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EDUCATIONAL APPLICATION OF CANVA IN CULTIVATING VISUALIZATION-DRIVEN PROJECT THINKING: A KAZAKH-SINO COMPARATIVE STUDY

Abstract. Visualization tools like Canva have become key resources for developing project-based thinking, a critical competence for future educational psychologists. This exploratory cross-sectional study examined the associations between two Canva use variables (depth of use and visual feature dependence) and two project thinking dimensions (idea organization and user perspective-taking) across two cultural contexts. Survey data were collected from 83 university students at Huanggang Normal University in China (n=48) and Al-Farabi Kazakh National University in Kazakhstan (n=35). Pearson correlation, t-tests, and ANOVA were used for analysis. Results showed that: (1) depth of Canva use had a weak, non-significant association with idea organization ($r = -0.044$, $p = 0.690$); (2) visual feature dependence was moderately and positively correlated with perspective-taking ($r = 0.56$, $p < 0.001$); and (3) Kazakhstani students scored significantly higher on overall project thinking than Chinese students ($M = 4.71$ vs. 4.40 , $t = -3.79$, $p < 0.001$). These findings suggest that specific Canva features, particularly visual design tools, support audience-centered thinking more effectively than general depth of use. The pedagogical significance lies in embedding intentional visual design tasks into educational psychology curricula, as such tasks can cultivate perspective-taking skills that traditional instruction rarely develops directly.

Keywords: Canva, Visualization Tools, Project Thinking, Cross-Cultural Study, Higher Education

Introduction

As digital education expands worldwide, tools like Canva have become important resources for teaching innovation. These tools are easy to use, which suits students who are new to digital learning environments, and they are steadily changing how knowledge is shared and how learners engage. At the same time, educational psychologists are increasingly expected to master idea generation, perspective-taking, and collaborative problem-solving. These skills help practitioners plan appropriate interventions, analyze complex learning environments, and support inclusion throughout their careers.

Both China and Kazakhstan have incorporated digital technologies into higher education. Chinese policy tends to emphasize technology for personalized learning, while Kazakhstani policy focuses on digital tools for intercultural cooperation. Despite this common trend, few cross-cultural studies have compared educational technology use across the two countries. Without such comparisons, it is hard to know what is shared and what differs in how these tools are used in each country's context.

Research on Canva in education is growing, but several important questions remain unanswered. First, most existing studies have examined only surface-level uses, such as note-taking or presentation design, without empirically validating what deep use means in terms that reflect student development, or how it relates to educational psychologists' ability to organize ideas. Second, the influence of Canva's visualization features on users' capacity to anticipate audience needs has not been well studied, with limited evidence explaining how visual design supports perspective-taking. Third, no cross-national comparison of visualization-driven project thinking has been conducted between students in China and Kazakhstan, making it unclear whether cultural and educational differences

affect how tools like Canva shape student skill development.

To address these gaps, this study formulates three core research questions and corresponding hypotheses:

RQ1: Does deep Canva use (e.g., project creation from scratch) positively relate to idea organization ability?

RQ2: Does reliance on Canva's visualization features (e.g., visual templates, intuitive layout) enhance users' perspective taking?

RQ3: Do Chinese and Kazakhstani students differ in overall visualization-driven project thinking (idea organization + user perspective taking) as influenced by Canva?

Theoretically, this study contributes to cross-cultural research on educational technology by showing that specific tool features, rather than general technology use, are more closely linked to particular learning outcomes. It also provides empirical support for applying the Technological Pedagogical Content Knowledge (TPACK) framework and cognitive load theory in non-Western higher education contexts, two areas that have received limited attention in the existing literature. Practically, the findings point to a clear direction for teaching practice. Embedding visual design tasks into educational psychology curricula can help students develop perspective-taking skills that traditional lecture-based instruction rarely addresses. These tasks work best when students are required to make deliberate visual choices based on the needs of a specific audience. This is especially relevant for educational psychology training, where graduates should communicate complex ideas to diverse groups such as students, parents, and school administrators.

Literature review

Visualization-driven educational technology reflects the key role of sensory input in learning. Roughly half of knowledge is acquired visually and auditorially (Triyono et al., 2024). Digital visual collaboration tools offering sticky notes, templates, and real-time communication, which reduce cognitive load and support collective sense-making in virtual workspaces (Liu et al., 2023, 2024). For educational psychologists in training, project thinking involves two core dimensions: structuring complex information and anticipating audience needs (Liu et al., 2023; Razzouk & Shute, 2012). Educational technology supports both dimensions: visualization tools act as cognitive scaffolds, guiding students to organize ideas systematically (Liu et al., 2024), collaborative features allow iterative feedback that enables learners to learn perspectives by exposing them to different viewpoints (Dindler et al., 2016). These findings can be explained further under the TPACK concept, since visualization tools make formal and abstract concepts more accessible and tangible (Mishra & Koehler, 2006). Visualization frameworks can support active learning through creative computing and visual communication (Roberts et al., 2018). In art and design education, visualization links theory and practice in ways that support project thinking (Tong, 2024). Finally, learners' knowledge and attitudes towards technology mediate how well tools support organized thinking (Seufert et al., 2021).

In this study, we define "visualization-driven project thinking" more specifically. It means the ability to organize ideas and think about what an audience needs when using visual design tools for project-based tasks. We break this down into two skills that build on the literature above. The first is idea organization, which means taking complex information and putting it into a clear, structured plan (Razzouk & Shute, 2012). The second is user perspective taking, which means thinking about how different people (like classmates, teachers, or parents) will see and understand your visual content (Liu et al., 2023). These two skills fit with the TPACK framework mentioned earlier. According to TPACK, technology (like visual tools) helps connect what you know with how you teach or communicate (Mishra & Koehler, 2006). Prior studies have broadly conceptualized project thinking. our study extends this work by examining how visualization tools specifically support these two skills in higher education across cultural contexts.

