



REIMAGINING EDUCATION BEYOND BORDERS: A REVIEW OF GLOBAL COMPETENCE, CURRICULUM TRANSFORMATION, AND FUTURE LEARNING SYSTEMS

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Abstract

Globalization, digitalization, climate change and interculturalism are unprecedented challenges for education systems globally. This literature review explores the ways in which global competence frameworks, curriculum transformation and the future learning systems could equip learners with the necessary skills to thrive in a borderless and interconnected society. The researcher analysed 46 peer-reviewed publications (2017-2025) in order to capture and critically consider the current conceptualisations of global competence (OECD and UNESCO frameworks) and curriculum reform efforts from content-based to competence-based models. The review identifies pedagogical strategies that are effective for global learning such as project-based learning, collaborative online international learning (COIL), and inquiry-based learning. Barriers to implementation in the Global North and South, such as digital inequities, teacher preparedness, and policy fragmentation are analysed. The paper suggests an integrated model that connects five dimensions globally – global competence, curriculum transformation, intercultural pedagogy, digital and future learning systems, and equity/sustainability/civic responsibility. Implications are for policy makers, teachers, and researchers. We believe that fostering global competence is a systemic and equitable transformation that integrates the concept into curricula, pedagogy, assessment, teacher development, and relies on digital infrastructure with sustainability and social justice dimensions.

Keywords: Global Competence, Curriculum Transformation, Education beyond Borders, Intercultural Education, Global Citizenship Education, Digital Learning, Future Learning Systems, 21st-Century Skills, Curriculum Reform,

1. Introduction

1.1 The Urgency of Education beyond Borders

Education systems need to be revolutionized in the 21st century, crossing national, cultural, linguistic, and disciplinary barriers. Globalisation has grown in relevance in education and national education systems are not solely national state-based anymore (Andrews, 2021). In today's world, contemporary learners live in a transnational society, have access to a connected, digital world, are impacted by climate change, experiencing disruptions due to pandemic disease, and are surrounded by technology. Education is seen as a key enabler for the Sustainable Development Goals (SDGs) and seeing ESD as a pathway for all to be able to play a role in sustainable development (SD) (Holst et al., 2024).

“Education beyond borders” does not mean that local contexts or cultural specificity are not erased. Instead, it refers to learning systems designed to intentionally overcome the barriers of geography, epistemology and institution to build competencies that allow engagement in interconnected global communities that also value cultural diversity and local knowledge systems. Internationalization of higher education involves border crossing as an essential aspect and the trends indicate that a short-term mobility



experience results in slightly better academic and general skills that result in slight career benefits, higher proportions of international tasks, and international career mobility (Teichler, 2017).

1.2 Defining Global Competence in Context

International competence is still under dispute in the field of educational research. The idea of global citizenship advanced by UNESCO and OECD's concept of global competence are two different and partly conflicting visions of a possible future; in the policy process, international education organizations are in conflict (Vaccari & Gardinier, 2019). The term global competence is used in a variety of ways across today's literature, including knowledge about global issues, intercultural communication skills, perspective taking skills, critical thinking, ethical responsibility, ability to work collaboratively, awareness of sustainability, and civic engagement. There are underlying tensions, however, as critical scholars observe: is global competence aligned with the agendas of neoliberal employability, or with democratic, justice-driven citizenship? is it a cultural universalism or context-sensitive pluralism? Whose knowledge systems are emphasized and/or de-emphasized in global contexts?

1.3 Why Curriculum Transformation is Essential

The traditional curriculum, based on disciplinary divisions, the mere memorization of information and the use of standardized tests, do not seem to be sufficient to equip students for issues such as climate change, pandemics, geopolitical conflict, digital transformation and related social challenges. Higher education researchers must get out of their national comfort zone and think and research beyond their country (Tight, 2019). Changes in the curriculum must involve a move from content to competence; from teacher to learner centric pedagogies; from content and discrete subjects to integrated, interdisciplinary approaches; and from summative to authentic, complex performance based assessment.

1.4 Research Gap and Review Aims

The literature studied is rather extensive for the area of global competence, curriculum reform and digital learning, but there are fewer extensive syntheses that focus on the interactions between these dimensions in education systems which aim to educate global citizens. Issues that remain to be explored are: (1) how global competence frameworks are implemented in different cultural and economic contexts; (2) what pedagogical and curricular innovations are most effective in supporting the development of competencies for borderless engagement; (3) how digital transformation can support or hinder equitable access to global learning; (4) what systemic barriers (policy fragmentation, teacher capacity, resource inequality, etc.) limit curriculum transformation; and (5) how future learning systems might incorporate technologies such as AI, LLP, and micro-credentials in an equitable and democratic way.

1.5 Research Questions and Review Scope

The five guiding questions for this review are:

What is meant by 'global competence' in the current educational discourse and what are associated dilemmas between various approaches?

2. Which curriculum changes are needed to provide education for societies that are interconnected and borderless?

3. What is the pedagogical intersection between global citizenship education, intercultural learning, digital learning and sustainability education?

4. What systemic, policy and institutional challenges restrict the inclusion of global competence in national curricula, especially in low-resource settings?

5. How can education continue to be equitable across borders in the future using learning models that include digital technology, life-long learning and transnational networks?

2. Methodology: Review Design and Search Strategy

2.1 Review Approach

This is a narration, theme-based literature review that integrates the findings of the empirical peer-reviewed literature, policy documents, and theoretical frameworks on global competence, transformation of curriculum, intercultural education, digital learning and the future education systems published during the period of 2017–2025. A narrative approach allows for critical synthesis of a variety of methodologies and contexts, and theoretical traditions, rather than systematic aggregation of effect sizes.



2.2 Search Strategy and Databases

Boolean combinations of keywords were used to search the following repositories: Scopus, Web of Science, ERIC, SpringerLink, Taylor and Francis Online, OECD/UNESCO.

