



Наукові перспективи
Видавнича група



Наукові інновації та передові технології

Державне управління

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Психологія



4(56) 2026

Всеукраїнська Асамблея докторів наук із державного управління

у рамках роботи Видавничої групи «Наукові перспективи»

***«Наукові інновації та
передові технології»***

*Державне управління, економіка,
право, педагогіка, психологія*

№ 4(56) 2026

Київ – 2026

Ukrainian Assembly of Doctors of Sciences in Public Administration



within the work of the Publishing Group «Scientific Perspectives»

«Scientific innovations and advanced technologies»

*Public administration, economics,
law, pedagogy, psychology*

№ 4(56) 2026

Kyiv – 2026

ISSN 2786-5274 Print
УДК 001.32:1 /3](477)(02)
R30-04851

DOI: [https://doi.org/10.52058/2786-5274-2026-4\(56\)](https://doi.org/10.52058/2786-5274-2026-4(56))

«Наукові інновації та передові технології»

Державне управління, економіка, право, педагогіка, психологія: журнал. 2026. № 3(55) 2026. С. 3909.

Журнал започаткований у 2021 році з метою розвитку вітчизняного наукового людського капіталу, соціальних наук та журналістики

*Свідоцтво про державну реєстрацію друкованого засобу масової інформації:
серія KB № 24962-14902P від 13.09.2021 р.*

*Рекомендовано до друку Президією Всеукраїнської Асамблеї докторів наук з державного управління
(Рішення від 06.04.2026, № 3/4-26)*

Журнал видається за наукової підтримки: Інституту філософії та соціології Національної Академії Наук Азербайджану (Баку, Азербайджан), громадської організації «Асоціація науковців України», громадської організації «Християнська академія педагогічних наук України» та громадської організації «Всеукраїнська асоціація педагогів і психологів з духовно-морального виховання»



Згідно наказу Міністерства освіти і науки України від 30.11.2021 № 1290 журналу присвоєно категорію "Б" із права

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UDC 378.147:811:338.48-051

[https://doi.org/10.52058/2786-5274-2026-4\(56\)-765-775](https://doi.org/10.52058/2786-5274-2026-4(56)-765-775)

Zablotska Lyubov Mykhailivna Candidate of Pedagogical Sciences, Associate Professor, Department of Foreign Languages, Volodymyr Hnatiuk National Pedagogical University, Ternopil. <https://orcid.org/0000-0002-4388-4710>

Olendr Tetiana Mykhailivna Candidate of Pedagogical Sciences, Associate Professor, Department of Foreign Languages, Volodymyr Hnatiuk National Pedagogical University, Ternopil. <https://orcid.org/0000-0002-1665-6413>

Tsar Iryna Olehivna Candidate of Pedagogical Sciences, Associate Professor, Department of Foreign Languages, Volodymyr Hnatiuk National Pedagogical University, Ternopil. <https://orcid.org/0000-0001-8042-4839>

Turchyn Andrii Ivanovych Candidate of Pedagogical Sciences, Associate Professor, Department of Foreign Languages, Volodymyr Hnatiuk National Pedagogical University, Ternopil. <https://orcid.org/0000-0002-1690-8967>

DEVELOPING INTERCULTURAL COMPETENCE OF INTERNATIONAL TOURISM STUDENTS THROUGH AUGMENTED REALITY

Abstract. This article examines the development of intercultural competence of first- and second-year students majoring in International Tourism through the integration of Augmented Reality (AR) technologies into foreign language instruction. The relevance of this topic stems from the rapid expansion of the global tourism industry and the growing labour market demand for professionals capable of effective cross-cultural communication in multilingual service environments. The theoretical framework draws on contemporary models of intercultural communicative competence and the pedagogical affordances of AR in Foreign Language Learning (FLL). A mixed-methods research design was employed with a group of 32 university students (14 female, 18 male). The quantitative component involved pre- and post-intervention testing across three dimensions: intercultural awareness (20-point scale), communicative confidence in cross-cultural encounters (5-point Likert scale), and engagement with AR tools. The qualitative component comprised semi-structured group interviews conducted with all participants following the five-month AR-based intervention. Results demonstrated statistically significant improvements across all three dimensions ($p < 0.01$, large effect sizes). Specifically, mean intercultural awareness scores rose from 11.4 to 16.1, and communicative confidence increased from 2.8 to 4.1. 87.5% of students rated the AR tools as useful or very useful for professional development. Qualitative analysis of interview data revealed three dominant themes: immersive



cognitive engagement, reduced affective anxiety in cross-cultural situations, and a strong desire for broader AR integration across the curriculum. Based on the empirical findings, three practical pedagogical scenarios for AR use have been proposed and substantiated: cross-cultural service encounter simulations, AR-enhanced tourism route design tasks, and interactive cultural reference companion applications. The article concludes that the systematic integration of AR into professional foreign language curricula for tourism students constitutes an effective, evidence-based, and practically viable pedagogical strategy.

