

National Heritage as Asset-Based Pedagogy: A Convergent Mixed-Methods Intervention Study of Future Primary Teachers in Kazakhstan

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ABSTRACT: Teacher education increasingly privileges standardized competencies, digital skills, and measurable outputs, while giving less attention to cultural identity, value negotiation, and diversity in multiethnic classrooms. This study reframes national heritage as an asset-based pedagogical resource rather than a static folkloric supplement. Using a convergent parallel mixed-methods design, the study examined how a 15-week course, “National Heritage and Pedagogical Values,” influenced ethno-cultural competence, professional identity, and culturally responsive teaching readiness among 42 Master’s students in primary education in Kazakhstan. Quantitative results showed significant growth across all measured dimensions, with the strongest practical shift in behavioural/pedagogical application, $t(41) = 9.77$, $p < .001$, $d = 1.51$. Micro-teaching observations confirmed that candidates converted heritage concepts such as Asar, qoshqar müiiz, and kösh into subject-specific teaching tools for cooperation, geometry, ecology, and classroom dialogue. Reflexive thematic analysis of essays showed a parallel identity shift: participants moved from viewing heritage as ceremonial folklore toward using it as an inclusive pedagogical language. The findings indicate that heritage-based teacher education can strengthen culturally responsive practice when mediated through structured reflection and observable teaching performance. The study contributes a post-Soviet, Central Asian model for preparing teachers who can balance national cultural revitalization with pluralistic classroom inclusion.

Keywords: Asset-based pedagogy, Culturally responsive teaching, Ethno-cultural competence, National heritage, Teacher education, Kazakhstan, Reflective teacher identity.

I. INTRODUCTION

Teacher education is becoming increasingly technical. Standards, measurable outcomes, digital skills, and accountability frameworks now define much of what future teachers are expected to master. These competencies matter. They do not answer a harder question: how should teachers work with identity, belonging, cultural memory, and value conflict in classrooms that are no longer culturally uniform? This question now cuts through contemporary teacher preparation. Schools are more diverse, yet many programmes still treat diversity as an abstract ethical commitment rather than a practical pedagogical problem. Sleeter argued that teacher education often leaves future teachers insufficiently prepared for culturally complex classrooms [1]. Recent work confirms the same deficit in a new language: social justice-oriented teacher education requires sustained reflection on values, power, culture, and inclusion, not only

technical instruction [2]. The tension is sharp. Systems ask universities to produce efficient professionals. Schools need cultural mediators.

Culturally responsive teaching offers a different logic. It treats culture not as decoration, but as a resource for learning. Gay and Ladson-Billings showed that students' cultural backgrounds can support academic engagement, identity formation, and classroom participation when teachers know how to use them pedagogically [3, 4]. Asset-based approaches extend this claim. Local knowledge, family practices, oral traditions, language, memory, and community values are not deficits to be corrected by formal schooling. They are funds of knowledge and forms of cultural wealth [5, 6]. Heritage changes status here. It stops being a museum object. It becomes pedagogical material.

Most of this theoretical tradition, however, comes from Western contexts. It grew around racialized minority students, migration, and the critique of whiteness in schooling. This literature remains essential, but it does not fully explain post-Soviet educational systems, where the titular nation is simultaneously rebuilding cultural identity and preserving a multiethnic civic space. Kazakhstan represents this tension clearly. It is not simply a country with ancient traditions. It is a society negotiating a difficult educational balance: revitalizing national heritage after decades of Soviet cultural standardization while maintaining interethnic cohesion in classrooms where Kazakh, Russian, Uzbek, Uyghur, Korean, Tatar, and other identities may meet. This makes Kazakhstan a valuable site for rethinking culturally responsive teacher education beyond the Western frame. National heritage carries a double function. It supports cultural continuity and civic identity. It can also become problematic if treated as a closed ethnic narrative. The pedagogical challenge is precise: can national heritage be taught not as a tool of exclusion, but as an asset-based foundation for inclusive teaching? Can future teachers learn to transform heritage into dialogue, empathy, and culturally responsive classroom practice? Kazakhstani teacher education has already recognized the need to connect professional preparation with local cultural context. Uzakbaeva and Zholdasbekova argued that modernization of teacher training in Kazakhstan requires a balance between international standards and traditional norms and values [7]. This point remains urgent. A teacher who only imports global pedagogical models may lack cultural rootedness. A teacher who only reproduces national symbols may lack intercultural openness. The task is not to choose between heritage and diversity. The task is to teach future educators how to hold both.

Existing research in Kazakhstan has examined ethnopedagogy, national values, civic identity, and ethno-cultural competence among students and future teachers [8-13]. These studies show that national heritage can influence attitudes, identity, and appreciation of cultural traditions. Their limitation lies elsewhere. Much of the available work remains descriptive, survey-based, or focused on general value formation. Less is known about how a structured heritage-based pedagogical intervention changes future teachers' competence across three dimensions: what they know, how they reflect, and how they teach. The transfer from cultural awareness to classroom application remains underexplored. The Kazakhstani case is not only "multiethnic." It is structurally asymmetric. The country is still working through the legacy of Soviet educational standardization, where local language, indigenous knowledge, and communal forms of cultural memory were often subordinated to a universalized state curriculum. This creates a different problem from the one usually examined in Western culturally responsive teaching research. In many Western studies, the central concern is how teachers respond to marginalized minority learners within dominant majority systems. In Kazakhstan, the titular culture itself is undergoing recovery, while the classroom remains civic, plural, and multiethnic.

