Original Article
IRISTI 14.35.07 10.51889/2960-1649.2025.65.4.009

KOZHAMBERDIYEVA NURZADA[1], KUDAIBERGENOVA ALIYA[1]*

[1]Al-Farabi Kazakh National University (Almaty, Kazakhstan)

*Address of correspondence: Kozhamberdiyeva Nurzada, Department of Pedagogy and Educational Management, Al-Farabi Kazakh National University, Masanchi street, 39, Almaty, Kazakhstan, 050000. ORCID ID: https://orcid.org/0009-0003-6261-1448; E-mail: nurzada_k8@mail.ru/ Tel.: +77089131609

Professional Competence as an Object of Research in Higher Education: A Systematic Review

Abstract

Introduction. This article synthesizes national and international research on professional competence in a master's degree in higher education. The review addressed three questions: how professional competence is defined in recent literature, which constituent components are most frequently posited, and which assessment approaches are employed at universities: methodology *and Methods.* A structured search covering 2015-2025 was conducted with three sources. Inclusion criteria are peer-reviewed research that explicitly state a definition of professional competence, describe its structural components, and report assessment methods or instruments. *Results.* Reported assessment practices typically combine practice-based tasks, mentor or supervisor observations, and employer feedback, often supported by rubrics or checklists. Research frequently links measured competence to academic achievement, practicum results, and early employment outcomes. A recurrent problem noted is misalignment between graduates' competencies and labor-market needs; many institutions report adopting strategies to reinforce competence development and graduate employability, with outcomes varying by the strength of internal innovation and collaboration. *Scientific Novelty.* The review consolidates a dispersed body of national and international sources into a coherent frame. The study also provides transparent eligibility criteria and flow for included literature, enabling reproducibility. *Practical Significance.* Across the included research, operational definitions of competence anchored in observable performance and explicit levels make goals and criteria clearer and testable. Aligning competence development with labor-market expectations through employer collaboration and supervised practicum links measured competence to concrete outcomes. Several research reports associations with course achievement, practicum ratings, and early employment. These effects recur in different institutional and disciplinary settings, underscoring the applied value of the documented approaches.

Keywords: professional competence, competency-based approach, global competence, higher education, competence assessment, assessment instruments.

Introduction. Over the past two decades, universities have increasingly designed instruction backwards, moving from stated learning outcomes to curriculum and assessment. Within this logic, professional competence serves as the target of the program. What matters is not only what is taught, but how a graduate acts in typical and atypical professional situations. At the same time, international and domestic research retains heterogeneous definitions, levels, and typologies of competence, complicating curriculum design and reducing comparability of results across institutions. Recent reviews note that competency-based education models vary across systems and cultural contexts and adopt different emphases; the primacy of performance-oriented outcomes and transparent assessment is consistently upheld as foundational (Tahirsilaj & Sundberg, 2025).

Formulating an operational definition of competency-based education remains a key methodological task. In the professional domain, the proposed operationalization underscores the need for explicit learning outcomes, evidence-based demonstration of mastery, and flexible time frames, thereby aligning program

requirements, instructional strategies, and assessment procedures without compromising academic depth (Gervais, 2016). In practice, this reliance on clearly articulated outcomes is enacted through constructive alignment of goals, teaching, and assessment at both program and course levels, including the involvement of external stakeholders and linkage to professional standards and qualifications frameworks (Serbati, 2015).

The most robust effects are observed where competence is treated as an integration of knowledge, skills, attitudes, and experiential performance, and where assessment is built around relevant tasks. Research shows that this form allows for seeing learning progress and managing the quality of the program, rather than just recording individual learning achievements. (Bergsmann et al., 2015). For universities, this entails a shift from formal checks of content recall to evaluating the ability to act in the context of professional tasks. An expanding evidence base links competency-oriented practices to graduate employability and the development of transferable skills, reinforcing the approach's pragmatic value for learners and employers (Abelha et al., 2020).

