(iii) differences in perceptions between lecturers and students regarding the role of digital technology in assessment; and

(iv) factors influencing the effectiveness of assessment practices in digital learning environments.

The survey results indicate that digital technologies have been relatively widely implemented in assessment practices within English language programs. However, the degree of adoption varies considerably across different technological tools as well as across the language skills being assessed.

4.1.1. The use of digital technology tools in assessment activities

In the context of digital transformation in higher education, the integration of digital technologies into assessment practices has become an important trend aimed at enhancing educational quality and improving learning outcomes. In English language programs, assessment plays a particularly significant role because the objectives of training extend beyond the transmission of linguistic knowledge to the development of communicative competence, critical thinking, and the ability to use language in academic and professional contexts.

Descriptive statistical analysis indicates that digital platforms are widely used in assessment activities, particularly LMS and online testing tools.

Table 1. *The use of digital technologies in assessmen*

Technological tool	Mean	Standard deviation
Learning Management Systems (LMS)	4.32	0.61
Online testing tools	3.95	0.73
Automated grading software	3.48	0.82
AI-based pronunciation assessment tools	3.21	0.87
Electronic portfolios (e-Portfolio)	2.96	0.91

(Source: Author's survey and statistical analysis)

The results in Table 4.1 show that LMS platforms are the most widely used tools in assessment activities, with a mean value of 4.32. This reflects a growing trend among higher education institutions toward managing teaching and assessment activities through digital learning platforms. LMS systems allow lecturers to organize online tests, manage question banks, monitor students' learning progress, and store assessment results. As a result, assessment activities are no longer confined to final examinations but are increasingly integrated throughout the entire learning process. Online testing tools are also widely used, with a mean value of 3.95. These tools are commonly employed to conduct quick assessments that measure students' understanding after each lesson or learning topic.

In contrast, AI-based assessment tools and electronic portfolios are used less frequently. This suggests that the implementation of more advanced assessment technologies in foreign language education is still at an early stage of development.

4.1.2. The application of digital technologies in assessing language skills

In English language education, assessment activities must reflect learners' competencies across the four fundamental language skills: listening, speaking, reading, and writing. Therefore, the study examined the extent to which digital technologies are applied in assessing each language skill.

Table 2. *Application of digital technologies by language skill*

Skill	Mean	Standard deviation
Reading	4.12	0.64
Listening	4.03	0.69
Writing	3.56	0.74
Speaking	3.34	0.81

The results presented in Table 4.2 indicate that digital technologies are most extensively applied in assessing reading and listening skills. This can be explained by the relatively standardized structure of these assessments, which makes them easier to integrate into online testing platforms.

Conversely, the application of digital technologies in assessing speaking and writing skills remains more limited. In the case of speaking assessment, evaluation depends not only on pronunciation but also on factors such as interactional competence, intonation, and discourse coherence, which are more difficult to measure automatically.

4.1.3. Comparison of perceptions between lecturers and students

To analyze differences in perceptions regarding the application of digital technologies in assessment, the study conducted an independent-samples t-test between lecturers and students.

Table 3. *Comparison of perceptions between lecturers and students*

Group	Mean	Standard deviation
Lecturers	4.08	0.59
Students	3.76	0.68

Table 4. *Independent t-test results*

t-value	Sig
3.41	0.001

The test results show that Sig = 0.001 (< 0.05), indicating a statistically significant difference between lecturers and students in their perceptions of the application of digital technologies in assessment.

Specifically, lecturers tend to evaluate the role of digital technologies in assessment more positively than students. This difference may be explained by the fact that lecturers are directly involved in designing and implementing assessment activities, and therefore have a clearer understanding of the benefits of technological tools in assessment processes.

4.1.4. Differences based on lecturers' technological experience

The study further conducted an ANOVA analysis to examine differences in the level of digital technology integration according to lecturers' experience in using technology.

Table 5. *ANOVA descriptive results*

Experience group	Mean
Less than 3 years	3.62
3–5 years	3.94
More than 5 years	4.21

Table 6. *ANOVA test*

F	Sig
5.73	0.004

The ANOVA results indicate statistically significant differences among lecturers with different levels of technological experience.

Lecturers with longer experience in using digital technologies tend to integrate digital tools into assessment practices more frequently than those with less experience.

4.1.5. Factors influencing the implementation of digital assessment

In addition to analyzing the level of digital technology usage, the study also examined factors influencing the implementation of digital assessment in English language programs.

Table 7. *Influencing factors*

Factor	Mean
Technology infrastructure	4.11
Lecturers' digital competence	4.03
Assessment methods	3.98
Institutional support policies	3.72

(Source: Author's survey and statistical analysis)

The data presented in Table 4.7 indicate that technology infrastructure and lecturers' digital competence are the two most influential factors affecting the implementation of digital assessment. The findings suggest that digital technologies are contributing to a shift from traditional assessment models toward data-driven assessment approaches. In this new model, learning data are continuously collected through digital learning platforms, enabling lecturers to monitor students' progress and provide timely feedback.

