

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

EXPERIMENTAL EVALUATION OF ICT-BASED METHODOLOGY FOR DEVELOPING PHILOLOGY STUDENTS' READING COMPETENCE

Dilorom Khayrullayeva Sayfutdinovna

English Faculty, Uzbekistan State World Languages University²

Senior Teacher, English Theoretical Aspects Department 2

e-mail: khayrullayevad@gmail.com

tel: (77) 999 47 59

Abstract

The article examines the experimental evaluation of an ICT-based methodology for developing reading competence among philology students. The study analyzes pre-test and post-test results, percentage growth, Hake gain, and t-test values. The findings show that strategic, level-based, and interactive ICT-supported reading tasks contribute to stronger development of reading competence.

Keywords: Reading competence; ICT; experimental study; pre-test; post-test; Hake gain; t-test; English language; strategic reading; philology students.

Introduction

In contemporary higher education, the development of reading competence in a foreign language is closely connected with students' ability to process academic and professionally relevant information. For philology students, reading is not limited to understanding written texts; it also involves identifying key ideas, interpreting implicit meanings, evaluating arguments, and applying information in academic, pedagogical, translation-related, and intercultural contexts.

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaopenaccess.com/index.php/2>

Therefore, reading competence should be regarded as an essential component of professional training in philological higher education.

At the same time, traditional approaches to reading instruction do not always provide sufficient conditions for the systematic development of this competence. When reading tasks are limited to translation, vocabulary explanation, or factual comprehension questions, students often remain at the level of literal understanding. They may be able to reproduce information directly stated in the text, but they may experience difficulty in making inferences, evaluating the author's position, comparing arguments, and reflecting on the content of the text. Grabe and Stoller [1] emphasize that reading is a complex process that includes linguistic, cognitive, and strategic components. This means that reading instruction should develop not only vocabulary and grammar knowledge, but also students' ability to use strategies for understanding, interpreting, and evaluating texts. Alderson [2] also argues that reading assessment should take into account different levels of comprehension, including explicit understanding, inference, interpretation, and evaluation. These ideas show that an effective reading methodology should be based on a system of tasks that gradually moves students from basic comprehension to analytical and reflective reading.

The use of ICT tools creates additional opportunities for developing reading competence. Digital platforms, interactive tests, automatic assessment, and immediate feedback can help organize reading instruction in a more flexible and individualized way. However, technology itself does not guarantee educational effectiveness. Robert [3] notes that information technologies in education should be integrated with didactic goals, content, methods, and forms of assessment. Therefore, ICT-based reading instruction becomes effective only when digital tools are combined with properly selected texts, reading strategies, level-based tasks, and feedback mechanisms.

The purpose of this article is to evaluate the effectiveness of an ICT-based methodology for developing reading competence among philology students on

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

the basis of experimental data obtained in three higher educational institutions: UzSWLU, SamSIFL, and NamSU.

Literature review

The theoretical foundation of the study is based on competence-based, communicative-cognitive, strategic, and digital-didactic approaches to foreign language teaching. Within the competence-based approach, reading is interpreted as the ability to use written information for academic, communicative, and professional purposes. This view corresponds to the CEFR Companion Volume [4], where reading as written reception is described through different types of written text comprehension and different levels of language proficiency.

The communicative-cognitive approach makes it possible to understand reading as an active process of meaning construction. In this process, students do not simply decode written signs; they relate textual information to their background knowledge, identify logical connections, interpret implicit meanings, and evaluate the communicative intention of the author. Nuttall [5] emphasizes that effective reading instruction requires purposeful organization of reading stages and tasks that guide students before, during, and after reading.

The strategic approach is also essential for the present study. Anderson [6] underlines the importance of metacognitive strategies in reading, including planning, monitoring, and evaluating comprehension. These strategies are particularly important for students who work with academic and professionally oriented texts, because such texts often require not only factual understanding but also interpretation, comparison, and critical evaluation.