Nonetheless, important issues remain unresolved: fuzzy boundaries and overloaded competency lists that hinder planning and measurement, gaps between professional standards and course-level tasks, and insufficient scrutiny of the reliability and validity of assessment tools. Such challenges are reported both in work on European frameworks and in regional research, including implementation efforts across diverse education systems, where there is particular demand for clear alignment structures and concrete exemplars of appropriate tasks for master's degree programs and continuing professional development. Complementary cases from professional and non-formal learning show how competency logic helps align educational aims with real workplace practices and labor markets (Ramasamy & Pilz, 2019). Theoretical and review publications further stress that the effectiveness of competency-based approaches depends not only on content and methods but also on organizational support and the regular review of assessment criteria (Serbati, 2015).

The scientific and methodological literature converges on several points. First, working definitions and components of competence should be specified in terms of observable behaviors and level descriptors. Second, curricula should be designed through a structure that aligns outcomes, learning activities, and assessment instruments, with the engagement of employers and professional communities. Third, genuine performance-based assessment formats with explicit rubrics should be implemented, accompanied by routine checks of the reliability and validity of the tools employed. Together, these measures create a basis for comparability across programs and for a meaningful dialogue with the labor market. The present review systematizes these solutions, juxtaposing national and international sources that can be adapted to specific university contexts without loss of scholarly rigor or the academic identity of the program (Bergsmann et al., 2015; Gervais, 2016; Serbati, 2015; Tahirsilaj & Sundberg, 2025).

Methods and Materials. A systematic review was conducted for the period 2015-2025, focusing on the social sciences and humanities strand of higher education. The review was guided by three research questions:

– How do contemporary researchers define and operationalize professional competence in social sciences and humanities education?

– How are these definitions embedded in curriculum design and learning activities?

– Which assessment methods are employed, and how are their validity and reliability reported?

The methodological framework was aligned with the principles of the competency-based approach and with transparent reporting practices for systematic reviews in adjacent fields, as reflected in foundational publications on defining competency-based education and on constructive alignment of aims, instruction, and assessment (Gervais, 2016; Serbati, 2015; Abelha et al., 2020; Jiaxin et al., 2024; Tahirsilaj & Sundberg, 2025).

Searches were carried out in Scopus, ProQuest, and Google Scholar using the following keywords: professional competence, competency-based learning/education, profes-

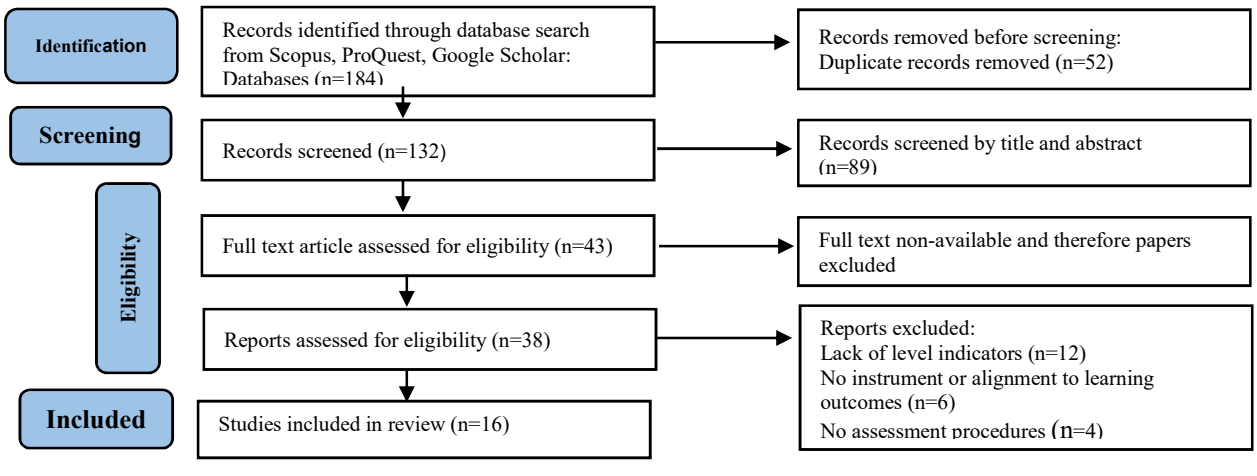
sional skills, higher education, master's degree, university, and assessment of learning outcomes.