Keywords: intercultural competence, augmented reality, international tourism, cross-cultural communication, foreign language, higher education, digital learning technologies.

Заблюцька Любов Михайлівна кандидат педагогічних наук, доцент, Тернопільський національний педагогічний університет імені Володимира Гнатюка, м. Тернопіль. <https://orcid.org/0000-0002-4388-4710>

Олендр Тетяна Михайлівна кандидат педагогічних наук, доцент, Тернопільський національний педагогічний університет імені Володимира Гнатюка, м. Тернопіль. <https://orcid.org/0000-0002-1665-6413>

Цар Ірина Олегівна кандидат педагогічних наук, доцент, Тернопільський національний педагогічний університет імені Володимира Гнатюка, м. Тернопіль. <https://orcid.org/0000-0001-8042-4839>

Турчин Андрій Іванович кандидат педагогічних наук, доцент, Тернопільський національний педагогічний університет імені Володимира Гнатюка, м. Тернопіль. <https://orcid.org/0000-0002-1690-8967>

РОЗВИТОК МІЖКУЛЬТУРНОЇ КОМПЕТЕНТНОСТІ СТУДЕНТІВ СПЕЦІАЛЬНОСТІ «МІЖНАРОДНИЙ ТУРИЗМ» ЗАСОБАМИ ДОПОВНЕНОЇ РЕАЛЬНОСТІ

Анотація. У статті досліджується проблема формування міжкультурної компетентності студентів першого та другого курсів спеціальності «Міжнародний туризм» засобами доповненої реальності (AR) у процесі іншомовної підготовки. Актуальність дослідження зумовлена стрімким розвитком міжнародної туристичної галузі та зростаючою потребою ринку праці у фахівцях, здатних ефективно здійснювати іншомовну комунікацію в полікультурному середовищі. Теоретичну основу дослідження складають сучасні концепції міжкультурної комунікативної компетентності та педагогічного потенціалу технологій доповненої реальності у навчанні іноземних мов. Емпіричну базу становлять результати змішаного дослідження із залученням 32 студентів (14 дівчат та 18



юнаків). Кількісна складова передбачала проведення тестування до та після впровадження AR-інтервенції за трьома вимірами: міжкультурна обізнаність (20-бальна шкала), комунікативна впевненість у міжкультурних ситуаціях (5-бальна шкала Лікерта) та залученість до роботи з AR-інструментами. Якісна складова включала напівструктуровані групові інтерв'ю з усіма учасниками дослідження. Результати засвідчили статистично значущі позитивні зміни за всіма трьома вимірами ($p < 0,01$, велика сила ефекту). Зокрема, середній бал міжкультурної обізнаності зріс із 11,4 до 16,1 бала, а комунікативна впевненість – із 2,8 до 4,1. Загалом 87,5% студентів оцінили AR-інструменти як корисні або дуже корисні для професійного розвитку. Якісний аналіз інтерв'ю виявив три домінуючі теми: занурювальна когнітивна залученість, зниження тривожності в міжкультурних ситуаціях та бажання ширшого впровадження AR у навчальний процес. На основі отриманих результатів розроблено та обґрунтовано три практичні педагогічні сценарії використання доповненої реальності: симуляції міжкультурних сервісних ситуацій, AR-туристичні маршрути та інтерактивні культурні довідники. Зроблено висновок про доцільність та ефективність системного впровадження технологій доповненої реальності у мовну підготовку студентів туристичних спеціальностей.

Ключові слова: міжкультурна компетентність, доповнена реальність, міжнародний туризм, іншомовна комунікація, іноземна мова, вища освіта, цифрові технології в навчанні.