This tension changes the pedagogical stakes. National heritage cannot be inserted into teacher education as simple cultural revival. If it is transmitted mechanically, it may become ethnic closure. If it is excluded completely, teacher preparation risks producing culturally rootless professionals who can reproduce imported methods but cannot read the local moral, linguistic, and historical texture of the classroom. Primary teachers stand at the centre of this tension. They work with children at the stage when family memory, school identity, language, and civic belonging first begin to collide.

The problem, therefore, is not whether national heritage should enter teacher education. The sharper problem is how it enters. Heritage must be translated into a pedagogical resource that supports mutual

responsibility, dialogue, and inclusion. In this study, concepts such as Asar, oral dialogue, nomadic ecological ethics, and intergenerational responsibility are treated not as ethnic symbols, but as cultural assets that can be reworked into lesson design and classroom interaction. This is where the Kazakhstani case becomes theoretically useful: it tests whether national revitalization and culturally responsive teaching can operate together without collapsing into ethnocentrism.

The remainder of this paper is organised as follows. Section II reviews the literature and presents the research gap, study objective, research questions, and hypothesis. Section III describes the materials and methods, including the intervention, participants, instruments, and data analysis. Section IV reports the findings. Section V discusses the results in relation to previous research. Section VI concludes with the study limitations and theoretical and practical implications.

II. LITERATURE REVIEW

The international literature on culturally responsive teacher education rests on one central claim: culture does not sit outside pedagogy. It shapes how students speak, remember, reason, participate, and trust the educational environment. This review narrows that broad claim to one problem: how national heritage can move from symbolic transmission into active teacher preparation. To address this problem, the section brings together four strands of scholarship: culturally responsive and asset-based pedagogy, ethno-cultural competence, post-Soviet teacher education, and the remaining gap in intervention-based evidence.

1. CULTURALLY RESPONSIVE AND ASSET-BASED PEDAGOGY

Culturally responsive teaching begins with a refusal of pedagogical neutrality. Gay argues that instruction becomes effective when it uses students' cultural experiences as part of the learning process, not as peripheral background. Ladson-Billings formulates the same demand through culturally relevant pedagogy: teachers must support academic achievement, cultural competence, and critical consciousness at once [4]. Aronson and Laughter strengthen this position by showing that culturally relevant education works across content areas, including mathematics, science, literacy, and social studies [14]. This matters for heritage-based teacher education. If culture can support subject learning, then national heritage cannot be reduced to a festive or folkloric supplement. It can become a scaffold for lesson design, classroom dialogue, and micro-teaching.

Asset-based pedagogy gives this shift a sharper vocabulary. Moll et al. introduced "funds of knowledge" to show that families and communities hold complex intellectual resources that formal schooling often ignores [5]. Yosso later framed such resources as community cultural wealth, challenging deficit views of learners whose knowledge does not match dominant institutional norms [6]. Through this lens, heritage changes status. Asar, proverb-based reasoning, oral dialogue, ecological ethics of nomadic life, and intergenerational responsibility are not static traces of the past. They are usable cultural assets. Paris and Alim push this logic further through culturally sustaining pedagogy: schooling should not only respond to students' culture, but sustain, adapt, and transform it. For Kazakhstan, this distinction is decisive [15]. Teacher education should not preserve national heritage in a museum form. It should teach future educators how to make it work inside multiethnic classrooms.

2. ETHNO-CULTURAL COMPETENCE AND THE RISK OF ETHNOCENTRISM

Ethno-cultural competence is often flattened into ethnic pride, knowledge of customs, or loyalty to tradition. In teacher education, the construct is more demanding. It requires future teachers to understand their own cultural positioning, recognize the cultural lenses of learners, and translate this awareness into inclusive pedagogical relationships. Banks places this movement within multicultural education, where local cultural identity can become a route toward wider civic and intercultural participation [16]. Nieto makes a related argument: multicultural learning communities do not erase difference; they make difference a condition for dialogue [17]. The teacher's task is not to hide cultural difference. The task is to make it pedagogically meaningful.

The risk appears when heritage is taught without reflection. Garmon shows that changes in preservice teachers' beliefs about diversity depend on openness, self-awareness, and reflective experience [18]. Content exposure alone is not enough. Without reflection, cultural knowledge can harden into stereotype. Tradition becomes performance. Identity becomes boundary. This risk is central to heritage-based teacher education in Kazakhstan. National heritage can support inclusive teaching only when reflective engagement mediates the movement from cultural knowledge to pedagogical action.

3. POST-SOVIET TEACHER EDUCATION AND NATIONAL IDENTITY

Kazakhstan complicates the dominant Western frame of culturally responsive pedagogy. In much of the Western literature, the central problem is how teachers respond to racialized minorities within historically dominant cultural orders. In Kazakhstan, the configuration is different. The titular nation is restoring cultural continuity after decades of Soviet linguistic and ideological standardization, while the education system still has to sustain a multiethnic civic space. This is not a minor contextual variation. It changes the theory. Teacher education must hold national revitalization and intercultural pluralism together.

