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The role of interactive exercises in developing multicultural competence among Ukrainian high school EFL learners: A quasi-experimental mixed-methods study

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ABSTRACT

In view of the growing intercultural interaction, foreign language education requires effective approaches to the development of students' multicultural competence. In this context, interactive culturally oriented teaching methods that are able to combine language training with the development of tolerance and intercultural communication are being under special focus. The aim of the study was to evaluate whether interactive culturally oriented exercises were associated with changes in students' multicultural competence, understood as the integration of cognitive, affective, and behavioural capacities required for intercultural interaction. The study involved 120 Ukrainian high school EFL learners (EG, n = 60; CG, n = 60) in a quasi-experimental pre-test/post-test design. The intervention combined interactive culturally oriented activities, including Story Circles, OSEE exercises, role-playing, discussions, and scenario tasks; analysis included ANOVA, Cohen's d, Pearson's correlation, and reflective diary analysis. Significant Group × Time interactions were found for all three MCC components (all $p < .001$), indicating greater pre-test–post-test improvement in the EG than in the CG. Large within-EG pre-test–post-test effects were observed in the B1 and B2 subgroups ($d_z = 1.64–2.08$), and post-test correlations among the MCC components were strong ($r = .76–.87$). The findings indicate that the intervention was associated with substantial improvement in MCC in this sample, although the quasi-experimental design limits strong causal inference. The academic contribution lies in the differentiated examination of coordinated changes in the cognitive, affective, and behavioural components of MCC in a Ukrainian high-school EFL context. Further research prospects are related to testing the methodology in other educational contexts and expanding the qualitative analysis.

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1. Introduction

The concept of multicultural competence (MCC) is no longer purely academic; it has become part of educational strategies on a global scale (Deardorff, 2006; Byram, 2021). In international practice, it involves the ability to interact effectively and appropriately with representatives of other cultures using linguistic, non-verbal, cognitive, and affective resources (Hammer et al., 2003; Zhou et al., 2024). Recent research has increasingly moved from conceptual descriptions toward empirical assessment and technology-supported interventions aimed at developing intercultural competence (Ertay & Gilanlioglu, 2024; Shadiev & Yu, 2024).

Recent empirical research also emphasizes the relationship between language learning and intercultural development. Language proficiency has been associated with dimensions of intercultural competence (Feng et al., 2024), while other studies show that intercultural competence is related to learners' willingness to communicate, motivational and affective variables, and intercultural sensitivity (Fathi et al., 2023; Liu, 2022; Vu, 2022). This makes it appropriate to analyse the effectiveness of MCC development techniques in light of English proficiency level.

However, in the Ukrainian context, the development and implementation of practical tools for the development of multicultural competence in educational institutions is only at its infancy. The experience of integrating online communication, international educational initiatives, as well as the growth of cultural diversity in student groups (especially in connection with internal and external migration) requires pedagogical solutions focused on engaging students in active reflection, emotional empathy, and rethinking stereotypes (Ávila Ávila & Medina Riveros, 2024; Chimeva & Trenchs-Parera, 2024; Hsieh et al., 2022; Lee et al., 2023). Qualitative studies of teachers' practices also show that the development of multicultural competence largely depends on targeted pedagogical strategies that shape students' cultural sensitivity and multicultural understanding (Hua & Le, 2025).

Despite the existence of theoretical models, methods for developing MCC adapted to Ukrainian realities, which combine innovation (online interaction, multimedia tools) with classical forms of learning (role-playing games, discussions, research projects) are extremely limited. Foreign studies also emphasize that the effectiveness of intercultural learning is determined by the context and cultural sensitivity of the content: in particular, studies from the Arab region show that "cultural taboos" and sensitive topics affect the teaching of English and require pedagogically balanced strategies for inclusive learning (Spathopoulou & Pitychoutis, 2025). This emphasizes the need for methods that combine interactivity with safe and contextually adapted discussion of cultural differences. Our study attempts to fill this gap.

The aim of the study is to experimentally verify the effectiveness of the interactive method in the development of MCC of high school students, taking into account the cognitive, affective, and behavioural components and the English proficiency level. High school students were selected because this educational stage involves increasingly complex intercultural interaction within EFL learning, while the B1/B2 distinction allows the strength of MCC change to be examined separately at two levels of English proficiency.

Research questions:

1. RQ1. How do the cognitive, affective, and behavioural components of MCC change in the EG and CG after the interactive intervention?
2. RQ2. What relationships exist between the cognitive, affective, and behavioural components of MCC in the EG at post-test?
3. RQ3. What is the magnitude of pre-test–post-test change in MCC components within the B1 and B2 subgroups of the EG?