Problem Statement. Tourism today is a global industry. Professionals in this field deal with clients from dozens of different cultural backgrounds every day. To do their job well, they need more than good language skills. They need to understand how people from different cultures communicate, what they expect, and what they find appropriate or offensive. Research shows that cultural misunderstandings are one of the main reasons for poor service quality in cross-cultural tourism contexts [8]. Yet many university programmes in Ukraine still focus mostly on grammar and vocabulary, while intercultural skills receive far less attention [5].

Augmented Reality (AR) is a technology that adds digital content, such as images, text, and audio, to the real world via a smartphone or tablet. In education, AR can create realistic, context-rich situations in which students practise communication in meaningful ways [4]. Studies show that AR increases motivation, lowers anxiety, and helps students connect language use with real-life situations [1]. However, AR has rarely been used specifically to build intercultural competence in tourism language classes, especially in Ukrainian universities.

This study investigates whether AR activities can foster intercultural competence among International Tourism students and identifies the classroom practices that prove most effective in achieving this goal.

Analysis of Recent Research and Publications. Studies on intercultural competence and AR-based language learning can be grouped into three broad areas:



- (1) conceptual frameworks of intercultural competence in professional and tourism contexts;
- (2) technology-mediated approaches to intercultural learning; and
- (3) AR and VR as specific tools for language and culture education.

The first group of studies focuses on what intercultural competence means and why it matters professionally. Researchers generally define it as a combination of knowledge, skills, and attitudes that allow people to communicate effectively across cultural boundaries [7]. In tourism and hospitality specifically, cultural differences in communication, such as directness, eye contact, or attitudes toward personal space, have been shown to directly affect service quality and tourist satisfaction [8]. The analysis confirmed that tourism undergraduates have positive views of intercultural communication, yet they still need organized, hands-on practice to develop the skills required outside the classroom [11]. These studies make a strong case for treating intercultural competence as a core professional skill in tourism education rather than an optional add-on.

The second group covers technology-mediated approaches to intercultural learning in higher education. Researchers have explored telecollaboration, virtual exchange, and online cross-cultural interaction as ways to give students an authentic intercultural experience. A systematic review of this field found that virtual interaction has become the dominant strategy in higher education since 2016, with consistent positive effects on students' intercultural awareness and communicative flexibility [5]. Telecollaboration, in particular, supports students in developing more nuanced communication strategies when working with peers from other cultures online [6]. However, a recurring limitation of these approaches is that they rely on screen-based interaction.

Students communicate with real people from other cultures, but only through text or video, not in immersive, lifelike situations. This gap has led researchers to look at more immersive technologies.

The third group of studies deals directly with AR and VR in language and intercultural education. Shadiev, Wang, and Huang [3] showed that VR-based intercultural tasks improved students' perceptions of their intercultural competence and helped them form more realistic expectations for cross-cultural encounters. A later study by the same team [2] compared immersive VR with non-immersive approaches among 80 students from China and Indonesia. The immersive version worked significantly better, especially when students could actively interact with the digital content rather than just observe it. The study closest to the present research is by Liu, Gao, and Ji [1], who worked with 48 EFL learners and found that AR instruction led to significantly higher intercultural competence scores and stronger motivation compared to traditional teaching.

A systematic review of 40 AR studies in Foreign Language Learning (FLL) confirmed similar patterns: greater motivation, lower anxiety, and more contextually relevant practice [4]. A meta-analysis reached the same conclusion that AR



consistently produces better outcomes than conventional instruction on both language and cultural measures [10]. According to the EULALIA project [12], students learn more effectively when they co-create AR materials about their own or target cultures. They also demonstrate higher engagement in FLL and improved motivation.

Purpose of the Article. This article has two main goals. The first is to test whether AR-based activities can improve intercultural competence in first- and second-year International Tourism students during their foreign language classes. The second is to propose practical, ready-to-use classroom scenarios for teachers who want to implement AR into their language courses. To achieve these goals, the study focuses on three specific questions:

RQ1. How do students' levels of intercultural awareness, communicative confidence, and engagement with AR tools change after the intervention?

RQ2. How do students themselves describe their experience of learning with AR?

RQ3. What activities can be recommended for wider use in tourism language education?

Research Methodology and Main Findings. The study took place at Ternopil Volodymyr Hnatiuk National Pedagogical University from October 2025 to February 2026. The study involved 32 students in the first and second year of a Bachelor's programme in International Tourism (see Table 1).