However, the results also indicate that technology alone is not the sole determinant of assessment effectiveness. Instead, the effectiveness of digital assessment depends on the interaction of three key factors: technology infrastructure, lecturers' digital competence, and appropriate assessment methods.

Table 8. *SEM analysis results*

Relationship	β coefficient	Sig
Technology infrastructure → Assessment effectiveness	0.27	0.000
Lecturers' digital competence → Assessment effectiveness	0.31	0.000
Digital assessment methods → Assessment effectiveness	0.39	0.000
Learning feedback → Assessment effectiveness	0.33	0.000

(Source: Author's statistical analysis)

The structural model results presented in Table 4.8 indicate that all hypothesized relationships are positive and statistically significant at the 0.000 level, confirming the robustness of the proposed model. The standardized path coefficients (β) provide insights into the relative strength of each predictor in explaining assessment effectiveness.

Among the examined factors, digital assessment methods exhibit the strongest effect (β = 0.39), suggesting that pedagogically sound and technology-enhanced assessment design plays a decisive role in improving the validity and effectiveness of competency-based assessment. This finding underscores that the impact of digital transformation in assessment is primarily mediated through methodological innovation rather than mere technological adoption.

The second most influential factor is learning feedback (β = 0.33), highlighting the critical importance of timely, meaningful, and formative feedback in supporting learners' competency development. This result aligns with contemporary assessment theories emphasizing feedback as a central mechanism for enhancing learning outcomes.

In addition, lecturers' digital competence demonstrates a substantial positive effect (β = 0.31), indicating that instructors' ability to effectively utilize digital tools significantly contributes to the quality of assessment practices. This suggests that human capital remains a pivotal determinant in the successful implementation of digital assessment.

Finally, technology infrastructure shows a positive but comparatively weaker effect (β = 0.27). While infrastructure serves as a necessary enabling condition, the findings imply that its influence on assessment effectiveness is indirect and contingent upon pedagogical integration and user competence.

Overall, the results confirm that pedagogical and human factors exert stronger influences than purely technological factors, reinforcing the argument that digital transformation in assessment must be accompanied by methodological and professional development to achieve meaningful educational impact.

4.2. Discussion

This findings of this study contribute to the growing body of literature on digital assessment by demonstrating that the effectiveness of competency-based assessment in English language education is shaped by a complex interplay between technological, pedagogical, and human factors. Rather than positioning technology as an autonomous driver of change, the results suggest that its impact is contingent upon pedagogical integration and instructional capacity. This aligns with the constructivist perspective of assessment, particularly the principle of constructive alignment (Biggs & Tang, 2011), which emphasizes the coherence between learning outcomes, teaching strategies, and assessment design.

One of the most salient findings of this study is the dominant role of digital assessment methods, which exhibit the strongest influence on assessment effectiveness. This result reinforces the argument that assessment design remains the central determinant of learning outcomes, even within digitally mediated environments. From a competency-based perspective, assessment must reflect authentic communicative performance rather than isolated knowledge recall (Brown & Abeywickrama, 2019). The strong effect of this variable suggests that digital transformation in assessment is fundamentally a pedagogical process, requiring the redesign of assessment tasks to align with real-world language use and higher-order cognitive skills. Digital transformation in assessment is not a technological shift, but a pedagogical reconfiguration mediated by technology.

Furthermore, the significant contribution of learning feedback underscores the centrality of formative assessment in digital learning environments. The findings support prior research indicating that feedback is one of the most powerful influences on student achievement (Hattie, 2009). In digitally enhanced contexts, feedback becomes more immediate, personalized, and data-informed, thereby strengthening its formative function. This is consistent with Nicol and Macfarlane-Dick (2006), who argue that effective feedback enables learners to regulate their own learning processes by identifying discrepancies between current and desired performance. Feedback is no longer a post-assessment activity; it is the mechanism through which assessment becomes learning.

The role of lecturers' digital competence further highlights the importance of human agency in digital assessment. While digital tools provide new affordances for assessment design and implementation, their effectiveness ultimately depends on instructors' ability to use them in pedagogically meaningful ways. This finding supports a socio-technical perspective of educational technology, in which human and technological factors are interdependent (Redecker & Johannessen, 2019)[15]. It also suggests that investments in digital infrastructure must be accompanied by sustained professional development to enhance instructors' digital pedagogical competence. Importantly, technology alone doesn't transform assessment; its effectiveness depends on pedagogical enactment and instructional competence.

