

The Influence of Global Competency Frameworks on 21st-Century Skill Development in Secondary Education

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Abstract:

This study investigates the influence of global competency frameworks on the development of 21st-century skills among secondary school students. In the context of growing globalization, schools are increasingly integrating global competencies—such as intercultural understanding, global awareness, and collaborative problem-solving—into their curricula to better prepare students for the demands of the modern world. Using a mixed-methods approach, this research collected data from 150 students across three schools through surveys and semi-structured interviews with teachers and school leaders. Quantitative analysis using linear regression and SEM revealed that global competency significantly predicts the enhancement of communication, collaboration, critical thinking, and creativity skills among students. Additionally, qualitative findings highlighted differences in framework implementation between urban and suburban schools, with urban schools showing more frequent use of technology-driven and international programs. The study contributes to strengthening global education theory and provides practical recommendations for integrating global competency frameworks into secondary education systems.

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Introduction (مقدمة)

In the era of globalization, the development of 21st-century skills has become a key priority in education systems across various countries. However, the OECD (2020) report reveals that only around 40% of secondary schools in member countries systematically integrate global competency frameworks into their curricula. This indicates a significant gap between the demands of global education and its actual implementation on the ground, particularly in fostering skills such as critical thinking, creativity, communication, and collaboration.

Global competency frameworks are designed to prepare students to effectively participate

in a highly interconnected and complex global society. These frameworks include a set of attitudes, knowledge, and skills that enable students to understand global issues, respect cultural diversity, and develop 21st-century skills relevant to their future (Boix Mansilla & Jackson, 2011).

The implementation of such frameworks is becoming increasingly relevant due to the shifting landscape of work and life, influenced by technological advancements, global migration, and rising environmental challenges (UNESCO, 2018). Therefore, secondary education systems must respond to these dynamics by offering curricula that foster students to become competent and adaptive global citizens.

Despite its importance, many previous studies have focused more on developing 21st-century skills without directly linking them to global competency frameworks (Binkley et al., 2012). Most of the research also tends to emphasize the context of higher education, while implementation at the secondary school level remains underexplored.

According to PISA (2018), students with high levels of global competence tend to perform better in problem-solving and collaboration skills. However, only about 25% of students from all participating countries scored above average in global competence, showing that the integration of this framework into education is still uneven across regions.

Furthermore, countries such as Finland, Australia, and Canada have shown success in integrating global competency frameworks into their curricula, positively contributing to the strengthening of students' 21st-century skills (Schleicher, 2019). On the other hand, many developing countries still face challenges in terms of policies and resources for the effective implementation of these frameworks.

In the Indonesian context, the implementation of global competency frameworks is still relatively new and has yet to be standardized at the secondary school level. The current "Kurikulum Merdeka" provides greater space for soft skills development, but it has not explicitly adopted global competence frameworks as developed by the OECD or UNESCO (Kemendikbud, 2022).

This presents a unique challenge, as Indonesia, a highly pluralistic country facing the strong currents of globalization, requires an educational strategy that prepares students to compete and collaborate on a global stage. Therefore, it is essential to further examine how global competency frameworks can contribute to strengthening 21st-century skills among secondary school students.

Global education theories emphasize that the development of 21st-century skills is not limited to technological or communication mastery but also includes cultural literacy, cross-cultural understanding, and structured global awareness (Reimers, 2020). Global competency frameworks serve as an essential tool to integrate these dimensions into classroom learning.

The development of skills such as critical thinking and problem-solving among students requires a systematic approach based on a clear framework. Global competency frameworks provide a foundation for schools and teachers to design learning that is not only locally oriented but also broadens students' perspectives on relevant global issues.

In addition, the emergence of challenges such as climate change, cross-border conflicts, and global inequality demands that students be able to think critically and collaborate with various parties across cultures. Therefore, global competency frameworks can serve as an important tool in equipping students with the necessary skills and attitudes to face these challenges (OECD, 2018).