Canva, in particular, has become widely adopted in higher education because of its intuitive interface, wide range of features (e.g., animations, audio, video, and pre-built templates), and support for collaborative learning (Jamaludin & Sedek, 2024; Saraswati et al., 2025). The key differentiator in the pedagogical approach to its adoption is between "deep use," in which learners build the project

from scratch to meet a defined learning objective, and "shallow use," in which templates are applied in a superficial manner without critical adaptation (Jamaludin & Sedek, 2024). Deep use is empirically proven to significantly increase motivation and learning outcomes; for example, Triyono et al. (2024) reported post-test means of 84.33 ± 3.716 for an intervention group who differentiated visual media using Canva compared to 70.67 ± 8.209 for the control group. A key foundation for its educational application lies in its visualization capabilities. Pre-built frameworks and templates scaffold students to focus on content and audience considerations (Liu et al., 2024) and enhances specific aspects like clarity and engagement by adjusting layouts, color schemes, and types of media to be incorporated (Jamaludin & Sedek, 2024). The practical applications include interactive notes and presentations in science education, made possible by using Canva, as evidenced by Triyono et al. (2024), and digital storytelling and infographics in language teaching, as suggested by Saraswati et al. (2025). These mobile-friendly interfaces and real-time collaboration open up many possibilities for students to access and jointly create resources anytime and anywhere (Ahmadillah et al., 2023). According to Sailer et al. (2021), these features reduce the technological adoption thresholds for pre-service teachers through the intuitive interface of Canva. Positive attitudes about the visualization functionalities of Canva have been related to deeper integration in academic assignments (Farjon et al., 2019).

For educational psychologists, two central professional skills lie in organizing ideas and taking users' perspectives: organizing ideas brings theoretical and empirical knowledge together into a practical intervention; in contrast, taking users' perspectives allows practitioners to modify approaches for a range of different stakeholders, including students, educators, and parents (Liu et al., 2023). Such competencies would be essential for responding effectively to complex educational contexts by enabling practitioners to design targeted, evidence-based solutions (Razzouk & Shute, 2012). Current pathways in practice have little room for those interactive, experiential elements vital for developing these competencies. Indeed, traditional approaches overemphasize the role of lectures and underemphasize the place of practice within the curriculum and reduce the chances of applying idea organization and perspective-taking in uncontrived settings (Farjon et al., 2019). Technology could also be part of that solution. Canva and other similar web-based digital visual collaboration tools can easily be embedded within pre-service training to provide realistic contexts in which ideas can be organized through research and visualized for various target groups (Saraswati et al., 2025). Developmental activities, such as creating educational campaigns or intervening with the use of Canva, require simplifying complex psychological concepts into easily understandable texts and anticipating how the different users will interact with this text (Tong, 2024). However, there is scant research on this issue except for a few surface understandings of this relationship competency; hence, there is a call for training programs that will specifically integrate such tools within an educational psychology curriculum. Specifically, embedding Canva into educational psychology training can provide pre-service psychologists with hands-on practice in translating complex theoretical knowledge into clear visual materials for diverse stakeholders—a professional skill that lecture-based instruction rarely cultivates. Seufert et al. (2021) state that pre-service teachers will be an influencing factor regarding the type of knowledge and attitude toward technology their students will experience while using technologies to organize ideas; on the other hand, Palshkova et al. (2023) emphasize that it can be cross-culturally oriented by digital resources, which improves perspective-taking in learning about diverse global contexts of education.

Cross-cultural comparison of the use of educational technology in China and Kazakhstan points to a different pattern, which seems to emerge under the influence of educational philosophies and learning styles. Higher education in China is structured and content-centered, and technology is integrated to facilitate more individualized approaches to mastering knowledge (Liu et al., 2024). Students from China generally use tools like Canva in a very structured way because they appreciate its templates functionality. By contrast, the higher education system in Kazakhstan has trilingual policy support (Kazakh, Russian, English), also strongly internationalized, aimed at cross-cultural collaboration and developing practical skills. This is supported indirectly by Palshkova et al. (2023), who note that Kazakhstan uses global digital resources to bridge language and geographic barriers.

Kazakhstani students generally use Canva's collaborative and multimedia features in group projects and applied problem-solving. This contrasts with Chinese students, who tend to engage with visual learning in more structured, experiential ways. Seufert et al. (2021) link this tendency to technology use for promoting project-based thinking. Cross-cultural activities for digital resource design further emphasize these differences (Quan & Gu, 2018). However, little cross-cultural research has been identified relating to educational technology in educational psychology. Therefore, more work is required to undertake comparative studies aimed at identifying context-specific adaptations as argued by Dindler et al. (2016).

Methods and materials

This study used a cross-sectional quantitative survey design to examine Canva use and project thinking among university students from China and Kazakhstan. Standardized questionnaires were distributed at two universities: Huanggang Normal University in China and Al-Farabi Kazakh National University in Kazakhstan. The surveys collected data on Canva use habits, perceived usefulness, perceived ease of use, playfulness/ enjoyment, willingness to transition from consumption to creation, and personal traits. Differences and correlations between variables were then analyzed.

A purposive sample was used to recruit participants. Students had to meet three criteria: (1) current enrollment as a student; (2) previous Canva experience to ensure valid responses about the tool; and (3) voluntary participation with informed consent during the workshop session. The survey was distributed through course instructors. At the beginning of the online questionnaire, an information sheet explained the purpose of the study, the voluntary nature of participation, and the confidentiality of all responses. Participants were informed that they could withdraw at any time without penalty. By proceeding to complete the questionnaire, participants indicated their informed consent.

In total, 89 responses were collected. Six students who had never used Canva were excluded, leaving 83 valid questionnaires (93.26% effective response rate). The final sample consisted of 48 students from Huanggang Normal University (57.8%) and 35 students from Al-Farabi Kazakh National University (42.2%). There were 53 male students (63.9%) and 30 female students (31.6%). There were 73 undergraduate students (88.0%) and 10 graduate students (12.0%). In terms of Canva usage orientation, 61 were classified as "Content Consumers" (73.5%) and 22 as "Project Creators" (26.5%).

