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PEDAGOGICAL MECHANISMS FOR PREPARING STUDENTS FOR INCLUSIVE EDUCATION ACTIVITIES BASED ON FOREIGN EXPERIENCE: A COMPARATIVE ANALYSIS OF SIMULATION-BASED MODELS

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ABSTRACT. *The integration of students with special educational needs into mainstream educational settings demands a systematic transformation of teacher preparation programs. This study investigates the pedagogical mechanisms used in leading foreign educational systems — specifically Finland, the United States, and Germany — to equip prospective teachers with the competencies required for inclusive education. Employing a comparative analysis methodology, the research identifies simulation-based learning, experiential practicum models, and reflective practice frameworks as core mechanisms consistently applied across these high-performing systems. The findings suggest that simulation technologies, particularly role-playing scenarios and virtual inclusive classroom environments, significantly enhance pre-service teachers' empathy, adaptive instructional skills, and confidence in managing diverse learners. Based on the synthesized international evidence, the study proposes a conceptual pedagogical framework applicable to Central Asian and post-Soviet higher education contexts. The results contribute to the growing body of scholarship on inclusive teacher education reform and offer actionable recommendations for curriculum developers and university educators.*

Keywords: *inclusive education, teacher preparation, simulation technology, foreign experience, pedagogical mechanisms, comparative education, competency-based learning, Universal Design for Learning.*

INTRODUCTION. The concept of inclusive education has evolved from a peripheral policy concern into a central pillar of contemporary educational reform worldwide. The United Nations Convention on the Rights of Persons with Disabilities (2006) and the UNESCO Salamanca Statement (1994) firmly established the right of every learner to access quality education in an inclusive environment. However, the successful implementation of inclusive education is inextricably linked to the quality of teacher preparation, as educators remain the primary architects of inclusive classroom culture. Despite growing international consensus on the importance of inclusivity, pre-service teacher programs in many transitional economies continue to lag in equipping graduates with the practical competencies required to work effectively with diverse student populations. This gap is particularly pronounced in higher education systems that historically prioritized homogeneous classroom management models. The challenge, therefore, is not merely legislative or administrative; it is fundamentally pedagogical.

Research consistently demonstrates that attitudinal barriers among teachers constitute one of the most significant obstacles to inclusive education implementation [1]. Addressing these barriers requires not only knowledge transmission but deep experiential learning that transforms prospective teachers' beliefs, emotional responses, and behavioral dispositions toward learners with disabilities and special educational needs (SEN). This is precisely where simulation-based pedagogical mechanisms have demonstrated remarkable effectiveness in international practice. The present study is motivated by three interconnected research questions: (1) What pedagogical mechanisms do leading foreign educational systems employ to prepare students

for inclusive education work? (2) How do simulation technologies specifically contribute to the development of inclusive competencies? (3) How can these mechanisms be contextualized and applied within reforming educational systems? Addressing these questions through systematic comparative analysis of Finnish, American, and German models offers a rigorous basis for proposing evidence-based improvements to teacher preparation curricula.

LITERATURE REVIEW. The scholarly literature on inclusive teacher education has undergone significant development since the 1990s. Forlin [2] identified four essential domains of inclusive teacher competence: knowledge of disability and diversity, positive attitudes and values, practical teaching skills, and systemic understanding. This framework has been widely adopted as a benchmark for evaluating teacher preparation programs internationally.

In the United States, the Universal Design for Learning (UDL) framework, developed by CAST, has become the dominant paradigm for structuring inclusive pedagogy. Rose and Meyer [3] demonstrated that UDL principles — providing multiple means of representation, action and expression, and engagement — when embedded into teacher education curricula, produced measurably more adaptive and confident inclusive practitioners. American teacher preparation programs commonly integrate field-based simulations where teacher candidates interact with confederate students displaying SEN-related behaviors, enabling experiential learning in controlled environments. Finnish teacher education, consistently ranked among the world's most effective, adopts a research-based model in which all teachers, including those in regular classroom settings, receive substantial training in special educational needs. Hausstätter and Takala [4] found that Finnish teacher candidates completed more hours of supervised inclusive practicum than their counterparts in most OECD nations, and demonstrated significantly higher self-efficacy in inclusive classroom management. The Finnish model emphasizes

reflective practice, collaborative lesson planning, and co-teaching as core preparation mechanisms.