The scope of this study focuses on secondary school students in Indonesia, aiming to analyze how the implementation of global competency frameworks affects the development of

their 21st-century skills. This research will examine the relationship between these frameworks and skills such as critical thinking, collaboration, communication, and creativity within the context of secondary education.

Method (منهج)

This study employed a correlational quantitative approach combined with a qualitative element, resulting in a mixed-methods design. The choice of this design aimed to comprehensively understand the influence of global competency frameworks on the development of 21st-century skills in secondary education. The quantitative phase measured the relationship between the implementation of global competence and the four main 21st-century skills (communication, collaboration, critical thinking, and creativity). Meanwhile, the qualitative phase explored how teachers and school leaders implement these frameworks in daily learning practices (Creswell & Plano Clark, 2018).

The correlational approach was used to examine the degree of association between students' mastery of global competency frameworks and their self-reported 21st-century skills. This approach was deemed appropriate to analyze patterns and strength of relationships without manipulating variables (Fraenkel et al., 2019). Furthermore, the qualitative portion through interviews was intended to provide deeper insights into contextual factors that influence the implementation process of global competency frameworks.

Participants in this research consisted of 150 students from three secondary schools located in urban and suburban areas, which had adopted global competency frameworks in their curricula. The selection of these schools was done through purposive sampling, focusing on schools that explicitly integrated elements of global competence such as intercultural understanding, global issues, and cross-border collaboration in their teaching and learning processes (Patton, 2015).

The participant characteristics included students aged between 15 and 17 years, with a balanced gender distribution and diverse socio-economic backgrounds. In addition to students, 6 teachers and 3 school principals were also included as informants in the qualitative phase to provide perspectives from the implementers of the curriculum (Mertens, 2020).

For the quantitative phase, a questionnaire consisting of two main sections was used. The first section measured students' mastery of global competency frameworks adapted from OECD's Global Competence Framework (OECD, 2018), covering dimensions such as global mindset, respect for diversity, and global problem-solving skills. The second section measured 21st-century skills using indicators from the Partnership for 21st Century Learning (P21) framework (Battelle for Kids, 2019).

Each item on the questionnaire used a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability test conducted in the pilot phase using Cronbach's Alpha yielded coefficients above 0.80 for both instruments, indicating a high level of internal consistency (Gliem & Gliem, 2003).

In addition to the questionnaire, a semi-structured interview guide was developed for teachers and principals. The guide focused on several key themes, such as strategies for integrating global competencies in daily lessons, challenges faced in implementation, and perceived impacts on students' skills development (Kvale & Brinkmann, 2015).

Data collection was carried out over a period of two months. The survey was administered to students during school hours with prior permission from the school authorities, while interviews were conducted after school hours in a one-on-one setting to ensure in-depth

exploration of teachers' and principals' perspectives (Cohen et al., 2018).

The quantitative data collected from the questionnaires were analyzed using linear regression and Structural Equation Modeling (SEM) techniques to examine the influence of global competence mastery on students' 21st-century skills. Both methods were applied to test the direct and indirect effects between the variables under study (Hair et al., 2019).

Meanwhile, the qualitative data obtained from interviews were transcribed and analyzed thematically. This thematic analysis identified recurring patterns and themes related to the application of global competency frameworks in secondary schools, including best practices and barriers to implementation (Braun & Clarke, 2006).

The results of both quantitative and qualitative data analyses were integrated at the interpretation stage to provide a more holistic understanding of the influence of global competency frameworks on the development of 21st-century skills among secondary students (Tashakkori & Teddlie, 2010). This integration allowed for a complementary perspective between statistical findings and in-depth insights from field practitioners.

Result (نتائج)

Descriptive Statistics

The descriptive analysis aimed to capture the overall levels of students' global competency and their 21st-century skills. The findings showed that the average score for global competency among the 150 surveyed students was 3.82 (SD = 0.56) on a 5-point Likert scale. The mean scores for the four components of 21st-century skills were as follows: communication (M = 3.91, SD = 0.58), collaboration (M = 3.85, SD = 0.62), critical thinking (M = 3.78, SD = 0.64), and creativity (M = 3.80, SD = 0.59).