Kazakhstani scholarship has approached this tension from several directions, but the field still remains uneven. Panzabek et al. show that Kazakh narratives can support the development of ethno-cultural competence, although this approach remains close to text-based heritage transmission [11]. Toleubekova et al. move further by examining ethno-pedagogical coursework and its influence on attitudes toward traditional values [13]. Musakhanova et al. connect ethno-cultural education with civic values and self-identity, which brings national heritage closer to citizenship formation [10]. Recent studies sharpen the professional angle: Serikkhan et al. link the preparation of primary school teachers with Kazakh national identity, Kazangapova et al. examine the relationship between ethno-cultural competence and readiness to teach national values, and Karimova et al. frame cultural preparation through cross-cultural and linguacultural competence [12, 9, 8]. Read together, these studies show a clear trajectory. Local scholarship is moving from heritage as content toward heritage as professional capacity.

That movement still needs stronger dialogue with asset-based and culturally sustaining pedagogy. The Kazakhstani studies demonstrate that national heritage matters, but they rarely ask how heritage becomes a transferable instructional asset. This is the missing bridge. From the perspective of Moll et al. and Yosso, Kazakh cultural practices can be read as funds of knowledge and community cultural wealth [5,6]. From the perspective of Paris and Alim, they must also be adapted and sustained in ways that do not close the classroom around one ethnic narrative [15]. The question, then, is not whether heritage should be included in teacher education. The harder question is how future teachers learn to convert heritage into inclusive classroom practice.

4. RESEARCH GAP

The reviewed literature exposes a precise gap. International scholarship provides strong theoretical tools for explaining why culture matters in instruction, but it remains anchored mainly in Western racial, migration, and minority-majority contexts. Kazakhstani scholarship explains why national heritage matters for identity, values, and teacher preparation, but it has not yet sufficiently demonstrated how heritage-based coursework changes future teachers' practice through an intervention design. Most regional studies remain descriptive, survey-based, or focused on value orientation. This study addresses that gap by treating national heritage as an asset-based pedagogical resource and examining its transformation through cognitive, affective, and behavioural/pedagogical dimensions. It also adds a methodological contribution: a mixed-methods intervention design that combines survey data, micro-teaching observation, and reflective essays. The goal is not to prove that heritage is valuable in general. That has already been argued. The goal is to show how heritage becomes teachable, inclusive, and pedagogically alive.

5. OBJECTIVE OF THE STUDY

This study addresses the identified research gap by examining whether a heritage-based pedagogical intervention can strengthen future primary school teachers' ethnocultural competence and culturally responsive teaching readiness. The intervention was implemented through a 15-week course entitled

National Heritage and Pedagogical Values. Rather than treating Kazakh heritage as folklore to be memorized, the course encouraged students to reinterpret cultural concepts such as Asar, Aksakalism, oral dialogue, and nomadic ecological ethics as pedagogical resources for lesson planning, inclusive classroom discussion, and subject-specific teaching.

The objective of this study is to examine how a heritage-based pedagogical intervention influences ethno-cultural competence, multicultural teacher identity, and culturally responsive teaching readiness among future primary school teachers in Kazakhstan. The study is guided by the following research questions:

- How does heritage-based pedagogical training affect future teachers' ethno-cultural competence?
- Which components cognitive, affective, or behavioural/pedagogical show the strongest transformation?
- How do future teachers reinterpret national heritage as a resource for culturally responsive teaching in a multiethnic classroom?

Alternative Hypothesis (H1). Participation in the heritage-based pedagogical intervention significantly improves future teachers' cognitive, affective, behavioural/pedagogical, and overall ethno-cultural competence.

III. MATERIAL AND METHOD

1. CONCEPTUAL MODEL AND OPERATIONALISATION

The conceptual model draws on culturally responsive teacher education and asset-based pedagogy. Villegas and Lucas define culturally responsive teachers as professionals who understand learners' sociocultural contexts and use that understanding in instructional decisions [19]. Gay develops this logic further: culture becomes instructionally meaningful only when teachers can convert it into curriculum, interaction, and assessment [3]. Heritage must move. It cannot remain passive content.

The model contains three domains. The cognitive domain treats heritage as pedagogical knowledge and didactic material. Students had to understand concepts such as Asar as collaborative responsibility, Aksakalism as intergenerational ethical guidance, oral dialogue as a mode of reasoning, and nomadic ecological ethics as a resource for environmental learning. The affective domain focused on reflective engagement, empathy, and professional identity. Garmon shows that beliefs about diversity do not shift through exposure alone; they require openness, self-awareness, and structured reflection [18]. The behavioural/pedagogical domain focused on lesson design, micro-teaching, classroom interaction, and subject-specific application.

Reflective engagement worked as the mediating mechanism of the model. It connected cultural knowledge with pedagogical action. A student may know the meaning of Asar, but that knowledge becomes pedagogical only when it shapes cooperative learning, peer support, or discussion of civic responsibility. Reyes supports this discipline-specific view of culturally relevant pedagogy, where culture enters mathematics, language, science, and classroom tasks rather than remaining an abstract ethical statement [20]. The operational trajectory was therefore: heritage-based intervention cognitive ethno-cultural awareness affective-reflective identity transformation behavioural/pedagogical application culturally responsive teacher readiness.