Studies on foreign language teaching methods pay increased attention to interactive exercises as a means of developing MCC. Most modern authors agree that an interactive, project-oriented and gamified approach contributes to a deeper assimilation of intercultural knowledge and skills in the process of foreign language learning. In particular, Li (2025) shows that the introduction of gamification elements forms a competitive-cooperative learning environment that enhances motivation and increases the MCC level due to the practical focus of tasks and their connection with cultural contexts. Saleh et al. (2025) obtained similar results in teaching German, where gamified exercises contributed not only to the growth of academic results, but also to the formation of a deeper cultural understanding. So, in different language

contexts, the authors demonstrate a consistent positive dynamic of MCC provided that students are actively involved in interculturally oriented tasks. Similar evidence has been reported for role-play, culturally responsive classroom instruction, intercultural course design, and project-based virtual exchange (Joo & Tuschling, 2022; Liao & Li, 2023; Wang, 2023; Fernández Peraza & Furumura, 2022).

At the same time, there are also discrepancies in the literature on the assessment of the effects of interactive learning. For example, Li (2025) emphasizes the potential risks of gamification, in particular increased stress and the uneven impact of rating mechanisms on students with different levels of preparation. This reservation contrasts with the more optimistic findings of Nguyen (2021), who showed that project-based assessment tasks consistently increase MCC while developing critical thinking and problem-solving skills. The discrepancy in these results suggests that the effectiveness of interactive approaches depends largely on the design of tasks, the degree of support from the teacher, and the learning context. Kahanurak et al. (2023) emphasize that digital storytelling is especially effective when it combines personal reflection with the analysis of cultural differences, but the authors do not detail how the different components of MCC develop in relation to each other.

A separate area of research focuses on digital and global learning formats, which are increasingly integrated into foreign language education. Experimental work by Liu et al. (2023) using augmented reality (AR) shows a significant increase in student MCC and motivation compared to traditional learning, but the emphasis in these studies is mainly on the overall effect without a detailed analysis of individual components of competence. A similar trend is observed in the study by Aidarbekova et al. (2025), where digital platforms provided positive dynamics of both language skills and MCC, but the issue of the interaction of cognitive, affective and behavioural components remained out of focus. In higher education, recent studies have reported positive effects of digital and virtual exchange on the development of MCC (Aladini & Gheisari, 2025; Heymans et al., 2024; Rets et al., 2023; Gruber et al., 2023; Liu et al., 2025; Gutiérrez-Santiuste & Ritacco-Real, 2023; Eren, 2023). However, most of this evidence comes from university-level samples and inter-institutional contexts, which limits its direct transferability to secondary-school EFL settings. Similarly, Marwa et al. (2025) record the positive impact of multimodal digital projects on cross-cultural awareness, but do not trace a differentiated effect according to the students' language level. Comparable findings have also been reported for reflective virtual exchange and digitally mediated intercultural interaction (Shadiev et al., 2024; Vinagre, 2022; Yeh et al., 2024).

Theoretical models of intercultural communicative competence (Byram, 2021) and intercultural sensitivity (Bennett, 2017) provide the conceptual basis for the present study. Byram's framework emphasizes the integration of intercultural knowledge, attitudes, and interaction skills, whereas Bennett's model explains the progressive development of sensitivity toward cultural differences. Together, these perspectives support the differentiated examination of the cognitive, affective, and behavioural components of MCC in foreign language education. Thus, although interactive methods are widely recommended in EFL/ELT research, empirical evidence on their coordinated effect on the cognitive, affective, and behavioural components of MCC in school settings remains limited (Driscoll & Mondaca-Rojas, 2024; Muszyńska et al., 2023; Shadiev & Yu, 2024). Evidence is also insufficient regarding whether the effectiveness of such interventions differs according to learners' foreign language proficiency. Story Circles and OSEE were selected because they complement each other in addressing the three MCC components targeted in this study. Story Circles combine cultural reflection and active listening, primarily supporting affective openness and behavioural interaction, whereas OSEE provides a structured procedure for observing, interpreting, and evaluating culturally different situations, thereby strengthening cognitive analysis and reducing premature judgements. Their combination was therefore considered particularly suitable for high school EFL learners, who require both structured cultural analysis and guided interpersonal reflection.

2. Method

2.1. Research Design

The study was conducted over one academic semester (16 weeks) and had a quasi-experimental design with a control group. The procedure included three consecutive stages: summative, formative and control, each having clearly defined goals, instruments, and outcomes.