AND ("global competence" OR "global citizenship education" OR "intercultural competence") AND ("curriculum transformation" OR "curriculum reform" OR "future learning systems" OR "education beyond borders")

- ("OECD PISA global competence" OR "UNESCO global citizenship") AND ("curriculum" OR "pedagogy" OR "assessment")

AND (digital learning OR hybrid education OR blended education) AND (global competence OR intercultural learning)

21st century skills AND (curriculum design OR pedagogical approaches)

Project-based learning OR inquiry-based learning OR collaborative learning AND global OR intercultural OR transnational.

2.3 Inclusion and Exclusion Criteria

Included: peer-reviewed journal articles, book chapters from reputable academic publishers (Springer, Routledge, Elsevier, Taylor & Francis, Sage, Wiley), OECD and UNESCO reports, empirical studies, systematic reviews, seminal theoretical literature on global competence, curriculum reform, intercultural education, digital learning, and future education systems; publications 2017-2025; English language; verifiable sources, with DOI or stable URL.

Not included: opinion blogs, unsupported speculation, predatory journals, non-educational fields of study (such as medical training, engineering algorithms), papers published before 2017, and papers that aren't published in English or can't be translated.

2.4 Literature Screening and Synthesis

The first searches returned a total of 1200+ results. Relevant abstracts were identified and 150+ full texts were examined. Final inclusion criteria were met by about 46 sources. The concepts that emerged through thematic analysis were (a) conceptual foundations and definitions; (b) frameworks for global competence; (c) curriculum changes needed; (d) pedagogical approaches; (e) digital and future learning systems; (f) barriers and challenges; (g) assessment and measurement; (h) equity dimensions; and (i) implications for policy and practice.

2.5 Limitations of This Review

This review is constrained by: (1) English language publication bias; (2) a disproportionately high number of studies from the Global North (USA, UK, Europe, Australia) are indexed; (3) paucity of long term impact studies of global competence intervention outcomes; (4) scarcity of large scale comparative studies across a range of national contexts; (5) the newness of research on global competence and AI; and (6) the limitations of narrative synthesis for systematically comparing the quality of the evidence in a range of heterogeneous studies.

3. Conceptual Foundations of Education beyond Borders

3.1 Transnational and Internationalized Education

Education across Borders is a complex concept that includes several conceptual perspectives. Transnational education is a term used to describe various arrangements for learning and/or achievement that take place in more than one country, such as student mobility, remote delivery, branch campuses or franchise arrangements. Internationalization of higher education refers to the intentional inclusion of international elements in the curriculum, in academic research and in the institutional life. Some see the process of "globalization" and "internationalization" in higher education as an additional outcome of "neoliberal agendas," but it is certainly not forgotten that HEIs are also agents of further globalization and internationalization, and the compromises that they make in internationalizing higher education should be recognized (Tight, 2019).

But, internationalization without critical reflection on global justice, equity and power can create neocolonial hierarchies. Recent trends in social, political and economic life have been heavily contaminated by globalization and neoliberalism, which has produced divergent perceptions of internationalization of higher



education, conflicts of which are generally along the lines of the link of internationalization with neoliberal values, whereas, progressive values are invisible (Bulut-Sahin & Kondakçı, 2023). Education that transcends borders is meaningful, which requires asking deliberately whose knowledge, values and interests are in the center and whose are on the margins.

3.2 Global Citizenship Education and Intercultural Learning

In multilingual approaches to global citizenship education (Mouboua et al., 2024), language is a dynamic tool to help overcome cultural barriers, foster empathy, respect and appreciation for different viewpoints. Global citizenship education (GCE) focuses on the active role of learners in solving problems in the world, their critical thinking, and their involvement in sustainable development and social justice. GCE is not only about employability but also about equity, rights and transformative social change.

Understanding, appreciation, and effective interaction across culture differences are key elements of borderless learning and literacy. It is important to note a theoretical relationship between the components of emotional intelligence (self-awareness, self-regulation, motivation, empathy and social skills) and the models of intercultural competence used in intercultural education (Guntersdorfer & Golubeva, 2018). Intercultural learning needs to be structured and provide opportunities for meaningful dialogue, interaction with multiple views and development of reflexivity and perspective-taking on one's own cultural positionality.

3.3 Digital Technologies and Borderless Learning

Digital technologies provide learning opportunities outside of the classroom, across geographical distances, via virtual exchange platforms, OER, COIL and distributed knowledge networks. Collaborative Online International Learning (COIL) is a learning model that has a strong focus on collaborative and intercultural learning; it is often presented in different ways than other virtual exchange programs, and the terms are frequently used interchangeably, resulting in problems identifying and distinguishing COIL (Hackett et al., 2024). While digital platforms offer unprecedented opportunities for real-time international cooperation, they also reflect inequities in terms of access, digital literacy, language dominance, and algorithmic bias.

To make the digital environment accessible and trouble-free, as a Third Space, digital inclusion and equity in international higher education, in particular in Global South - North Collaborative Online International Learning (COIL), must be acknowledged as something that is not easily accessible and comfortable, and thus is problematic and requires recommendations on how South-North digitalization practices can be designed to overcome access and inclusion barriers for students and academics (Wimpenny et al., 2022).

4. Global Competence: Meanings, Dimensions, and Debates

4.1 OECD PISA Global Competence Framework

The OECD began measuring global competence on a global scale in 2018, releasing the results in October 2020, while the OECD is increasingly becoming involved in education with the PISA tests and international comparison tables (Andrews, 2021). The OECD PISA Global Competence Framework sees as four components: (1) analysing and explaining local, global and intercultural issues; (2) understanding and appreciating diverse viewpoints and worldviews; (3) interacting responsibly, appropriately and effectively with people from diverse backgrounds; and (4) acting responsibly in the interests of sustainable development and the well-being of communities.