The bilingual (English and Russian) questionnaire was titled "From Digital Consumption to Project Creation: Willingness to Adopt Canva for Project Thinking". It consisted of four parts. Part A screened for nationality and Canva usage experience. Part B investigated usage patterns and orientation. Part C measured core constructs (perceived usefulness, ease of use, playfulness and enjoyability, and willingness to transition) using a 5-point Likert scale. Part D measured personal traits (innovative self-efficacy and digital proficiency) as well as demographic information.

The questionnaire was developed based on existing scales. For technology acceptance, the Technology Acceptance Model (Davis, 1989) was used. For project thinking dimensions, the measurements reported in Liu et al. (2023, 2024) were adopted. These studies measured project thinking competence through self-reported items covering idea generation and user orientation. Content validity was established through review by three experts in educational technology and cross-cultural education in both universities. The questionnaire was then translated from English to Russian using a translation-back-translation method conducted by two bilingual researchers. Although no Chinese or Kazakh language version was produced, language accessibility for Chinese participants was ensured in three ways. First, English is a compulsory subject in the Chinese national college entrance examination (gaokao), so all enrolled university students possess at least basic English reading proficiency. Second, course instructors were asked to refer students with demonstrably higher English proficiency, verified through class grade records. Third, participants were informed that they could use a translation tool for any unfamiliar words to ensure accurate comprehension of the items. For Kazakhstani students, the Russian-language version of the questionnaire was available, as Russian remains a widely used academic language in Kazakhstan. No pilot test was conducted due to

the exploratory nature of this study and limited sample availability. Reliability was assessed using Cronbach's alpha: overall scale ($\alpha = 0.87$), idea organization subscale ($\alpha = 0.82$), user perspective taking subscale ($\alpha = 0.85$), visual feature dependence ($\alpha = 0.79$), and depth of Canva use ($\alpha = 0.76$). All of these values are above 0.70, which is the accepted standard for satisfactory reliability.

Data were collected from October to December 2025 after coordination with both universities. The online survey was conducted using Google Forms. Course instructors sent the survey link to their students, and students completed the survey independently on their own time. After screening out non-Canva users, the valid data were coded and imported into SPSS 26.0 for analysis.

This study was approved by the Institutional Review Board (IRB) of Al-Farabi Kazakh National University (No. IRB-1886). All participants provided informed consent prior to participation. All data were anonymized and stored securely on password-protected servers.

Results

Descriptive Statistics

This section presents descriptive statistics for Chinese and Kazakhstani students across four variables: Canva usage depth, idea organization ability, user perspective-taking ability, and total visualization project thinking score. The analysis drew on 83 valid questionnaires: 48 from Chinese students (Huanggang Normal University) and 35 from Kazakhstani students (Al-Farabi Kazakh National University).

For all core variables, both groups achieved high mean scores ($M > 4.0$ on a 5-point Likert scale), suggesting that students viewed Canva as useful for supporting project thinking. Kazakhstani students outperformed Chinese students on every measure. In Idea-Organization Ability, Kazakhstani students averaged 4.771 ($SD = 0.578$), whereas Chinese students averaged 4.146 ($SD = 0.555$). In User Perspective Capability, Kazakhstani students averaged 4.571 ($SD = 0.805$) and Chinese students averaged 4.375 ($SD = 0.570$). In Visual feature dependence (which is the main indicator of how students use Canva's core functions), Kazakhstani students scored 4.686 ($SD = 0.578$) slightly above Chinese mean of 4.458 ($SD = 0.554$). The composite score for visualization-based project thinking, which includes these dimensions, also reflected the gap: Kazakhstani students averaged 4.74 ($SD = 0.188$) and Chinese students averaged 4.422 ($SD = 0.207$). However, all mean scores were concentrated at the upper end of the 5-point scale (range: 4.146–4.771). This concentration suggests a potential ceiling effect, which may have compressed the range of scores and reduced the sensitivity to detect group differences. Therefore, these descriptive results should be interpreted with caution.

Different patterns emerged in Canva usage depth. 64.6% of Chinese students used “shallow use” of templates-based tasks while 35.4% used “deep use” of projects based on brainstorming and independent planning. The same pattern was reversed for Kazakhstani students: 85.7% used shallow use and 14.3% used deep use. Despite these differences in usage depth, both groups relied heavily on Canva visual tools. All Chinese students (100%) and 94.3% of Kazakhstani students fell into “high dependence” category (with 4–5 Likert scale).

The two groups also differed in score variability. Chinese students showed a narrower standard deviation ($SD = 0.207$) for total project thinking scores, reflecting greater individual consistency. Kazakhstani students showed greater variability ($SD = 0.518$), which may reflect differences in international exposure, cross-cultural project experience, and trilingual education (Kazakh–Russian–English). These descriptive results provide a basis for inferential analysis and highlight both similarities and differences in Canva use and project thinking across the two institutional contexts.

Results for RQ1: Correlation between Canva Deep Usage and Idea Organization Ability