All of them were taking FLL as a compulsory course as part of their degree programme. The study used a mixed-methods design: students completed tests before and after the intervention and participated voluntarily in group interviews once the intervention was complete.

Table 1

Participant Profile by Year of Study and Gender (n = 32)

Year of Study	Female (n)	Male (n)	Total (n)	% of cohort
1st year	8	9	17	53.1%
2nd year	6	9	15	46.9%
Total	14	18	32	100%

The intervention lasted five months. During this time, three types of AR activities were added to regular FLL classes: (1) role-play tasks using AR scenario cards that simulated real service situations with tourists from different countries; (2) a mobile AR city guide task where students practised culturally appropriate communication on a simulated tourist route; and (3) interactive AR cultural reference cards, due to which students pointed their phones at images of cultural objects and received contextual information about that culture in real time. Three aspects of intercultural competence were measured using adapted, validated instruments.

Table 2

Summary of Quantitative Pre- and Post-Intervention Results (n = 32)

Dimension	Max Score	Pre-test M (SD)	Post-test M (SD)	p-value	Effect size (Cohen's d)
Intercultural Awareness	20	11.4 (2.3)	16.1 (1.8)	< 0.01	2.1 (large)
Communicative Confidence	5	2.8 (0.7)	4.1 (0.6)	< 0.01	1.9 (large)
AR Tool Engagement	5	2.5 (0.8)	4.4 (0.5)	< 0.01	2.7 (large)

Figure 1 illustrates these changes visually across all three dimensions.

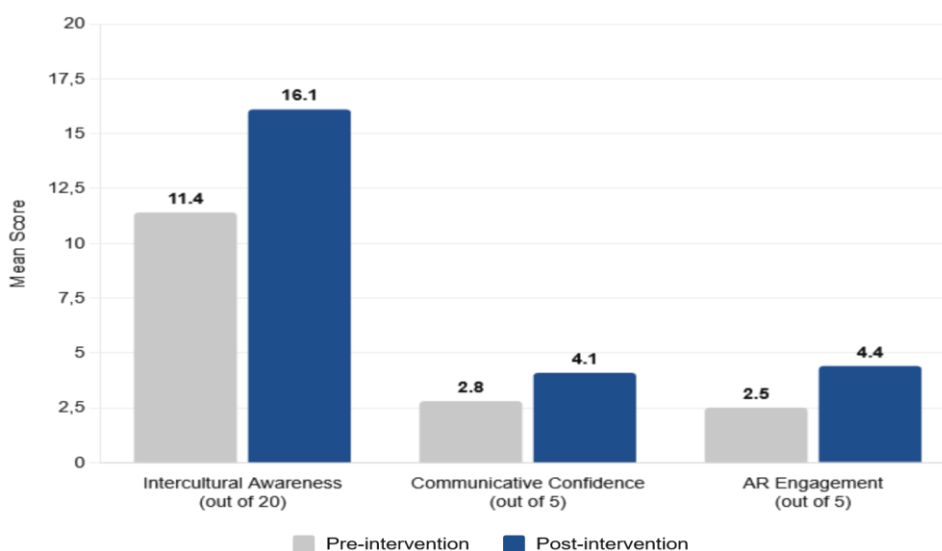


Figure 1. Pre- and Post-Intervention Mean Scores Across Three Dimensions (n=32)

The results are shown in Table 2 and Figure 1. All three dimensions improved significantly after the intervention. The biggest change was in Intercultural Awareness: the mean score went from 11.4 to 16.1 out of 20 ($p < 0.01$, Cohen's $d = 2.1$). This suggests that AR's visual, context-rich presentation of cultural information helps students effectively absorb and retain cultural knowledge. Students' confidence in communication increased significantly, rising from 2.8 to 4.1 on a five-point scale. This suggests that, following the AR activities, they felt more capable of engaging with tourists from diverse cultural backgrounds.

Figure 2 shows how students rated the usefulness of AR tools for their professional development. Over 87% found them useful or very useful. Only one student said the tools were not useful. This level of acceptance is important: students are more likely to engage deeply with a tool they believe is relevant to their future work.