However, problems of tension emerge from critical analyses. Without alternative means and in view of the increasing national and international attention to education for global competence, the OECD's international framework for global competence (PISA 2018) deserves to be examined conceptually, as does the literature on how the OECD has been able to promote neoliberal education policy trends and on how influence is secured through measurement technologies (Engel et al., 2019). It is possible to trace the genealogy of global competence in the OECD-PISA Global Competence framework, which supports the interests of US corporations, and to show that the pedagogical impulse in the framework is to influence and condition the culture of 'new capitalism' and its tendency to decrease social cohesion (Robertson, 2021).

4.2 UNESCO Global Citizenship Education

UNESCO's approach to Global Citizenship Education focuses on education that nurtures an informed, responsible and engaged citizenry who are dedicated to sustainable development, peace and social justice. The



idea of global citizenship, as introduced by UNESCO, is different from global competence as defined by OECD in terms of social justice and global competence in terms of individual and economic competencies, respectively (Vaccari & Gardinier, 2019). UNESCO agendas prioritize the Agency of Learners as agents of change and rights-holders, paying particular attention to human rights, democracy, and to the interrelated forms of inequalities (gender and disability and marginalisation).

4.3 Intercultural Competence Models

Institutional culture, curricular adaptability and teacher training are enablers of culturally integrating IC in HE, whereas fixed curricula and resistant dispositions pose challenges to the process (Cruz et al., 2025). The intercultural competence models of authors such as Deardorff and Byram focus on knowledge of similarities/differences among cultures, analysis and perspective-taking abilities, and attitudes of openness and curiosity. Competence is not only awareness, it's the ability to communicate and cooperate effectively, and respectfully, across cultures in ways that are mutually beneficial.

4.4 Contested Dimensions and Critical Questions

Central debates persist:

Universalism vs. Cultural Specificity: Are global competence frameworks Western epistemologies and individualistic values imposed on non-Western contexts, or can they include other cultural epistemologies? In South Korea, global citizenship is taught alongside the dominant ideology of neoliberalism, and it was found that textbooks contain the dominant non-socialist narrative of global citizenship that ignores or marginalizes social justice and multiculturalism through the support of the neoliberal agenda and nationalism ideology (Choi & Kim, 2020).

Does a focus on employability for the labour market come at the expense of critical consciousness, collective action and a focus on justice-oriented citizenship? Inclusion takes on new meaning as it moves between iterations of the global competence framework, reorientating inclusion from a social justice imperative toward supporting young people's inclusion into a globalized market economy (Cobb & Couch, 2022).

Measure and Fairness: How might global competence be equitably measured in a range of linguistic, cultural, socioeconomic contexts without replicating standardized, culturally-biased testing environments that serve privileged students?

5. Curriculum Transformation for Global Competence

5.1 From Content-Based to Competence-Based Curricula

Traditional curricula focus on the transmission of the knowledge of a discipline in terms of predetermined content. Competence-based curricula emphasise the skills, knowledge, attitudes and values that are combined to be competent in solving authentic problems. This change requires: (1) the identification of authentic competencies and their specific contexts for certain roles; (2) designing integrated learning experiences across disciplines; (3) assessment that is focused on authentic performance, not content recall; and (4) flexibility to allow personalization and contextual relevance.

5.2 From National Narratives to Global and Intercultural Perspectives

The integration of local knowledge in higher education is a major thrust in reform, particularly in culturally diverse areas, which is achieved by teaching them through thematic subjects on customary law, oral literature and traditional ecology, and through community-based learning/assessment approaches, including reflective journals and participatory mapping (Ramli et al., 2025). The process of curriculum transformation demands a conscious effort to incorporate a variety of cultural viewpoints, intellectual traditions and historical narratives that are not found in the Western canon. It means: rethinking whose stories, achievements and knowledge systems are at the centre; bringing together Indigenous knowledge systems and the academic disciplines; teaching multiple perspectives of contested historical events; and validating ways of knowing.

5.3 From Rote Learning to Inquiry, Creativity, and Problem-Solving

Inquiry-based learning is considered as a good model in developing higher order thinking skills with a substantial mean effect size of 1.27, with nuances in the application of inquiry-based learning found in the subgroups analysis based on educational level, teaching models, use of information and communication technology, learning time, and evaluation (Arifin et al., 2025).



Project-based learning is one of the learning models that can foster the 21st-century skills of learners, according to the results of the study which carried out the enhancement of collaborative learning, problem solving, critical thinking, and positive attitudes mediated by project based learning model for 21st century skills among learners (Rehman et al., 2024). The key elements of effective implementation are: real problems for learners' communities and global issues; collaborative team organisation; cycles of reflection and iteration; incorporation of digital tools; process and product assessment.

5.4 From Discipline-Based Silos to Interdisciplinary Integration

Learning approaches that are interdisciplinary in nature are necessary in understanding and solving problems in real life, and need to involve multiple disciplinary perspectives, including six components of STEM education, which are integration of discipline, use of multiple representations, involvement in realistic and relevant problems, application of the engineering design process, active collaboration and emphasis on student-centered learning approaches (Nugraha et al., 2024). Integrated curricula connect the themes of science, technology, engineering, mathematics, humanities, and arts to real problems (climate change, health, urbanization, digital ethics). This is a disruption of artificial barriers to disciplines and an example of how knowledge is used in the real world.

5.5 From Standardized to Authentic Assessment

Traditional standardized tests assess decontextualized formats of narrow content areas. Authentic assessment measures in meaningful tasks with real world complexity: portfolios of growth; presentations and defenses to peers; community based projects, collaborative group work; reflective practice (metacognition). Rubrics should be developed to align with outcomes and evaluated the level of achievement for each major component of an assignment, and rubric assessment be used as a facilitator for student learning, consistent and transparent evaluation of students' work, and evaluation of course, programme, and institutional learning quality (Olson & Krysiak, 2021).