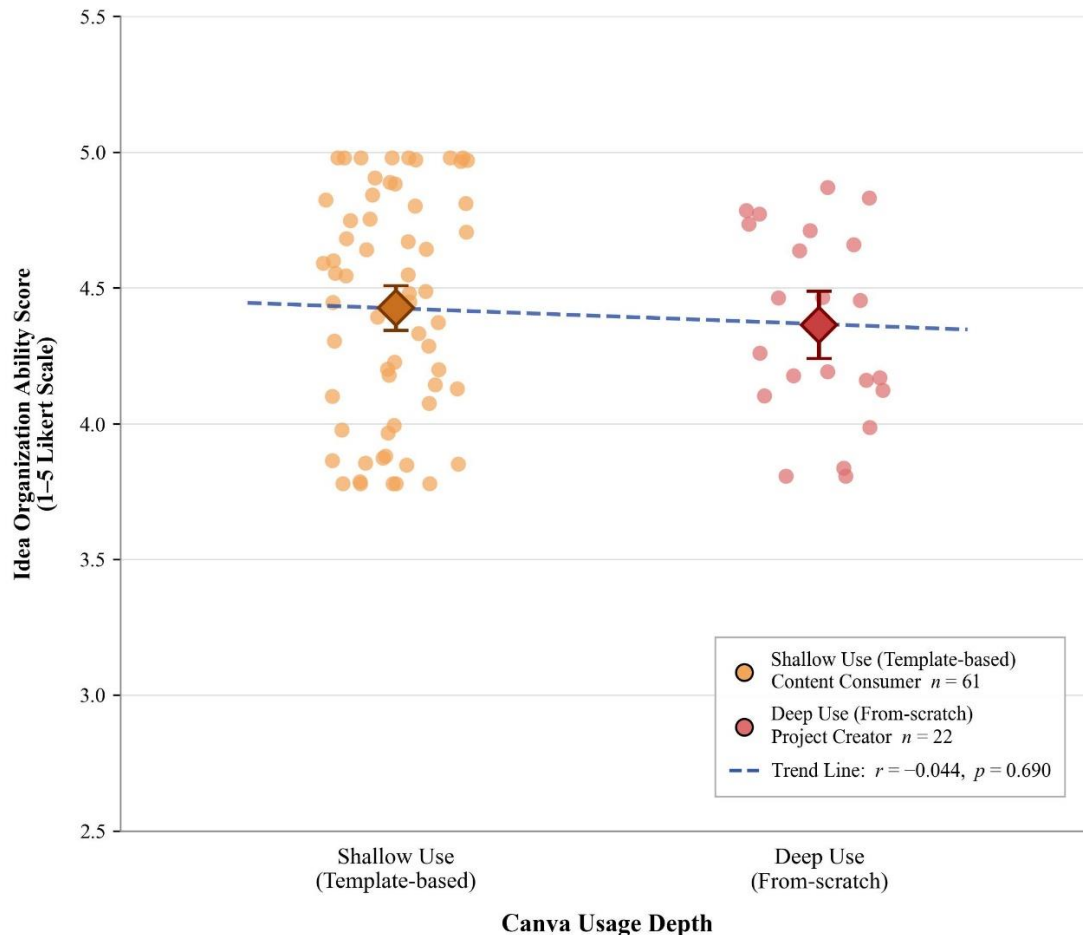
Research Question 1 aimed to examine whether there was any significant relationship between Canva's deep usage (operationalized as "Project Creator" orientation) and students' ability to organize ideas. The relationship was tested using Pearson's correlation analysis and independent samples t-tests.

As shown in Figure 1, correlation analysis revealed a weak, negative, and non-significant relationship between the depth of Canva's use and the ability to organize ideas ($r = -0.044$, $p = 0.6899 > 0.05$). In other words, deeper Canva use was associated with slightly lower idea organization scores.

This was further supported by group comparison: the deep use group had slightly lower mean scores on idea organization than the shallow use group ($M = 4.364$, $SD = 0.581$, $n = 22$; $M = 4.426$, $SD = 0.644$, $n = 61$), without a significant difference ($t = -0.421$, $p = 0.6763 > 0.05$). The mean difference was -0.063 (a 1.4% decrease), which was practically negligible. The distinction between deep and shallow use did not significantly affect idea organization.

Figure 1

Correlation between Canva Usage Depth and Idea Organization Ability



These non-significant results may reflect the academic contexts in which students used Canva—primarily course presentations and poster design. In these settings, Canva's built-in templates already provide sufficient structure for idea organization. As a result, creating projects from scratch offered no additional benefit, as template-based use had already met students' idea organization needs.

Results for RQ2: Correlation between Canva Visual Feature Dependence and User Perspective-Taking Ability

Research Question 2 investigated the relationship between students' dependence on Canva's visual features (e.g., intuitive layouts, graphic integration) and their user perspective-taking ability (i.e., the capacity to anticipate audience needs). Pearson correlation analysis and one-way analysis of variance (ANOVA) were employed to analyze the data.

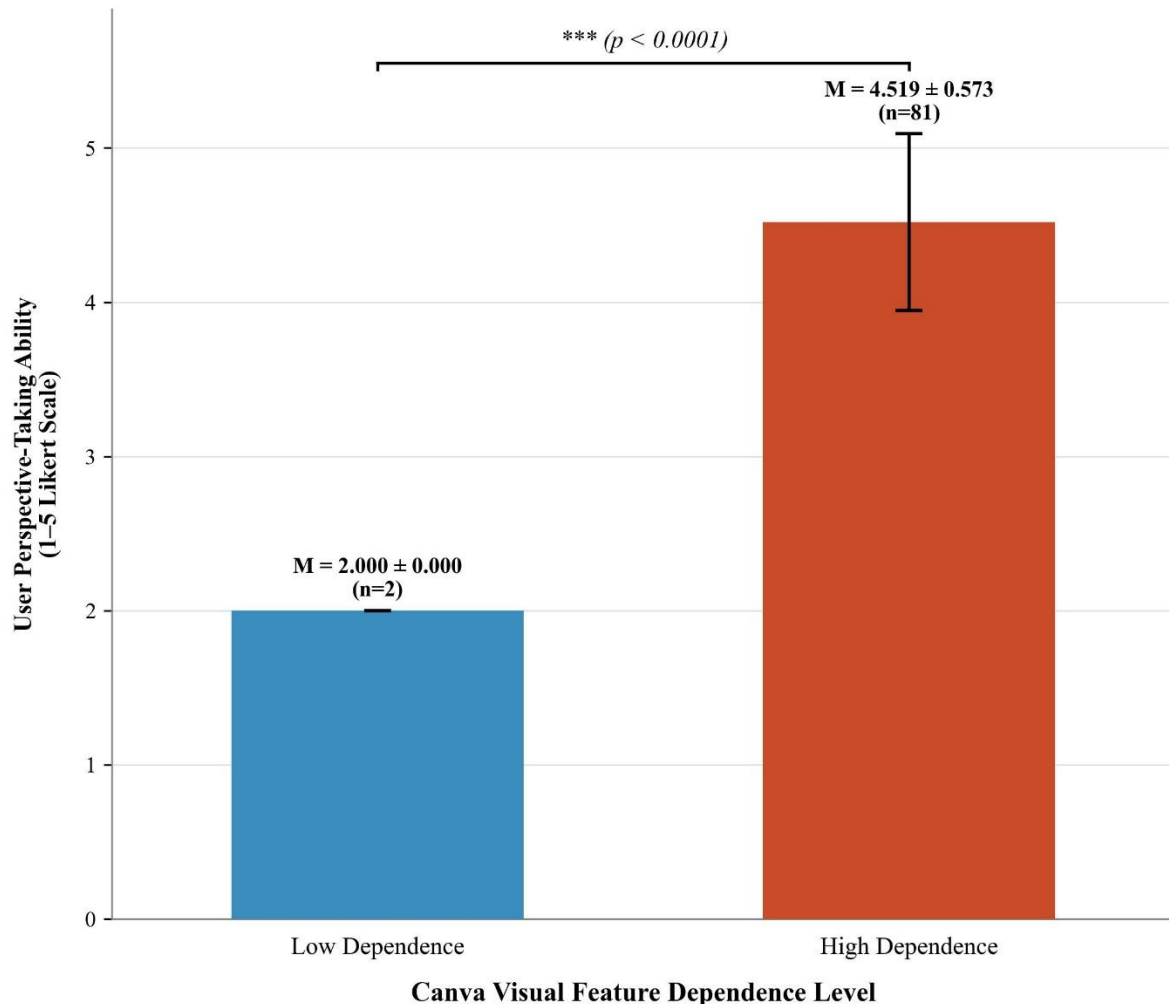
Figure 2 shows that the correlation analysis yielded a moderate, statistically significant positive correlation between visual feature dependence and user perspective-taking ability ($r = 0.563$, $p < 0.0001$), indicating that greater reliance on Canva's visual features was associated with stronger audience perspective-taking.