The summative stage (2 weeks) was aimed at determining the students' initial MCC level. At this stage, all participants of the EG and CG underwent a pre-test using the author's MCC scale, which

covered cognitive, affective, and behavioural components. Testing was conducted under the same conditions for both groups during English lessons. The data of the summative stage were used to check the equivalence of the groups and as a baseline for assessing the dynamics of changes.

The formative stage (12 weeks) involved the systematic implementation of the interactive MCC development methodology in the EG. The training combined asynchronous and synchronous formats. The asynchronous component was implemented according to the flipped classroom model through the Moodle and Google Classroom platforms and included watching videos, familiarizing with cultural cases, short written reflective tasks and preparing for classroom work (Khabir et al., 2022). The synchronous component was carried out during regular English classes and included interactive exercises: role-playing, group discussions, scenario tasks, Story Circles, OSEE exercises, project and interculturally oriented activities (see Appendix A).

The formative stage comprised 16 interactive sessions delivered over 12 weeks, with one or two sessions per week during regular English lessons. Each session lasted one regular lesson period (approximately 45 minutes). The sessions were aimed at the gradual development of all MCC components: (1) cognitive (knowledge of cultural differences, norms, contexts) (2) affective (empathy, openness, tolerance) (3) behavioural (skills of intercultural interaction, communicative flexibility).

The intervention was implemented by two regular EFL teachers, each of whom taught students in both the experimental and control conditions. Before the intervention, both teachers completed a standardized two-hour briefing covering the sequence and objectives of the intervention, the implementation of Story Circles and OSEE, role-playing and reflective activities, and the requirement to maintain the regular curriculum in the control classes.

During this period, the CG studied according to the traditional English programme without the purposeful inclusion of interactive culturally oriented exercises.

The control stage (2 weeks) provided for the final measurement of the MCC level in both groups using the same tools that were used at the summative stage. In addition to quantitative post-testing, the reflective diaries completed by EG students during the intervention were analysed to qualitatively clarify changes in attitudes, emotional reactions, and intended behavioural responses. The data from the control stage served as the basis for statistical analysis of the effectiveness of the methodology.

The proposed methodology is based on the conceptual approaches of Deardorff (2006), Byram (2021), Hammer et al. (2003), integrates MCC development practices tested in international programmes (Story Circles, OSEE), and is adapted to the conditions of a Ukrainian secondary school. (1) *Research methods.* Six complementary methods were used. *Pedagogical experiment* compared changes in the EG and CG before and after the implementation of the methodology. (2) *Descriptive analysis* involved calculating means and standard deviations for each MCC component at pre-test and post-test in the EG and CG. (3) *For each MCC component, a 2 × 2 mixed ANOVA with Group* (EG vs. CG) as the between-subjects factor and Time (pre-test vs. post-test) as the within-subjects factor was used to examine differential change over time. Effect size was reported as partial eta squared (ηp^2). Before inferential analysis, the data were screened for extreme outliers and approximate normality. No extreme outliers were identified, and skewness and kurtosis values for the MCC component scores remained within ±1.0. Homogeneity of variance was supported by Levene's tests for the cognitive ($p = .31$), affective ($p = .18$), and behavioural ($p = .27$) components at pre-test and for the cognitive ($p = .42$), affective ($p = .36$), and behavioural ($p = .24$) components at post-test. Therefore, no substantial violations of the assumptions affecting interpretation of the mixed ANOVA were identified. (4) *Estimation of the strength of the effect (Cohen's d)* was used to interpret the practical significance of the impact of the methodology on the MCC components and to describe the magnitude of pre-test–post-test change separately in the B1 and B2 subgroups. For the B1 and B2 subgroups, Cohen's d was calculated for the pre-test–post-test change within the EG as the mean change divided by the standard deviation of the individual change scores (d_z). The resulting effect sizes were $d_z = 1.64$, 1.82, and 1.71 for the cognitive, affective, and behavioural components in the B1 subgroup, and $d_z = 1.89$, 2.08, and 2.04, respectively, in the B2 subgroup. (5) *Correlation analysis (Pearson)* identified relationships between the cognitive, affective and behavioural components of multicultural competence in the post-test. (6) *Thematic content analysis* was used to identify recurrent qualitative themes in the EG reflective diaries; the coding and inter-coder reliability procedures are described in Section 2.3.