6. Pedagogical Approaches for Education beyond Borders

6.1 Project-Based and Inquiry-Based Learning

Project-based learning (PBL) is an approach that helps students undertake a long-term, cooperative study of a real-life problem that results in a public product or performance. Generative AI, and large language models (LLMs) specifically, have enabled more student-centred and active learning approaches such as project-based learning and fostered new technologies like AI-driven personalisation, which have allowed teachers to use LLMs to support their professional development and augment their existing roles rather than replacing them (Ravi et al., 2025).

Inquiry Based Learning Inquiries: Student questions, hypothesis testing and gathering evidence. Both have the potential of fostering development of critical thinking, creativity, collaboration, communication, and agency, which are key skills for global engagement. In education, critical thinking is considered a significant skill to acquire: being exposed to problems and working collaboratively has proven beneficial for students' critical thinking processes in student-centered learning settings, including problem-based learning and project-based learning, but the conceptualization and measurement of critical thinking remains unclear and is not consistent (Loyens et al., 2023).

6.2 Collaborative Online International Learning (COIL)

The Collaborative Online International Learning (COIL) model is a model that allows faculty and students to work collaboratively with their international partners via co-taught, culturally-inclusive online learning environments to foster intercultural awareness, content area learning, and communication and group collaboration skills, and, according to analysis, enhances intercultural awareness, encourages students' global engagement, and supports their personal and professional growth (Vahed & Rodriguez, 2020).

COIL is about the creation of virtual third spaces for students from various countries to co-learn, co-design solutions and co-produce knowledge. To be effective, it must be accompanied by: careful facilitation of the instructor; structured competence development in interculturalism; all voices represented; and attention to language and digital access barriers.

6.3 Multilingual and Multicultural Pedagogy

The term multilingualism as part of educational practices turns into a tool that helps to build informed



global citizens who are proficient in multiple languages and can think and act in an inter-cultural way: translanguaging pedagogy and content and language-integrated learning (CLIL) as practical ways to enhance language acquisition and intercultural competence (Mouboua et al., 2024). Multilingual pedagogies: use students' language as their own resource; content and language integration; allow for code switching; see translation as cognitive work leading to a better understanding.

6.4 Culturally Responsive Teaching and Inclusive Pedagogy

CRP is an educational approach that prioritizes cultural awareness and recognition of students' cultures, experiences, and perceptions; involves engaging in culturally relevant teaching practices and material; engages in self-reflection; and promotes social equity (Guberina, 2023). CRP must include: deep knowledge of students' cultures; cultural infusion across the curriculum; a range of instructional methods; high expectations for all students; and classroom climates of belonging.

Both concepts of inclusive pedagogy and Universal Design for Learning (UDL) highlight the pedagogical significance of making all learners feel at home in the classroom and curriculum, and specific ways in which teachers can joyfully embrace diversity and promote student learning to all students (Sanger, 2020).

6.5 Service Learning and Civic Engagement

Service-learning is a pedagogical model that integrates theory and practice of learning in Universities and the practice of developing solidary and civic commitment in students, which implies the need to have virtual exchanges that promote the concept of global citizenship and intercultural dialogue, as well as consolidating digital competence in virtual educational environments (García-Gutiérrez et al., 2017). Service learning is a teaching and learning approach that integrates academic learning with service to the community, helping students to learn and become responsible and ethical citizens and to develop a deeper understanding of the complexities of social issues.

6.6 Critical Pedagogy and Social Justice Orientation

For Initial Teacher Education programs which foreground social justice, engaging with digital learning encompasses the 21st century context—both local and global—in which student-teachers and their future pupils are situated, with critical pedagogy enabling student-teachers to understand context and challenge inequities which persist (Coker, 2020). Inspired by Freirean teachings, critical pedagogy fosters a critical awareness of power dynamics, invites reflection on normalized values and beliefs, and empowers students' agency in changing society.

7. Future Learning Systems and Borderless Education

7.1 Blended and Hybrid Learning Ecosystems

The global pandemic of 2019, in turn, brought a heightened awareness of institutions of higher education to the need for a digital transformation that goes beyond business operations to the pedagogy of the classroom, and to the fact that universities are at different points on the digital transformation path including major challenges and barriers to achieving transformation and steps toward adoption and change (Graham et al., 2023).

While hybrid and blended learning models leverage the best of both face-to-face and online education, technological advancements like artificial intelligence, adaptive learning platforms, and virtual reality are changing how these programs are delivered by providing students with personalised learning experiences, automated assessment tools, and interactive simulations, there remain concerns about equity and access, particularly for students without reliable internet access and digital tools, who may be at a disadvantage (Mulenga & Shilongo, 2024).

7.2 Artificial Intelligence and Adaptive Learning

In this context, universities have expanded their boundaries and students have become more global, which has opened new frontiers in the field of education using artificial intelligence-based tools, leading to the evolution of strong assessment and evaluation systems, and students' faculty involvement rates have increased (Rahiman & Kodikal, 2023). AI can customize learning paths, offer intelligent tutoring, give instant feedback, and aid in assessment. However, there are ongoing worries -- algorithmic bias that perpetuates inequality, data privacy concerns, the potential for AI to supplant human connections and centralization of AI



development in companies based in the Global North.

A review of artificial intelligence (AI)-assisted personalised learning systems, focusing on pedagogical approaches and challenges for language learning, reveals that majority of AI applications are related to general education and language learning, with automated feedback systems and adaptive content distribution being the main aspects of AI's educational role, while the most significant barriers are pedagogical challenges, including the integration of AI in language teaching, followed by educational and pragmatic barriers and technical barriers and concerns about data privacy (Vorobyeva et al., 2025).

7.3 Lifelong Learning and Micro-Credentials

Micro-credentials were seen as a tool to enhance employability and lifelong learning, and to offer multiple pathways of learning towards various careers, usually being short programmes with specific focus, developing complementary skills within a particular area of interest for the learner, offering targeted, flexible and accessible pathways to skill development and career progression (Gamage & Dehideniya, 2025).

