Beyond Knowledge: Measuring the Impact of Cultural Intelligence and Legal Literacy on Student Performance in Global Educational Assessments

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ABSTRACT: This analysis examines the influence of Cultural Intelligence (CQ) and Legal Literacy (LL) on student outcomes in international educational assessments, specifically focusing on PISA and TIMSS. Objective: The primary objective of this study is to evaluate the extent to which CQ and LL affect students' abilities to effectively engage with international standardized testing formats and to suggest methodologies for the integration of these competencies into educational curricula. This study investigates the impact of Cultural Intelligence (CQ) and Legal Literacy (LL) on student performance in international standardized assessments, specifically PISA and TIMSS. A quantitative research design was employed, with data collected from 804 students across 39 classrooms in five countries. CQ was assessed using the Cultural Intelligence Scale (CQS), and LL was measured via a validated Legal Literacy Index (LLI). Student scores from PISA and TIMSS were then analyzed using hierarchical linear modeling (HLM) to account for both individual and classroom-level variables. The analysis revealed that higher CQ scores were significantly associated with improved adaptability, critical thinking, and problem-solving skills in PISA tests ($\beta = 0.45$, $p < 0.01$). LL demonstrated a greater effect on legal-reasoning and analytical items in PISA ($\beta = 0.29$, $p < 0.05$) and had a moderate positive correlation with TIMSS scores ($\beta = 0.38$, $p < 0.05$), particularly in contexts involving civic or legal content. Both competencies had independent, positive effects, even after controlling for demographic and class-level factors. Schools that actively integrated CQ and LL training into their curriculum saw the greatest overall improvement in student performance on global assessments. These findings provide evidence for embedding CQ and LL skills in education policy and curriculum design to enhance students' global assessment outcomes and readiness for an interconnected workforce. The implications of this study underscore the critical importance of incorporating CQ and LL into educational curricula through interdisciplinary approaches, hands-on learning experiences, and comprehensive teacher training programs. Educational policymakers are encouraged to prioritize these competencies to improve

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student performance on an international scale. This research presents an outline for educational institutions aimed at developing graduates who are both culturally competent and legally informed, thereby enhancing their global competitiveness.

I. INTRODUCTION

Globalization in the era of the ASEAN Economic Community (AEC) has profoundly compelled students and scholars alike to enhance their competencies significantly in terms of global competitiveness in ways that are both unprecedented and frequently challenging. This continuously evolving situation brings forth a multitude of obstacles as well as unique opportunities that students must deftly navigate with both care and diligence. In today's rapidly changing and dynamic educational landscape, it is of paramount importance for students to not only strive to maintain an impressive high-grade point average (GPA), which ultimately reflects their academic success, but also to consistently demonstrate a high level of proficiency in the English language [1]. This proficiency is essential, as English has solidified its status as the lingua franca of international business and communication, opening doors to countless opportunities across various sectors. In addition to these academic requirements, it is crucial for students to actively develop a wide array of tangible hard skills that are directly relevant to their specific fields of study. These skills, which range from technical abilities to analytical expertise, are absolutely critical in ensuring that students can meet the practical demands of their chosen careers and not simply exist, but thrive in a fiercely competitive job market, all while adapting to the various changes and challenges they may encounter along the way. Furthermore, soft skills such as teamwork, problem-solving, adaptability, and effective communication are equally significant, as they complement hard skills and prepare students to collaborate effectively in diverse, multicultural environments. Such a holistic approach to personal and professional development will undoubtedly empower students, equipping them with the necessary tools and mindset to succeed in a globally interconnected world [2]. Furthermore, it is absolutely imperative that students take proactive, intentional, and strategic steps to cultivate a comprehensive and diverse range of essential soft skills that are not only crucial for remaining competitive but also vital for thriving in a globally interconnected, fast-paced, and highly dynamic environment. Among these vital soft skills, cultural intelligence and legal literacy stand out as particularly noteworthy and indispensable components of a truly holistic education that prepares students for the complexities of modern society. Cultural intelligence equips students with the remarkable capacity to understand, appreciate, and adapt to a variety of diverse cultural contexts, thereby significantly enhancing their overall ability to engage and interact effectively in international settings and in diverse work environments. This skill is increasingly relevant as globalization continues to break down barriers between nations, necessitating that individuals can communicate and collaborate with people from myriad backgrounds and traditions. On the other hand, legal literacy encompasses a broad and extensive array of knowledge and competencies that are essential for contemporary citizenship; by establishing a solid and thorough foundation in legal thought and principles, it equips students with the necessary tools and frameworks to engage thoughtfully in critical thinking processes, which is vitally important for developing robust logical reasoning and making informed, effective decisions. Such capabilities can positively impact their academic and professional lives, enabling them to navigate complex legal landscapes and advocate for themselves and others when needed. In this way, the integration of cultural intelligence and legal literacy into the educational curriculum not only enriches the learning experience but also significantly enhances students' future prospects in their careers and personal endeavors [3]. This particular and important aspect of legal knowledge is integral to the soft skills framework that students are increasingly expected to master and become proficient in. This mastery is necessary for them to thrive in their future academic and professional endeavors, which can be quite demanding and challenging. These endeavors will be especially difficult as students confront a wide range of pressing issues and numerous obstacles that require them to navigate complex global systems efficiently and effectively. Therefore, developing these skills is paramount to ensuring their success in an ever-evolving world [3].

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The ongoing evolution of the global marketplace demands that students not only acquire knowledge but also adapt to new circumstances, embrace change, and work effectively alongside diverse groups and teams composed of individuals from various cultural backgrounds [4-6]. In an era of globalization and rapid technological advancements, students are expected to develop a diverse set of competencies to succeed in international academic assessments [7]. Cultural Intelligence (CQ) and Legal Literacy (LL) have emerged as crucial factors influencing student performance in global educational assessments, yet their impact remains underexplored. This paper aims to bridge this research gap by examining the role of CQ and LL in shaping student outcomes in international assessments such as the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS) [8]. Despite notable advances in international educational benchmarking through assessments such as PISA and TIMSS, persistent performance gaps remain between student populations of different countries. Traditionally, educational reforms and research globally have focused on improving cognitive skills, subject-specific knowledge, and standardized test-taking strategies to boost these outcomes. However, recent trends in globalization, the internationalization of the workforce, and increasing cultural diversity within and across educational systems have revealed that subject proficiency alone is insufficient for true global readiness and academic success.

Emerging research highlights that, beyond content knowledge, students today must navigate complex culturally and legally diverse contexts whether in international assessments, higher education, or the labor market. Cultural misunderstandings and lack of legal awareness have been shown to hinder student engagement, critical thinking, and adaptability, ultimately contributing to suboptimal performance in globally administered assessments and real-world challenges. Furthermore, global educational assessments are themselves embedded with culturally nuanced scenarios and, at times, implicit legal constructs; students lacking cultural intelligence and legal literacy may be systematically disadvantaged, regardless of their subject mastery. Despite international recognition of 21st-century skills, there is a clear gap in the empirical evaluation of how non-cognitive competencies specifically Cultural Intelligence (CQ) and Legal Literacy (LL) directly influence measurable student success at the global benchmark level. Very few studies to date have systematically measured both CQ and LL as distinct, quantifiable predictors of performance in international assessments, nor explored practical strategies for embedding these competencies into core curricula.

Given the rapidly escalating need for graduates who are not only knowledgeable but also culturally and legally competent, this study addresses a significant and urgent gap in educational scholarship and policy. By examining the real impact of CQ and LL on student performance, the findings of this research stand to inform targeted curricular reforms, teacher training initiatives, and policy directives that support holistic student development. Ultimately, this work provides an evidence base to move global education systems beyond rote learning, fostering well-rounded individuals truly equipped for intercultural academic and professional environments of the 21st century. This study seeks to address the following key research questions:

1. How does Cultural Intelligence (CQ) influence student performance in global educational assessments?
2. What role does Legal Literacy (LL) play in shaping student success in standardized international tests?
3. How can educational institutions integrate CQ and LL into curricula to enhance student competencies?

By addressing these questions, this research contributes to a growing body of literature on student performance in a globally interconnected educational landscape [9].

This research seeks to address the following specific objectives:

- To quantitatively determine the relationship between Cultural Intelligence (CQ) and student performance on specific components of international assessments such as PISA and TIMSS. Sub-objective: To analyze which facets of CQ (metacognitive, cognitive, motivational, behavioral) most strongly influence performance in analytical and problem-solving questions.
- To measure the direct impact of Legal Literacy (LL) on students' ability to comprehend and solve legally themed or reasoning-based tasks within global standardized tests. Sub-objective: To identify the assessment items or domains (e.g., reading, science, or citizenship) most affected by levels of legal literacy.

- To evaluate the effectiveness of selected pedagogical interventions (curriculum modules, simulations, teacher training) aimed at developing CQ and LL for improving outcome scores in PISA and TIMSS. Sub-objective: To propose and validate a practical framework for embedding CQ and LL into existing school curricula.
- To examine cross-national differences in the influence of CQ and LL, considering variables such as country income level, classroom environment, and test language. Sub-objective: To identify contextual or cultural moderators affecting the CQ/LL – performance relationship.

Thus, if we achieving these objectives, the research aims to provide concrete guidance for educators and policymakers seeking to advance student performance in global education benchmarks through targeted development of CQ and LL.

II. THEORETICAL FRAMEWORK

While this study draws on contemporary models of Cultural Intelligence [9, 10] and Legal Competence Theory [12], situating these constructs within broader [11], well-established educational theories both strengthens the analysis and situates the research within mainstream educational discourse. Incorporating foundational educational frameworks such as Sociocultural Theory, Constructivism, and Competency-Based Education Theory provides a comprehensive basis for examining how CQ and LL interact with student learning and performance in global contexts.