2.2. Sample

The study involved students in grades 10–11, aged 16–17, from one Ukrainian public general secondary school, where English was taught as a foreign language (EFL). Permission to conduct the study was obtained from the participating school administration. Written informed consent was obtained from the participants' parents or legal guardians. A total of 200 students were initially considered for participation. The criteria for inclusion in the final analysis were enrolment in Grades 10–11, B1 or B2 English proficiency, parental or legal-guardian consent, regular attendance throughout the study period, and completion of both pre- and post-tests. A total of 120 students met these criteria and were included in the final analysis (EG, n = 60; CG, n = 60); the remaining 80 were not included because at least one criterion was not met. The proficiency-level distribution was balanced across conditions: the EG included 30 B1 and 30 B2 learners, and the CG included 30 B1 and 30 B2 learners. For the subgroup effect-size analysis, B1 and B2 comparisons were conducted within the EG. No directly identifying information was included in the analytic dataset; participants' responses were coded and reported only in aggregated form. The principles of voluntary participation, confidentiality, and the right to refuse without negative consequences were observed.

Participants were recruited from intact Grade 10–11 classes using convenience sampling. The study compared comparable intact parallel classes designated as the EG or CG; individual students were not randomly assigned to conditions. All students followed the same curriculum, had access to comparable learning resources, and received the same number of English-language instructional hours. The EG, unlike the CG, participated in systematic interactive classes that were aimed at developing multicultural competence. The CG studied according to the traditional curriculum without these elements.

2.3. Tools

The following were used to collect data: (1) The author's MCC scale was developed on the basis of the conceptual frameworks of Deardorff (2006) and Byram (2021) and comprised 18 items (six items for each cognitive, affective, and behavioural component). Items were rated on a five-point Likert scale. Content validity was evaluated by five experts in foreign language and intercultural education, after which the instrument was piloted with 30 high school students not included in the main sample. Internal consistency in the pilot study was acceptable to high: Cronbach's $\alpha = .82$ for the cognitive, .85 for the affective, and .84 for the behavioural component, with $\alpha = .88$ for the total scale. This multidimensional approach is consistent with recent work on the development and validation of ICC measures for language learners (Ertay & Gilanlioglu, 2024). (2) Cohen's d formula for calculating the strength of the effect. A value above 0.8 was interpreted as a strong effect. (3) Statistical analysis packages — SPSS for calculating ANOVA, correlation coefficients, and effect. (4) Online platforms Moodle / Google Classroom — for implementing the flipped classroom component and interactive interaction. (5) Reflective diaries were analysed using a thematic content-analysis procedure. Initial coding focused on recurrent indicators of openness, empathy, cultural reflection, stereotype awareness, and readiness for intercultural interaction. Codes were subsequently grouped into broader themes corresponding to recurring patterns in students' reflections. To reduce researcher bias, two researchers independently coded 20% of the diaries, discussed discrepancies, and refined the coding framework before the remaining material was analysed. Inter-coder agreement was high (Cohen's $\kappa = .82$). Diary entries were guided by three standardized prompts: (1) "What cultural difference or similarity did you notice during today's activity?"; (2) "Did the activity change how you felt about or understood people from another cultural background? Explain briefly"; and (3) "How would you respond if you encountered a similar intercultural situation in real communication?"

3. Findings and Discussion

Table 1 presents descriptive statistics for the three MCC components and the Group × Time interaction effects. Baseline means were comparable between the EG and CG, whereas post-test scores increased markedly in the EG and changed only slightly in the CG. The Group × Time interaction was statistically significant for all three MCC components (all $p < .001$), with large effects for the cognitive ($\eta p^2 = .31$), affective ($\eta p^2 = .35$), and behavioural ($\eta p^2 = .33$) components, indicating substantially greater pre-test–post-test improvement in the EG than in the CG.

Table 1. Descriptive statistics and Group × Time interaction effects for MCC components in the EG and CG

MCC component	CG pre, M ± SD	CG post, M ± SD	EG pre, M ± SD	EG post, M ± SD	Group × Time F(1,118)	p	ηp^2
Cognitive	16.8 ± 3.2	17.3 ± 3.1	16.7 ± 3.1	22.0 ± 3.0	52.4	< .001	.31
Affective	17.1 ± 3.3	17.6 ± 3.2	17.0 ± 3.2	22.8 ± 3.1	64.8	< .001	.35
Behavioural	16.9 ± 3.1	17.2 ± 3.0	16.8 ± 3.1	22.2 ± 3.0	59.1	< .001	.33

Note. M = mean; SD = standard deviation; ηp^2 = partial eta squared. The Group × Time interaction tests whether pre-test–post-test change differed between the EG and CG.