Micro-credentials have become part of the agenda of education, training and labour market policy, and policy makers, education and training providers, and the wider education and training community have started to imagine how and what they can be and what impact they can have, but there is a lack of empirical evidence supporting their value and impact (OECD, 2023). Micro-credentials can be made user-friendly, can provide for speedy reskilling and can look after difference in learning paths. But, if there is no quality assurance and coherence, the definition of micro-credentials may become fragmented and lose educational standards.

7.4 Open Educational Resources and Digital Access

OERs have also been extolled for their potential to lower costs for students and increase equity in higher education, but studies on whether OER offers learning benefits have had mixed findings, with the majority indicating null effects (Grimaldi et al., 2019). While OER offer potential for the democratization of access to knowledge, they will only be effective if they are of high quality, easily found, appropriately contextualised and digitised and made available through a digital network.

Social Media - Open Educational Resources (SM-OERs) are a combination of open educational resources and social media platforms that offer users accessible and engaging materials in a dynamic learning environment, with advantages such as: greater engagement, collaboration and personalisation of the learning process; however, disadvantages include concern over privacy issues, data security and ensuring the credibility and quality of educational content (Ahmad, 2024).

7.5 Mobile, Ubiquitous, and Distributed Learning

Mobile and Ubiquitous Learning are becoming more commonplace in the learning process, characterized by a blend of formal and informal learning, and distributed across physical and virtual learning spaces, which introduces further complexity for the design, monitoring and evaluation of learning activities (Pishtari et al., 2020). The results of the bibliometric analysis of mobile learning in higher education showed that MLHE-related publications have increased over the years, especially in 2021, with publications starting from the year 2002, the majority of which focused on mobile learning and higher education, e-learning and mobile devices (Irwanto et al., 2023).

8. Challenges and Barriers to Implementation

8.1 Digital Inequities and Access Disparities

There were found to be important socio-economic differences in access to generative AI tools, with students from lower socio-economic backgrounds mainly relying on free generative AI applications and smartphones, and students from higher socio-economic backgrounds reporting better access to generative AI on a laptop and to premium features, with ethics concerns higher among students who have less institutional support (Valdivieso & González, 2025). Digital inclusion and equity in international higher education with particular emphasis on Global South-North COIL involves acknowledging that the digital space as Third Space can be both challenging and inaccessible, and the design of South-North digitalization practices which addresses access and inclusion needs of students and academics (Wimpenny et al., 2022).

8.2 Teacher Preparedness and Professional Development

While there is a long history of teacher professional learning workshops to prepare in-service and pre-service teachers for the effective use of technology in education, papers found in the literature did not use



comprehensive models for teacher professional development evaluation, majority did not use established models for collecting data, and majority did not attempt to evaluate various aspects of teacher change (Ahadi et al., 2021).

Regarding artificial intelligence education preparedness, confidence in AI, AI ethics and subjective norms significantly influenced AI readiness while attitude towards AI and perceived threats did not significantly influence AI readiness, with findings providing basis for education policy change on AI education (Fundi et al., 2024).

8.3 Curriculum Nationalism and Policy Fragmentation

Elite schools positively influenced teachers through various processes to engage in educational reform and to require them to implement change, while policy in mainstream schools was marked by excessive speed, fragmented solutions and did not offer enough resources to the micro-level policy actors to implement change (Karabassova, 2021).

National curricula are reluctant to embrace international curricular frameworks that are viewed as a threat to cultural sovereignty and national identity. Policy fragmentation – in some policy documents, global competence is mentioned and in some policy documents it is not mentioned, or in some policy documents it is defined differently – leads to confusion and misalignment between schools.

8.4 Systemic Barriers to Educational Change

To heighten success of change initiatives at initial stage, those designing and mandating changes need to consider six overarching factors: coordination of the reform; coherence between goals, strategies and professional learning and the vision and needs of the school; connection between new reform and ongoing changes occurring across schools; flexibility of reform to address different needs between schools and within schools; fit with sociocultural factors found in each school context; and construction of school leadership capacity to manage change (McLure & Aldridge, 2022).

In the lead-up to mandated reform, school leaders can focus on four broad themes: school climate for reform, comprehensive planning, preparation for implementation and building capacity, providing practical information about school-level factors that are malleable and can support the school's capacity for change (Aldridge & McLure, 2023).

8.5 Language Barriers and Epistemological Pluralism

The results of the study of international doctoral students' language-engagement experiences in Chinese universities suggest that in some cases, English and Chinese co-exist in doctoral students' academic writing practices, allowing for the formation of hybrid, in-between cosmopolitan practices, while others felt disempowered in the Chinese higher education sub-field and its specific logics of practice, which further demonstrates that the language of instruction should be aligned to the students' learning (Dai & Hardy, 2024).

8.6 Commercialization and Neoliberal Pressures

Nonmonetary values and nonmonetary ethos are both necessary to ensure a healthy democratic society; nonmonetary values are marginalized, nonmonetary ethos is essential; and the telos of higher education is being redefined through neoliberalism, which redefines the very meaning of higher education (Cerro Santamaría, 2020). Although, neoliberalism—a major aspect of globalisation—has been a major force in reshaping the mission of universities with its winners and losers, its disbenefits are of a high magnitude and could help to narrow down universities' traditional missions, promote academic managerialism, end the academic collegiality and promote uneven development and unhealthy competition among universities at both local and international levels (Sarpong & Adelekan, 2023).

9. Discussion: Synthesis and Critical Perspectives

9.1 How Global Competence Becomes Central to Curriculum Transformation

Global competence is not a sideline to be added to any curriculum, as "one unit" on cultural awareness or one international exchange program. Instead, meaningful transformation is built upon global competence in learning and teaching in all disciplines, in pedagogies, and in assessment systems. This requires: (1) explicit expression of how each discipline contributes to global competence development; (2) redesigning learning experiences around global challenges (climate change, pandemics, inequality, conflict); (3) incorporating multiple epistemologies and perspectives throughout, (4) cultivating meta-competencies (reflection,



perspective-taking, tolerating ambiguity) as they help students engage across difference, and (5) authentic assessment that measures not knowledge of facts about the world, but the ability to analyze, collaborate and act in intercultural, global contexts.