2. RESEARCH DESIGN

The study used a convergent parallel mixed-methods intervention design with a contextual comparison frame. We avoided the term quasi-experimental because the wider non-participant cohort did not complete a full post-test cycle. Quantitative and qualitative evidence were collected during the same 15-week intervention and integrated during triangulation. This design allowed us to examine measurable change and interpretive transformation together, rather than treating one as secondary to the other [21, 22]. The design fitted the research problem. ethno-cultural competence cannot be captured by a survey alone. It involves knowledge, attitudes, identity work, and visible teaching behaviour. For that reason, the study combined pre-test and post-test questionnaire data, micro-teaching observation, and reflective essays. Each data source addressed a different layer of transformation.

3. PARTICIPANTS AND CONTEXT

The study was conducted at Abai Kazakh National Pedagogical University within a Master's programme preparing future primary school teachers. The total academic cohort included 180 graduate students. The intervention group consisted of 42 students enrolled in the 15-week course "National Heritage and Pedagogical Values." The remaining 138 students were not used as a control group. They served only as a contextual comparison frame for describing the broader cohort and, where institutional data were available, checking baseline demographic and academic comparability. The final sample included only students who completed the full tracking sequence: pre-test, post-test, micro-teaching task, and final reflective essay. This design does not support randomized causal inference. It supports a more specific claim: the study traces competence transformation within one structured pedagogical intervention and strengthens interpretation through triangulated evidence.

4. PEDAGOGICAL INTERVENTION

The intervention took the form of a 15-week course titled "National Heritage and Pedagogical Values." We rejected the folkloric approach of memorizing dates, customs, costumes, and isolated symbols. Students instead deconstructed cultural resources and translated them into primary school pedagogy. The course worked across five areas: mathematics, language, science, values education, and inclusive classroom discussion.

The conversion was concrete. Asar was used to design cooperative learning and peer-tutoring tasks. Aksakalism was discussed as a model for ethical reasoning, restorative dialogue, and intergenerational responsibility. Oral dialogue was adapted for storytelling, argumentation, and classroom discussion. Nomadic ecological ethics were connected to science lessons on sustainability, ecosystems, and human-nature relations. In mathematics, students used the geometry of traditional zoomorphic ornaments, including qoshqar müiiz, to teach symmetry, spatial reasoning, and pattern recognition. In science, they used seasonal migration cycles, or kösh, to explain adaptation, movement, environment, and survival. Heritage became the delivery mechanism for standard curricular aims. Each participant designed and delivered one heritage-integrated micro-lesson. The task was not to display culture. The task was to teach through it. This distinction protected the intervention from simple ethnic celebration and moved it toward asset-based instructional practice.

5. INSTRUMENTS AND VALIDATION

Table 1. Overview of research instruments, variables measured, and data sources.

Instrument	Purpose	Variables Measured	Scale
25-item questionnaire	Quantitative assessment	Cognitive, affective, behavioural competence	5-point Likert
Observation rubric	Classroom performance	Heritage integration, pedagogical relevance, inclusiveness, cultural accuracy, cross-cultural interaction	4-point rubric
Reflective essays	Qualitative analysis	Identity transformation, heritage perception, inclusive teaching	Thematic analysis

The study used three instruments. The first was a 25-item Likert-scale questionnaire measuring ethno-cultural competence across cognitive, affective, and behavioural/pedagogical domains. The questionnaire was adapted from validated instruments on culturally responsive teaching self-efficacy and self-efficacy-forming experiences [23, 24]. Items were recontextualized for Kazakhstan and for the specific focus on national heritage as an instructional asset. This adaptation avoided the methodological weakness of presenting a new, unsupported scale.

The 25-item questionnaire was organized into three functional domains that followed the conceptual model of the study. The cognitive domain measured students' confidence in understanding national heritage as pedagogical knowledge. The affective domain measured reflection, openness to diversity, and awareness of possible ethnocentric risks. The behavioural/pedagogical domain measured confidence in converting heritage concepts into lesson design, micro-teaching, and classroom interaction. This structure allowed the instrument to capture not only what students knew, but also how they interpreted heritage and whether they could use it in teaching.

The adaptation from Siwatu's culturally responsive teaching self-efficacy instruments was not mechanical. Items were reworded for the Kazakhstani context and for the specific focus on national heritage as an instructional asset [23, 24]. For example, general confidence in using varied instructional strategies was transformed into confidence in using *Asar* for cooperative learning, *qoshqar müiiz* for geometry tasks, or *kösh* for discussing ecological adaptation. This adaptation protected the questionnaire from remaining too general for the intervention.

The micro-teaching rubric was used to reduce dependence on self-report. Each of the 42 participants delivered one heritage-integrated micro-lesson. The observation focused on five indicators: integration of national heritage, pedagogical relevance, inclusiveness, accuracy of cultural content, and cross-cultural classroom interaction. This followed the methodological position that culturally responsive teaching should be visible in classroom behaviour, not only in candidate attitudes or declared confidence [25].