Source: Developed by the authors

Pearson correlations were calculated among the cognitive, affective, and behavioural MCC component scores in the EG at post-test to assess the strength of their cross-sectional associations (Table 2).

Table 2. Pearson correlation coefficients between the components of MCC (EG, post-test)

Component	Cognitive	Affective	Behavioural
Cognitive	1.00	0.87	0.76
Affective	0.87	1.00	0.85
Behavioural	0.76	0.85	1.00

Source: Developed by the authors

The three MCC component scores were strongly positively associated. The strongest association was observed between the cognitive and affective components (r = .87), followed by the affective and behavioural components (r = .85) and the cognitive and behavioural components (r = .76). With n = 60, all three correlations were statistically significant (all p < .001). These associations support the coherence of the measured MCC components but do not establish causal relationships or parallel change over time.

Fig. 1 presents the within-EG pre-test–post-test effect sizes (Cohen's d_z) for the cognitive, affective, and behavioural MCC components separately for the B1 and B2 subgroups. This approach makes it possible to compare the strength of the method's effect within subgroups and assess the role of language training in the development of MCC.

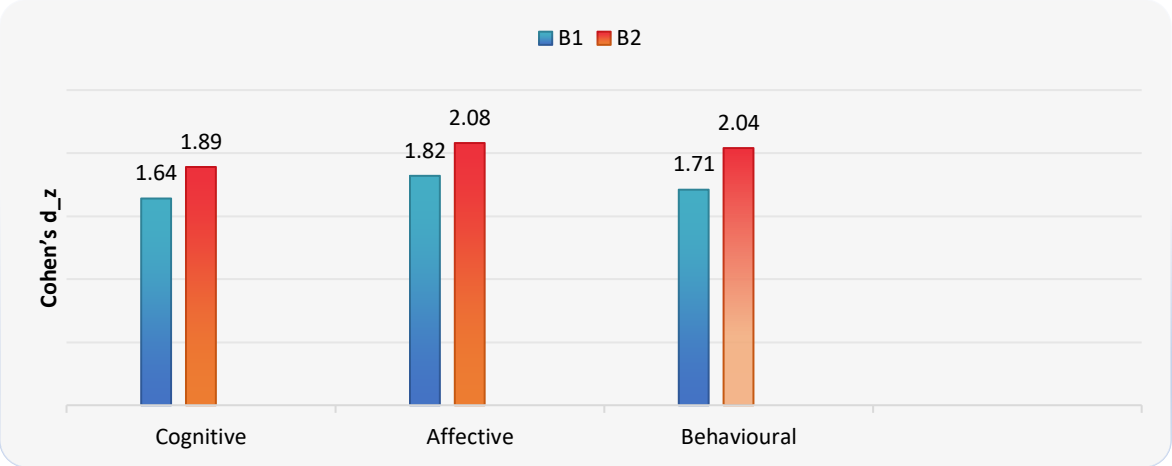


Fig 1.Cohen's d_z effect sizes for MCC components in the B1 and B2 subgroups

Source: Developed by the authors

Large within-group effects were observed in both proficiency subgroups, although the descriptive d_z values were consistently higher for B2 students (1.89–2.08) than for B1 students (1.64–1.82). This pattern may indicate that greater linguistic proficiency facilitates participation in linguistically demanding activities such as role-playing, intercultural discussions, and reflective tasks. However, the subgroup differences should be interpreted cautiously because no formal between-subgroup interaction test was conducted, and factors such as initial communicative confidence, engagement, or familiarity with interactive learning may also have contributed to the observed pattern. Importantly, the large effects found among B1 students indicate that the benefits of the intervention were not restricted to learners with higher English proficiency. Thus, language proficiency may influence the degree of engagement with

particular activities, but the present data do not establish it as an independent cause of differences in MCC development.

Analysis of reflective diaries of high school students in the EG revealed sustained positive changes in attitudes towards other cultures, increased openness, empathy, and awareness of stereotypes. Content analysis revealed several key themes that recurred in students' statements (Table 3).