9.2 Tensions between Global Standards and Local Relevance

A sense of central tension exists: how can educational systems be global at the same time as maintaining culture-specific and locally relevant aspects? Comparative curriculum research inspired by theories and methods of comparative education may contribute to the investigation of curriculum issues at different levels in the public education system and the international policy movements that impact public education in different ways in different countries (Wahlström et al., 2018).

Comparisons and standards from around the world can have the effect of homogenizing cultural diversity and introducing Western epistemologies to the extent that they are over-standardized. However, total localization can lead to parochialism and a lack of readiness to engage in transnationalism. To realize resolution, the following principles must be established in the framework, which need to be developed locally while still maintaining the global competencies: (1) development of the framework must start with the local community's assets and needs, rather than being imposed top down; (2) local knowledge systems must be explicitly included in the curriculum alongside academic disciplines; and (3) governance structures must ensure local communities are truly empowered in curriculum decisions.

9.3 Education beyond Borders and Equity

Although the environmental and economic dimension has been the focus of much attention, the social dimension which includes equity, cultural diversity, human rights and community resilience, is under-explored in the implementation of Education for Sustainable Development (Tafese & Kopp, 2025). Education for beyond borders has the potential to perpetuate inequalities without making a conscious effort to make it fair. This must involve: (1) awareness of the fact that digital platforms, international programmes and global frameworks are not universally accessible; (2) intentional scaffolding of participation and engagement of students from under-resourced contexts; (3) an opportunity to reflect on, and actively shape, global frameworks by including voices from the Global South; (4) recognising current international education is informed by historical colonial, racist and exploitative legacies; and (5) explicitly developing critical consciousness about power structures shaping globalization and unequal development.

9.4 Integration of Digital Transformation with Equity and Sustainability

The education for Sustainable Development is predominantly add-on to the education system, with the sub-indicators showing that ESD is mentioned in most cases, or is only partially integrated in the education system, with training in teaching ESD as the most deficient in most fields of education (Holst et al., 2024). Digital transformation needs to be based on, not replace, human relationships and critical consciousness. The risks are: 1) the replacement of human judgment by AI; 2) privacy issues arising from surveillance via learning analytics; 3) digital tools focusing on personalization, which can restrict, not broaden, perspectives; 4) digital tools centralizing the power in corporations instead of democratizing it.

The essential conditions for authentic integration of digital systems with global competence and sustainability include (1) democratic and participatory governance of digital educational systems; (2) data sovereignty and privacy protection; (3) explicit teaching of digital citizenship, covering critical media literacy and ethical uses of technology; (4) making technological infrastructure accessible for marginalized communities; and (5) maintaining pedagogies that are human-centred and complement, but do not supplant, educator relations.

10. Proposed Integrated Framework for Education beyond Borders

Based on literature reviewed, we suggest an educational concept that incorporates five dimensions that are interdependent in education that is truly beyond borders:

Integrated Framework for Education beyond Borders

Dimension 1: Global Competence Development

Content: Learners acquire integrated knowledge, skills, attitudes and values that enable them to participate in the world's challenges and diverse people.

Key Indicators: Knowledge of interconnected global systems (climate, economics, politics, culture);



Understanding multiple perspectives on contested issues; Capacity for perspective-taking and empathetic engagement across difference; Critical analysis of power, privilege, and structural inequality; Intercultural communication skills; Capability to collaborate across cultural and linguistic boundaries; Ethical reasoning addressing multiple value systems; Agency and efficacy in collective problem-solving.

Outcomes: Students are informed global citizens, are intercultural, have critical consciousness and are committed to justice and sustainability.

Dimension 2: Curriculum Transformation

Definition: Curricula become content-silos to become integrated, competence-based and locally-contextual learning around global challenges.

The key indicators are: Explicit integration of global competencies across all subjects; Interdisciplinary design that addresses real world complexity; Inclusion of diverse epistemologies and knowledge systems (scientific, Indigenous, local); Learner agency in problem-identification and knowledge co-creation; Assessment aligned with authentic performance and transfer; Integration of local cultural, ecological and ethical knowledge; Flexibility to enable contextual adaptation to community priorities; Systemic coherence across early childhood through lifelong learning.

Outcomes: Curricula educate to the challenges which span the border but have a foundation in community and address cultural diversity.

Dimension 3: Intercultural Pedagogy

Definition: Intercultural, equitable and inclusive approaches to teaching and learning are planned and intentional.

Themes: - Project-based and inquiry-based learning - Collaborative online international learning (COIL) opportunities - Multilingual and multicultural instructional approaches - Culturally responsive teaching that validates student identities - Service learning connecting academics with community needs - Development of agency for social change through critical pedagogy - Universal Design for Learning to ensure accessibility for diverse learners - Structured intercultural dialogue and perspective-taking activities - Learning environments that promote psychological safety and belonging for all

Outcomes: Learners become intercultural competent, critical conscious, and with an attitude of inclusion; marginalized students have a sense of belonging and valued identities.

Dimension 4: Digital and Future Learning Systems

The definition of technology and institutional systems is: To facilitate equitable, individualized, globally connected, life-long learning.

Key Indicators: Blended/hybrid learning that integrates online and face-to-face learning; Adaptive learning platforms that personalize learning to the learner's needs while maintaining rigor; Open Educational Resources (OER) and free/low-cost digital tools that democratize learning; Micro-credentials and skills-based pathways that allow for flexible progression; Digital platforms that connect learners around the world for collaboration; Professional networks and communities of practice that support continuous learning; Digital infrastructure that provides access to those who are underserved; Transparent governance and data ethics that protect the learner's privacy.

Results: There is personalization, accessibility, a global context, and a lifelong approach to learning; digital systems do not negate human systems, but enhance them; equity gaps are reduced.

Dimension 5: Equity, Sustainability, and Civic Responsibility

Education is clearly aimed at fostering social justice, environmental sustainability and democratic citizenship.