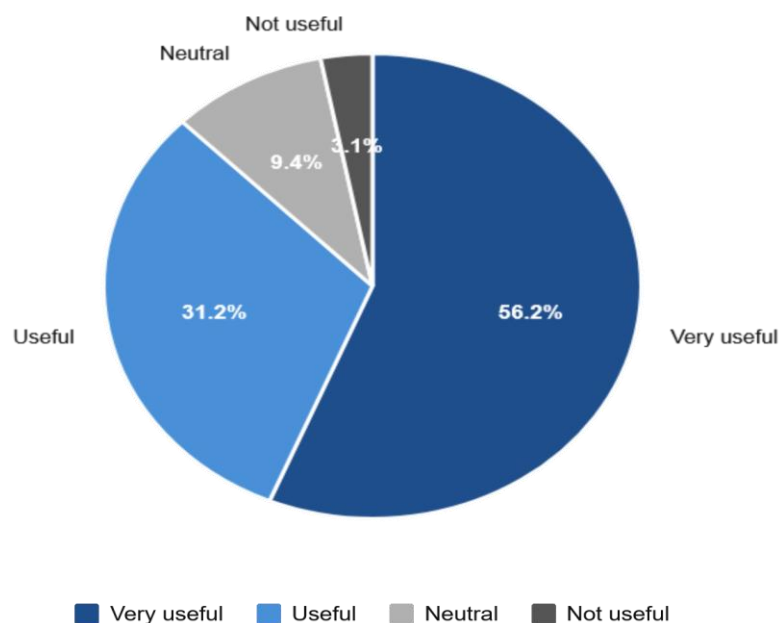


Figure 2. Students' Perceived Usefulness of AR Tools for Professional Development (n=32)

After the intervention, all 32 students took part in small-group interviews. Their responses pointed to three clear themes, shown in Figure 3. First, most students felt that AR made the tasks more engaging than standard role-play. They described feeling more present in the cultural situation, not just performing a script. Second, many students said AR reduced their nervousness. The digital component created a sense of safety, making the activity feel more like a simulation than a performance subject to evaluation. Third, nearly all students said they wanted more AR activities in their language classes, not just a few isolated sessions.

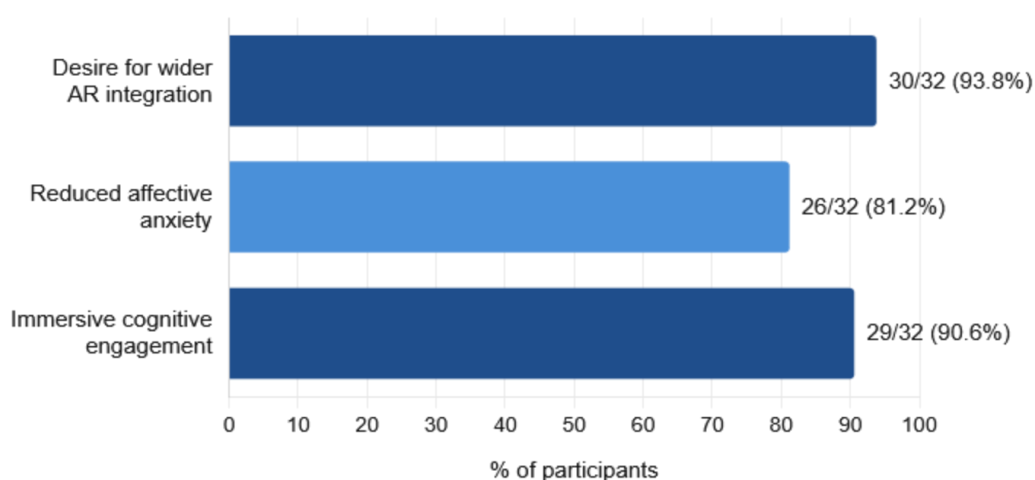


Figure 3. Dominant Themes in Student Interview Responses (n=32)



Taken together, these qualitative findings complement the quantitative results. The theme of immersive cognitive engagement aligns with the significant gains in intercultural awareness, suggesting that AR's context-rich visual environment supports deeper cultural learning. The reduction in affective anxiety corresponds to the rise in communicative confidence scores, indicating that AR may lower the emotional barriers that typically inhibit cross-cultural interaction. The near-unanimous desire for wider AR integration signals strong student buy-in, which is itself a prerequisite for sustained engagement and long-term competence development.