Inclusion criteria were pre-specified. Eligible records were peer-reviewed articles, reviews, and conference papers published in 2015-2025 that: (1) pertained to higher education in the social sciences and humanities; (2) provided an explicit definition of student professional competence; and (3) described program-level solutions and assessment instruments with documented procedures for establishing validity and reliability. Exclusion criteria comprised research confined to school education without transferability to higher education, publications lacking methodological relevance, materials without a description of assessment approaches, and duplicates.

Screening proceeded in two stages: initial title/abstract screening followed by full-text eligibility assessment. Data were extracted using a standardized template with a second pass for internal self-verification. For each source, we recorded the study context, program level, operational definitions, and typologies of competence, the set of assessment instruments, and indicators of methodological quality, including types of validity evidence and reliability coefficients. Data extraction and reporting were informed by best practices for evaluating competency-based approaches in universities and by guidance on implementing assessment tools at program and course levels (Bergsmann et al., 2015; Gervais, 2016; Serbati, 2015).

Figure 1

Updated search strategy framework



Quality appraisal was conducted separately for qualitative, quantitative, and mixed-methods research using a common set of minimum criteria. For qualitative designs, we considered transparency of the study rationale and data-collection procedures, justification of the sampling frame and recruitment strategies, completeness of contextual description, and the logic and steps taken to enhance trustworthiness, including data cross-checks. For quantitative research, examined sample size justification, representativeness, and sampling method were examined, and the appropriateness of measurement procedures and their alignment with the stated constructs. For mixed-methods designs, we additionally analyzed the integration between qualitative and quantitative components and the consistency of the conclusions. Data extraction was conducted using a standardized template. For each source, we recorded bibliographic details, higher-education level, research design, and methods. Ethical approval was not required because the analysis relied on openly published materials without personal data.

Results. The 2015-2025 search was conducted in three sources: Scopus, ProQuest, and Google Scholar. 184 articles were identified. After removing 52 duplicates, 132 remained for screening. During title and abstract screening, 89 records were excluded as not aligned with the topic and the aim

of identifying operationalized professional competence, including publications offering only general descriptions of skills without assessment procedures, materials about other educational levels, and non-peer-reviewed items. 43 articles were retrieved for full-text review, and 5 were excluded due to lack of access to the full text. 38 publications were assessed for eligibility, and an additional 22 were excluded on transparent grounds: absence of operationalization and level indicators of professional competence (n=12), reliance solely on self-report without instrument description and without linkage to learning outcomes (n=6), absence of assessment procedures or focus on a different educational level (n=4). 16 articles were included in the final synthesis, providing sufficient coverage across regions and disciplines and allowing comparison of the assessment instruments employed. Of these, seven were empirical research with reporting on instrument quality, and nine were theoretical, review, or methodological publications that established conceptual and procedural guidelines for aligning learning outcomes, instructional activities, and assessment.

All methodological sources documented the use of alignment tables, «learning outcomes, learning activities, assessment, and the involvement of external stakeholders in program design. Replacing discipline-based pass or fail checks with relevant assessment practices is described as a key condition for making competence measurable at the program level (Serbati, 2015; Abelha et al., 2020). Research focused on aligning educational outcomes with professional requirements describes role-based and scenario tasks, along with the integration of project and case work.