Critically, the Pearson correlation ($r = 0.563$, based on the full sample of $n = 83$) is the primary and most reliable estimate of this association. Although ANOVA results ($F = 38.242$, $p < 0.0001$) and post-hoc Tukey HSD tests indicated that the high dependence group ($M = 4.519$, $SD = 0.573$, $n = 81$) scored markedly higher than the low dependence group ($M = 2.000$, $SD = 0.000$, $n = 2$), this between-

group comparison must be interpreted with extreme caution. The low-dependence group comprised only two participants, rendering the group contrast statistically unreliable. The ANOVA result is therefore presented for completeness only and should not be treated as a substantive finding.

Figure 2

Perspective-Taking Ability by Canva Visual Feature Dependence



This result suggests that students who actively engage with Canva's visual features develop stronger awareness of how their content will be perceived by others. By using tools such as color coding to emphasize key information and infographics to simplify complex ideas, students are implicitly required to consider how different audiences will interpret their work—a process that cultivates perspective-taking. This finding aligns with the TPACK framework (Mishra & Koehler, 2006), which posits that effective technology integration mediates the connection between content knowledge and pedagogical practice. In this context, Canva's visual features serve as the technological bridge that supports students in translating content knowledge into audience-centered communication, which is a core pedagogical competency for educational psychologists.

Results for RQ3: Cross-Cultural Differences in Visualization-Driven Project Thinking

Research Question 3 explored whether there were significant differences in visualization-driven project thinking total scores between Chinese and Kazakhstani students. Independent samples t-tests (preceded by Levene's tests for homogeneity of variance) were performed.

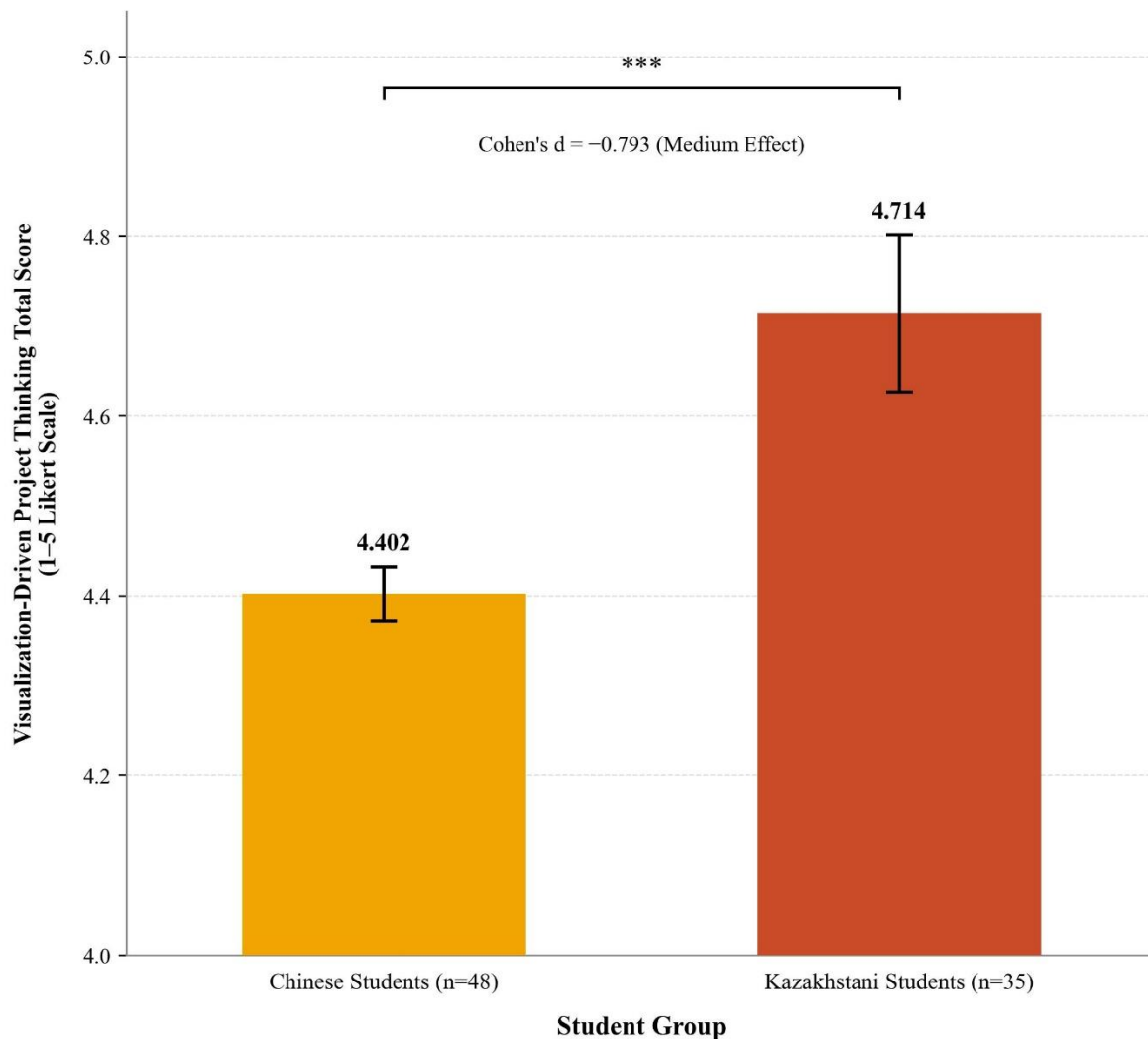
Levene's test for equality of variance between the two groups showed homogeneity of variance ($F = 3.500$, $p = 0.0650 > 0.05$), so the standard t-test was performed. As shown in Figure 3, the t-test indicates a significant difference in project thinking total scores ($t = -3.794$, $df = 81$, $p = 0.0003 < 0.001$), with Kazakhstani students ($M = 4.714$, $SD = 0.518$) scoring significantly higher than Chinese students ($M = 4.402$, $SD = 0.207$). The mean difference of -0.313 (Kazakhstani minus Chinese) gave