The digital-didactic approach is connected with the methodological use of ICT tools in teaching and assessment. Bepalko [7] considers pedagogical technology as a structured system in which goals, content, methods, and assessment are interconnected. From this perspective, ICT tools should support the logic of the teaching process rather than function as isolated technical additions. In the

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaopenaccess.com/index.php/2>

context of reading instruction, digital tools may be used for presenting texts, organizing interactive tasks, providing automatic assessment, monitoring results, and supporting independent learning.

In the dissertation research, the methodology for developing reading competence was based on the integration of ICT tools, strategic reading tasks, level-based exercises, automatic assessment, and feedback. The reliability of the research results was supported by pre-test and post-test data, experimental and control group comparison, average scores, growth rates, relative effectiveness, Hake coefficient, and t-test analysis.

Research Methodology

The experimental study was aimed at evaluating the effectiveness of ICT-based reading instruction for developing reading competence among philology students. The methodology combined pedagogical observation, comparative analysis, experimental teaching, monitoring, testing, and mathematical-statistical analysis. The research design included experimental and control groups, which made it possible to compare the dynamics of students' reading competence under different instructional conditions.

The experimental work was conducted in three higher educational institutions: Uzbekistan State World Languages University (UzSWLU), Samarkand State Institute of Foreign Languages (SamSIFL), and Namangan State University (NamSU). The choice of these institutions made it possible to evaluate the methodology in different educational contexts while keeping the general focus on philological language education.

The experimental groups studied reading through an ICT-based methodology that included strategic reading tasks, level-based exercises, interactive tests, automatic assessment, and feedback. The control groups continued learning under more traditional instructional conditions. The methodological intervention was

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaopenaccess.com/index.php/2>

based on the principle of gradual development: students moved from literal comprehension to inferential, analytical, and reflective reading.

The experimental methodology included several interconnected components. First, academic and professionally oriented texts were selected according to students' language level, professional relevance, linguistic complexity, and suitability for digital tasks. Second, reading tasks were organized according to a staged model, which guided students from initial orientation to deeper interpretation and reflection. Third, ICT tools were used to provide interactive exercises, automatic checking, and immediate feedback. Fourth, students' results were analyzed through pre-test and post-test comparison.

The main indicators used for evaluating effectiveness were: average pre-test and post-test scores, percentage growth, gain score, Hake coefficient, and t-test. Such a combination of indicators allowed the research to evaluate not only whether students improved, but also whether the improvement in experimental groups was more significant than in control groups.

Results and discussion

The experimental data showed positive dynamics in the development of reading competence among students in the experimental groups. According to the dissertation results, the overall percentage growth in the experimental groups was **28.6%**, while in the control groups it was **13.6%**. This difference indicates that the ICT-based methodology produced a stronger positive effect than traditional forms of reading instruction.

Table 1. General Growth in Experimental and Control Groups

Group	Percentage growth
Experimental groups	28.6%
Control groups	13.6%

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaopenaccess.com/index.php/2>

The results by institution also demonstrated positive changes. In **UzSWLU**, the experimental group showed a **41.4%** increase, while the control group improved only by **7.4%**. In **NamSU**, the experimental group demonstrated a **30.8%** increase, whereas the control group showed **11.1%** growth. In **SamSIFL**, the percentage growth in the control group appeared relatively high due to its very low initial level; however, the final average score remained higher in the experimental group. Therefore, the percentage growth was interpreted together with pre-test/post-test scores and gain indicators.

Table 2. Growth Dynamics by Institution

Institution	Experimental group	Control group
UzSWLU	41.4%	7.4%
NamSU	30.8%	11.1%
SamSIFL	Positive final advantage of the experimental group	Relatively high growth due to low initial level

The Hake gain values also confirmed the effectiveness of the methodology. In **UzSWLU**, the Hake gain was **0.57**, which indicates a relatively strong learning gain. In **NamSU**, the Hake gain was **0.33**, while in **SamSIFL** it was **0.24**. These results show that ICT tools, strategic reading tasks, and gradual text complexity contributed to the development of students' reading competence.