Table 3. Thematic content analysis of reflective diaries of the EG students

Topic	Summary / Description of changes	Typical student quotes
Awareness of cultural diversity and overcoming stereotypes	Students noted that they previously perceived other cultures through the prism of stereotypes. Interactive exercises helped them to understand cultural differences more deeply and form a more tolerant attitude.	"I learned that you can't judge people by the way they dress or the way they behave that we find strange. Every culture has its own idea of what is normal." "I felt ashamed of some jokes that I once thought were harmless. Now I understand how they can offend people from other countries."
Building empathy and emotional engagement	Classmates' stories and reflective tasks contributed to the development of the ability to empathize and understand situations from another person's perspective.	"When my classmate told me how his relatives from another country felt isolated at a new school, I realized how important it is to support newcomers." "Listening to my classmates' stories of cultural misunderstandings has made me more careful about what I say. Sometimes it's better to just ask than to assume."
Increasing motivation for intercultural communication	Students expressed a desire to communicate with people from other cultures, participate in projects, and deepen their knowledge about other countries.	"Now I want to go on an exchange – not just to learn the language, but to actually communicate with people and understand their way of life." "Our joint online project with students from Poland was a revelation for me: we are more similar than I thought."

Source: Developed by the authors

The qualitative findings complement the quantitative improvement observed across the cognitive, affective, and behavioural MCC components. The growth of the cognitive component was reflected in students' reconsideration of stereotypes and cultural norms; for example, one participant noted that "Every culture has its own idea of what is normal." The particularly strong affective changes were supported by reflections on empathy and perspective-taking following Story Circles and reflective discussions, including the observation that supporting newcomers is important. This interpretation is consistent with recent evidence that structured intercultural dialogue combined with reflection can strengthen intercultural sensitivity (You et al., 2025). Behavioural development was reflected in students' increased willingness to engage in intercultural communication and collaborative projects, as illustrated by the positive reflection on the online project with students from Poland. Thus, the diary data provide qualitative evidence of how specific interactive activities were associated with the three MCC components measured quantitatively.

The results are consistent with the global trend that interactive culturally enriched teaching methods increase students' MCC. In particular, our study confirms the findings of Liu et al. (2023) that immersing students in an interactive environment with cultural scenarios significantly improves their intercultural awareness. In their experiment, students who learned using AR showed significantly higher scores on MCC compared to a CG of traditional teaching. Similar conclusions were made by Aladini and Gheisari (2025) when integrating digital intercultural exchanges into a foreign language course: students in the EG significantly outperformed controls in terms of MCC (as well as motivation and readiness to communicate) after the online exchange. The literature confirms that the inclusion of interactive and simulation exercises, digital technologies, and direct intercultural interactions contributes to the growth of MCC. At the same time, unlike most of the cited studies (Liu et al., 2023; Aladini & Gheisari, 2025),

where MCC is analysed mainly as a generalized indicator or with a focus on individual aspects (motivation, awareness), our study carried out a differentiated analysis of cognitive, affective and behavioural components. This made it possible to trace not only the fact of MCC growth, but also the internal consistency of its structural components.

The effect sizes observed in our study ($d_z = 1.64–2.08$) are substantially larger than those reported in some comparable interventions. For example, Yevdokimova-Lysohor et al. (2025) reported effects of $d = 0.72$ and 0.59. The larger effects in the present study may partly reflect the longer, multi-component intervention combining digital, classroom, and reflective activities. However, these estimates should be interpreted cautiously because the quasi-experimental design cannot fully exclude alternative explanations. Increased attention to the EG (Hawthorne effect), novelty of the activities, teacher or researcher influence, and close correspondence between the intervention content and assessment tasks may have contributed to the magnitude of the observed effects. Thus, the large effect sizes indicate substantial differences within the present educational context but should not be interpreted as evidence that the intervention alone caused the entire observed change.

These differences are especially noticeable when compared with short-term interventions. For example, in the study by Bøhn et al. (2025), schoolchildren in Norway were given a one-hour intercultural training: the results showed an improvement only in the knowledge dimension, while skills (interaction skills) did not increase significantly. The authors concluded that deeper influences are needed to develop the skill component and attitudes. Our results are consistent with this conclusion and at the same time specify it: a significant increase in the behavioural component of the MCC was recorded under the conditions of long-term stage-by-stage work with intercultural scenarios and reflection. This clarifies the position of Bøhn et al. (2025), showing that changing behavioural attitudes at school age is possible under the condition of a methodically designed long-term intervention. These findings are consistent with the view that longer, structured interventions may be associated with changes beyond the knowledge dimension. In the present study, the behavioural component also increased significantly, although the quasi-experimental design and self-report nature of the scale preclude strong causal claims about behavioural skill development.