Reflective essays were used to examine the internal layer of transformation. Participants wrote the essays at the end of the course, after the post-test and micro-teaching task. The texts were analyzed through Reflexive Thematic Analysis, where themes were developed inductively through repeated reading rather than imposed through a fixed codebook [26, 27]. When excerpts were translated into English, the aim was not literal word replacement, but preservation of conceptual meaning, especially for culturally dense terms such as *Asar*, *Aksakalism*, and *kösh*.

The adaptation followed a construct logic. General items on culturally responsive teaching confidence were rewritten to capture local pedagogical action. For example, an item on using varied instructional methods to meet students' needs was adapted into a heritage-based version: "I can use national heritage concepts, such as *Asar*, to structure collaborative peer-learning tasks in multiethnic classrooms." Items were reviewed for alignment with the three domains of the conceptual model. Reliability was assessed through Cronbach's alpha for the overall scale and subscales. The study did not conduct exploratory or confirmatory factor analysis because the intervention sample was too small for stable factor modelling.

The second instrument was an observation rubric for 42 micro-teaching sessions. The rubric assessed five indicators: integration of national heritage, pedagogical relevance, classroom inclusiveness, accuracy of cultural content, and cross-cultural interaction. Franco et al. argue that culturally responsive practice must be evaluated through observable classroom behaviour, not only through self-report [25]. The rubric followed this logic. It measured whether students could turn heritage into instruction.

The third instrument was a reflective essay completed in Week 15. The essay prompts asked participants to examine how the course changed their understanding of heritage, teacher identity, and inclusive classroom practice. The essays captured the affective and interpretive layer of the intervention. They showed whether students understood national heritage as a closed ethnic script or as a resource for dialogue.

6. DATA COLLECTION AND ANALYSIS

The pre-test and post-test scores show significant growth across all dimensions of ethno-cultural competence. Among the three component domains, the largest standardized effect appears in cognitive knowledge, while the behavioural/pedagogical dimension shows the most important practical shift for the study's argument: students became more ready to use national heritage in teaching, not only to recognize or value it.

Quantitative analysis examined change between pre-test and post-test scores. Paired-samples t-tests measured whether the cognitive, affective, and behavioural/pedagogical domains changed significantly. Cohen's d was calculated for each domain. This step was necessary because the second research question

asks which component showed the strongest transformation. Mean differences alone would be methodologically weak; standardized effect sizes allow comparison across subscales with different variance structures.

Qualitative data from 42 reflective essays were analysed through Reflexive Thematic Analysis. Braun and Clarke define this approach as interpretive and recursive rather than mechanical [26, 27]. We did not use a rigid pre-constructed codebook. Repeated reading generated initial semantic codes, which were then clustered into broader patterns around identity, reflection, inclusion, pedagogical application, and implementation challenges. Researcher interpretation was treated as part of the analytic process, not as noise to be removed.

The final stage used triangulation. Questionnaire data showed measurable shifts. Micro-teaching scores showed visible pedagogical performance. Reflective essays showed how participants made sense of their own transformation. Reading these sources together allowed us to examine whether knowledge, reflection, and classroom action moved in the same direction. That alignment was central to the study's claim: national heritage becomes educationally meaningful only when future teachers learn to transform it into inclusive practice.

IV. RESULTS

The results are organized around the three layers of the intervention: measured competence change, observed teaching performance, and reflective interpretation. This structure follows the mixed-methods logic of reading quantitative and qualitative evidence together rather than treating them as separate outcomes [22]. The original dataset included survey results, observation scores, and reflective essays from 42 participants, as presented in this article.

1. QUANTITATIVE FINDINGS

The pre-test and post-test scores show significant growth across all dimensions of ethno-cultural competence. The largest standardized effect appears in cognitive knowledge, while the behavioural/pedagogical dimension shows the most important practical shift for the study's argument: students became more ready to use national heritage in teaching, not only to recognize or value it.

The quantitative assessment was structured around four competence dimensions. The cognitive dimension referred to participants' knowledge and understanding of national heritage as a pedagogical resource for teaching and learning. The affective dimension reflected attitudes toward cultural diversity, appreciation of national values, and the capacity for critical self-reflection regarding cultural identity and inclusion. The behavioural/pedagogical dimension measured participants' ability to integrate national heritage into lesson planning, classroom interaction, and culturally responsive teaching practices. Finally, overall ethno-cultural competence represented the composite construct encompassing the cognitive, affective, and behavioural/pedagogical dimensions, as measured by the total questionnaire score.

Table 2. Pre-test and post-test ethno-cultural competence scores.

Competence dimension	Pre-test M (SD)	Post-test M (SD)	t(41)	p	Cohen's d
Cognitive: knowledge of national heritage	3.20 (0.50)	4.10 (0.40)	-11.45	< .001	1.77
Affective: appreciation of diversity and values	3.80 (0.60)	4.50 (0.50)	-6.84	< .001	1.06
Behavioural/pedagogical: application in teaching	3.00 (0.70)	4.00 (0.60)	-9.77	< .001	1.51
Overall ethno-cultural competence	3.30 (0.40)	4.20 (0.30)	-12.40	< .001	1.91

Note. Scale: 1 = strongly disagree, 5 = strongly agree. Cohen's d was calculated from paired-samples t values.