Table 3. Hake Gain by Institution

Institution	Hake gain
UzSWLU	0.57
NamSU	0.33
SamSIFL	0.24

The topic-based analysis conducted with second-year students also demonstrated stable progress. In the topic "**Talking Telephones**", the results of UzSWLU and

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

NamSU were approximately **73%**. In “**The Day a Language Died**”, the indicator reached **82.18%** in UzSWLU and **82.44%** in NamSU. Even in the more complex B2–C1 level text “**Fashion, Identity and the Global Economy**”, UzSWLU students achieved **79.27%**, while NamSU students achieved **79.61%**. These results suggest that students began to apply skills such as identifying the main idea, interpreting implicit meaning, and giving critical responses when working with more complex academic and professionally oriented texts.

Table 4. Topic-Based Results

Text / Topic	UzSWLU	NamSU
Talking Telephones	about 73%	about 73%
The Day a Language Died	82.18%	82.44%
Fashion, Identity and the Global Economy	79.27%	79.61%

To determine whether the differences between the experimental and control groups were statistically significant, the independent samples t-test was applied. The results showed that the strongest statistically significant differences were observed in UzSWLU and SamSIFL. In UzSWLU, the t-test result was $t = 9.04$, with $p < 0.001$, which indicates a highly significant difference in favour of the experimental group. A similar result was obtained in SamSIFL, where the t-value was 7.41 , also with $p < 0.001$. These findings confirm that the ICT-based methodology had a strong positive effect on the development of students’ reading competence in these two institutions.

In NamSU, the t-test result was $t = 1.99$, with $p = 0.058$. Although this result does not reach the conventional level of statistical significance at $p < 0.05$, it is very close to the threshold and demonstrates a positive tendency in favour of the experimental group. This means that the students in the experimental group also showed improvement, but the difference between the experimental and control

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

groups was not statistically strong enough to be interpreted as significant at the 0.05 level.

Table 5. T-test Results by Institution

Institution	t-value	p-value	Interpretation
UzSWLU	9.04	$p < 0.001$	Statistically significant difference
SamSIFL	7.41	$p < 0.001$	Statistically significant difference
NamSU	1.99	$p = 0.058$	Positive tendency, but not statistically significant at $p < 0.05$

The data presented in Table 5 show that the effectiveness of the ICT-based methodology varied across the three institutions. The results from UzSWLU and SamSIFL provide statistically reliable evidence of the positive impact of the proposed methodology. The NamSU result, while not statistically significant at the conventional level, still indicates a favourable tendency. Therefore, the general tendency across all three institutions supports the conclusion that ICT-based reading instruction, when combined with strategic and level-based tasks, contributes to the development of philology students' reading competence.

Results and discussion

The obtained results confirm that the ICT-based methodology had a positive influence on the development of reading competence among philology students. The difference between the experimental and control groups suggests that the improvement was not accidental and cannot be explained only by general language learning progress. Rather, it was connected with the systematic use of strategic reading tasks, level-based exercises, interactive formats, automatic assessment, and feedback.

The higher growth in the experimental groups can be explained by several methodological factors. First, the students worked with texts and tasks organized according to a clear progression from literal comprehension to inferential and

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaopenaccess.com/index.php/2>

analytical reading. This helped them avoid fragmented reading and gradually develop deeper comprehension skills. Second, ICT tools made it possible to provide immediate feedback and repeated practice, which supported self-correction and independent learning. Third, the use of academic and professionally oriented texts helped students see reading as a meaningful activity connected with their future profession.

The Hake gain values are especially important because they show the normalized learning progress achieved during the experiment. The highest Hake gain was observed in UzSWLU, which may be connected with better initial readiness for ICT-based learning or more stable integration of digital tools into the reading process. The results in NamSU and SamSIFL were lower but still positive, indicating that the methodology can be effective in different institutional contexts.

The topic-based results also have methodological significance. Students demonstrated relatively strong performance not only with easier texts but also with more complex B2–C1 materials. The results on “**Fashion, Identity and the Global Economy**” are particularly important because this text required higher-order reading operations, including interpretation, evaluation, and critical response. This confirms that the methodology supported not only literal comprehension but also analytical and reflective reading skills.