Key Indicators: - Clear teaching of sustainable development goals and environmental science; - Critical analysis of structural inequality and privilege; - Education on human rights, social justice and collective liberation; - Developing ecological consciousness and sustainable practices; - Service learning and community action for social change; - Engaging marginalized communities in curriculum development; - Equal access to educational resources and opportunities; - Democratic and participatory school governance, involving students and communities.

Learning outcomes: Students acquire knowledge of the relationship between individual decisions and



institutional mechanisms; they gain their dedication and capacity to take action in a collective way for sustainability and social justice; education is a force for equality and social transformation.

Framework Logic and Integration

The five dimensions are interconnected. Global Competence is the learning goals, Curriculum Transformation is the content of what will be taught, Intercultural Pedagogy is how the learning will be organized, Digital/Future Systems is the infrastructure that will be used to access/connect learning, and Equity/Sustainability/Civic Responsibility is the framework that will ensure that the entire system promotes justice and collective wellbeing and does not reproduce inequality.

The following are necessary for the development of competence without a transformation of curricula, without intercultural pedagogy, without an attention to equity, and without a policy, assessment, teacher development, and institutional culture aligned.

Correct implementation must involve all five dimensions simultaneously or else it will likely have limited effect and sustain a superficial, fragmented and disjointed approach to educational change that is prevalent today.

11. Implications for Educational Stakeholders

11.1 Implications for Policymakers

1. Transition from compliance based towards competence based policy, which allows flexibility of how schools can shape global competence, while ensuring coherence with a shared policy agenda.
2. Formulate the funding of digital infrastructure, teacher training and curriculum innovation in an equitable manner, especially in less resourced schools and in less developed regions.
3. Coordinate across sectors—education, environment, health, labour—to ensure policy signals are aligned and a holistic approach to sustainability and global competence.
4. Preserve educational autonomy from market influences, avoiding over commercialisation and allowing for partnerships with civil society.
5. Ensure that accreditation, school inspection and assessment frameworks include global competency as an element of teacher education.
6. Promote the integration of Indigenous knowledge in a manner that is supported by policy to safeguard Indigenous intellectual property and community co-governance of curricula.

11.2 Implications for Curriculum Developers and School Leaders

1. Develop interdisciplinary problem-solution curricula that are problem-centered on global issues such as climate, inequality, and pandemics.
2. Clearly articulate the contribution of each discipline, course and learning experience to each of the dimensions of global competence.
3. Provide time and space for teachers to collaborate, engage in professional development and try new pedagogy.
4. Audit curriculum for representation: inclusive diverse voices, perspectives, knowledge systems and historical narratives.
5. Create connections and co-learning with universities, international organisations and community groups.
6. Re-imagine assessment to measure authentic performance on meaningful tasks and transfer of learning to new contexts.

11.3 Implications for Teachers and Teacher Educators

1. Demonstrate a commitment to developing intercultural competence through professional development, perspective taking, cultural humility and critical reflection on one's own positionality.
2. Develop and use new pedagogies (project-based learning, inquiry-based learning, COIL facilitation, culturally responsive teaching), in sustained, job-embedded professional development (PD) with coaching.
3. Think and learn creatively—with other international educators, teachers in other subject areas and community members.



4. Be reflexive in their understandings of power, privilege and positionality; and constantly think about their teaching and how it perpetuates inequalities or challenges them.
5. Use technology purposefully and responsibly to deepen and broaden relationships, not to replace them; to create an environment where knowledge is shared and not centralised; to engage with technology in a way that is appropriate for the age.
6. Support colleagues and administrators in initiating systemic change to support meaningful global competence development, not superficial add-on.

11.4 Implications for Higher Education Institutions

1. Redesign the initial teacher education to integrate global competence, intercultural pedagogy and critical consciousness throughout the curricula instead of the disciplinary content.
2. Implement COIL (collaborative online international learning) partnerships with universities around the world to provide opportunities for students to work collaboratively with others around the world.
3. Include LK in the curriculum and research; acknowledge past wrongs and strive for decolonization.
4. Create micro-credentials and flexible pathways for a variety of paths, yet ensuring quality.
5. Promote equitable access via need-based supports, multilingualism, culturally responsive teaching and practices and culturally sustaining campus cultures.
6. Integrate sustainability and social justice into all programs, not as electives.

11.5 Implications for Assessment Bodies

1. Redesign assessment that moves from high-stakes, standardized testing to authentic, performance-based, portfolio-based assessment.
2. Include global competence measures that address perspective-taking, intercultural competence, and critical thinking, in addition to content knowledge.
3. Ensure assessments are culturally valid with no bias against specific language, cultural or socio-economic groups.
4. Clear reporting of learning within a variety of populations, disaggregating data to identify and address inequities.
5. Help teachers use high quality formative assessment and feedback instead of just summative high-stakes testing.

12. Future Research Directions

12.1 Measuring Global Competence across Cultures

There is a need for very rigorous longitudinal studies to assess whether interventions that foster global competence enhance intercultural understanding, decrease prejudice, and promote pro-social behavior. Research should: (1) use culturally-valid measures developed with communities, as opposed to imposed measures; (2) include outcomes across various contexts (Global North/South, urban/rural, income etc); (3) explore transfer of learning beyond the classroom; and (4) explore differences between competency development across gender, ethnicity, disability, and across other factors.

12.2 AI-Supported Global Learning

AI's impact on education must be assessed and explored, including: (1) bends vs. exacerbates inequalities in access to global education; (2) impact of intercultural collaboration with AI vs. by humans; (3) ethical frameworks for AI governance in education; (4) limitations and expansion of perspectives through AI-mediated personalization; and (5) long-term consequences of AI-supported education on critical thinking and agency.