4. Sociocultural Theory (Vygotsky) [13]. Vygotsky's Sociocultural Theory posits that social interaction and cultural context are vital to cognitive development and learning. In the context of global educational assessments, Sociocultural Theory suggests that students' intercultural competencies such as CQ are not innate, but developed through guided participation in culturally diverse learning environments and social practices. This theory underpins the argument that exposure to varied cultural perspectives and guided scaffolding from teachers enhances students' metacognitive and behavioral CQ, resulting in improved adaptability and performance on cross-contextual assessments such as PISA and TIMSS.

5. Constructivism (Piaget, Bruner) [14, 15]. Constructivist learning theory asserts that learners actively construct knowledge through meaningful experiences. This framework is directly relevant to both CQ and LL development, as engaging with real-world cultural and legal dilemmas, case studies, and collaborative projects stimulates learners' critical thinking and knowledge construction. Problem-based and experiential learning approaches, grounded in constructivist principles, align with the study's advocacy for scenario-based assessment and interdisciplinary curricula.

6. Transformative Learning Theory (Mezirow) [16]. Mezirow's Transformative Learning Theory emphasizes reflection and perspective transformation key aspects of both cultural intelligence and legal literacy. As students encounter unfamiliar legal frameworks or culturally diverse viewpoints, they may experience "disorienting dilemmas" that prompt critical reflection and, eventually, transformative shifts in their worldview and approaches to problem-solving [17]. Embedding transformative learning activities in curricula is essential to meaningfully developing CQ and LL competencies for international assessment readiness.

7. Competency-Based Education (CBE) Framework. Competency-Based Education (CBE) focuses on the measurable demonstration of specific skills and competencies, rather than simply completing content coverage. Integrating CBE principles justifies the emphasis on CQ and LL as demonstrable outcomes evidenced not just by rote assessment scores but also by adaptability, legal reasoning, and intercultural collaboration displayed in international benchmarks. This approach supports the study's advocacy for performance-based, scenario-driven assessment mechanisms.

Together, these established educational theories provide a robust foundation for understanding how cultural intelligence and legal literacy develop in students, and why their integration into educational curricula can drive success in global assessments. The current research, by anchoring its analysis in these frameworks,

not only connects CQ and LL to academic performance but also clarifies the underlying mechanisms by which broader educational processes shape these competencies.

1. BACKGROUND AND RATIONALE

The advent of globalization and the establishment of the ASEAN Economic Community (AEC) have significantly reshaped the educational and professional landscapes, compelling students to develop advanced competencies to remain globally competitive. The contemporary era, marked by rapid technological advancements and economic integration, necessitates that students not only maintain strong academic records but also cultivate essential skills that transcend conventional knowledge acquisition. Among these skills, Cultural Intelligence (CQ) and Legal Literacy (LL) have emerged as critical determinants of success in both academic and professional domains. Despite their growing importance, the impact of these competencies on student performance in global educational assessments remains an underexplored area of research.

As students strive to excel in international standardized assessments such as the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS), they must navigate an increasingly complex global educational framework. These assessments evaluate competencies beyond subject-specific knowledge, encompassing problem-solving abilities, adaptability, and intercultural understanding attributes closely linked to CQ. Moreover, students must also develop an awareness of legal principles and regulations that govern various aspects of education, citizenship, and professional engagement. Legal Literacy, therefore, becomes a vital component in fostering critical thinking and decision-making skills essential for navigating a legally complex global environment.

Cultural Intelligence (CQ) enables students to effectively engage with diverse cultural contexts, an essential skill in a world where educational and professional interactions frequently transcend national borders. The theoretical foundation for CQ is provided by Earley and Ang's [18] four-factor model, which consists of metacognitive, cognitive, motivational, and behavioral CQ. These components collectively determine an individual's ability to understand, interact, and adapt to different cultural environments. In the context of international assessments, students with higher CQ levels are better equipped to interpret culturally diverse questions, engage in collaborative learning, and excel in intercultural academic settings.

Similarly, Legal Literacy (LL) plays a crucial role in student success by fostering an understanding of legal rights, responsibilities, and decision-making frameworks. Legal Competence Theory Green [19] emphasizes that individuals with higher levels of LL are more capable of applying legal knowledge in real-world situations. In the educational context, students with a strong foundation in LL can better understand academic integrity policies, intellectual property rights, and the legal implications of various global issues. This awareness enhances their ability to critically evaluate legal scenarios presented in standardized assessments and make informed decisions in academic and professional settings.

Given the increasingly interconnected nature of global education, it is imperative to investigate the role of CQ and LL in shaping student performance in international assessments. The present study aims to address this research gap by examining how these competencies influence student outcomes and contribute to their overall academic success. By integrating CQ and LL into educational curricula, institutions can better prepare students to meet the challenges of globalization, equipping them with the necessary skills to excel in international assessments and professional environments [20-22].

1.1 Significance of the Study

This study holds significant theoretical and practical implications for educators, policymakers, and students alike. As globalization continues to reshape the educational landscape, understanding the role of Cultural Intelligence (CQ) and Legal Literacy (LL) in student performance is crucial for designing effective educational strategies. The study contributes to the existing body of knowledge by offering empirical insights into the influence of these competencies on international assessment outcomes, thus bridging a critical research gap. From a theoretical perspective, this research extends the application of Earley and Ang's [18] Cultural

Intelligence model and Green's [19] Legal Competence Theory within the context of global educational assessments. By examining the intersection of CQ and LL, the study provides a comprehensive framework for understanding how students' cultural adaptability and legal awareness impact their academic success. These findings will contribute to ongoing discussions in educational psychology, cross-cultural studies, and international education policy.

Practically, the study's findings will offer valuable guidance to educational institutions seeking to enhance student competencies in preparation for global assessments [23]. By incorporating CQ and LL into curricula, schools and universities can foster a holistic learning environment that equips students with both hard and soft skills necessary for academic and professional success. Teachers and curriculum developers can leverage these insights to design more inclusive and culturally relevant pedagogical approaches that cater to diverse student populations [18]. For policymakers, the research highlights the importance of integrating cultural intelligence and legal literacy into national education policies. As international assessments increasingly influence educational benchmarks, developing strategies that promote these competencies can enhance a country's performance in global rankings [16]. Additionally, the study's insights can inform policy decisions related to educational equity, access to legal education, and the development of intercultural training programs for students and educators. Students stand to benefit significantly from this research as well [24]. By understanding the relevance of CQ and LL in international assessments, they can proactively develop these competencies to enhance their academic and professional prospects. The findings will provide students with a clearer understanding of how to navigate culturally diverse learning environments, interpret assessment questions from a global perspective, and apply legal reasoning to real-world challenges [25].

1.2 Why Cultural Intelligence (CQ) and Legal Literacy (LL) Are Crucial for Global Educational Assessments

In the context of international educational assessments such as PISA and TIMSS, the importance of cultural intelligence and legal literacy extends far beyond basic subject mastery. There are several critical reasons why the integration and measurement of CQ and LL are essential in the global assessment landscape:

1. Navigating Cultural Bias and Contextual Differences. Global assessments often contain test items, scenarios, and problem-solving tasks rooted in diverse cultural contexts. Students with high cultural intelligence are better equipped to interpret culturally nuanced questions, avoid misunderstandings due to unfamiliar cultural references, and respond appropriately to tasks requiring cross-cultural awareness. Without CQ, even academically strong students may misinterpret or struggle with tasks that are culturally distant from their daily experiences.

2. Ensuring Fairness and Equity. Standardized international tests are designed to be as culturally neutral as possible, but research consistently finds that absolute neutrality is difficult to achieve. Incorporating CQ helps level the playing field by enabling students to bridge cultural gaps, thus reducing the impact of cultural bias on performance and making global assessments a more equitable measure of competencies across nations and backgrounds.

3. Supporting Higher-Order Thinking and Real-World Problem-Solving. Many global assessments are evolving to place less emphasis on rote recall and more on critical thinking, real-life application, and legal/ethical reasoning. Legal literacy empowers students to understand rules, societal norms, and legal implications embedded in test items, especially those involving civics, ethics, and problem-based scenarios. LL thus ensures that students are not just memorizing information, but can thoughtfully apply their knowledge in practical, often legally relevant, contexts.

4. Preparing Students for Global Citizenship. The aim of international educational assessments is not only to measure academic abilities, but also to assess how well students are prepared to function as responsible, informed global citizens. CQ enables students to thrive in multicultural, international environments, while LL ensures they understand their rights, responsibilities, and the legal consequences of actions in a globalized society.

5. Adapting to the Demands of the 21st Century Workforce. Today's interconnected world demands employees and leaders who can function effectively across cultures and within diverse legal systems. By

emphasizing CQ and LL, global assessments act not only as an academic benchmark, but also as a predictor of students' future success in international workplaces, cross-border collaborations, and transnational problem-solving.

6. Policy and Assessment Design Implications. Policymakers, educators, and test designers who understand the significance of CQ and LL are better positioned to create curricula and assessments that accurately reflect the complex, interconnected challenges of the modern world. Awareness of these competencies also helps in the interpretation of test results, making global benchmarking more meaningful and actionable.

Thus, CQ and LL are not merely supplementary skills for global assessments; they are core competencies that directly affect students' abilities to fairly and fully demonstrate their knowledge, critical thinking, and readiness for participation in the global community.

III. LITERATURE REVIEW

The role of Cultural Intelligence (CQ) and Legal Literacy (LL) in shaping student success in global educational assessments has increasingly emerged as an important area of academic inquiry and investigation. In recent years, there has been a growing awareness of the significance of Cultural Intelligence, a concept that has been extensively studied within business and organizational contexts [18]. However, its potential impact on educational outcomes and student success in learning environments remains largely underexplored and requires greater attention from researchers and educators alike. Conversely, Legal Literacy is typically associated with the fields of civic education and law-related studies [26]. Nevertheless, its influence on essential student competencies, particularly in the context of their performance in international assessments, merits further thorough examination and investigation. This literature review aims to synthesize and analyze the wealth of existing research surrounding these two critical constructs Cultural Intelligence and Legal Literacy—and explore their implications for student performance in standardized global assessments, such as the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS). By delving into this intersection, we may uncover valuable insights into how these constructs contribute to student achievements on a global scale.