These results answer the first two research questions. Heritage-based training significantly improved future teachers' ethno-cultural competence. The change was not limited to awareness. The behavioural/pedagogical score increased from 3.00 to 4.00 and produced a large effect size. This matters. It shows movement from cultural recognition toward classroom application.

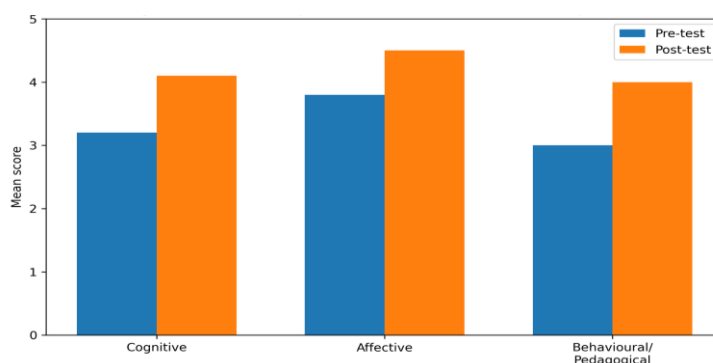


FIGURE 1. Pre-test and post-test shift in ethno-cultural competence.

The visual pattern in Figure 1 confirms that the intervention did not produce a narrow informational gain. All three dimensions moved upward, but the most pedagogically meaningful change appeared in the behavioural/pedagogical scale. This dimension began with the lowest pre-test mean ($M = 3.00$), indicating that participants initially lacked confidence in converting national heritage into classroom practice. By the post-test stage, the mean increased to 4.00, showing movement from moderate readiness to confident application. The cognitive and affective gains also remained substantial, but they functioned as enabling layers: students first expanded their understanding of heritage, then reinterpreted it through reflection, and finally translated it into lesson design and micro-teaching. The figure therefore supports the central claim of the study: heritage-based training becomes educationally significant only when cultural awareness turns into pedagogical action.

2. OBSERVATION FINDINGS

The observation rubric tested whether self-reported growth appeared in micro-teaching. Table 3 presents the mean scores across five indicators. The rubric followed the logic that culturally responsive practice must be visible in teaching behaviour, not only declared in questionnaires [25].

Table 3. Observation rubric results for micro-teaching sessions.

Observation indicator	Mean score / 4	Interpretation
Integration of national heritage	3.50	Strong integration
Pedagogical relevance	3.40	Good alignment with lesson aims
Inclusiveness of classroom delivery	3.60	Strong inclusive orientation
Accuracy of cultural content	3.70	Very strong content accuracy
Cross-cultural classroom interaction	3.30	Good dialogic engagement

Note. Scores were rated on a 4-point rubric: 1 = weak, 2 = developing, 3 = good, 4 = excellent.

The observation rubric tested whether the reported growth in Table 2 and Figure 1 appeared in actual teaching behaviour. This step was necessary because culturally responsive teaching cannot be evaluated through self-report alone. It must be visible in how teacher candidates design tasks, organize interaction, use cultural material, and respond to diversity in the classroom.

Table 3 shows that students achieved consistently high scores across all observation indicators. The strongest result appeared in the accuracy of cultural content ($M = 3.70$), followed by inclusive classroom delivery ($M = 3.60$) and integration of national heritage ($M = 3.50$). These scores indicate that most candidates did not use heritage superficially. They were able to explain cultural concepts accurately and adapt them to the logic of a primary school lesson.

The most important qualitative pattern was the shift from decorative folklore to meaningful cultural integration. In weaker lesson fragments, heritage appeared as a visual or introductory element: an ornament on a slide, a short reference to a holiday, or a motivational story before the “real” lesson began. In stronger micro-teaching sessions, heritage became part of the instructional mechanism. Qoshqar müiiz was used to teach symmetry and spatial reasoning. Kösh supported discussion of seasonal movement, adaptation, and ecosystems. Asar structured cooperative learning and peer assistance. This difference matters. It separates symbolic inclusion from asset-based pedagogy.

The cross-cultural interaction score was slightly lower than the other indicators ($M = 3.30$), which is analytically important. Candidates learned to integrate national heritage into lesson design, but moderating dialogue across different ethnic backgrounds remained more difficult. Some students still needed stronger strategies for inviting comparison with Russian, Uzbek, Uyghur, Korean, or Tatar cultural experiences. This result does not weaken the intervention. It clarifies the next layer of training: heritage-based pedagogy must be paired with explicit tools for multiethnic classroom dialogue. Overall, the observation findings confirm that the intervention produced behavioural evidence of change. Students were not only more confident after the course; they demonstrated that confidence in micro-teaching. Heritage moved from content to method.