12.3 Curriculum Reform in Global South Contexts

The majority of the research on curriculum reform comes from the Global North. Research from a Global South perspective needs to address: (1) how curriculum transformation can recognize the knowledge of local communities and facilitate global engagement; (2) the effectiveness of pedagogical approaches in contexts of limited resources; (3) how colonialism's legacy affects the contemporary curriculum debates; (4) if global frameworks are supportive or/or resistant to local educational autonomy; and (5) what policy environments support indigenous-led innovations in curriculum.



12.4 Longitudinal Studies on Global Citizenship Education

Long-term research tracking cohorts of students through GCE should examine: (1) whether there are any links between global citizenship competencies and later civic engagement and social action and sustainable practices; (2) how classroom learning translates into behavior change; (3) whether there are any continued or amplified effects after school; (4) any population differences in effects of GCE; and (5) any mechanisms that explain the processes by which GCE is effective and/or ineffective.

12.5 Teacher Professional Development Effectiveness

Future research should focus on which models of PD are most effective in developing intercultural competence and pedagogical skills, how to ensure consistency of the PD results beyond PD sessions, the influence of types of PD (peer coaching, collaborative learning, job embedded, isolated PD), the impact of system-specific factors on the implementation of PD (such as limited planning time, fixed curricula, standardized testing), and the differential uptake of PD by teachers.

12.6 Equity in Digital Global Learning

Research should address the following questions: (1) who and why some learners are excluded in global online learning; (2) how global online learning platforms can be designed to be equitable; (3) implications of digital divides on learning outcomes and social connections; (4) implications of language, literacy and bandwidth on quality of global online learning exchange; and (5) policy innovations (funding, infrastructure, regulation) for access to equitable learning opportunities.

12.7 Comparative Curriculum Studies

The following should be explored in the context of systematic comparative research on the definition and implementation of global competence in different national systems: (1) similarities and differences in the definition and implementation of global competence; (2) how national contexts influence the implementation of global competence; (3) which models of global competence are replicable in different national contexts; (4) contradictions between global requirements and local needs; and (5) emerging models of curriculum that is globally informed and locally grounded.

13. Conclusion

The world has a fundamental challenge for education: re-thinking learning to engage with the inter-connectivity, ecological emergency, cultural diversity and technological change of the world. In this overview, this review gathers the current research on global competence, curriculum transformation, and future learning systems, and maintains that transformative and systemic change is needed rather than superficial change and additions to education beyond borders.

13.1 Central Argument

Competence to understand the challenges of the world, interact respectfully across cultural difference, think critically about complex systems, act ethically towards collective wellbeing should be at the heart of educational purpose, not the periphery. This requires simultaneous transformation on five integrated fronts: explicit development of global competencies; restructuring curricula around authentic and interdisciplinary challenges; implementing intercultural pedagogies, enabling equitable digital and future oriented learning systems and centering equity, sustainability and social justice as educational imperatives.

13.2 Against Superficiality

A critical examination of the global competence programs reveals that they may be superficial: a cultural diversity unit, study abroad for privileged students, international partnerships for elite universities that exclude underserved schools, symbolic representation of non-Western views of the world without changing whose knowledge is at the center, and the incorporation of global competence into standardized assessments without changing the pedagogical approaches used. These good intentions are ineffective at breaking cycles of injustice or fostering meaningful interactions with the world.

13.3 Requirements for Authentic Transformation

Authentic education beyond borders needs to be coherent in policy, curriculum, pedagogy, assessment and teacher development; needs infrastructure investment, specifically supporting digital access for underserved communities; needs consistent teacher development to foster intercultural competences and new pedagogies; needs the redesigning of curriculum to include global perspectives throughout, rather than as



separate courses; needs to be governed in such a way as to maintain the agency and voice of local communities; needs protecting educational spaces from over-commercialisation and market logics; needs to pay explicit attention to power, privilege and structural inequality; and needs to make sustainability and social justice core purposes of education, not side-issues.

13.4 The Role of Digital and Future Learning Systems

Digital technologies have the power to connect the world in ways that were previously unimaginable, to provide personalised learning experiences and to democratise access. However, technology cannot fix it. Digital systems need to be designed with equity in mind, organized in a public-interest-driven manner, woven into human systems and relationships in an appropriate way, and leveraged for justice rather than division. If systems of learning and learning are designed with the intent to create opportunities and foster levels of inclusion and equity rather than reinforce opportunities for the most privileged, then the field is ripe for incorporating AI, micro-credentials, OER, and lifelong learning pathways to democratize opportunity.

13.5 Education and Collective Flourishing

Finally, education across borders has a moral dimension: the education of informed, ethical, competent citizens dedicated to collective flourishing, sustainability, and justice. This means a shift from human capital approaches that view education as an investment in individual economic productivity to recognising education as a key component of democratic societies, ecological survival and human dignity.

The problems are huge: national interests are still dominant and the world is trying to establish a global framework, there are too many inequalities that prevent the marginalised populations from being connected to the world, education is a commodity and powerful actors who gain from this inequality have little reason to invest in change, and there are actually tensions between respecting local knowledge systems and enabling global engagement.

However, the truth is that education systems that leave students unprepared to live in a world that is interconnected, experiencing an ecological crisis, and living in diverse multi-cultural societies are not doing their job. The research reviewed in this review supports the notion that meaningful global competence development is possible, that curriculum transformation to integration and authenticity can increase learning for all students that intercultural pedagogies are effective, and that equitable digital systems can provide equal opportunity for learning.

What is left is the political commitment – on the international, national and local scale – to make education a true agent of the flourishing of the human person in an equitable, sustainable, and globally engaged manner. It requires a commitment from policy makers who allocate resources, from educators who re-think practice, from school leaders who establish supportive systems, from communities who reclaim authority of the curriculum and from researchers who persist in rigorous investigations of what works, for whom, under what conditions.

Educating beyond borders is no dream. It's a necessary and possible need. The framework, practices and evidence shared in this review provides a starting point for the collective work to come.

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The author/s declare no conflicts of interest.

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Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of 1964 Helsinki declaration and its later amendments.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.



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