

**DIGITAL TRANSFORMATION IN COLLABORATIVE LEARNING: INTEGRATING  
ICT AND INTERCULTURAL APPROACHES TO FORM PROFESSIONAL  
COMPETENCIES OF FUTURE TEACHERS IN COLLABORATIVE EDUCATION*****Karshieva Shakhnoza Valievna****Head of the SOP Coordination Department**KSU, Phd****Ubaydullaeva Kamolakhon Numonovna****KSPI, Master's 01/24 PP MAG (SOP)**E-mail: kamolaxonubaydullayeva88@gmail.com****Tashpulatova Mavluda Abdumajidovna****KSPI, Master's 01/24 PP MAG (SOP)**E-mail: mavludataspulatova886@gmail.com****Research Location: Kokand State University (Uzbekistan),****in collaboration with Yanka Kupala State University of Grodno (Belarus)*

**Abstract:** This study analyzes the role of digital transformation in collaborative learning between KSU and YKSG, with a focus on integrating information and communication technologies (ICT) and intercultural approaches to form professional competencies of future teachers. An experiment involving 120 students showed that using ICT (Google Workspace, Canva, Moodle) combined with intercultural modules (case studies, role-playing games) significantly enhances general professional (communication, leadership) and specific (teaching methods) competencies, and also reduces psychological barriers, such as stress from intercultural interaction. The results highlight the potential of digital tools in the globalization of pedagogical education and offer recommendations for their integration into international teacher training programs.

**Keywords:** digital transformation, ICT, intercultural approaches, professional competencies, collaborative learning, pedagogical education, globalization

**INTRODUCTION**

Digital transformation is radically changing educational systems, making information and communication technologies (ICT) an integral part of teacher training. In the context of globalization, where intercultural interaction is becoming the norm, the integration of ICT with intercultural approaches opens up new opportunities for forming professional competencies,

including general professional (communication, leadership, classroom management) and specific (teaching methods, subject-specific skills) ones. Collaborative learning between Kokand State University (KSU) and Yanka Kupala State University of Grodno (YKSG), which began in 2023, provides a unique platform for implementing digital transformation through online and in-person formats, bringing together students from Uzbekistan and Belarus.

A literature review confirms the importance of ICT in education. In his theory of connectivism, Siemens (2005) emphasizes that digital technologies create networks of knowledge, enhancing collaboration. OECD (2019) studies show that ICT increases the digital literacy and adaptability of teachers. Intercultural approaches, according to Byram (1997), develop the competencies needed to work in multinational environments. Psychological aspects, such as stress from intercultural interaction, require attention, as noted by Lazarus and Folkman (1984) in their coping strategies model. However, there is a lack of research that combines ICT and intercultural approaches in the context of post-Soviet countries, which makes this work pioneering.

The purpose of the study: To evaluate the impact of integrating ICT and intercultural approaches in collaborative learning on the formation of future teachers' professional competencies, taking into account psychological factors.

Research objectives:

- \* To determine the initial level of professional competencies and psychological state of students from KSU and YKSG.
- \* To implement digital modules (ICT) and intercultural approaches (case studies, role-playing games) into collaborative learning.
- \* To assess the impact on competencies and psychological barriers (stress, motivation).

Hypothesis: The integration of ICT and intercultural approaches will increase professional competencies by 25-30% and reduce stress by 20%, compared to traditional methods.

Significance of the study: The results will allow for the development of recommendations for the digital transformation of pedagogical education, strengthening intercultural cooperation and preparing teachers for global challenges.

## METHODS

Participants: The study was conducted from September 2024 to May 2025 with the participation of 120 students from pedagogical faculties: 60 from KSU (philology, mathematics) and 60 from YKSG (foreign languages, natural sciences). The average age was 21, and the gender distribution was 58% female and 42% male. The sample was formed randomly, taking into account the level of English proficiency (A2-B2 according to CEFR) and pedagogical experience (at least 1 semester).

Study Design: Quasi-experimental, with a division into an experimental group (80 students using ICT and intercultural modules) and a control group (40 students learning through traditional programs). Collaborative learning included: online sessions via Zoom (twice a week for 90 minutes) and asynchronous assignments in Moodle (developing lessons, reflection). Two in-person seminars were held (5 days each in Kokand and Grodno).

#### Data collection tools:

- \* Questionnaires: Based on the UNESCO competency scale (2017) for general professional skills (communication, leadership, classroom management; 20 questions, 1-5 Likert scale). EFSET for specific competencies (teaching methods, subject-specific skills; 100 points). Intercultural Competence Scale (Deardorff, 2006; 15 questions, 1-5 scale).
- \* Psychological tests: Motivation Scale (MSLQ, Pintrich et al., 1991; 15 questions, 1-7 scale). Perceived Stress Scale (PSS, Cohen et al., 1983; 10 questions, 0-4 scale).
- \* Case studies: 10 assignments focused on intercultural interaction (e.g., developing a math lesson that accounts for Uzbek and Belarusian traditions).
- \* Interviews: Semi-structured, with 30 students (15 from each university) to evaluate the perception of digital and intercultural modules.
- \* Portfolios: Analysis of 120 works (lesson plans, Canva presentations, reflective essays).
- \* Observation: Analysis of 15 sessions (video recordings, protocols).