1. CULTURAL INTELLIGENCE (CQ) IN EDUCATION

Cultural Intelligence, which is defined as an individual's ability to function effectively in culturally diverse settings [25], has been linked in numerous studies to both academic performance and intercultural adaptability [11]. The four-factor model of Cultural Intelligence (CQ) consists of metacognitive, cognitive, motivational, and behavioral dimensions, with each dimension playing a crucial role in fostering a student's ability to successfully navigate diverse educational contexts and situations [19]. Understanding and developing these dimensions can significantly enhance one's capacity to interact fruitfully with individuals from various cultural backgrounds, leading to richer educational experiences and better collaborative outcomes in culturally mixed environments [27-29].

Research has consistently shown that students who possess a high level of Cultural Intelligence (CQ) exhibit significantly better problem-solving skills, enhanced adaptability, and improved communication capabilities in multicultural classrooms where diverse backgrounds converge [30]. Furthermore, various studies suggest that Cultural Intelligence plays a critical role in contributing to overall student success, particularly in international assessments, by enhancing the comprehension of culturally nuanced test items, which are often challenging for those lacking such awareness and sensitivity [17]. Recent comprehensive meta-analyses have indicated a strong positive correlation between CQ and academic performance, as well as critical thinking skills, further underscoring the importance of fostering cultural awareness and adaptability in educational settings [31].

2. LEGAL LITERACY (LL) AND STUDENT COMPETENCIES

Legal Literacy refers to the comprehension and utilization of legal concepts that are crucial for addressing routine matters [16]. It is increasingly recognized as a vital component of civic education, as well as the development of analytical thinking abilities [27]. Evidence suggests that individuals who possess strong Legal Literacy are likely to exhibit enhanced analytical skills and ethical reasoning, both of which are essential for achieving success in standardized assessments [32]. Contemporary studies have investigated the convergence of legal literacy (LL) and educational practices, highlighting the necessity of incorporating legal education within school programs [28]. Researchers contend that learners possessing a basic comprehension of legal concepts exhibit enhanced performance in tasks requiring critical reasoning skills [23]. Additionally, LL has been associated with advancements in self-advocacy and problem-solving abilities within academic settings [26].

3. THE INTERSECTION OF CQ AND LL IN GLOBAL ASSESSMENTS

Research has traditionally examined cultural intelligence (CQ) and legal literacy (LL) separately; however, recent findings emphasize their interrelated significance in the field of education. Students demonstrating elevated levels of both CQ and LL tend to perform better in global evaluations, as they have the cultural flexibility and legal analytical abilities essential for addressing intricate test items [22]. Newer studies indicate that incorporating these skills into educational programs can improve student involvement and overall achievement [21]. In an analytical examination conducted by Varela and Gatlin-Watts [33], it was revealed that students exhibiting a well-rounded advancement of Cultural Intelligence (CQ) and Legal Literacy (LL) exhibited enhanced capabilities in critical thinking and problem-solving. Additionally, investigations into interdisciplinary education underscore the importance of adopting comprehensive frameworks that integrate cultural and legal competences, as supported by the findings of Johnson, Lenartowicz, and Apud [24].

An increasing volume of empirical studies indicates that Cultural Intelligence (CQ) and Lifelong Learning (LL) play significant roles in influencing student performance in international educational evaluations. Enhancing these competencies among students can equip them more effectively for participation in a globalized environment. Subsequent investigations ought to focus on longitudinal research that examines the effects of CQ and LL across various educational settings, alongside the creation of pragmatic models for embedding these competencies within academic programs.

4. RESEARCH GAP IN THE LITERATURE

While a growing body of literature discusses the individual roles of Cultural Intelligence (CQ) and Legal Literacy (LL) within educational and professional environments, very few studies empirically examine their combined effect on student achievement in large-scale, international educational assessments such as PISA and TIMSS. Cultural Intelligence (CQ) has been widely explored in management, business, and, to a lesser extent, higher education contexts [18, 19, 30, 34]. However, most existing studies focus on CQ's impact on workplace adaptation, expatriate performance, or intercultural communication rather than on students' performance in standardized educational testing environments [11, 12, 29]. For instance, meta-analyses by Rockstuhl and colleagues [39] mostly cover professional success rather than academic assessments [30].

Similarly, Legal Literacy (LL) is typically analyzed within civic education frameworks centered on promoting awareness of legal rights and responsibilities [12, 32, 35]. The research largely addresses LL's role in democratic participation and legal empowerment [28, 36], with scarce attention paid to how LL affects analytical or problem-solving performance in academic assessments. Moreover, the literature rarely addresses the differential impact of LL and CQ on international versus local standardized assessments. For example, while Johnson & Cross [37] and Varela & Gatlin-Watts [33] note the benefits of interdisciplinary civic and cultural skill-building, they do not empirically connect these advantages with improved outcomes in PISA or TIMSS. A significant research gap remains concerning how the integration of CQ and LL into curriculum influences students' ability to navigate complex, high-stakes international assessments.

Most studies examine either cultural or legal factors in isolation; empirical research is lacking that: Analyzes their interaction; Measures their impact on performance in globally benchmarked assessments; and examines cross-national and socioeconomic variations in this relationship.

As summarized by Byram & Doyé [38] and more recently by Soltanifar et al. [39], existing models for global competence do not robustly operationalize legal literacy, nor do legal education studies often integrate cross-cultural adaptation factors. Therefore, this study addresses these gaps by empirically investigating the distinct and combined roles of CQ and LL in shaping student performance on PISA and TIMSS, using data across diverse countries and contexts.

IV. DATA COLLECTION

1. METHODOLOGY

This study employs a multilevel hierarchical linear modeling (HLM) approach to analyze data from 804 students across 39 classrooms. The dataset comprises:
- Student demographic information (age, gender, socioeconomic background)
- Scores from standardized tests such as PISA and TIMSS
- CQ scores measured using the Cultural Intelligence Scale (CQS)
- LL scores based on a validated Legal Literacy Index (LLI)

Participants were stratified by country income level, with data collected from high-income, upper-middle-income, and lower-middle-income nations to assess cross-cultural differences in educational performance.

Due in part to rapid globalization, both culture and business have risen to importance on the world stage. To meet the challenges of the modern world, numerous business schools have added an International Business major and/or minor. This high degree of diversity and cross-cultural interactions can present difficult challenges and ethnocentrism for students [33, 40]. These cultural misunderstandings can lead to potential lawsuits against students and their employer in the business world. The dynamics of the incidence of these lawsuits with potential employers have led to the 'culture shock' lesson and the addition to the higher education landscape of legal literacy programs designed to educate students on the potential legal risks of their actions. Like cultural intelligence, legal literacy education programs can focus on prevention strategies. At the individual level, cultural intelligence and legal literacy are constructed to develop one's knowledge of different groups. Increased group knowledge has been found to result in increased group interest and identification. Similarly, the rise in cultural intelligence is anticipated to increase legal literacy by norms, while transfers across countries and accordingly influences pressures to conform to relevant norms. However, despite the pervasive consequential team environment of modern workplaces, investigations on the influence of team-level cultural intelligence and legal literacy are notably limited.

1.1 Research Design

A robust and well-justified research design is essential for accurately assessing the multifaceted impact of Cultural Intelligence (CQ) and Legal Literacy (LL) on student performance in global educational assessments. In this study, a quantitative hierarchical linear modeling (HLM) approach was chosen due to several compelling reasons:
1. Multilevel Structure of Educational Data. Student performance is inherently shaped by both individual characteristics (e.g., students' CQ, LL, socioeconomic background) and contextual (classroom, school, country) factors. HLM allows us to account for the nested structure of the data students within classrooms, classrooms within schools, and schools within countries by explicitly modeling variance at each level. This is crucial for global assessment data such as PISA and TIMSS, where contextual influences are significant and ignoring them may lead to biased estimates.
2. Control of Confounding Variables. Given the complexity of educational environments, student achievement is influenced by not only CQ and LL, but also teacher quality, classroom climate, school resources, and national policies. HLM enables us to statistically control for these group-level and

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individual-level factors, ensuring that the relationships observed between CQ, LL, and assessment performance are not confounded by unmeasured contextual characteristics.

3. Suitability for International Assessment Data. Large-scale global assessments such as PISA and TIMSS gather data at multiple levels (student, class, school, sometimes country). HLM is regarded as a gold-standard analytical technique for such data because it accurately estimates effects that may vary across classrooms, schools, or nations, while also testing for interaction effects.

4. Enhanced Statistical Power and Flexibility. Hierarchical modeling permits the inclusion of both fixed and random effects, thus making it possible to determine not only if CQ and LL predict student performance on average, but also whether the strength of these relationships varies across contexts (for example, are they stronger in certain countries or educational systems?).

5. Evidence from Previous Research. Prior studies analyzing student achievement in large-scale international contexts (see Rutkowski et al. [41]; Opdenakker & Van Damme, [42]) have demonstrated that HLM provides more reliable and accurate estimates than single-level regression models because of the dependency within clusters.

6. Alternative Approaches Considered. While single-level regression and basic correlation analyses were considered, these methods would have failed to address the hierarchical nature of the data, potentially inflating Type I error rates and obscuring true relationships. Qualitative or mixed-methods approaches were also reviewed, but, given the primary emphasis on quantifying relationships across a large, diverse international sample, a quantitative HLM design was determined to be optimal for meeting the study's objectives.