a medium effect size (Cohen's $d = -0.793$), which is also meaningful in terms of practical significance for this cross-cultural study.

More importantly, there was no overlap in the 95% confidence intervals (CIs) for Chinese students [4.341, 4.462] and Kazakhstani students [4.536, 4.892], further confirming the validity of the group difference. This also implies that the SD for Chinese students (0.207) is smaller than that for Kazakhstani students (0.518), so the project thinking level for Chinese students is more consistent across individuals. In contrast, the project thinking level for Kazakhstani students varies considerably across individuals, which might be due to the differences in their internationalization experiences (i.e., participation in cross-cultural projects) and their trilingual education experience (Kazakh-Russian-English), which might empower them to use visualization tools to meet different communication needs.

Figure 3

Cross-Cultural Comparison of Project Thinking Total Score



This difference attests to how institutional educational contexts may be associated with variation in technology integration outcomes. The internationalization and practicality orientation at Al-Farabi Kazakh National University may correspond to a higher degree of fit with Canva's collaborative and visual features, whereas the more structured learning environment at Huanggang Normal University appears associated with more consistent but slightly lower project thinking scores. These patterns are interpreted at the institutional level and should not be taken as representative of Chinese or Kazakhstani higher education more broadly.

Discussion

Interpretation of Results

Contrary to the initial hypothesis of Research Question 1 (RQ1), the results did not reveal a statistically significant relationship between deep Canva utilization and idea-organization proficiency among the participating students. The correlation observed was weak and non-significant. The weak negative trend, though non-significant, is worth noting. Deep Canva use encompasses activities such as brainstorming, strategic planning, and the creation of projects from the ground up. This approach facilitates a structured yet adaptable framework for organizing ideas, in contrast to shallow use, which relies on prefabricated templates. Deep Canva utilization encourages systematic idea organization through the employment of structured features like modular layouts and logical flow mapping. In contrast, shallow use predominantly leans on pre-existing templates, offering limited structural support. Cognitive load theory helps explain the potential benefits of deep Canva use, suggesting that its intuitive interface may minimize cognitive strain, enabling students to concentrate on organizing fundamental concepts rather than struggling with tool navigation. However, in the context of routine academic tasks such as course presentations, template-based utilization appears to provide enough structural guidance, which may explain why deep use did not yield additional measurable benefits for idea organization in this study. Thus, from a cognitive load perspective, the value of deep tool use appears task-dependent: it may benefit complex, ill-defined projects but not routine academic tasks where templates already reduce extraneous load. Distinguishing between deep and shallow Canva usage proves challenging, as template-based utilization typically furnishes rudimentary structural cues, particularly evident in scenarios like course presentations. This simplistic guidance allows students to direct their focus towards idea organization rather than navigating the tool.

The moderate positive correlation between Canva visual features and users' perspective-taking skills provides support for Research Question 2 (RQ2). Canva visual features (graphic integration, color-coding, easy layout) serve as a pathway between individual ideas and audience-centered communication. Students who use these features to simplify information or highlight key points demonstrate their perspective-taking abilities by anticipating how an audience perceives and interprets content. This finding can be understood more deeply through the TPACK framework (Mishra & Koehler, 2006). TPACK suggests that effective technology integration occurs when teachers or in this case students understand how technological tools interact with both content knowledge and pedagogical strategies. In the context of RQ2, Canva's visual features are the technological component; the content knowledge is the psychological or educational information students communicate; and audience-centered communication (perspective-taking) is the pedagogical component—understanding how to present information to specific learners or stakeholders. Canva's visual features bridge these three components by lowering the technical burden, freeing students to focus on how their content will be received. In short, the tool does not simply improve a project's appearance; it actively scaffolds the cognitive process of perspective-taking. Reliance on visual features was high in both groups (94.3% of Kazakhstani students and 100% of Chinese students), suggesting that visualization is a generally effective way to improve perspective-taking, as abstract audience needs become more tangible and actionable.

Research Question 3 (RQ3) explored cross-cultural differences in visualization-driven project thinking between the two participating institutions. The results supported Hypothesis 3, showing that students at Al-Farabi Kazakh National University scored higher than those at Huanggang Normal University on all variables, and the difference in total project thinking scores was statistically significant ($t = -3.794$, $p = 0.0003$). These findings are specific to the two participating institutions and should not be generalized to the student populations of China or Kazakhstan as a whole. Within the scope of this study, these differences may reflect variations in the institutional educational contexts. Al-Farabi Kazakh National University places institutional emphasis on trilingualism (Kazakh, Russian, English) and internationalization, foregrounding cross-cultural communication and practical skill application—contexts for which Canva's visual and collaborative features may be particularly well-suited. Huanggang Normal University operates within an educational context that tends to emphasize structured knowledge mastery, and participants in this study appear to have used Canva primarily for standard academic tasks rather than creative or cross-cultural projects. The higher

variability in the scores of students from Al-Farabi Kazakh National University ($SD = 0.518$ vs. 0.207 for Huanggang Normal University students) may also reflect differences in international exposure and collaborative project experience within these specific institutional settings.