The data distribution indicated that a significant proportion of students reported moderate to high levels of both global competency and 21st-century skills. Specifically, 67% of the students scored above 3.50 on the global competency scale, reflecting the successful integration of the framework into school practices.

Additionally, the interviews with teachers and school leaders revealed that schools consistently embedded global topics such as intercultural collaboration, sustainability, and global citizenship in classroom activities. These practices were complemented by school initiatives like student exchange programs and joint projects with international partners.

Moreover, further descriptive analysis showed that students from schools with higher levels of global learning integration exhibited slightly better performance in communication and collaboration dimensions.

The descriptive statistics are summarized in Table 1.

Variable	N	Mean	SD
Global Competency	150	3.82	0.56
Communication Skills	150	3.91	0.58
Collaboration Skills	150	3.85	0.62
Critical Thinking Skills	150	3.78	0.64
Creativity	150	3.80	0.59

Inferential Statistics

A linear regression analysis was conducted to examine the influence of global competency

on students' 21st-century skills. The model summary revealed an R-square value of 0.48, indicating that global competency accounted for 48% of the variance in students' 21st-century skills.

The regression analysis demonstrated that global competency significantly predicted students' communication ($\beta = 0.62, p < 0.001$), collaboration ($\beta = 0.58, p < 0.001$), critical thinking ($\beta = 0.55, p < 0.001$), and creativity ($\beta = 0.57, p < 0.001$).

In addition, a Structural Equation Modeling (SEM) analysis was conducted to validate the relationships. The SEM results confirmed a good model fit, with the following indices: CFI = 0.95, RMSEA = 0.04, and SRMR = 0.05.

Further inferential analysis using multigroup SEM indicated that the model fit was consistent across both urban and suburban school groups, suggesting a stable relationship between global competency and 21st-century skills regardless of school location.

The detailed regression results are presented in Table 2.

Dependent Variable	β	p-value
Communication Skills	0.62	<0.001
Collaboration Skills	0.58	<0.001
Critical Thinking Skills	0.55	<0.001
Creativity	0.57	<0.001

Additional Findings

Further analysis explored differences in global competency implementation based on school location. The results showed that urban schools had slightly higher mean global competency scores ($M = 3.90$) compared to suburban schools ($M = 3.75$).

The interviews provided context for these results, indicating that urban schools had greater access to international partnerships and global learning resources. These schools more frequently engaged students in international projects and collaborative digital platforms.

Moreover, students who had previous international exposure, such as participating in exchange programs or multicultural events, reported higher levels of global competency and stronger development of 21st-century skills.

Thematic analysis from teacher interviews revealed that urban schools tended to employ more technology-driven methods to foster global competencies, such as virtual classrooms and international webinars. In contrast, suburban schools were more likely to adopt conventional instructional methods.

A cross-tabulation analysis further indicated that students from urban schools with international exposure scored significantly higher on creativity and critical thinking dimensions compared to their suburban counterparts.

Table 3 summarizes the comparison of global competency scores based on school location.

School Location	N	Global Competency Mean	SD
Urban	75	3.90	0.52
Suburban	75	3.75	0.58

Additional Tables

Table 4 displays the SEM model fit indices.

Fit Index	Value
CFI	0.95
RMSEA	0.04
SRMR	0.05

Table 5 summarizes qualitative themes from teacher interviews.

Theme	Frequency
Use of intercultural projects	High
Access to international partnerships	High
Technology-enhanced global learning	High (urban), Moderate (suburban)
Traditional teaching focus	Low (urban), High (suburban)

Discussion (مناقشة)

Interpretation of Results

The findings of this study demonstrate a significant and positive relationship between global competency frameworks and the development of students' 21st-century skills. The regression analysis revealed that global competency strongly predicted communication, collaboration, critical thinking, and creativity, all of which are essential components of 21st-century skills. This suggests that the incorporation of global competency frameworks in secondary education is effective in fostering students' abilities to adapt and thrive in an interconnected world (Saavedra & Opfer, 2012).