Thus, the present findings suggest coordinated improvement across the three MCC components rather than change limited primarily to the knowledge dimension. This pattern is consistent with comprehensive intercultural approaches such as that reported by Öztürk and Ekşi (2025). Like that study, the present research relies partly on self-report measurement, which remains a limitation. However, the quantitative MCC scale was complemented by reflective-diary analysis, allowing the statistical patterns to be interpreted alongside qualitative evidence of students' attitudes, reflections, and intended behavioural responses.

Overall, the results of our experiment are in line with current global approaches. Recent reviews of technology-supported intercultural language education show that effective interventions combine interaction, collaborative tasks, cultural content, and guided reflection (Shadiev & Yu, 2024).

The achievements of Ukrainian scholars also indicate the relevance of the problem of building MCC and supports certain approaches implemented in our study. In particular, the experimental training we conducted fills certain gaps noted in the Ukrainian literature and supplements theoretical models with practical data. Most domestic studies were conceptual and emphasized the need for interactive methods, but empirical confirmation of their effectiveness was lacking.

Voloshyna (2022) emphasizes that multiculturalism has become a dominant requirement for a modern specialist and that foreign language education should ensure multicultural development of the personality. Our results empirically specify these provisions, showing which interactive formats and components of the educational process provide an increase in the cognitive, affective, and behavioural components of MCC in school foreign language studies.

Hulych (2022) outlined the pedagogical conditions for the development of MCC of future foreign language teachers. Among the key conditions she identified the addition of linguistic and country studies material and interactive teaching methods of the educational process into the educational process. Our experiment actually implemented these recommendations: through project work, staging and discussions, we introduced country studies content and ensured active interaction of students, which led to significant progress. So, we confirm in practice Hulych's justification for the effectiveness of interactive learning for multicultural education.

It is worth emphasizing that some Ukrainian studies focus on specific target groups and also confirm the effectiveness of integrating a multicultural component into training. In particular, Yerastova-Mikhalus and Zelenska (2023) investigated the features of the development of MCC in cadets of military institutions through the teaching of a professionally oriented foreign language. They concluded that it is necessary to take into account the professional context and values of different cultures in the content of cadets' training. Our approach, although in a school dimension, similarly included culturally significant content (topics of international cooperation, traditions, etiquette, etc.), which probably increased the personal significance of training for students and contributed to a better result.

It is noteworthy that, unlike our experimental data, most publications in Ukraine (Hulych, 2022; Tkachov et al., 2022) were theoretical and declared the importance of multicultural education through foreign language means. Our study addresses this gap by providing empirical evidence relevant to the stated research questions. Against the background of the reviewed literature, our study makes a comprehensive evidence-based contribution to the theory and practice of developing MCC.

Summarizing the results of the comparison with earlier studies, it can be stated that, despite the widespread recognition of the effectiveness of interactive approaches, the problem of the coordinated development of all components of MCC in school foreign language teaching and patterns of MCC change across different language proficiency levels remained insufficiently studied in the literature. This study fills this gap by providing comprehensive quantitative and qualitative evidence of the effectiveness of interactive methods.

3.1. Limitations

Several limitations should be considered when interpreting the findings. Because 80 of the 200 students initially considered were not included in the final analysis because of eligibility, attendance, or incomplete data, selection or attrition bias cannot be excluded. First, the quasi-experimental design used intact classes and did not involve individual random assignment, which limits strong causal inference. Second, the MCC scale included self-reported responses, which may have been influenced by social desirability. Third, the novelty of the interactive activities, increased attention to the EG, and teacher-related implementation effects may have contributed to the observed changes and particularly to the large effect sizes. Because the same two teachers taught both conditions, some cross-condition contamination may also have occurred despite the standardized briefing. Finally, the sample was limited to 120 Ukrainian high school EFL learners aged 16–17, which restricts the generalizability of the findings to other age groups, proficiency levels, and educational contexts.

3.2. Recommendations

EFL teachers can integrate short culturally oriented activities such as Story Circles, OSEE tasks, role-playing, and guided discussions into regular lessons without requiring additional technological resources. Curriculum planning should balance cognitive tasks focused on cultural knowledge with affective reflection and behavioural practice in intercultural scenarios. For teachers working in resource-limited settings, these activities can be implemented through small-group discussion, printed cultural cases, and reflective writing, while teacher training should include guidance on facilitating culturally sensitive dialogue and adapting tasks to students' language proficiency. The importance of targeted teacher preparation is supported by Wang et al. (2023), who identified practice-oriented training and access to intercultural teaching resources among the key forms of support required for implementing intercultural foreign language teaching.