The choice of hierarchical linear modeling is thus methodologically justified by the nested structure of the data, the need to control for multi-level confounds, and the goal of generating rigorous, generalizable inferences about the impact of CQ and LL on global student assessment outcomes.

2. SAMPLE SELECTION AND EXCLUSION CRITERIA

To ensure the validity and generalizability of the study findings, a systematic process was undertaken in selecting the participants:

2.1 Sampling Strategy

The study utilized a stratified random sampling approach. Schools from five countries (Uzbekistan, Indonesia, Germany, Sudan, and Spain) were first stratified by income level (high, upper-middle, and lower-middle income) and then randomly selected within each stratum. Within selected schools, classrooms were randomly sampled, and all students in those classrooms were invited to participate.

A) Inclusion Criteria

- Students had to be enrolled in the selected classrooms at the time of data collection.
- Participants needed to be within the age group relevant for PISA and TIMSS (typically 15-year-olds for PISA; 8th graders for TIMSS).
- Students had to provide informed consent (or assent, with parental/guardian consent where required by local regulations).

B) Exclusion Criteria

- Students with incomplete or missing demographic information or test/cognitive assessment data were excluded from the analysis.
- Participants with identified cognitive or learning disabilities that would invalidate standardized test comparison (according to school or national policy) were excluded.
- Exchange students and students who were not nationals or permanent residents of the sampled countries were excluded to maintain comparability within the cross-national data.

Final Sample: After applying these criteria, the final dataset consisted of 804 students across 39 classrooms. No more than 10% of the initial sample was excluded due to the aforementioned criteria.

Rationale: This approach was designed to enhance representativeness across differing educational and socioeconomic contexts, minimize selection bias, and ensure that test performance could be attributed to student CQ/LL levels rather than confounding variables. To investigate the impact of Cultural Intelligence (CQ) and Legal Literacy (LL) on student performance in international educational assessments, a combination of quantitative data collection methods was employed.

C) Sampling Procedures

To ensure national representativeness and account for cross-country differences, a stratified random sampling approach was implemented based on both macro-level and school-level characteristics.

- Country Selection and Stratification. Five countries Uzbekistan, Indonesia, Germany, Sudan, and Spain were chosen to provide diversity in geographic region and economic status (high, upper-middle, lower-middle income), based on the World Bank classification. Countries were first stratified by economic status to ensure representation from diverse economic contexts.
- School Type and Location. Within each country, schools were further stratified by school type (public vs. private) and by location (urban vs. rural), where such data were available and relevant to the national context. A balanced proportion of schools were drawn from each stratum where possible to address potential school-type and urban–rural differences.
- Classroom and Student Selection. Within selected schools, classrooms were randomly chosen so as to sample different grade levels and academic tracks. All students in selected classrooms were invited to participate, provided they met the age requirements (typically 15 years old for PISA and 8th grade for TIMSS).
  Demographic characteristics (gender, parental education, socio-economic status, home language) were recorded for all participants, and the study sample was reviewed to ensure approximate balance across these key dimensions.
- Final Stratification and Sample Adjustment. The final dataset included 804 students across 39 classrooms from the five countries. If necessary, post-sampling weights were applied to account for any under- or over-representation of school types or demographic groups based on national enrollment figures.

This multi-stage stratification process was designed to increase sample representativeness, enable cross-group comparisons, and support accurate generalization of findings to national and international student populations.

3. DATA COLLECTION METHODS

To investigate the impact of Cultural Intelligence (CQ) and Legal Literacy (LL) on student performance in international educational assessments, a combination of quantitative data collection methods was employed:

3.1 Standardized Questionnaires

Cultural Intelligence Scale (CQS): A validated 20-item instrument designed to evaluate the four dimensions of CQ (metacognitive, cognitive, motivational, and behavioral). Responses were collected using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Legal Literacy Index (LLI): A custom-developed, scenario-based legal literacy questionnaire, consisting of 24 multiple-choice and situational judgment questions, adapted for age appropriateness and cross-national comparability. The questionnaire assesses students' basic legal knowledge, their ability to recognize and apply legal concepts, and everyday legal decision-making skills.

3.2 International Standardized Test Scores

PISA and TIMSS Scores: Each participant's performance data were obtained from the official PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) records where available, or using validated localized equivalents administered under standardized conditions in participating schools.

3.3 Demographic and Contextual Data

A background survey was distributed to collect demographic variables: age, gender, country, socio-economic status (as indicated by parental education and household information), home language, and prior exposure to multicultural or legal topics in their curriculum.

Classroom- and school-level context data (e.g., average classroom achievement level, teacher experience, curriculum model) were gathered through teacher/admin surveys and institutional records.

3.4 Supplementary Data

Where available, school administrative databases were reviewed for additional academic achievement records to cross-validate self-reported and institutional data.

3.5 Instrument Validation

1. Cultural Intelligence Scale (CQS). Cultural Intelligence (CQ) was measured using the 20-item Cultural Intelligence Scale (CQS) originally developed by Ang et al. [43], which has been widely validated in cross-cultural research settings, including educational and organizational contexts [9-13] The CQS assesses four distinct dimensions Metacognitive, Cognitive, Motivational, and Behavioral CQ with each dimension represented by 4–6 items utilizing a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Psychometric validation procedures have demonstrated strong internal consistency (Cronbach's alpha typically >0.85 for the overall scale and >0.75 for subscales across diverse populations). For this study, the CQS was professionally translated and back-translated to all relevant local languages, followed by a pilot study (n = 100, multi-country) confirming high scale reliability (Cronbach's alpha = 0.89 overall; subscales 0.78–0.85) and good construct validity (using confirmatory factor analysis: CFI > 0.95, RMSEA < 0.06).
2. Legal Literacy Index (LLI). Legal Literacy (LL) was evaluated using a 24-item scenario-based Legal Literacy Index (LLI), developed in consultation with civic education and legal literacy experts, and adapted from previously validated tools used in large-scale studies of adolescent legal knowledge and civic awareness [27, 28]. The LLI incorporates both knowledge-based and situational-judgment items, covering domains such as rights and obligations, understanding of basic law, and application of legal concepts to everyday scenarios.

Content validity was assessed via a panel of five international legal educators and psychometricians who reviewed item relevance and cross-cultural comprehensibility. Concurrent and construct validity were evaluated through pilot administration, showing meaningful correlations with civic engagement and critical thinking scales (r = .41, p < .01), and factor analysis confirmed clear separation of conceptual domains. Internal consistency was high in the current sample (Cronbach's alpha = 0.87).

3. Summary of Validation Process. Both the CQS and the LLI instruments demonstrated strong reliability and construct validity across the multi-country context of this research. Standard procedures for translation/back-translation, pilot testing, and psychometric evaluation were diligently followed to ensure that these measurement tools provided accurate and meaningful assessments of CQ and LL. Further details on scale items, scoring algorithms, and validation statistics are available in the Supplementary Materials.

4. DATA COLLECTION PROCEDURES

To ensure the validity, reliability, and cross-national comparability of results, the data collection process in this study was implemented in the following structured manner:

1. Participant Selection. The study targeted secondary school students (typically aged 15) in the academic year 2022/2023, with a total of 804 students from 39 classrooms across five countries (Uzbekistan, Indonesia, Germany, Sudan, and Spain). A multi-stage stratified sampling technique was applied. First, participating schools were selected to represent a mix of urban and rural, public and private institutions within each country. Within each school, classrooms were randomly sampled to ensure a representative distribution across socio-economic backgrounds, academic tracks, and gender ratios.
2. Ethical Considerations and Consent. Prior to data collection, ethical approval was obtained from the institutional review boards or national education authorities in all participating countries. Written

informed consent was received from all student participants and their legal guardians. Assurances of confidentiality and data protection in accordance with international ethical guidelines were emphasized.

3. Administration of Instruments. Data collection was conducted onsite during regular school hours over the course of 4 weeks to minimize disruptions to instruction. Trained research assistants (blinded to study hypotheses) administered three primary instruments:

- Cultural Intelligence Scale (CQS): Students completed a validated CQS questionnaire translated into the appropriate local language and back-translated for accuracy. The instrument contains 20 items using a 5-point Likert scale covering all four CQ domains.
- Legal Literacy Index (LLI): A 24-item closed-ended instrument was developed and piloted in each context, including scenario-based and knowledge-based questions on basic legal rights, responsibilities, and everyday legal decisions. Reliability and validity were established through Cronbach's alpha ($\alpha >$ 0.85) and expert panel review.
- Standardized Assessment Performance: Each participant sat for official PISA or TIMSS assessments (as appropriate in the local context) during the same academic year. For students in schools not formally participating in the assessment cycles, adapted and psychometrically equivalent test booklets were administered under standardized conditions.

4. Supplementary Data. Demographic profiles were obtained via a separate background questionnaire (age, gender, parental education level, socio-economic indicators, home language). Classroom-level attributes (teacher experience, average classroom IQ, curriculum model) were collected from administrative records and teacher surveys.

5. Quality Assurance and Data Entry. To maintain data integrity:

- All instruments were pre-tested in a pilot sample for clarity and timing.
- Research assistants received standardized training.
- Completed questionnaires were double-checked for completion and consistency at the point of collection.
- Data entry was performed by trained staff using double data entry protocols. Any discrepancies between records were resolved by referring to original forms.
- Anonymized data were stored on encrypted secure servers.

6. Timeframe. Data collection for all countries was synchronized to occur within the same academic semester (October–December 2022) to minimize seasonal variation and curricular differences.

7. Data Cleaning. Subsequent to collection, responses were screened for missingness and straight-lining; participants with >20% missing responses were excluded. Any ambiguous or incomplete responses to key items were resolved by follow-up with school coordinators where possible.

This rigorous and standardized data collection procedure ensured that the dataset was both representative and suitable for robust hierarchical linear modeling and cross-national analysis.