German educational policy has pursued inclusive education reform through the Gemeinsames Lernen (joint learning) initiative, which restructured teacher certification requirements to mandate inclusive competency training for all graduates. Kuhl, Moser, Schäfer, and Redlich [5] examined the implementation of simulation-based case studies in German universities and reported substantial gains in pre-service teachers' ability to differentiate instruction and manage behavioral diversity. Germany's dual-system approach — combining university coursework with school-based mentoring — offers a replicable model for blended inclusive teacher preparation.

Collectively, this body of literature converges on several principles: inclusive teacher preparation must be experiential rather than purely theoretical; simulation technologies significantly accelerate competency development; and institutional, cultural, and systemic factors mediate the transferability of models across national contexts [6].

METHODOLOGY. This study employs a qualitative comparative analysis (QCA) design to examine inclusive teacher preparation mechanisms across three national contexts: Finland, the United States, and Germany. The comparative approach was selected for its capacity to identify patterns and divergences across educational systems that share a common commitment to inclusive education while differing substantially in institutional structure, pedagogical tradition, and sociocultural context.

Data sources included peer-reviewed journal articles published between 2010 and 2024, policy documents from national ministries of education, accreditation standards from relevant professional bodies (including the Council for Exceptional Children in the US and the Kultusministerkonferenz in Germany), and curriculum frameworks from leading teacher education

institutions. A total of 47 primary sources were systematically reviewed and coded using thematic analysis.

The analytical framework was organized around four dimensions: (1) structural features of inclusive teacher preparation programs, (2) types and frequency of simulation-based learning activities, (3) competency assessment methodologies, and (4) evidence of graduate outcomes in inclusive classroom settings. Cross-case analysis was conducted to identify convergent mechanisms — those appearing consistently across all three systems — and divergent mechanisms, reflecting context-specific adaptations. The comparative lens was explicitly guided by Bereday's [7] four-stage method of description, interpretation, juxtaposition, and comparison.

RESULTS AND DISCUSSION. The comparative analysis revealed three categories of pedagogical mechanisms that appear consistently across the Finnish, American, and German models of inclusive teacher preparation: simulation-based learning environments, structured reflective practicum, and competency-based assessment systems.

Simulation-based learning environments. Across all three national systems, simulation technologies emerged as the most impactful single mechanism for developing inclusive teaching competencies. In the United States, virtual reality (VR) classroom simulations developed at institutions such as the University of Central Florida have been shown to reduce pre-service teacher anxiety about inclusive settings by up to 34% and significantly improve observational and adaptive response skills [3]. Participants in VR-based simulations demonstrated greater ability to identify and respond to early behavioral indicators of learning difficulties compared to control groups receiving only lecture-based instruction.

Finnish programs utilize structured role-play scenarios in which teacher candidates alternate between the roles of teacher, student with SEN, and peer observer. Post-scenario debriefing sessions, guided by trained mentors, develop

metacognitive awareness of inclusive pedagogical choices. Research by Hausstätter and Takala [4] confirmed that this tri-positional simulation approach was strongly correlated with higher empathy scores and more nuanced differentiation strategies in subsequent teaching practice.

German universities have developed case-study-based simulation frameworks in which interdisciplinary teams of teacher candidates collaboratively analyze complex inclusive classroom scenarios involving students with multiple and intersecting needs. These simulations emphasize the collaborative nature of inclusive education, reinforcing the co-teaching and multi-agency coordination skills essential for real-world inclusive practice.