In empirical publications, relevant assessment formats predominate projects and case analyses (Ramasamy & Pilz, 2019). Several studies demonstrate growth in graduate master's degree students' global and professional competence resulting from intercultural and interdisciplinary learning activities and online projects (Kang et al., 2018; Liu et al., 2020). In the social sciences and humanities strand, individual research emphasizes tying tasks to the functional responsibilities of future professional practice and employing comprehensive assessment criteria.

Most empirical research reports content validity through expert alignment and links to stated learning outcomes, construct validity through factor models and relationships with external indicators, and reliability via Cronbach's alpha coefficient (Bergsmann et al., 2015; Liu et al., 2020). Kazakhstani sources additionally report item difficulty and discrimination indices and item total correlations, indicating the implementation of a minimal psychometric standard at the program level (Minzhanov et al., 2024).

Table 1

Research on competence-based education

Source (year)	Design & context	RQ1: Definition and operationalization	RQ2: Integration into curricula and activities	RQ3: Assessment, validity, and reliability
Serbati (2015)	Analysis of university alignment practices	Competence = knowledge, skills, attitudes, with level descriptors	Program-level alignment maps, involvement of external stakeholders, and re-mapping courses to targeted outcomes	Rubrics, portfolios, project tasks, emphasis on coherence, and the formative function of assessment
Bergsmann et al., (2015)	Methodological study on assessing CBE in universities	Operationalization through observable outcomes and attainment indicators	Embedded assessment within course design, preparing faculty to use rubrics	Utility and feasibility of instruments, reporting on reliability and rater calibration as a quality condition
Gervais (2016)	Conceptual paper on competency-based education	Competence as measurable learning outcomes manifested in observable actions, with emphasis on clear level indicators	Constructive alignment of «outcomes – teaching –assessment» at program and course levels, recognition of prior learning	Relevant tasks and rubrics, requirement for transparent criteria and mastery thresholds, psychometrics noted as desirable, without detailed reporting

Kang et al., (2018)	Quasi-experiment: intercultural online projects	Operationalization via changes in global-competence indicators	Embedding online collaborations within a course	Use of self-report scales, internal consistency reported, and participation effects noted
Lozano et al. (2017)	Literature review and framework on competence-oriented higher education for sustainable development	Highlights systems thinking, anticipatory, and normative components	Cross-curricular embedding, problem-based learning, community, and stakeholder-engaged tasks	Limited validity and inter-rater reliability reporting
Ramasamy & Pilz (2019)	Competency-based curriculum development	Competence is described via professional functions and actions	Modular design from functions to tasks, close linkage with workplace practice	Assessment through work-integrated tasks, observation, and checklists, reliability supported by assessor training
Liu et al., (2020)	Development and validation of a graduate-level scale	Competence model with factors and operational indicators	Application of the scale in courses and programs for monitoring	Detailed psychometrics: factor analysis, Cronbach's alpha, relationships with external measures
Butum et al. (2020)	Comparison of competency requirements in social-economic sciences	Lists and prioritization of competencies based on employer demand	Recommendations for adjusting curricula and activities	Assessment is predominantly survey-based; the need for validated instruments is emphasized
Ortiz-Marcos et al. (2020)	Framework of global competence for universities	Competencies formulated as actions and outcomes	Project-oriented learning, tasks related to sustainable development	Achievement indicators proposed, validity left for subsequent research
Abelha et al., (2020)	Systematic review: competencies and employability	A broad framework of professional and «transversal» competencies, need for explicit levels	Practices linking learning outcomes with labor-market requirements, projects with external clients	Concludes that many research lack robust validity and reliability evidence
Kulik et al., (2020)	Theoretical review in the higher-education context	Typology of competencies: key, general, cultural, professional, need for operational indicators	Recommendations for aligning programs and courses with stated outcomes	Notes a shortage of validated Russian-language instruments, calls for development and testing
Brauer (2021)	Systematic literature review of competence-oriented processes in higher education across disciplines	Competence = integrated knowledge, skills, observable indicators, and explicit levels.	Curriculum-level constructive alignment, project and work-based learning, stakeholder co-design.	Authentic tasks with rubrics, gaps in validity and inter-rater reliability, need for standardized evidence.
Kjellgren & Richter (2021)	Conceptualizing global competence for sustainable development	Global competence is the capacity to act in complex social contexts	Strategies: cross-cutting sustainability themes, interdisciplinary assignments, micro-credentials for supplementary competencies	Program-level moni_ toring proposed, call to strengthen measurement reliability
Jiaxin et al., (2024)	Systematic review of global competence in higher education	Global competence is a set of knowledge, skills, and attitudes	International and intercultural online projects, «Internationalization at Home»,	Predominance of self-report surveys, reliability and factor structure reported, but criterion