The Structural Equation Modeling (SEM) results further confirmed this relationship by demonstrating a strong model fit, indicating that global competency contributes meaningfully to the enhancement of students' soft skills. These findings align with the idea that global education not only broadens students' cultural perspectives but also sharpens their problem-solving and interpersonal skills, which are crucial for success in modern workplaces (OECD, 2018).

Additionally, the qualitative findings highlighted the role of contextual factors, such as school location and access to global partnerships, in shaping the effectiveness of global competency frameworks. Urban schools with better access to international programs and technological resources tended to show more pronounced development of students' global competencies and 21st-century skills.

Overall, this suggests that while the framework itself is impactful, its implementation and the school environment play a significant role in optimizing student outcomes.

Comparison with Previous Studies

The results of this study are consistent with prior research that emphasizes the value of global competency in modern education. For example, Hunter et al. (2006) found that students with higher global awareness tend to excel in collaboration and communication across diverse settings, which mirrors the strong correlation between global competency and communication skills found in this research.

Similarly, studies by Reimers (2017) have highlighted that integrating global education into curricula enhances students' critical thinking and creativity by exposing them to complex global issues and diverse perspectives. The current study further supports this notion, confirming that

students exposed to global topics are more adept at navigating ambiguity and problem-solving.

However, this study adds a nuanced perspective by highlighting variations based on geographic and resource-related factors. While prior research has focused primarily on curriculum content, this study sheds light on how school context and infrastructure influence the effectiveness of global competency programs.

Thus, the findings expand upon the existing literature by emphasizing the interplay between global competency frameworks, local school contexts, and 21st-century skill development.

Theoretical Implications

From a theoretical perspective, this research strengthens the link between global competency and socio-constructivist learning theories, which emphasize active, collaborative, and real-world learning experiences (Vygotsky, 1978). The study demonstrates that global frameworks support learning environments where students actively engage with authentic global challenges.

The findings also validate the principles of experiential learning theory (Kolb, 1984), which posits that meaningful learning occurs when students are immersed in real-life contexts and reflective practices. The integration of international projects and intercultural collaboration opportunities serves as experiential learning platforms that foster deeper skill acquisition.

Moreover, this study contributes to expanding the discourse on global citizenship education (GCE) by showcasing how practical application of GCE principles can enhance cognitive and interpersonal skills vital for 21st-century readiness (UNESCO, 2015).

In sum, these theoretical contributions suggest that adopting global competency frameworks can serve as a bridge between abstract theories of learning and concrete skill development for students.

Practical Implications

Based on the results, it is recommended that schools and educational policymakers integrate global competency frameworks systematically into secondary education curricula. Schools should prioritize not only content delivery but also foster international collaborations and intercultural projects to maximize student engagement and skill development (Boix Mansilla & Jackson, 2011).

Additionally, teacher professional development programs should be designed to equip educators with the knowledge and tools to implement global competency-oriented learning strategies effectively. Empowering teachers to lead global learning initiatives will ensure that students consistently engage with global issues and cross-cultural collaboration.

Policymakers are also advised to allocate resources equitably to ensure that suburban and rural schools have access to the same international opportunities and digital platforms as their urban counterparts.

Finally, education stakeholders should consider developing partnerships with global organizations and technology providers to facilitate virtual exchange programs and enhance access to global learning resources, thus democratizing global education across all school contexts.

Conclusion (خاتمة)

The findings of this study underscore the critical role of global competency frameworks in fostering the development of 21st-century skills among secondary school students. The

significant positive relationships between global competency and key skills such as communication, collaboration, critical thinking, and creativity demonstrate that integrating global perspectives into educational practices is essential for preparing students to thrive in an interconnected world. The study also highlights how access to international partnerships and global learning resources can enhance students' exposure to and mastery of global competencies.

Moreover, the combination of quantitative and qualitative data indicates that the effective implementation of global competency frameworks varies depending on school contexts, such as urban versus suburban settings. The results suggest that schools with better infrastructure and international networks tend to achieve higher outcomes in fostering global competencies. These insights emphasize the need for policymakers and educators to address gaps in resources and training to ensure that all students benefit equally from globalized education initiatives.

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