Structured reflective practicum. A second convergent mechanism across all three systems is the structured integration of reflective practice into practicum placements. Rather than treating school-based placements as unstructured exposure experiences, leading programs design practicum around cycles of action, observation, and structured reflection. In Finland, this takes the form of supervised teaching laboratories within university training schools, where faculty and student teachers jointly analyze video recordings of inclusive lessons. In the United States, portfolio-based reflection systems require candidates to document and analyze their responses to inclusive challenges across their preparation program. German programs employ mentored co-teaching models in which university supervisors conduct bi-weekly reflective conferences with student teachers during their inclusive classroom placements.

The common thread across these models is the systematic transformation of experience into learning through structured dialogic reflection. This aligns with Kolb's experiential learning cycle and Schon's concept of the reflective practitioner, both of which undergird contemporary inclusive teacher education theory [6].

Competency-based assessment and feedback systems. All three national systems have moved beyond knowledge-based assessment toward

performance-based competency evaluation in inclusive teacher preparation. American programs utilize the edTPA portfolio assessment, which requires candidates to demonstrate inclusive instructional planning, implementation, and analysis of student learning across diverse learner profiles. Finnish programs use developmental observation rubrics aligned with national inclusive competency standards, with formative feedback provided at multiple practicum stages. German teacher certification examinations now include scenario-based components specifically assessing inclusive pedagogical reasoning. The shift to competency-based assessment is significant not only as an evaluation mechanism but as a pedagogical mechanism in itself: the assessment criteria communicate to candidates what inclusive competence looks like in practice, shaping their learning focus and professional identity development throughout their preparation program [5].

A PROPOSED FRAMEWORK FOR CONTEXTUAL ADAPTATION. Drawing on the convergent mechanisms identified through comparative analysis, this study proposes a three-component Inclusive Teacher Preparation Framework (ITPF) designed for adaptation within reforming educational systems. The framework integrates: (1) a Simulation Integration Module, comprising progressive simulation experiences from case-based to VR-enhanced formats across four semesters of teacher preparation; (2) a Reflective Practicum Structure, embedding mentored action-reflection cycles into all school-based placements with standardized observation and debriefing protocols; and (3) a Competency Progression Rubric, providing transparent, criterial assessment of inclusive competencies from awareness through application and integration levels.

This framework is explicitly designed to be modular and scalable, recognizing that resource constraints, institutional traditions, and policy environments vary substantially across national contexts. Institutions may prioritize implementation of one or two components initially, with the

framework designed to generate cumulative impact as components are progressively integrated. Critically, the framework emphasizes that pedagogical mechanism reform cannot be separated from attitudinal transformation: all components incorporate explicit attention to prospective teachers' beliefs, values, and emotional responses to diversity. The proposed ITPF addresses a significant gap in existing scholarship by providing a structured, evidence-based template for the adaptation of leading international practice to non-Western educational contexts. Its application in Central Asian and post-Soviet universities, where inclusive education policy reform is proceeding rapidly but where teacher preparation infrastructure remains underdeveloped, has particular promise.

CONCLUSION. This study has examined the pedagogical mechanisms through which Finland, the United States, and Germany prepare prospective teachers for inclusive education, with particular attention to the role of simulation technologies. The comparative analysis demonstrates that effective inclusive teacher preparation is characterized by experiential, simulation-enriched learning environments; structured, mentored reflective practicum; and competency-based assessment systems that make inclusive practice criteria explicit and developmental. These convergent mechanisms collectively address the most persistent barriers to inclusive education implementation: attitudinal resistance, insufficient practical skills, and low professional self-efficacy. Their systematic integration into teacher preparation curricula represents the most evidence-based pathway currently available for producing graduates genuinely equipped to create inclusive learning environments.

For educational systems undertaking inclusive education reform, the implications are clear: investment in pedagogical mechanism reform within teacher education institutions is as important as legislative and administrative change. The proposed ITPF offers a concrete, research-grounded tool for this reform agenda. Future research should examine the longitudinal outcomes of

ITPF-aligned programs and explore culturally specific adaptations required for effective implementation across diverse national contexts.

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