4. Conclusion

The findings provide evidence that the interactive intervention was associated with greater development of MCC than traditional instruction in this sample. Addressing RQ1, the EG showed substantially greater pre-test–post-test improvement than the CG across the cognitive, affective, and behavioural components, with significant Group × Time interactions (all $p < .001$). Addressing RQ2, the three MCC components were strongly positively related at post-test in the EG ($r = .76–.87$), indicating strong post-test associations among the three components. Addressing RQ3, large within-EG pre-test–post-test effects were observed at both B1 and B2 levels ($d_z = 1.64–2.08$), with descriptively larger effects in the B2 subgroup. These findings should be interpreted cautiously because the quasi-experimental design, absence of individual random assignment, possible novelty and teacher effects, and reliance partly on self-report measures limit causal inference.

The practical value of the study lies in providing a structured set of culturally oriented activities that can inform EFL lesson and module design and help teachers select tasks targeting specific MCC components. The academic contribution lies in the empirical examination of coordinated changes in the cognitive, affective, and behavioural components of MCC in a Ukrainian high-school EFL context and in the descriptive examination of within-EG change across B1 and B2 proficiency subgroups. Future studies should test the intervention with larger and more diverse samples, randomized or stronger controlled designs, delayed post-tests to assess the sustainability of effects, and systematic classroom observations to complement self-report and test data.

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Declarations

Author contribution	:	Ihor Bopko contributed to the conceptualization of the study, formulation of the research objectives and questions, coordination of the research process, interpretation of the findings, and preparation and revision of the manuscript. Olha Dolhusheva contributed to the development and refinement of the pedagogical intervention and interactive activities aimed at developing multicultural competence, as well as to the interpretation and discussion of the findings and critical revision of the manuscript. Nataliia Hlushkovetska contributed to the methodological organization of the study, refinement of the research procedures and instruments, organization of the research materials, and critical revision of the manuscript. Stanislava Zaitseva contributed to the methodological implementation of the educational intervention, interpretation of the quantitative and qualitative findings, development of the discussion, and critical revision of the manuscript. Helen Konopelkina contributed at the research development and preparation stage to the conceptual and methodological development of the approach to fostering multicultural competence, the selection and refinement of interactive exercises, and the structuring of the pedagogical intervention. All authors reviewed and approved the final version of the manuscript and agreed to be accountable for their respective contributions to the work. All authors reviewed and approved the final version of the manuscript and agreed to be accountable for their respective contributions to the work.
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Ethical declaration	:	The study was conducted in accordance with institutional and national ethical requirements for educational research involving human participants. Permission to conduct the study was obtained from the participating school administration. Written informed consent was obtained from the participants' parents or legal guardians, participation was voluntary, and anonymity and confidentiality were ensured. The data were analysed only in aggregated form for scientific purposes

We support ELTEJ in maintaining high standards of personal conduct, practicing honesty in all our professional practices and endeavors.

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Appendix A

Series of classes for the development of multicultural competence of high school students

Item No.	Lesson topic	Main format	Type of interactive activity	Expected results
1	Getting to know cultures	Flipped Classroom + Circle	Story Circles: My Cultural History	Empathy, active listening
2	Stereotypes and prejudices	Group Discussion	OSEE Exercise + Debate	Analysis of cultural perceptions
3	Sign language and etiquette	Role Playing	Paired Scenes Guest from Another Culture	Nonverbal literacy
4	Multicultural school life	Online Comparison	Video Meeting with Students from Another Country	Collaboration, openness
5	Holidays and traditions	Project	Group Presentation Holiday Through the Eyes of Culture	Exploratory activity
6	Intercultural conflicts	Scenario Exercise	Role Playing Misunderstandings on an Exchange	Adaptability, critical thinking
7	Language and identity	Thinking Circle	Story Circles: My Language History	Self-awareness
8	Food Traditions	Comparative Research	Infographics about world cuisines	Tolerance, cognitive interest
9	Gender and Culture	Debate	Discussion of social norms	Argumentation, sensitivity
10	Education in the World	Online Project	Comparative video presentations with foreign peers	Intercultural interaction
11	Family and Everyday Life	Story Circles	My family tradition	Reflection, understanding
12	Media and Culture	Critical Review	Analysis of the video without sound (OSEE)	Attention to context
13	Religious Diversity	Research	Group mini-report without assessment	Respect, neutrality
14	International Values	Discussion	Exercise Values: common and distinctive	Intercultural sensitivity
15	Presentation of Experience	Multimedia Presentation	Online or classroom presentation of the project	Awareness of progress
16	Closing and Reflection	Story Circles	What did I discover for myself?	Reflection, self-development