Comparison with Previous Studies

The results align with prior research on educational technology and cross-cultural learning. Consistent with Liu et al. (2024), who found that the visual features of collaborative technology help students structure and organize design ideas, our findings suggest that Canva's visualization tools may support the structuring of project ideas. However, our findings add an important distinction. Depth of use was not significantly associated with idea organization for routine academic tasks. This suggests that template-based use already meets the structural demands of such tasks. This specific pattern has not been previously examined in the Canva literature. Regarding visual feature dependence, our results are consistent with Ahmadillah et al. (2023), who found that Canva's flexible features positively affect users' creative expression. We extend this finding by linking visual flexibility specifically to perspective-taking ability and by identifying how visualization tools can support audience-centered thinking, a connection not previously examined in the literature.

Sailer et al. (2021) found that teachers' self-assessed technology skills relate more strongly to active learning outcomes than attitudes do. Our findings are consistent with this pattern. Students who used Canva's visual features more actively showed stronger perspective-taking outcomes, suggesting that what students do with a tool matters more than how positively they feel about it. We extend this finding by showing that institutional context, such as internationalization demands and trilingual education, may further shape how students engage with technology for project thinking. This points to the need for region-specific studies, as broad frameworks may not capture the distinct educational conditions of Central Asian and East Asian universities. Our study also responds to Tong (2024), who highlighted the lack of cross-cultural research on educational technology in art and design contexts. By providing empirical data from China and Kazakhstan, two contexts rarely studied together, this study adds to a growing body of work that moves beyond single-country samples.

Theoretical Contributions

Three theoretical contributions emerge from this study.

First, empirical evidence on visualization-driven project thinking is provided for Chinese and Kazakhstani higher education, two national contexts largely absent from the educational technology literature. The findings show that Canva's impact varies across institutional settings, yet its core effectiveness in supporting project thinking remains consistent. This pattern advances understanding of how cultural and institutional factors shape the pedagogical value of technology tools.

Second, the TPACK framework is extended by showing that specific tool features, rather than general technology use, matter more for particular learning outcomes. Visual feature dependence was positively associated with perspective-taking, while depth of use showed no significant association with idea organization in routine tasks. This feature-level finding offers a more precise application of TPACK than has typically appeared in the literature.

Third, cognitive load theory is extended beyond individual knowledge construction. The findings suggest that visualization tools may also reduce extraneous load in audience-centered communication tasks, broadening the theory to cover social and collaborative dimensions of learning.

Practical Implications

Visualization tools like Canva, when used purposefully in educational psychology curricula, can support two professionally relevant skills: idea organization and user perspective-taking. These are skills that lecture-based instruction rarely develops in a direct or measurable way.

The findings offer practical guidance for educators in both countries. For Chinese educators, the results point to a need to move beyond template-based tasks. Designing open-ended assignments, such as cross-cultural project design or community outreach planning, can push students to organize ideas from scratch. Perspective-taking can be built gradually by asking students to justify their visual design choices based on the needs of a specific audience. Chinese students in this study relied heavily on visual features, but their perspective-taking scores were only moderate. Connecting visual design tasks to audience analysis would be especially useful for this group. Having students share and test

their project plans with peers from different cultural backgrounds is one practical way to do this.

For Kazakhstani educators, the results show that Canva already supports cross-cultural communication and practical skill development, both of which align well with Kazakhstan's education priorities. Building on these strengths, educators can design collaborative projects using Canva's real-time editing and sharing features, such as joint research presentations or international event planning. To address the higher variability in Kazakhstani student scores, structured support for less-experienced users may be helpful. Tutorials on advanced visual design and exercises that ask students to reflect on how their design choices affect cross-cultural communication can deepen audience awareness over time.

For cross-cultural collaboration between Chinese and Kazakhstani universities, Canva can function as a shared working platform that bridges language and cultural differences. Joint projects where students co-design visual materials, such as educational resources or awareness campaigns, can build mutual understanding of different communication styles. Educators can support this by setting shared guidelines for visual communication that respect both cultures' preferences. For example, Chinese students' tendency toward structured content can be balanced with Kazakhstani students' preference for interactive elements. From a pedagogical standpoint, Canva is a low-cost, widely accessible tool that does not require specialized technical training to integrate into existing courses. Visual design tasks that ask students to consider audience needs, rather than simply applying templates, can meaningfully develop perspective-taking skills relevant to educational psychology practice. These recommendations are exploratory and should be treated as a starting point rather than definitive guidelines, given the study's limitations.

Limitations and Future Research

Four limitations of this study should be noted. First, data were collected from only two universities, giving a total sample of 83 students. Findings cannot be generalized to the broader student populations of China or Kazakhstan. Second, the cross-sectional design captures Canva use and project thinking at a single point in time. Changes in these variables over time cannot be observed. Third, all measures relied on self-report questionnaires. Participants may have overestimated their depth of Canva use or their actual skill level, which could affect the accuracy of the findings. Fourth, mean scores across all variables fell above 4.0 on a 5-point scale. This concentration near the top of the scale may have compressed variance and reduced statistical power, particularly for RQ1 where the correlation was weak and non-significant. Future studies should consider using wider scales, such as 7-point or 9-point Likert scales, or objective performance measures to reduce this issue.

Several directions for future research follow from these limitations. A longitudinal study spanning one semester could track how sustained Canva use shapes project thinking over time. An intervention study would also be valuable. One group could receive structured deep-use training, while a control group uses Canva without guidance. Comparing outcomes across the two groups would show more clearly how different levels of engagement affect idea organization and perspective-taking. Expanding the sample to national or inter-regional levels would improve generalizability. Including variables such as digital literacy experience and collaboration frequency would also help explain how institutional context shapes the relationship between technology use and project thinking. Finally, combining survey data with qualitative methods, such as interviews and analysis of student project artifacts, would provide a fuller picture of how Canva supports or limits project thinking in different academic settings.