3. QUALITATIVE FINDINGS

The reflective essays explain how this shift happened. Using Reflexive Thematic Analysis, the analysis generated five connected themes: movement from ethnocentric pride to universal values, overcoming the folklore barrier, renegotiating teacher identity, treating heritage as pedagogical resource, and recognizing implementation challenges [26, 27]. These themes should be read as one trajectory, not as isolated categories. The first movement was conceptual. Many students entered the course with a narrow view of heritage: holidays, costumes, songs, and formal symbols. By the end, they described heritage as a set of values and practices that could be used in a multiethnic classroom. “Before this course, I thought heritage meant Nauryz, traditional clothes, and stories. Now I see that it can become a method for teaching cooperation, ecology, and language.” (Participant 14)

This rupture with folklore was followed by a second shift: students began to detach national heritage from ethnic closure. Asar was no longer read only as a Kazakh custom. It became a language for mutual support that any child could understand. “I understood that Asar is not only about Kazakh tradition. It is about helping each other. Any child in the classroom can understand this value.” (Participant 8) The third shift concerned professional identity. Students no longer positioned themselves only as transmitters of textbook content. They began to describe the teacher as a mediator who can use local culture without imposing it. “I do not want to impose national culture. I want to use it carefully, so that every child can compare it with their own family values.” (Participant 21)

The fourth theme matched the observation data. Participants gave concrete subject-based examples: ornaments for geometry, oral dialogue for language, nomadic ecology for science. Heritage became teachable. “In mathematics, I can use Kazakh ornaments to explain symmetry. In science, I can use nomadic movement to discuss adaptation to nature.” (Participant 5) The essays also showed caution. Students recognized that school implementation would face crowded curricula, limited materials, and the risk of superficial use. “The main difficulty is time. The school programme is full. If heritage is added without purpose, it will become decoration again.” (Participant 32)

This critical note strengthens the findings. The participants did not romanticize the intervention. They understood that heritage-based pedagogy requires design, time, and institutional support.

4. TRIANGULATION

The three evidence streams converge. The questionnaire shows statistically significant gains. The observation rubric shows practical application in micro-teaching. The reflective essays show the internal mechanism: students moved from folklore to pedagogy, from pride to dialogue, and from cultural knowledge to professional identity. The strongest claim is therefore not that students became more interested in national heritage. That would be too weak. The stronger claim is that a structured heritage-based intervention helped future teachers convert heritage into inclusive classroom practice. Knowledge, reflection, and teaching action moved in the same direction.

V. DISCUSSION

The empirical results support the core claim of culturally responsive teaching: culture becomes pedagogically powerful only when it moves from symbolic content into the structure of instruction. Gay argues that culturally responsive teaching depends on the deliberate use of learners' cultural experiences in curriculum and interaction. Our data show this mechanism in a post-Soviet context. The behavioural/pedagogical dimension increased from 3.00 to 4.00, with a large effect size, $t(41) = 9.77$, $p < .001$, $d = 1.51$, and the observation rubric confirmed that this reported confidence was visible in micro-teaching performance. Students did not only appreciate heritage more. They used it. Asar structured cooperative learning; qoshqar müiiz supported symmetry and spatial reasoning; kösh became a route into ecological adaptation. This extends Ladson-Billings' triadic view of culturally relevant pedagogy: academic learning, cultural competence, and critical consciousness moved together [4]. The cognitive scale rose, but the practical result mattered most. Heritage became method.

The first implication concerns the kind of change produced by the intervention. Many heritage-oriented courses remain at the level of recognition: candidates learn cultural concepts, express respect for traditions, and reproduce positive attitudes toward national values. The present intervention moved beyond that threshold. It required candidates to treat heritage as a source of instructional decisions. The examples recorded in the micro-teaching tasks show this shift clearly: cultural material was not added before the "real" lesson; it entered the logic of the lesson itself. This finding is consistent with Aronson and Laughter's synthesis, which shows that culturally relevant education can operate across subject areas rather than remain confined to identity-based discussion [14]. In this study, the key movement was from cultural approval to pedagogical use. That movement is the main practical contribution of the intervention.

That movement also clarifies the value of culturally sustaining pedagogy. Paris and Alim argue that culture should not be preserved as a fixed archive; it must be sustained, adapted, and transformed [15]. The reflective essays show that this transformation occurred. Participants broke the "folklore barrier": they stopped reducing heritage to holidays, costumes, and ceremonial memory. They began to read it as a set of teachable social technologies. The risk was clear. In a postcolonial society, national heritage can easily become ethnic closure. Yet the qualitative themes showed the opposite pattern. Students moved from ethnocentric pride toward universal values. Asar became mutual support, not ethnic possession. Nomadic ecological ethics became a language for sustainability, not cultural superiority. This supports Garmon's argument that reflection is the condition that changes beliefs about diversity [18]. Reflection was the safeguard. Without it, heritage may harden into stereotype. With it, heritage becomes dialogue.

The Kazakhstani case also clarifies why the reflective layer cannot be treated as an optional supplement. Recent intervention research with preservice teachers shows that structured identity work can increase confidence for culturally responsive teaching and make candidates more reflective about their own beliefs. The present study confirms that direction, but under a different cultural and political condition. The intervention was not built around minority identity exploration in a Western migration context. It was built around national heritage in a post-Soviet society where cultural revitalisation and multiethnic inclusion must be held together. This difference changes the risk. National heritage may support belonging, but it may also become exclusionary if it is taught as ownership, purity, or superiority. The reflective essays suggest that

candidates began to manage this risk by translating heritage into shared values rather than ethnic boundaries.