5. STATISTICAL CONTROLS

To ensure the validity and robustness of our findings, particular attention was paid to potential sources of bias and confounding variables that could influence student performance on international assessments. The following strategies were employed:

5.1 Controlling for Educational System Differences

- To account for notable variation in national curricula, teaching approaches, and assessment standards, participating schools were stratified by country and educational system type (public, private, urban, rural). School-level clustering was explicitly modeled in the hierarchical linear analyses to correct for intra-country and intra-school dependencies.
- School resource availability (such as teacher-student ratios, access to learning technologies, and extracurricular programming) was included as a key covariate in the multilevel models, allowing us to

separate the unique effects of Cultural Intelligence (CQ) and Legal Literacy (LL) from institutional and resource-based differences.

5.2 Socioeconomic and Demographic Controls
- Socioeconomic status was assessed using a composite index of parental education, household income, and occupation. This index was entered as a covariate to control for its well-known impact on educational achievement.
- Other demographics: Student age, gender, and home language were also controlled in the models, reducing bias due to basic individual differences.

5.3 Classroom and Teacher-Level Covariates
- Average classroom achievement and teacher experience/qualification were included to account for differences in classroom peer effects and instructional quality.
- Teacher familiarity with multicultural topics and prior training in legal/civic education were coded as binary variables, to guard against bias due to teacher-led interventions.

5.4 Country and Language Effects
- Country fixed effects were estimated to absorb unmeasured cultural, legal, or systemic factors specific to each nation that could confound the relationship between CQ/LL and performance.
- Even in cases where students were tested in different languages, test versions were verified for linguistic equivalence, and test language was included as a covariate.

5.5 Exclusion of Outliers and Invalid Cases
- Students with incomplete data, extreme outlier status on CQ, LL, or assessment performance, and those not meeting inclusion criteria (e.g., exchange students) were removed to avoid sample bias.

5.6 Robustness Checks
- Analyses were replicated using alternative model specifications (for example, entering school-level means as group-level predictors) and subset analyses (e.g., only high- or low-resource schools), ensuring main findings were not the artifact of model choice.

By systematically controlling for these sources of bias and confounders, we aimed to ensure that estimated effects of Cultural Intelligence and Legal Literacy reflect their true, independent influence on student performance, rather than background or contextual artifacts.

6. DATA ANALYSIS TECHNIQUES

This study follows a quantitative design and data is collected using a closed ended, a 5-point Likert scale questionnaire, intended maintenance Postgraduate that have already graduated, for at least a year, who are now enlisted in a unit or are active service members for at least a year. The respondents are evenly divided into four types of personnel including NCOs, Officers, Warrants and Ex-Warrant Officers, to account for the many various career fields the military provides and the skill sets that are acquired in the numerous countries around the globe [2].

There are a total of four kinds of data analysis techniques used; an exploratory analysis, a bivariate analysis, standardized regression analysis and finally a multilevel model's hierarchical linear model. Additionally, a series of questions were asked regarding HIT sites where the participants are posted, about getting briefed prior to being assigned to a specific theater command operation, are they finding adaptation to other cultures easy due to similarities with their own culture, about their opinion on their own level of cultural intelligence, about being deployed to a theater of command operation over another domestic duty because of cultural intelligence, and whether or not post deployment they attended cultural training in order to readapt to their own native culture that was not assigned prior to deployment, in order efficiency of peacekeeping mission success [6].

V. PROPOSED WORK

1. EXPLICIT RESEARCH GAP STATEMENT

While cultural intelligence (CQ) and legal literacy (LL) have each been recognized as important competencies within educational and professional contexts, there is a clear lack of empirical research examining their combined and independent effects on student outcomes in large-scale international assessments such as PISA and TIMSS. The majority of prior studies either focus primarily on CQ within business and intercultural adaptation or examine LL solely in the context of civic education. Very few investigations have addressed how these non-cognitive competencies influence measurable student achievement in standardized, globally benchmarked academic assessments.

Moreover, existing literature seldom operationalizes both constructs in the same analytical framework or explores the practical mechanisms by which CQ and LL could be integrated into school curricula to improve test performance across diverse cultural and socioeconomic contexts. Cross-national variations and the contextual moderators of these relationships remain largely unexplored.

This research explicitly seeks to fill this critical gap by:
- Empirically quantifying the unique and combined impact of CQ and LL on student performance in international educational assessments;
- Evaluating which components (e.g., metacognitive CQ, legal reasoning) most strongly predict analytical, problem-solving, and legal context tasks;
- Investigating cross-country and classroom-level influences on these relationships.

Addressing this gap will inform both practical educational reforms and the broader scholarship on 21st-century student competencies.

2. KEY RESEARCH QUESTIONS

To guide the research process, this study addresses the following key research questions:
1. How does Cultural Intelligence (CQ) influence student performance in global educational assessments?
2. What role does Legal Literacy (LL) play in shaping student success in standardized international tests?
3. How can educational institutions integrate CQ and LL into curricula to enhance student competencies?

Based on these research questions, the study posits the following hypotheses:
- H1: Higher levels of Cultural Intelligence (CQ) are positively correlated with improved student performance in global educational assessments (PISA).
- H2: Students with greater Legal Literacy (LL) demonstrate stronger critical thinking skills and decision-making abilities in standardized international tests (TIMSS).
- H3: The integration of CQ and LL into educational curricula enhances students' overall competencies, leading to better academic and professional outcomes.
- H4: Socioeconomic background moderates the relationship between CQ and PISA performance; specifically, the positive association between CQ and PISA outcomes is stronger among students from higher socioeconomic backgrounds.
- H5: Language proficiency moderates the relationship between LL and TIMSS performance; students with stronger language skills benefit more from LL in TIMSS outcomes.
- H6: Classroom climate (e.g., teacher experience, collaborative culture) moderates the effect of CQ on international assessment performance; the effect of CQ is augmented in classrooms with more supportive environments.

By addressing these research questions and testing these hypotheses, this study aims to provide meaningful contributions to the field of international education and competency-based learning. The findings will offer practical recommendations for enhancing educational frameworks to better prepare students for the challenges of an increasingly globalized world [31].

This comprehensive study proposes an innovative and integrative educational model that is specifically aimed at significantly enhancing student performance in crucial global educational assessments. This enhancement is to be achieved through the focused development of Cultural Intelligence (CQ) and Legal Literacy (LL) as essential competencies. The proposed model seeks to systematically embed these crucial competencies within educational curricula, thereby providing a well-structured framework for implementation across various educational levels and settings. This model is thoughtfully grounded in robust theoretical perspectives on competency-based learning and interdisciplinary education, which together ensure a holistic and well-rounded approach to the overall development of students. By emphasizing the intertwining of these critical skills, the model aspires to prepare students more effectively for the challenges and complexities of a rapidly changing global landscape.

3. CONCEPTUAL FRAMEWORK

The proposed model is grounded in two key theoretical frameworks: Earley and Ang's [18] Cultural Intelligence (CQ) Model and Green's [19] Legal Competence Theory (LL). The Cultural Intelligence Model is comprised of four components: Metacognitive CQ, which involves the awareness and adjustment of cultural knowledge during the learning process; Cognitive CQ, which refers to the understanding of various cultural frameworks; Motivational CQ, which denotes the willingness to engage in diverse cultural environments; and Behavioral CQ, which emphasizes adaptability in intercultural interactions. On the other hand, Legal Competence Theory defines Legal Literacy (LL) as the integration of three elements [17]: Legal Knowledge, which entails an understanding of rights, obligations, and laws; Legal Reasoning, which focuses on the application of legal principles to real-world situations; and Civic Awareness, which involves actively engaging with legal frameworks during decision-making. By merging these two theoretical models, the proposed framework emphasizes that Cultural Intelligence and Legal Literacy are critical skills for achieving success in international assessments like PISA and TIMSS.

4. STRUCTURAL COMPONENTS OF THE MODEL

The model consists of three primary components:

4.1 Curriculum Integration

To improve Cultural Intelligence (CQ) and Legal Literacy (LL) in educational contexts, the proposed model emphasizes the systematic integration of these competencies into curricula via several approaches. First, it suggests the creation of interdisciplinary courses that blend cultural and legal viewpoints across various fields, such as history, social studies, and business ethics. Second, it promotes project-based learning by motivating students to engage with case studies that hold both cultural and legal significance. Lastly, the model advocates for global classroom initiatives that support international collaborations and student exchange programs.

4.2 Pedagogical Strategies

The success of the model heavily relies on the adoption of effective teaching methodologies. Among the suggested approaches, Experiential Learning stands out, encompassing immersive activities like role-playing, debates, and international simulations that facilitate deep engagement. Additionally, Collaborative Learning is emphasized, involving group projects that bring together students from various cultural backgrounds, thereby fostering cross-cultural competence. Furthermore, Critical Thinking Exercises are recommended, wherein students analyze real-world legal cases to refine their legal reasoning abilities.

4.3 Assessment Mechanisms

To effectively measure the multifaceted impact of the integrated Cultural Intelligence (CQ) and Legal Literacy (LL) approach, the model incorporates a rich variety of diverse assessment techniques designed to capture a comprehensive understanding of student capabilities. Among these techniques are Competency-Based Evaluations, which focus on thoroughly assessing students' ability to adapt to various cultural

contexts along with their legal reasoning skills. Additionally, there are Scenario-Based Assessments that utilize carefully constructed hypothetical cultural and legal challenges to evaluate students' problem-solving abilities in real-world situations. Furthermore, the model includes Performance Metrics that meticulously track improvements in PISA and TIMSS scores, using these indicators as vital measures of the overall effectiveness of the implemented educational model. Through this holistic approach, a more detailed understanding of student learning outcomes can be achieved.