At the same time, the results should be interpreted carefully. Percentage growth alone may not fully reflect the quality of progress, especially when the initial level of a control group is very low. For this reason, the study used several indicators together: pre-test and post-test comparison, percentage growth, gain score, Hake coefficient, and t-test. This approach makes the interpretation more reliable and prevents overgeneralization.

The t-test results provide additional evidence for interpreting the effectiveness of the proposed methodology. The statistically significant differences in UzSWLU and SamSIFL demonstrate that the experimental groups achieved stronger

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

progress than the control groups. In NamSU, the result did not reach the conventional significance level, but the value $p = 0.058$ suggests a positive tendency close to statistical significance. This may be explained by several factors, including the initial level of students, the duration of the intervention, the degree of familiarity with ICT tools, and differences in institutional learning conditions. Thus, while the strength of the statistical effect varied, the overall direction of the results remained positive.

Overall, the experimental results support the idea that ICT-based reading instruction becomes effective when digital tools are integrated into a broader methodological system. Technology does not replace the teacher, the text, or the reading strategy. Instead, it strengthens the learning process when it is used to organize tasks, provide feedback, support monitoring, and encourage independent reading activity.

Conclusion

The experimental evaluation of the ICT-based methodology showed that the use of strategic, level-based, and interactive reading tasks contributes to the development of reading competence among philology students. The comparison of experimental and control groups demonstrated stronger positive dynamics in the experimental groups, where students worked with ICT-supported reading tasks, automatic assessment, and feedback.

The overall growth of the experimental groups was 28.6%, compared with 13.6% in the control groups. The Hake gain values — 0.57 in UzSWLU, 0.33 in NamSU, and 0.24 in SamSIFL — indicate measurable learning progress. The t-test results, including $t = 9.04$ in UzSWLU and $t = 7.41$ in SamSIFL with $p < 0.001$, confirm the statistical significance of the differences between experimental and control groups. This indicates that the ICT-based methodology was generally effective, although the strength of its statistical impact differed across institutions.

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

The findings suggest that ICT tools are effective when they are integrated with methodologically selected texts, strategic reading tasks, level-based exercises, and feedback mechanisms. The methodology helped students move from literal comprehension to inferential, analytical, and reflective reading, which is particularly important for philology students who need to work with academic and professionally oriented texts.

Thus, ICT-based methodology should be regarded not as a simple technical modernization of reading instruction, but as a didactic system that supports the gradual formation of reading competence. Its effectiveness depends on the integration of text, task, strategy, assessment, feedback, and learner autonomy.

References

- [1] Grabe, W., & Stoller, F. L. Teaching and Researching Reading. 2nd ed. London; New York: Routledge, 2013. 344 p.
- [2] Alderson, J. C. Assessing Reading. Cambridge: Cambridge University Press, 2000. 398 p.
- [3] Robert, I. V. Sovremennye informatsionnye tekhnologii v obrazovanii: didakticheskie problemy; perspektivy ispolzovaniya. Moscow: Shkola-Press, 1994. 205 p.
- [4] Council of Europe. Common European Framework of Reference for Languages: Learning, Teaching, Assessment – Companion Volume. Strasbourg: Council of Europe, 2020. 278 p.
- [5] Nuttall, C. Teaching Reading Skills in a Foreign Language. Oxford: Heinemann, 1996. 282 p.
- [6] Anderson, N. J. Practical English Language Teaching: Reading. New York: McGraw-Hill, 2008. 182 p.
- [7] Bepalko, V. P. Slagaemye pedagogicheskoy tekhnologii. Moscow: Pedagogika, 1989. 192 p.

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online)

Volume 2, Issue 6, June 2026



This article/work is licensed under CC by 4.0 Attribution

<https://eurekaoa.com/index.php/2>

- [8] Hake, R. R. Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*. 1998. Vol. 66, No. 1. P. 64–74.
- [9] Cohen, L., Manion, L., & Morrison, K. *Research Methods in Education*. 8th ed. London: Routledge, 2018. 916 p.
- [10] Creswell, J. W., & Creswell, J. D. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 5th ed. Thousand Oaks: SAGE, 2018. 304 p.