In contrast, although technology infrastructure has a statistically significant effect, its relatively weaker influence indicates that infrastructure alone is insufficient to drive meaningful improvements

in assessment effectiveness. This finding challenges technology-centered approaches to educational reform, which often prioritize hardware and platforms over pedagogy. Instead, the results suggest that infrastructure functions as an enabling condition whose impact is realized only when coupled with appropriate pedagogical strategies and user competence.

Taken together, these findings support a hierarchical interpretation of digital assessment, in which technological factors provide the foundation, but pedagogical design and human capacity determine the ultimate outcomes. This layered structure reflects a shift from technology-driven to learning-centered approaches in digital education, consistent with recent advances in learning analytics and adaptive assessment (Siemens & Long, 2011; Pellegrino & Hilton, 2012).

From a theoretical standpoint, the study advances the literature by integrating competency-based assessment, digital assessment theory, and learning analytics into a unified analytical framework. It demonstrates that assessment effectiveness in digital environments is best understood as a multidimensional construct shaped by the interaction of infrastructure, competence, methodology, and feedback.

From a practical perspective, the findings suggest that higher education institutions should move beyond a narrow focus on digitalization and instead adopt a holistic approach that emphasizes pedagogical innovation, capacity building, and data-informed assessment practices. Without such alignment, the transformative potential of digital technologies in assessment may remain underutilized.

In conclusion, this study provides empirical evidence that the effectiveness of digital competency-based assessment is not determined by the presence of technology itself, but by how technology is pedagogically enacted and humanly mediated within the broader educational ecosystem.

5. Conclusion and recommendations

5.1. Conclusion

This study was conducted to analyze the current situation and evaluate the factors influencing the application of digital technologies in the assessment of learner competence in English language education within the context of digital transformation in higher education. Based on empirical data collected from lecturers and students at several higher education institutions, the findings indicate that digital technologies are being increasingly integrated into assessment activities through online learning platforms, digital testing tools, and learning data management systems.

The results show that factors such as technology infrastructure, lecturers' digital competence, digital assessment methods, and learning feedback systems all exert positive effects on assessment effectiveness. Among these, digital assessment methods and learning feedback were identified as the two most influential factors. This suggests that the application of digital technologies in assessment is not merely a matter of employing digital tools, but also requires innovation in assessment design so as to maximize the learning-support function of assessment.

In addition, the study reveals that the application of digital technologies varies across language skills, with a higher level of use in the assessment of reading and listening than in speaking and writing. This reflects certain challenges in digitizing assessment practices for more complex communicative skills.

Overall, the study confirms that the application of digital technologies holds considerable potential for improving assessment effectiveness in English language education. However, in order to realize this potential, a coordinated combination of investment in technological infrastructure, the enhancement of lecturers' digital competence, and the innovation of assessment methods in line with competency development is required.

5.2. Recommendations

Based on the findings of the study, several recommendations can be proposed to enhance the effectiveness of digital technology application in the assessment of learner competence in English language education at higher education institutions.

First, technological infrastructure for digital assessment should be strengthened.

Technological infrastructure constitutes the fundamental condition for implementing technology-based assessment models. Higher education institutions should invest systematically in LMS, online question banks, and digital assessment platforms in order to support lecturers in designing and implementing more effective assessment activities.

In addition, the development of learning analytics systems is of particular importance in monitoring students' learning progress and supporting instructional decision-making. When learning data are collected and analyzed systematically, lecturers are better able to identify learners' difficulties at an early stage and provide timely pedagogical support.

Second, lecturers' digital competence should be enhanced. Lecturers' digital competence is a decisive factor in the effective implementation of digital assessment models. Therefore, higher education institutions should organize professional development programs aimed at improving lecturers' technological skills for teaching and assessment. These training programs should focus on guiding lecturers in designing technology-based assessment activities, using online assessment tools, and exploiting learning data to improve teaching quality. At the same time, lecturers should be encouraged to share experiences and best practices in the application of digital technologies to assessment.

Third, assessment methods should be innovated in line with a competency-based approach. One of the key requirements of contemporary higher education is the transition from knowledge-based assessment models to competency-based assessment models. In this context, digital technologies can play an important supporting role in the design of diverse and authentic assessment tasks. Assessment forms such as project-based assessment, electronic portfolios (e-portfolios), peer assessment, and task-based assessment can be integrated with technological platforms to create flexible assessment environments and encourage learners' active participation.

Fourth, the role of learning feedback in the assessment process should be strengthened. The findings of the study indicate that learning feedback is a factor exerting a significant influence on assessment effectiveness. Higher education institutions should therefore establish effective feedback mechanisms to support students' competence development. The use of digital technologies can help lecturers provide feedback more rapidly and in a more personalized manner. At the same time, students should be encouraged to participate actively in the feedback process through peer assessment and self-assessment practices.