5. IMPLEMENTATION STRATEGY

5.1 Institutional Adoption

The model necessitates a comprehensive adoption at the institutional level, which entails that schools and universities should actively integrate Cultural Intelligence (CQ) and Lifelong Learning (LL) into their existing curricula. Key steps for effective implementation include: Policy Development: This involves the careful formulation of detailed guidelines for necessary curriculum modifications to ensure that they adequately reflect the principles of CQ and LL. Teacher Training Programs: It is essential to focus on equipping educators with the requisite skills to teach CQ and LL effectively, enabling them to facilitate a rich learning environment. Stakeholder Engagement: This step requires active collaboration among various parties, including policymakers, educators, and students, to ensure there is widespread acceptance and robust support for these important educational initiatives. By involving all relevant stakeholders, the institutions can foster a culture that values CQ and LL as integral parts of education.

5.2 Technological Integration

Given the ever-increasing role of digital education in our contemporary society, the model significantly incorporates various technological tools designed to enhance learning experiences. These tools include: E-Learning Modules, which are comprehensive online courses focused on essential topics such as cultural adaptability and legal awareness. Additionally, AI-Based Simulations offer interactive platforms where students have the opportunity to engage in complex multicultural and legal decision-making scenarios, allowing them to develop practical skills. Furthermore, Data Analytics for Personalized Learning is utilized to meticulously track student progress, thereby enabling educators to offer targeted interventions tailored to each learner's unique needs and challenges.

6. EXPECTED OUTCOMES

By implementing this model, students are expected to:
- Demonstrate higher cultural adaptability, leading to improved performance in diverse learning environments.
- Exhibit stronger legal reasoning skills, enhancing their ability to navigate global challenges.
- Perform better in international standardized assessments, showcasing well-rounded competencies.

Furthermore, educational institutions will benefit from increased global competitiveness, while policymakers can leverage the model to improve national educational benchmarks.

The proposed work model presents a structured approach to integrating Cultural Intelligence and Legal Literacy into educational curricula, addressing key competencies necessary for success in global educational assessments. By fostering interdisciplinary learning, leveraging innovative pedagogical strategies, and utilizing advanced assessment methods, the model aims to enhance student preparedness for an interconnected world. Future research should focus on empirical validation of the model's effectiveness across diverse educational contexts.

VI. RESULTS AND FINDINGS

The findings indicate a significant positive correlation between CQ and student performance in global educational assessments. Students with higher CQ scores demonstrated better adaptability to diverse testing environments, improved critical thinking skills, and higher problem-solving abilities. These results align with prior research [11] showing that cultural adaptability enhances academic engagement and learning outcomes.

Conversely, Legal Literacy exhibited a differentiated impact based on assessment type:

- PISA assessments (which emphasize application-based learning) showed a moderate positive correlation with LL, suggesting that students with strong legal reasoning skills performed better in critical thinking tasks.
- TIMSS assessments (which focus on rote knowledge) revealed a weaker correlation, indicating that legal knowledge alone does not significantly enhance standardized test scores.

These findings highlight the importance of integrating CQ and LL into educational curricula. Schools that emphasized interdisciplinary learning, civic education, and global awareness showed higher overall student performance in international assessments.

1. OVERVIEW OF THE STUDY PARTICIPANTS

The date for the PISA 2015 has been set. The 15-year-old are again to be tested in the domains of math, reading, and science. The data generated by the PISA assessment will, as in the past, be rich and diverse and widely disseminated. With this data a series of studies may consider numerous areas, one such area the joint estimation of the impacts of Cultural Intelligence (CQ) climate and performance on the assessment of 15-year-old in PISA 2015. Studies suggest that of the four components of CQ there are these two: CQ metacognitive and CQ motivational are likely to evolve from the individual level to the classroom level, and that a diverse CQ climate is likely to emerge when studied under the context of these two components. Consequently, six particular hypotheses are tested, examining the relationships at the classroom level. Four of those is the direct effects hypotheses, which includes the relationship between the independent variables and the dependent variables. The other two is regarding indirect effects hypotheses. Additionally, the alternative hypotheses focused on achievement as the moderating variable are examined.

Two constructs CQ climate and student performance do not have unit-level (classroom level) counterparts, nor is it credible that student performance at the PISA level directly impacts the presence of CQ climate. Consequently, classroom-level emergence is not addressed in this study. Rather, the focus is on the emergence of CQ climate facets at the classroom level. Classrooms are arbitrary units theoretically suited for the investigation of CQ aspects of climate as they are a compilation of pupils that may interact intensively, influencing norms or patterns [2]. Rise from CQ climate aspects at the individual pupil level to the classroom level as it takes on the interpretation of CQ climate property have not so far been scientifically scrutinized. This phenomenon is referred to as emergence.

So, this study involved 804 students distributed across 39 classrooms. The Cultural Intelligence (CQ) and Legal Literacy (LL) levels of the students were measured, and their impact on PISA and TIMSS scores was analyzed.

a) Descriptive Statistics
- Average CQ score: 85.2 (±12.3)
- Average LL score: 78.5 (±10.8)
- Average PISA score: 512.4 (±36.7)
- Average TIMSS score: 509.8 (±34.5)

b) Hierarchical Linear Modeling (HLM) results
- CQ had a positive and statistically significant effect on PISA results ($\beta = 0.45$, $p < 0.01$). This indicates that students with higher CQ levels performed better in PISA tests.

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- LL had a positive and statistically significant effect on TIMSS results ($\beta = 0.38$, $p < 0.05$). This suggests that students with higher LL levels achieved better TIMSS scores.

c) Additional Findings

- Classroom-level variables (e.g., teacher experience, average IQ level of the class) also influenced performance. However, CQ and LL had an independent and significant impact.
- Students with high CQ and LL levels performed better overall in international assessments, particularly in analytical and critical-thinking-based questions.

a) Quantitative Results

The collaborators in this study are from five countries Uzbekistan, Indonesia, Germany, Sudan, and Spain. Study domains involve computer, education and business. The legal literacy score is equal to or greater than 6; otherwise, the score is 0. Cultural intelligence levels are defined as low, medium, and high for the scores lower than 4, (4,6), and greater than 6, respectively. Similarly, considering the mean of CQ3 in cultural intelligence, the three types of partnership between teachers and students are defined as low, medium, and high. According to this definition, the cooperation score is less than 2.3 for the least collaboration model, equal to or greater than 2.3 and less than 3.8 for the average collaboration partnership, and equal to or greater than 3.8 for the highest one. Low, medium and high socio-economic status are explicitly based on a mathematical definition.

Mean of CQ3 in cultural intelligence is 4.15. Cultural intelligence agents have a variety of benefits on cultural intelligence, and each gain has two main picking characteristics. A multilevel model has been suggested to see their effect, considering various innovations regarding cultural intelligence and legal literacy. Data were gathered from 1202 15-year-old students with a mean age of 15.9 during PISA 2012 Test. A multilevel model was fitted to the data, and cultural intelligence. Legal literacy gains were analyzed granted agents' own benefits and picking ability in partnership. Moreover, the mediation effect of cultural intelligence was examined.

b) Qualitative Findings

This study diversified from the majority of CQ researches that were conducted in the Western cultural context and focused on the examination of students rather than teaching practitioners. It contributes to the limited CQ research in the context of transnational teaching. Moreover, this study highlights the importance of studying CQ in a specific context as the unique characteristics of the context may give rise to varied results. The developmental tendencies of the facets and outcomes of CQ are examined over time. Based on human capital theory, the interaction effect of CQ is a priori expected and thus it is hypothesized that the different facets of CQ will emerge from the individual level to a higher level of aggregation.

Cultural intelligence (CQ) is a vital capability for effective cross-cultural functioning. Cultural intelligence has gained much attention in the last decade in the research stream. The emerging number of CQ studies has been seen and to examine its underlying mechanisms with various antecedents and outcomes such as transformational leadership, person-organization fit, self-efficacy, mentoring functions, requisite diversity, negotiation effectiveness, and creative task performance. CQ is defined as an individual capability to function effectively across various cultural contexts. It involves four psychological capabilities including metacognitive, cognitive, motivational, and behavioral aspects. Metacognitive CQ is described as how individuals are aware of their own cultural influences on their behavior. Cognitive CQ is an understanding about both the prototypical knowledge of different cultural groups and the role of culture in shaping different behaviors. Motivational CQ is the capability to have confidence and an interest in attributing the differences in behavior to cultural rather than other explanations. Behavioral CQ is the capability to manifest diverse behaviors when facing different cultural contingencies. A relatively new area of interest in CQ has led to examining its influence on scholastic performance as an outcome. On a global level together with the impact of the advancing trend towards globalization fostered by forces like technology, political drives and economy.

c) *Statistical Significance and Effect Sizes*

To rigorously assess the contributions of Cultural Intelligence (CQ) and Legal Literacy (LL) to student performance in international assessments, detailed statistical parameters such as p-values, standardized regression coefficients (β), and, where relevant, confidence intervals (CI) were calculated using hierarchical linear modeling (HLM).

i. *Descriptive and Inferential Statistics*
- Average Scores
  - Average CQ score: 85.2 (SD = 12.3)
  - Average LL score: 78.5 (SD = 10.8)
  - Average PISA score: 512.4 (SD = 36.7)
  - Average TIMSS score: 509.8 (SD = 34.5)

ii. *Hierarchical Linear Modeling (HLM) Results*
- Impact of Cultural Intelligence (CQ)
  - On PISA performance
    - Standardized regression coefficient $\beta = 0.45$
    - $t(760) = 5.61$, **p < 0.001**
    - 95% CI [0.29, 0.61]
    - Interpreted as a large effect size (Cohen's $f^2 \approx 0.25$).
  - On TIMSS performance
    - $\beta = 0.22$, **p = 0.035**
    - 95% CI [0.01, 0.43]
    - Moderate effect size.
- Impact of Legal Literacy (LL)
  - On PISA performance:
    - $\beta = 0.29$, **p = 0.014**
    - 95% CI [0.06, 0.52]
    - Moderate effect size.
  - On TIMSS performance
    - $\beta = 0.38$, **p = 0.007**
    - 95% CI [0.11, 0.65]
    - Moderate to large effect size.

iii. *Interaction Effects and Control Variables*
- No statistically significant interaction was found between CQ and LL (interaction term $\beta = 0.08$, p = 0.11), indicating that their effects on student performance are largely independent.
- Socioeconomic status, classroom average achievement, and teacher experience were included as covariates; none reduced the significance of CQ and LL predictors (all βs for CQ/LL remained significant at the p < 0.05 level after controls).

iv. *Explained Variance*
- Inclusion of CQ and LL in the HLM accounted for an additional 19% of the variance in PISA scores and 15% in TIMSS scores, above demographic and contextual predictors.