		assessed in intercultural tasks	interdisciplinary assignments	validity needs strengthening
Minzhanov et al., (2024)	Applied study in a Master's in Social Work	Professional competence is described via functions and observable actions	Development of task sets and alignment tables «outcomes – activities –assessment» at the program level	Psychometrics for the task set: item difficulty and discrimination indices, revision of weak items
Tahirsylaj & Sundberg (2025)	Research review of the «five visions» of CBE	Multiple co-existing definitions, shared core is action and transfer to practice	Diverse pathways for curriculum-level implementation	Critique of a weak evidence base, call for more rigorous validation procedures

Comparison of results yields four stable conclusions: (1) competence should be specified through observable actions with level descriptors aligned to stated learning outcomes; (2) in master's degree programs within the social sciences and humanities, the most methodologically robust approaches are authentic tasks paired with rubrics and portfolios; (3) alignment practices that link «outcomes – activities – assessment» reduce the gap between program goals and actual assignments and improve the reproducibility of assessment; (4) reporting on the validity and reliability of instruments remains uneven, uniform requirements are needed for describing procedures and minimum psychometric indicators.

Discussion. A synthesis of the sixteen research converges on a shared view of graduate professional competence as an action-visible result articulated through levels of mastery, which makes it genuinely testable within the educational process (Gervais, 2016). Translating such descriptions into curriculum architecture requires a direct linkage among the statement of outcomes, the forms of learners' work, and the means of verification at both program and course levels (Serbati, 2015). Although the elements of competence are labeled differently, the literature agrees on action and transfer to practice as the common core of the approach (Tahirsylaj & Sundberg, 2025). In other reviews, additional emphasis the need for explicit operational indicators and a clear typology; without these, goals become diffuse, and assessment loses its meaning (Kulik et al., 2020).

A turn toward labor-market requirements heightens attention to end results and to embedding external projects in the curriculum, thereby narrowing the program-practice gap (Abelha et al., 2020). Comparisons between university and employer expectations help prioritize competencies and update assignments and courses based on actual demand (Butum et al., 2020). Sustainability frameworks provide ready-made contexts for project tasks in which competence can be demonstrated and measured in action (Ortiz-Marcos et al., 2020). Strategies for developing global competence propose cross-cutting themes and interdisciplinary assignments as routine practice rather than one-off events (Kjellgren & Richter, 2021). Reviews of global competence document the growth of intercultural formats while simultaneously calling for stronger evidence linking measurements to external criteria (Jiaxin et al., 2024).

In assessment, practice-based tasks consistently outperform alternatives. Projects, cases and portfolios paired with clear rubrics yield defensible evidence of level and actionable, program-level feedback for quality management (Bergsmann et al., 2015). Translating professional functions into learning tasks with explicit observation rules and checklists makes the full cycle from outcomes to verification visible and provides a workable template for teachers (Ramasamy & Pilz, 2019). Intercultural online projects produce measurable gains for participants and are therefore reasonable to embed in coursework as a standard element (Kang et al., 2018). Scales developed for master's students confirm the feasibility of reliable monitoring, provided that the factor structure, internal consistency, and relationships with external criteria are reported (Liu et al., 2020).