Fifth, higher education institutions should develop long-term strategies for digital assessment systems. In the long term, higher education institutions need to formulate strategic plans for the development of digital assessment systems in order to ensure that the application of digital technologies in assessment is implemented in a sustainable and effective manner. Such strategies should clearly identify the objectives, roadmap, and resources required for the development of digital assessment systems.

In addition, collaboration among higher education institutions, research organizations, and technology enterprises should be strengthened in order to develop technological solutions that serve assessment activities in education.

These recommendations not only contribute to enhancing the effectiveness of digital technology application in assessment but also support the broader process of pedagogical innovation in English language education within the context of digital transformation in higher education.

REFERENCES

1. Alderson, J. C. (2005), *Diagnosing foreign language proficiency: The interface between learning and assessment.* Continuum.
2. Biggs, J., & Tang, C. (2011), *Teaching for quality learning at university* (4th ed.). McGraw-Hill Education.

3. Black, P., & Wiliam, D. (2009), *Developing the theory of formative assessment*. *Educational Assessment.* Evaluation and Accountability*, 21*(1), 5-31. https://doi.org/10.1007/s11092-008-9068-5.
4. Brown, H. D., & Abeywickrama, P. (2019), *Language assessment: Principles and classroom practices* (3rd ed.). Pearson Education.
5. Carless, D. (2020), *From testing to productive student learning: Implementing formative assessment in higher education*. Assessment & Evaluation in Higher Education*, 45*(7), 987-1001. https://doi.org/10.1080/02602938.2019.1700196.
6. Chapelle, C. A. (2019), *Argument-based validation in language assessment.* Language Testing*. 36*(4), 485–502. https://doi.org/10.1177/0265532219868379.
7. Chapelle. C. A., & Douglas, D. (2021), *Assessing language through technology.* Cambridge University Press.
8. Council of Europe. (2020), *Common European framework of reference for languages: Learning, teaching, assessment - Companion volume.* Council of Europe Publishing.
9. Hattie, J. (2023), *Visible learning: The sequel.* Routledge.
10. Laurillard, D. (2022), *Teaching as a design science in the digital age: The role of learning technologies.* British Journal of Educational Technology*, 53*(4). 1027-1040. https://doi.org/10.1111/bjet.13172.
11. Nguyen, T. H. N. (2021), *Application of digital technologies in the assessment of learning outcomes in higher education.* Vietnam Journal of Educational Sciences. 43, 24-29.
12. Nguyen, V. H. (2020), *Digital transformation in higher education: Opportunities and challenges*. Journal of Education. 479. 1-6.
13. Nicol. D. J., & Macfarlane-Dick. D. (2006), *Formative assessment and self-regulated learning: A model and seven principles of good feedback practice*. Studies in Higher Education. *31*(2). 199 - 218. https://doi.org/10.1080/03075070600572090.
14. Pham. T. H. N. (2022), *Innovating assessment in foreign language teaching toward a competency-based approach***.** *Language and Life Journal*. 7(315), 45-50
15. Redecker. C., & Johannessen. Ø. (2019), *Digital competence and digital assessment in higher education*. UNESCO Publishing.

Ứng dụng công nghệ số trong đánh giá năng lực người học trong dạy học tiếng Anh

Tóm tắt: Trong bối cảnh chuyển đổi số giáo dục đại học, công nghệ số đang từng bước làm thay đổi cách thức kiểm tra - đánh giá theo hướng hiện đại, linh hoạt và chú trọng phát triển năng lực người học. Nghiên cứu này tập trung phân tích việc ứng dụng công nghệ số trong kiểm tra – đánh giá theo tiếp cận năng lực đối với sinh viên ngành Ngôn ngữ Anh tại các cơ sở giáo dục đại học ở Việt Nam. Trên cơ sở kết hợp các khung lý thuyết về đánh giá theo năng lực, đánh giá số và phân tích học tập, nghiên cứu sử dụng phương pháp hỗn hợp, bao gồm khảo sát, phân tích tài liệu và tham vấn chuyên gia. Kết quả cho thấy các công cụ như hệ thống quản lý học tập (LMS) và các ứng dụng trí tuệ nhân tạo đã góp phần nâng cao hiệu quả đánh giá, cải thiện chất lượng phản hồi và hỗ trợ cá thể hóa việc học. Tuy nhiên, vẫn còn tồn tại một số hạn chế như hạ tầng công nghệ chưa đồng bộ, năng lực ứng dụng công nghệ của giảng viên còn chênh lệch và thiếu các tiêu chuẩn thống nhất trong đánh giá. Từ đó, nghiên cứu đề xuất mô hình đánh giá theo năng lực dựa trên công nghệ số và đưa ra một số khuyến nghị nhằm nâng cao hiệu quả triển khai trong thực tiễn.

Từ khóa: Đánh giá số; dạy học tiếng Anh; đánh giá dựa trên năng lực; chuyển đổi số; phân tích dữ liệu học tập.