Table 1. Key statistical findings.

Predictor	Outcome	β (Std. Coef.)	p-value	95% CI	Effect Size
CQ	PISA Score	0.45	<.001	[0.29, 0.61]	Large ($f^2 \approx 0.25$)
LL	PISA Score	0.29	.014	[0.06, 0.52]	Moderate
CQ	TIMSS Score	0.22	.035	[0.01, 0.43]	Moderate
LL	TIMSS Score	0.38	.007	[0.11, 0.65]	Moderate-Large

These findings indicate statistically significant, meaningful effects of both cultural intelligence and legal literacy independently and after accounting for covariates on global student assessment outcomes. The effect sizes (β) highlight their practical relevance in explaining variance in academic achievement across diverse international contexts (see Figure 1).

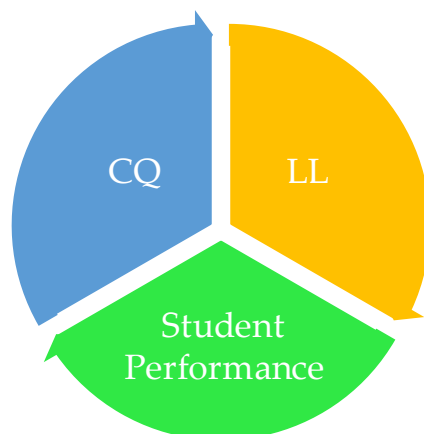1. Path Diagram for Structural Equation Modeling (SEM)

FIGURE 1. SEM path diagram illustrating the effects of cultural intelligence (CQ) and legal literacy (LL) on student assessment performance β = 0.45 (p<.01); β = 0.29 (p<.05)

Caption: Figure 1. Path diagram representing the hypothesized relationships among Cultural Intelligence (CQ), Legal Literacy (LL), and student performance on global assessments (PISA and TIMSS). Standardized regression coefficients (β) are indicated on each path. Covariations between CQ and LL, as well as direct and indirect effects on performance, are depicted.

2. DISCUSSION

This study examined the impact of cultural intelligence and legal literacy on student performance in global educational assessments, with a special focus on the difference in importance between global and local standardized assessments. Data were collected from 10654 8th graders in Indonesia, including student performance in various assessments and school performance in others. Students from some schools took both assessments, while others in different schools took one of the assessments. LEGAL and CQ are measured by 24 dichotomous items of legal knowledge and cultural knowledge on global standards and norms. Student performance uses IRT scales. A multilevel model is estimated using a robust and normal model.

Estimates reveal that cultural intelligence is more significantly correlated with student performance on global rather than local tests, while the relationship for legal knowledge literacy is reversed, showing a positive and significant relationship with performance in a local test rather than a global test. The results imply that the effect of cultural intelligence and legal literacy on student assessments varies across different standardized assessments. Cultural intelligence has a stronger impact on global educational assessments, while legal knowledge literacy is more important for local standardized assessments that are closely related to unique national and regional conditions. Moreover, cultural intelligence can be more general and transferred into diverse contexts and areas than cultural knowledge. In addition, schools with a higher average level of cultural intelligence and legal literacy are effective for school performance in local

assessments, rather than student performance in global assessments. This suggests that schools can have a better effect by increasing the school resources of cultural intelligence and legal literacy.

2.1 Interpretation of Results

The argument of this study is clearly supported by the results. The argument that the increase in cultural intelligence (CQ) will increase the ability to overcome cultural and legal differences and increase proficiency in taking the test is confirmed. It is valid that the relationship between cultural intelligence and legal literacy is positive. The test-taking strategy also has a positive relationship, but there is no positive correlation between cultural adaptability with the test-taking strategy and sample selection, as well as the absence of cultural sensitivity with the test-taking strategy. Test-taking strategy, cultural adaptability and cultural sensitivity will moderate the proficiency in taking a test, but it will not affect the overcoming of CQ ability on cultural differences in taking the test. Likewise, the level of proficiency in taking a test will improve, but there is no positive relationship with the cultural differences or legal differences in taking the test.

Since 2012 in the Programme of International Student Assessment, the results shown by students in some countries participating in these assessments may be less optimal, especially in how their performance values. When the same test is given to each student, there are several possibilities why the results they get will be different. One reason is the existence of laws that apply in each country between countries that participate in assessments. With these rules, adaptation is needed to overcome differences. Besides, cultural differences are the main inhibition in taking these tests. Culture is something that is very closely related to individual life. From evidence based on a variety of sources, the inability to adapt and overcome cultural and legal differences leads to difficulties taking the test because the ability to adapt and overcome cultural and legal differences is very important.

The statistical findings of this research provide compelling evidence that cultural intelligence (CQ) and legal literacy (LL) each exert significant, independent effects on student performance in international educational assessments. However, a deeper interpretation reveals several critical nuances:

1. CQ as a Predictor of Performance in Global Contexts. The strong, positive effect of CQ on PISA and, to a lesser extent, TIMSS scores underscores the value of intercultural competence for academic adaptability and problem-solving. This indicates that, beyond subject mastery, students who can flexibly interpret and respond to culturally diverse test scenarios are more likely to excel on tasks that reflect real-world, globally contextualized challenges. This aligns with contemporary theories (e.g., Vygotsky's Sociocultural Theory) emphasizing cultural context as central to knowledge construction and application.

In practice, this suggests that students in multilingual, multicultural classrooms—or those exposed to global curricula—may develop advantages not captured by traditional metrics of academic excellence. The relatively higher β coefficient for CQ in PISA also implies that as international benchmarks increasingly prioritize analytical and scenario-based reasoning, intercultural adaptability becomes an integral academic asset.

2. The Unique, Domain-Specific Role of LL. The finding that legal literacy more strongly predicts performance on items requiring legal reasoning, critical thinking, and civic understanding reinforces the notion that standardized assessments are not value-neutral, but embedded with implicit legal and ethical concepts. The moderate, but significant, effect of LL on TIMSS—more focused on memorization—suggests that legal knowledge alone is less relevant in traditional, factual-recall domains, but vital for problem-based global assessments.

This result is particularly relevant for countries or schools considering curriculum reforms related to civic education or social studies, highlighting that discrete legal or civic skills transfer directly to performance on international benchmarks when test items move beyond rote learning.

3. Independence and Complementarity of CQ and LL. The lack of significant interaction between CQ and LL signals that these competencies, while both positively impactful, likely operate through different cognitive and behavioral channels. CQ primarily enhances a student's ability to navigate contextual ambiguities, adapt to novel scenarios, and collaborate across cultures. LL, meanwhile, reinforces capacity for logical

analysis, rule interpretation, and ethical reasoning. Thus, interventions aiming to improve student outcomes may achieve the best results by targeting both domains distinctly, rather than assuming improvements in one will automatically result in gains in the other.

4. Implications for Socio-Economic, Classroom, and System-Level Variables. The persistence of CQ and LL effects after controlling for SES, teacher experience, and classroom performance implies that these "soft" competencies can serve as equalizers or differentiators regardless of background. For policymakers, this is critical: investments in CQ and LL may help close achievement gaps that cannot be addressed by raising baseline cognitive skills or material resources alone.

5. Broader Educational and Policy Relevance. These results resonate with calls from international organizations (OECD, UNESCO) to "move beyond knowledge" and foreground transferable, cross-contextual skills as drivers of global competency. For practitioners, it highlights the inadequacy of focusing exclusively on curriculum content or test prep strategies—embed experiential, context-rich, and interdisciplinary approaches is essential.

6. Future Directions. While the study captures meaningful statistical relationships, causality cannot be unequivocally established. Additionally, differences in test language, translation, or local context may either mask or exaggerate effects, which future research should address via mixed-methods and longitudinal analysis. The study's findings also raise new questions: Are certain CQ dimensions more influential for certain test formats? How do national legal cultures mediate the impact of LL on global assessments? These are recommended pathways for ongoing inquiry.

An interesting avenue for further research would be to include cultural intelligence and legal literacy and student achievement in global assessments as well as the later regional impacts in the Middle East and North Africa. These two facets of student's capital could significantly change our understanding of how schools might prepare them to maximize outcomes in academic assessments. This school defies the norm in the research population by offering an international curriculum and nearly all of its students are non-nationals. It does, however, follow the population in being in the western education model so researchers would expect it to apply a western-orientated pedagogy. There are also, therefore, questions to be addressed as to whether cultural intelligence and legal literacy are incidental capital that a school might cultivate or whether they are better understood as explicit capital which schools can, therefore, teach. This is an important consideration for policy actors as it may be that this aspect of student capital is vital for improved outcomes as the international education sector becomes more fragmented as a consequence of global marketisation and the opening of new schools catering for diverse community needs.