The findings also align with current intervention research on teacher self-efficacy. Siwatu shows that culturally responsive teaching self-efficacy grows through mastery experiences, modelling, and opportunities to practise culturally grounded instruction [23]. Pevec-Zimmer et al. report a similar pattern in identity-focused work with preservice teachers: structured engagement with identity can increase awareness and confidence for culturally responsive teaching [28]. Our study confirms that pattern through a heritage-based intervention. The questionnaire showed large effects across all dimensions, while the observation rubric showed that students could perform culturally responsive practice rather than merely claim it. This point is methodological. Franco et al. warn that culturally responsive practice must be assessed through observable classroom behaviour, not only through self-report [25]. Our design answered that demand by pairing pre/post measures with micro-teaching evidence and reflective essays.

This methodological pairing strengthens the argument, but it also disciplines it. The questionnaire measured perceived competence. The observation rubric measured visible enactment. The essays showed how candidates interpreted the ethical meaning of using national heritage in a diverse classroom. Each source had a weakness on its own. The survey could have overstated confidence. The observation task could have captured performance only under course conditions. The essays could have remained reflective without proving instructional skill. Their convergence indicates that the intervention produced more than attitude change: it produced movement across knowledge, identity, and teaching action. This is why the observation component is essential, especially in light of recent measurement work arguing that culturally responsive practice should be assessed through observable classroom indicators, not only through teacher self-report [25].

The contribution to Kazakhstani and Central Asian teacher education is more specific. Existing regional research has shown that national identity and ethno-cultural competence matter for future teachers [9, 12]. Our study shows how they matter. It traces the operational mechanism: cultural knowledge enters reflection, reflection reshapes teacher identity, and identity becomes visible in lesson design. This mechanism matters because Kazakhstan faces two failures at once. One is rootless imitation of imported pedagogical models. The other is narrow ethnic closure. The intervention models a path between them: national heritage as an asset-based instructional toolkit for a multiethnic classroom. Knowledge alone is fragile. Reflection without practice is incomplete. Practice without reflection is dangerous.

VI. CONCLUSION

This study examined whether a 15-week heritage-based teacher education intervention could strengthen ethno-cultural competence, professional identity, and culturally responsive teaching readiness among future primary school teachers in Kazakhstan. The findings support this claim. The strongest practical shift appeared in the behavioural/pedagogical domain, where candidates moved from moderate readiness to confident pedagogical use of heritage-based materials, $t(41) = 9.77$, $p < .001$, $d = 1.51$. The effect was not only statistical. Micro-teaching observations showed that candidates could translate national heritage into cooperative learning, geometry and symmetry tasks, ecological discussion, oral dialogue, and values education.

The theoretical contribution lies in reframing national heritage as asset-based pedagogy in a post-Soviet, multiethnic context. The study does not argue that heritage is automatically inclusive. Used mechanically, it may reproduce ethnic closure. Used reflectively, it may support dialogue, shared responsibility, and culturally responsive classroom practice. The decisive mechanism was reflection. It helped candidates move from folklore to pedagogy, from pride to shared values, and from cultural recognition to teaching action.

The practical implication is clear. Teacher education programmes in Kazakhstan and other post-Soviet contexts should not limit national values to declarative curriculum language. Heritage-based modules need to be organised around practice: cultural content analysis, subject-specific lesson design, micro-teaching, and

reflective writing on inclusion risks. Future teachers should not only know heritage. They should learn how to convert it into classroom tasks without excluding pupils from other cultural backgrounds.

The study has limits. The sample included 42 Master's students from one university. The wider cohort served only as a contextual comparison frame, not as a randomized control group. The study also did not track graduates into real primary school classrooms. Future research should use larger multi-site samples, comparison groups, and longitudinal follow-up after graduates enter schools. The next question is no longer whether heritage-based teacher education can improve readiness inside a university course. The sharper question is whether this readiness survives real school pressure: overloaded curricula, assessment demands, limited resources, parental expectations, and institutional routines.

By answering these questions, the article contributes to culturally responsive teacher education in two ways. First, it provides empirical evidence from a non-Western, post-Soviet context that remains underrepresented in international teacher education research. Second, it argues that national heritage, when mediated through reflection and pedagogical practice, can function not as ethnocentric transmission, but as asset-based preparation for inclusive teaching. This is the central claim. Ancient content becomes useful only when future teachers learn to make it pedagogically alive.

Conflicts of Interest

The authors declare no conflicts of interest.

Author Contributions

Conceptualization, K.G. and S.A.; methodology, K.G. and S.A.; validation, S.A. and T.Y.; formal analysis, K.G.; investigation, S.A. and T.Y.; resources, S.A.; data curation, T.Y.; writing—original draft preparation, K.G.; writing—review and editing, S.A. and T.Y.; visualization, T.Y.; supervision, K.G.; project administration, S.A. All authors have read and agreed to the published version of the manuscript.

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Ethics Statement

All participants were informed about the purpose of the study before data collection. Participation was voluntary, and written informed consent was obtained from all respondents. The study complied with the ethical standards of the host institution and the principles of the Declaration of Helsinki.

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