Domestic developments show how to bring a task set to the required standard by computing item difficulty and discrimination, checking item total correlations, and revising weak items before summative assessment (Minzhanov et al., 2024). Pilot reports complement this trajectory by describing assessor calibration and subsequent validation steps, thereby establishing a clear technological standard for programs. Overloaded competency lists without levels lead to formalistic control and poor transferability of results (Kulik et al., 2020). Heterogeneous reporting on validity and reliability impedes comparison and scaling, necessitating unified minimum requirements for publishing quality indicators and calibration procedures (Abelha et al., 2020). Conceptual reviews also note insufficient rigor in instrument validation and call for a stronger evidentiary base, especially at the stage of curriculum-level implementation (Tahirsylaj & Sundberg, 2025).

Program documentation should specify where and by which task each stated outcome is assessed, closing coverage gaps and making quality control transparent to teachers and students (Serbati, 2015). Assessment design should be mixed rapid screenings provide early signals, whereas level decisions are based on performance in relevant tasks with explicit criteria preserving validity while keeping workload reasonable (Bergsmann et al., 2015). For key instruments, a minimum set of quality indicators should be published and kept current, enabling well-grounded and transparent program decisions (Liu et al., 2020). Using sustainability and internationalization contexts furnishes a natural environment for demonstrating complex outcomes and helps embed them in ordinary courses rather than leaving them as one-off activities (Ortiz-Marcos et al., 2020). National cycles for developing and refining assessment tasks with calculation of psychometric indices and rater calibration ensure portability across modules and cohorts and increase confidence in the final assessment (Minzhanov et al., 2024).

Conclusion. A decade of research converges on the view that graduate master students' professional competence is defined through observable actions and graded levels of mastery, and is best examined via tasks approximating real practice. The included publications document the translation of such definitions into curriculum through explicit alignment of learning outcomes with student work and assessment procedures at both program and course levels. On the assessment side, practice-based formats projects, case analyses, and portfolios predominate, accompanied by transparent rubrics and articulated performance levels. Several research report indicators of instrument quality. Methodological reporting remains heterogeneous, and a subset of research relies primarily on self-reports without performance verification.

Empirical findings consistently link stated outcomes to labor-market demands and to contexts in which competence naturally manifests. In the social-sciences and humanities, research show that assessment tasks function as carriers of evidence of mastery and provide actionable, program-level feedback. Measurement instruments developed for master's degree programs demonstrate that reliable monitoring is feasible, provided key metrics are reported and scoring is regularly calibrated. National and international sources agree on the need for uniform minimum requirements for describing instruments and presenting evidence of their quality, to ensure comparability across programs and institutions. The review is constrained by the choice of databases and search languages, as well as the heterogeneity of study designs among the included works. Nevertheless, key findings were replicated across different samples and institutional settings. Future work should include longitudinal measurement over the full course of study, cross-country checks of instrument comparability, and the development of open task banks with performance exemplars and concise psychometric documentation.

References

Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education—A systematic literature review using PRISMA. *Sustainability*, *12*(15), 5900. https://www.mdpi.com/2071-1050/12/15/5900

Bergsmann, E., Schultes, M. T., Winter, P., Schober, B., & Spiel, C. (2015). Evaluation of competence-based teaching in higher education: From theory to practice. *Evaluation and Program Planning*, *52*, 1-9. https://www.sciencedirect.com/science/article/pii/S0149718915000270

Brauer, S. (2021). Towards competence-oriented higher education: a systematic literature review of the different perspectives on successful exit profiles. *Education+ Training*, *63*(9), 1376-1390. https://www.emerald.com/insight/content/doi/10.1108/ET-07-2020-0216/full/html

Butum, L. C., Nicolescu, L., Stan, S. O., & Găitănaru, A. (2020). Providing sustainable knowledge for the young graduates of economic and social sciences. Case study: comparative analysis of required global competences in two Romanian universities. *Sustainability*, *12*(13), 5364. https://www.mdpi.com/2071-1050/12/13/5364