Conclusion

This study examined how different levels of Canva use relate to project thinking dimensions among students at Huanggang Normal University in China and Al-Farabi Kazakh National University in Kazakhstan. Three findings emerged. Deep Canva use showed no significant association with idea organization, suggesting that for routine academic tasks, templates already provide sufficient structural support. Reliance on Canva's visual features was moderately and positively associated with perspective-taking ability, indicating that working with visual tools helps students become more aware of audience needs. Kazakhstani students scored significantly higher on overall project thinking

than Chinese students, a pattern that likely reflects differences in institutional emphasis on internationalization and cross-cultural communication rather than broader national differences.

These findings carry both theoretical and pedagogical significance. Theoretically, the findings contribute in two ways. First, they extend the TPACK framework by showing that specific tool features, rather than general technology use, drive distinct learning outcomes. Second, they broaden cognitive load theory by demonstrating that visual tools can reduce extraneous load not only in individual learning, but also in audience-centered communication tasks. Pedagogically, the results point to the value of intentional Canva integration in educational psychology training: visual design tasks that ask students to consider audience needs can cultivate perspective-taking skills that lecture-based instruction rarely develops. Overall, these contributions suggest that how a tool is used, and in what institutional context, matters as much as whether it is used at all.

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КӨРІКТІРУНЕ НЕГІЗДЕЛГЕН ЖОБАЛЫҚ ОЙЛАУ ДАМУЫНДА CANVA БІЛІМ БЕРУ ҚОСЫМШАСЫ: ҚАЗАҚСТАН-ҚЫТАЙ САЛЫСТЫРМАЛЫ ЗЕРТТЕУІ

Аңдатпа. Бүгінгі әлемде білім беру жалпылықтағы цифрлық трансформациядан өтуде, мұның ішінде Canva сияқты көріктіру құралдары болашақ педагогикалық психологтардың негізгі біліктілігі болып табылатын жобалық ойлауды оқытуда өз өзегі орын алады. Осы жағдайда зерттеу Canva қолданылу көрсеткіштері (қолданылу тереңдігі, көріктіру функцияларына тәуелділік) мен жобалық ойлау (ойларды ұйымдастыру, пайдаланушы көзқарасын қабылдау) арасындағы байланысты мәдениетаралық контекстте сандық дәлелдеп, Қытай және Қазақстан студенттері арасындағы айырмашылықтарды салыстырады. Зерттеу деректері екі оқыту топынан жиналды: Қытайдың Хуанган педагогикалық университеті (n=48) және Қазақстанның Әл-Фараби атындағы ұлттық университеті (n=35), жалпы 83 жарамды анкета алынды. Деректерді статистикалық өңдеу үшін Пірсон байланыстары, t-тест және дисперсиялық анализ (ANOVA) қолданылды. Нәтижелер көрсетеді: (1) Canva қолданылу тереңдігі ойларды ұйымдастырумен аз байланысты; (2) көріктіру функцияларына тәуелділік пайдаланушы көзқарасын қабылдаумен орташа байланысты ($r=0,56$; $p<0,001$), сонымен бірге осы көрсеткішнің орташа мәні Қазақстан студенттерінде Қытай студенттерінен сенімді жоғары ($M=4,52$ мен $2,00$); (3) жалпы жобалық ойлау көрсеткіштері Қазақстан студенттерінде олардың Қытай ұстаздарынан жоғары ($M=4,71$ мен $4,40$; $t=-3,79$; $p<0,001$). Зерттеу Canvanyң жобалық ойлау дамуындағы рөлін ашып, жобалық ойлау туралы мәдениетаралық зерттеулердегі бос орынды толтырады, сонымен бірге екі елдегі педагогикалық психология курстарында көріктіру құралдарын біріктіруге маңызды практикалық түсініктер береді.

Түйін сөздер: Canva, көріктіру құралдары, жобалық ойлау, мәдениетаралық зерттеу, жоғары білім беру

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ОБРАЗОВАТЕЛЬНОЕ ПРИЛОЖЕНИЕ CANVA В РАЗВИТИИ ПРОЕКТНОГО МЫШЛЕНИЯ, ОСНОВАННОГО НА ВИЗУАЛИЗАЦИИ: КАЗАХСТАНСКО-КИТАЙСКОЕ СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ

Аннотация. В современном мире образование проходит глобальную цифровую трансформацию, при этом визуализационные инструменты, такие как Canva, играют незаменимую роль в формировании проектного мышления — ключевой компетенции будущих педагогов-психологов. В связи с этим данное исследование количественно оценивает взаимосвязь между показателями использования Canva (глубина использования, зависимость от визуальных функций) и проектным мышлением (организация идей, принятие точки зрения пользователя) в кросскультурном контексте, а также сравнивает различия между студентами Китая и Казахстана. Данные для исследования были собраны в двух учебных группах: Хуанганский педагогический университет Китая (n=48) и Казахский национальный университет им. аль-Фараби (n=35), всего было получено 83 действительных анкеты. Статистическая обработка данных включала корреляционный анализ Пирсона, t-критерий и дисперсионный анализ (ANOVA). Результаты показали, что: (1) глубина использования Canva слабо коррелирует с организацией идей; (2) зависимость от визуальных функций умеренно коррелирует с принятием точки зрения пользователя ($r=0,56$; $p<0,001$), при этом среднее значение данного показателя достоверно выше у казахстанских студентов по сравнению с китайскими ($M=4,52$ против $2,00$); (3) общие показатели проектного мышления выше у студентов из Казахстана, чем у их сверстников из Китая ($M=4,71$ против $4,40$; $t=-3,79$; $p<0,001$). Исследование раскрывает роль Canva в развитии проектного мышления и восполняет пробел в кросскультурных исследованиях проектного мышления, имея важные практические выводы для интеграции визуализационных инструментов в курсы педагогической психологии в обеих странах.

Ключевые слова: Canva, визуализационные инструменты, проектное мышление, кросскультурное исследование, высшее образование

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