#### Research Procedure:

- \* September 2024: Pre-testing (questionnaires, EFSET, psychological tests).
- \* October 2024 - March 2025: Implementation of modules.
  - \* ICT: Google Workspace (Docs, Slides) for collaboration, Canva for lesson visualization, Moodle for asynchronous assignments.
  - \* Intercultural approaches: role-playing games (e.g., "teacher in a multicultural school"), case studies (solving classroom conflicts).
  - \* Psychological support: stress management training (4 sessions, mindfulness), reflective discussions (6 meetings).
- \* April 2025: Post-testing, interviews.
- \* May 2025: Data analysis.

Data Processing: Quantitative data were analyzed using ANOVA and Pearson's correlation analysis in SPSS ( $p < 0.05$ ). Qualitative data (interviews, essays) were processed using thematic analysis in NVivo. Ethical aspects: informed consent was obtained, and data was anonymized.

**RESULTS**

## Initial level:

\* Experimental group: general professional competencies - 3.5 (out of 5), specific - 65 (out of 100), intercultural competence - 3.4 (out of 5), motivation - 4.6 (out of 7), stress - 2.8 (out of 4).

\* Control group: general professional - 3.4, specific - 64, intercultural - 3.3, motivation - 4.5, stress - 2.7 (t=0.35-0.44, p>0.05, differences are insignificant).

## After the experiment:

\* Experimental group: general professional competencies - 4.6 (+31%), specific - 85 (+31%), intercultural - 4.5 (+32%), motivation - 6.0 (+30%), stress - 2.1 (-25%).

\* Control group: general professional - 3.7 (+9%), specific - 70 (+9%), intercultural - 3.6 (+9%), motivation - 4.8 (+7%), stress - 2.6 (-4%).

\* ANOVA: F=13.2-15.7, p<0.01 (significant differences).

Table 1: Indicator Dynamics

Indicator	Pre-test (Exp.)	Post-test (Exp.)	Pre-test (Cont.)	Post-test (Cont.)
General Professional	3.5	4.6	3.4	3.7
Specific (EFSET)	65	85	64	70
Intercultural Competence	3.4	4.5	3.3	3.6
Motivation (MSLQ)	4.6	6.0	4.5	4.8
Stress (PSS)	2.8	2.1	2.7	2.6

## Qualitative data (thematic analysis):

## \* Barriers:

\* Technical problems (15% of KSU students reported unstable internet).

\* Language difficulties (60% KSU, 40% YKSG).

\* Intercultural misunderstandings (50% mentioned differences in expectations).

## \* Module effects:

\* 90% of students noted an increase in confidence in digital skills.

\* 85% reported an improvement in intercultural communication.

\* 80% noted a reduction in stress due to the training sessions.

\* Correlation between ICT use and competencies:  $r=0.82$ ,  $p<0.01$ ; intercultural modules and stress:  $r=-0.78$ ,  $p<0.01$ .

\* Details:

\* KSU: the largest increase was in communication (+33%) and teaching methods (+35%).

\* YKSG: improvement in leadership (+30%) and intercultural attitudes (+32%).

\* The overall increase in competencies (31-32%) and decrease in stress (-25%) confirmed the hypothesis.

## **DISCUSSION**

The results demonstrate that digital transformation through the integration of ICT and intercultural approaches significantly enhances professional competencies and reduces psychological barriers in collaborative learning. This is consistent with Siemens' (2005) theory of connectivism, where digital networks enhance collaboration, and Byram's (1997) model of intercultural competence. Psychological support, based on Lazarus and Folkman (1984), helped KSU students overcome language and cultural barriers, while YKSG brought an analytical approach, enriching the process.

Limitations:

\* Unequal access to ICT (10% of KSU students).

\* Differences in language proficiency.

\* Short duration of in-person meetings (10 days).

Recommendations:

\* Integrate ICT and intercultural modules into the curricula.

\* Provide technical support (internet, licenses).

\* Expand psychological training.

Future research:

\* Long-term effects on careers.

\* Comparison with other regions.

\* The impact of new technologies (AI, VR).

## **CONCLUSION**

In conclusion, the study convincingly shows that digital transformation in collaborative learning between KSU and YKSG, based on the integration of ICT (Google Workspace, Canva, Moodle) and intercultural approaches (case studies, role-playing games), is a powerful tool for forming

professional competencies of future teachers, with an increase of 31-32% and a decrease in stress by 25%. In summary, digital technologies, enhanced by intercultural interaction and psychological support, transform pedagogical education, making it more adaptable to global challenges such as digitalization, migration, and multiculturalism.

Summarizing the experience of the two universities, ICT creates an infrastructure for knowledge exchange, where KSU students contribute practice-oriented ideas, and YKSG contributes theoretical depth, forming a model that aligns with UNESCO and Bologna Process standards. For example, joint projects in Canva allowed students to visualize lessons that reflect the cultural characteristics of both countries, and mindfulness training reduced stress from intercultural differences. In the long term, such a model can become the basis for creating international educational networks, uniting universities in the post-Soviet space and beyond. For sustained success, it is necessary to overcome limitations, such as unequal access to technology and language barriers, through investments in infrastructure and teacher training. Ultimately, the study emphasizes that digital transformation in collaborative learning not only develops competencies but also contributes to the formation of a global pedagogical community, where teachers become agents of cultural dialogue and innovation, ready for the challenges of the 21st century.

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