Table 3

Selected Interview Responses by Theme

Theme	Representative Student Response	Frequency
Immersive cognitive engagement	"I felt like I was actually talking to a Japanese guest. It was different from just reading about customs."	29/32 (90.6%)
Reduced affective anxiety	"With the AR cards, I wasn't afraid to make mistakes because it felt more like a game."	26/32 (81.3%)
Desire for wider AR integration	"We should use this in every language class, not just a few times."	30/32 (93.8%)

Practical Pedagogical Scenarios for AR Integration. The study's findings point clearly to the value of AR in tourism language classes. But what does this look like in practice? Below are three concrete scenarios that teachers can adapt and use. Each is designed to develop intercultural competence alongside language skills, and each fits within a standard university language course structure.

Scenario 1: Cross-Cultural Service Encounter Simulations. The teacher uses AR scenario cards or apps like *HP Reveal* or *Assembler* to set up realistic role-plays. Students have to handle a service situation, such as checking in a guest at a hotel, guiding a tour, or serving a virtual tourist from a specific cultural background. As students work through the task, AR overlays show them relevant cultural information: how to greet someone politely, what topics to avoid, and what body language is appropriate. This gives students support without taking away the challenge of actually communicating.

Scenario 2: AR-Enhanced Cultural Tourism Routes. Students design a tourism route for a specific cultural group. For example, a heritage route for Chinese tourists or a food tour for Italian visitors. They use AR authoring tools to attach culturally relevant commentary to photos or real locations along the route, all in English. This task asks students to research a culture, think carefully about what visitors from that culture would appreciate, and express their ideas in the target language. It combines language production with genuine intercultural inquiry.



Scenario 3: Interactive Cultural Reference Companion. Students use an AR app (such as *Zap Works* or *Metaverse*) to explore cultural objects. When they point their phone at an image, a piece of traditional dress, a religious symbol, or a local dish, they see a short explanation in English or German. Students also create their own content for the app: they record voice notes about a cultural topic they have researched, which are then added as AR layers. This means students are both learning from the app and contributing to it, which deepens their engagement with the material.

Table 4

Proposed AR Pedagogical Scenarios: Overview

Scenario	Primary Skill Target	Suggested AR Tool	Assessment Mode
1. Service Encounter Simulation	Intercultural awareness + communicative confidence	HP Reveal / Assemblr	Performance rubric
2. AR Cultural Tourism Route	Cultural research + productive language skills	ZapWorks / Aurasma	Portfolio + peer review
3. Cultural Reference Companion	Vocabulary + digital literacy + cross-cultural knowledge	Metaverse / Merge Cube	Voice recording submission

Conclusions. The quantitative findings offer a clear answer to RQ1. Following the five-month intervention, students demonstrated statistically significant progress across all three dimensions, with large effect sizes in each case (Table 2, Figure 1). Gains were recorded in intercultural awareness, communicative confidence, and engagement with AR tools. This suggests that sustained, purposeful AR integration can produce measurable and substantial shifts in intercultural competence among tourism undergraduates.

Addressing RQ2, the interview data revealed that students did not merely perform better; they experienced the learning differently. Three dominant themes emerged: immersive cognitive engagement, reduced affective anxiety in cross-cultural situations, and a strong desire for broader AR integration across the curriculum (Figure 3, Table 3). Students described AR tasks as more realistic, less intimidating, and more professionally relevant than traditional classroom activities. These affective outcomes matter because motivation and communicative confidence directly influence how willingly students engage in language practice and take communicative risks.



In response to RQ3, this article proposes three practical pedagogical scenarios that can be implemented within standard university language course structures without expensive equipment: cross-cultural service encounter simulations, AR-enhanced cultural tourism routes, and interactive cultural reference companions (Table 4). These are low-cost, adaptable, and aligned with current language course frameworks.

The study has limitations that should be acknowledged. The sample of 32 students from one university is small, and the results may not apply to other institutions or programmes. The intervention was also relatively short. Future studies should test these approaches with larger groups, in different contexts, and over longer periods. It would also be valuable to compare AR directly with VR in the tourism language classroom, and to track whether the gains students make are maintained over time. As higher education in Ukraine advances and becomes more globally connected, developing intercultural competence among future tourism professionals has become essential rather than optional. AR offers a valuable means of supporting this goal.

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Дата першого надходження статті до видання: 24.03.2026

Дата прийняття статті до друку після рецензування: 07.04.2026