Gervais, J. (2016). The operational definition of competency-based education. *The Journal of Competency-Based Education*, *1*(2), 98-106. https://onlinelibrary.wiley.com/doi/abs/10.1002/cbe2.1011

Jiaxin, G., Huijuan, Z., & Md Hasan, H. (2024). Global competence in higher education: A ten-year systematic literature review. In *Frontiers in Education 9*, 1404782. https://www.frontiersin.org/articles/10.3389/feduc.2024.1404782/full

Kang, J. H., Kim, S. Y., Jang, S., & Koh, A. R. (2018). Can college students' global competence be enhanced in the classroom? The impact of cross-and inter-cultural online projects. *Innovations in Education and Teaching International*, *55*(6), 683-693. https://www.tandfonline.com/doi/abs/10.1080/14703297.2017.1294987

Kjellgren, B., & Richter, T. (2021). Education for a sustainable future: Strategies for holistic global competence development at engineering institutions. *Sustainability*, *13*(20), 11184. https://www.mdpi.com/2071-1050/13/20/11184

Kulik, A. A., Lazareva, P. V., Ippolitova, N. V., Egorova, A. E., & Nedorezova, O. Y. (2020). Competency-based approach and competencies in higher education: a theoretical review. *Propósitos y Representaciones*, *8*(2), 38. https://dialnet.unirioja.es/servlet/articulo?codigo=8113535

Liu, Y., Yin, Y., & Wu, R. (2020). Measuring graduate students' global competence: Instrument development and an empirical study with a Chinese sample. *Studies in Educational Evaluation*, *67*, 100915. https://www.sciencedirect.com/science/article/pii/S0191491X20301632

Lozano, R., Merrill, M. Y., Sammalisto, K., Ceulemans, K., & Lozano, F. J. (2017). Connecting competences and pedagogical approaches for sustainable development in higher education: A literature review and framework proposal. *Sustainability*, *9*(10), 1889. https://www.mdpi.com/2071-1050/9/10/1889

Minzhanov, N.A., Minzhanova, G.N., Okashev, R.D., Isina, S.S., & Kossybaev, Zh.Zh. (2024). Training of future social workers based on a competence-based methodology. *Pedagogy Series*, 147(2), 121-132. https://doi.org/10.32523/2616-6895-2024-147-2-121-132

Ortiz-Marcos, I., Breuker, V., Rodríguez-Rivero, R., Kjellgren, B., Dorel, F., Toffolon, M., ... & Eccli, V. (2020). A framework of global competence for engineers: The need for a sustainable world. *Sustainability*, *12*(22), 9568. https://www.mdpi.com/2071-1050/12/22/9568

Ramasamy, M., & Pilz, M. (2019). Competency-based curriculum development in the informal sector: The case of sewing skills training in rural South India. *International Review of Education*, *65*(6), 905-928. https://link.springer.com/article/10.1007/s11159-019-09810-4

Serbati, A. (2015). Implementation of Competence-Based Learning Approach: stories of practices and the Tuning contribution to academic innovation. *Tuning Journal for Higher Education*, *3*, 19-56. https://www.research.unipd.it/handle/11577/3242465

Tahirsylaj, A., & Sundberg, D. (2025). Five visions of competence-based education and curricula as travelling policies: a systematic research review 1997–2022. *Journal of Curriculum Studies*, 1-26. https://www.tandfonline.com/doi/abs/10.1080/00220272.2025.2492605

Information about authors:

Kozhamberdiyeva Nurzada, PhD Doctoral Student, Al-Farabi Kazakh National University, ORCID ID: https://orcid.org/0009-0003-6261-1448, e-mail: nurzada_k8@mail.ru

Kudaibergenova Aliya, candidate of pedagogical sciences, Al-Farabi Kazakh National University, ORCID ID: https://orcid.org/0000-0002-9551-3073, e-mail: alia80.80@mail.ru