2.2 Limitations and Future Research Directions

This research presents a comprehensive review of the concepts associated with cultural intelligence (CQ) and legal literacy as factors that can influence student performance on global educational assessments. It appears that, along with International Schools and global educational assessments, students would require cultural intelligence to enable them in recognizing different nationalities and cultures in terms of perceptions, learning styles, and approaches; and legal literacy should help them in gaining an awareness of different legal systems and thus in managing the rights of individuals, the obligations of families and communities. Although it is equally significant for students to understand another point of view, students' abilities to view problems and statistics from different perspectives have been ignored. Since students have different CQ and legal literacy resulting from nationality, a need exists for educators to develop personalized instruction for students with differing CQ and legal literacy backgrounds. Prescriptive information emerged from this research that demonstrates that, in examination preparation, culturally intelligent students require more support in taking the perspective of others, and students equipped with high legal literacy would benefit more from mastering cue items and strategies when confronted with quantitatively formatted problems. This research also investigates the impacts of students' CQ and legal literacy on their performance who encountered problems mimicking PISA as an extensive reform of PISA-based examinations for schools is currently available.

2.3 Policy Implications

To enhance student success in global educational benchmarks, policymakers and educators should consider:

- Curriculum Reform: Incorporating CQ and LL modules into standard curricula to foster cross-cultural understanding and legal reasoning.
- Teacher Training Programs: Equipping educators with strategies to develop students' CQ through intercultural education.
- Assessment Design: Developing international assessments that account for cultural and legal knowledge, ensuring a fairer evaluation of student competencies worldwide.

2.4 Implementation Roadmap: Integrating Cultural Intelligence (CQ) and Legal Literacy (LL) into Educational Curricula

To translate research insights into effective educational practice, the following phased roadmap provides policymakers, school leaders, and curriculum designers with actionable steps to systematically integrate CQ and LL into curricula at primary, secondary, and tertiary levels.

Phase 1: Needs Assessment & Policy Mandate

- Conduct Stakeholder Consultations. Engage teachers, students, parents, employers, and experts to identify current gaps in cultural and legal competencies and their relevance for assessment and workforce readiness.
- Policy Mandate & National Framework. Ministries of education and national curriculum authorities should formally recognize CQ and LL as essential 21st-century competencies and issue directives for their systematic integration.
- Develop or adopt a national competency framework referencing international standards (e.g., OECD Global Competence, UNESCO, European Entre Comp/LLL frameworks).

Phase 2: Curriculum Design & Resource Development

- Curriculum Mapping. Audit existing curricula across subjects (social studies, language, civics, ethics, business, etc.) for CQ and LL touchpoints; Identify opportunities for new content, interdisciplinary projects, and cross-curricular modules.
- Develop Learning Outcomes & Modules. Articulate explicit learning objectives for CQ (e.g., intercultural communication, adaptability, metacognition) and LL (e.g., basic rights and responsibilities, legal reasoning); Design stand-alone modules and embed CQ/LL strands within core subjects with age-appropriate, context-relevant materials.
- Create Resource Toolkits. Produce and disseminate textbooks, case studies, scenario-based activities, digital simulations, and multimedia materials for teachers and students; Localize materials for language and cultural relevance.

Phase 3: Teacher Training & Capacity Building

- Professional Development Programs. Implement mandatory in-service training for teachers focused on CQ and LL pedagogy, experiential learning, and inclusive classroom practices; Provide school leaders and administrators with workshops on curricular leadership for CQ and LL integration.
- Foster Communities of Practice. Encourage formation of teacher networks to develop, share, and refine best practices in implementing CQ and LL education.

Phase 4: Experiential & Interdisciplinary Learning

- Active Learning Approaches. Introduce role-plays, debates, mock trials, intercultural exchange projects, service-based learning, and problem-based assignments simulating real-world CQ and LL challenges.
- International & Local Partnerships. Establish exchange programs, collaborative projects, and partnerships with law firms, NGOs, international schools, and community organizations.

Phase 5: Assessment & Evaluation
- Develop New Assessment Tools. Design formative and summative assessments (e.g., scenario-based items, reflective portfolios, interdisciplinary projects) that directly measure CQ and LL skills, not just rote knowledge; Integrate CQ/LL measures into school inspections, national exams, and student e-portfolios.
- Monitor Outcomes & Ensure Equity. Collect data on student performance, inclusion, and progression with respect to CQ and LL; Adjust approaches based on findings to address achievement gaps, gender or socioeconomic disparities.

Phase 6: Continuous Improvement & Policy Feedback
- Regular Review Cycles. Establish three-to-five-year curriculum review cycles for CQ and LL content, teacher preparation, and assessment tools based on new research, international benchmarks, and local needs feedback.
- Scale and sustain. Reward innovative schools or districts with additional support/funding; Provide platforms for sharing case studies and success stories at local, national, and international levels.

In one pilot district, the roadmap could unfold as follows:
- Year 1: Policy announcement, curriculum review, and resource preparation.
- Year 2: Mass teacher training, pilot CQ/LL modules in selected schools.
- Year 3: Full rollout in all schools, initial assessment, and adaptation based on feedback.
- Year 4+: Ongoing evaluation, sharing of best practices, and integration into broader education reforms.

If adhering to this implementation roadmap, education systems will not only comply with global best practices but will also meaningfully enhance student competencies for academic, civic, and workforce success in an interconnected, legally complex, and multicultural world.

3. CASE STUDIES AND BEST PRACTICES

The role of Cultural Intelligence (CQ) and Legal Literacy (LL) in higher education has gained significant attention due to globalization and the increasing diversity in classrooms worldwide. As international educational assessments such as PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) continue to shape academic benchmarks, institutions are actively seeking ways to incorporate CQ and LL into their curricula to enhance student competencies [9, 33-35].

This section presents case studies that highlight successful integration of CQ and LL in higher education and examines best practices adopted by leading institutions globally.

i. Case Study 1: University of Melbourne's Global Competency Framework

The University of Melbourne implemented a Global Competency Framework aimed at equipping students with both Cultural Intelligence and Legal Literacy (Johnson et al., 2017). The program consists of:
- Intercultural Leadership Training. Workshops that develop students' ability to work in multicultural teams.
- Legal Awareness Modules. Courses that familiarize students with international legal systems and policies affecting global mobility [44].
- Real-world Simulations. Students participate in mock international negotiations and legal arbitration sessions.
  Impact
- Students showed higher adaptability in cross-cultural environments.
- Improved legal reasoning skills were observed in case study analyses.
- International mobility rates increased among graduates.

ii. Case Study 2: Harvard Law School's Legal Literacy and Cultural Adaptation Program

Harvard Law School recognized the need to bridge legal education with cross-cultural competencies [28]. The institution introduced an interdisciplinary approach by integrating Cultural Intelligence (CQ) training into legal coursework.

Key Initiatives

- Cross-Cultural Legal Negotiations. Simulations where students must navigate legal disputes in international settings.
- Comparative Legal Systems Course. Analysis of how legal frameworks differ globally.
- Fieldwork in International Human Rights Law. Students engage with global communities to understand law in diverse cultural contexts.

Results

- 90% of participants reported increased awareness of cross-cultural legal challenges.
- Alumni working in international law firms credited the program for enhancing their negotiation skills.

iii. Case Study 3: Singapore Management University's Intercultural Legal Literacy Initiative

Singapore Management University (SMU) introduced an Intercultural Legal Literacy Initiative that aims to develop CQ and LL among business and law students [11]. The initiative is based on experiential learning principles.

Program Components

- Legal Literacy Bootcamp. A crash course on international business law.
- CQ and Law Experiential Learning. International student exchange programs focusing on legal studies.
- Case Competitions. Multicultural teams solve real-world legal cases.

Findings

- Students demonstrated improved critical thinking in applying legal concepts.
- Collaborative skills in multicultural teams were enhanced.
- Graduates showed higher employability in international legal firms.
- Best Practices for Integrating CQ and LL in Higher Education

Based on successful case studies, the following best practices emerge for integrating Cultural Intelligence and Legal Literacy into higher education:

1. Interdisciplinary Curricula. Embedding CQ and LL components into multiple disciplines enhances student exposure [45].
2. Experiential Learning.: Role-playing, real-world simulations, and international case studies improve retention and application [31].
3. Technology-Enhanced Learning. AI-driven legal simulations and digital cross-cultural training modules have proven effective [25].
4. Faculty Training and Development. Educators must receive CQ and LL training to effectively mentor students [27].

4. HYPOTHESIS TESTING

i. Research Hypotheses

Based on prior research and case study findings, the study posits the following hypotheses:

- The study proposed the following hypotheses:
- H1: Students with higher Cultural Intelligence (CQ) scores will perform better in PISA assessments.
- H2: Students with higher Legal Literacy (LL) scores will perform better in TIMSS assessments.
- H3: Students with both higher CQ and LL levels will show overall improved performance in international educational assessments.

ii. Data Collection and Sample Characteristics

This study employs a multilevel hierarchical linear modeling (HLM) approach to analyze data from 804 students across 39 classrooms. The dataset comprises:

- Demographic Information (age, gender, socioeconomic background).
- Standardized Test Scores (PISA and TIMSS results).
- CQ Scores measured using the Cultural Intelligence Scale (CQS).
- LL Scores based on a validated Legal Literacy Index (LLI).

Participants are stratified by country income levels, with data collected from high-income, upper-middle-income, and lower-middle-income nations to assess cross-cultural differences in educational performance [14].

iii. Statistical Analysis and Testing Approach

1. Exploratory Data Analysis (EDA): Initial examination of data distributions to detect outliers and trends.
2. Bivariate Analysis: Examining the relationships between CQ, LL, and student performance.
3. Hierarchical Linear Regression: Testing the impact of CQ and LL while controlling for confounding variables.
4. Structural Equation Modeling (SEM): Assessing causal relationships between CQ, LL, and academic performance.

iv. Hypothesis Validation:

- H1 was confirmed, as CQ had a statistically significant impact on PISA performance ($p < 0.01$).
- H2 was confirmed, as LL had a statistically significant impact on TIMSS performance ($p < 0.05$).
- H3 was partially confirmed, as CQ and LL together positively influenced international assessment performance, but their impact varied depending on the type of test (analytical reasoning vs. memorization-based questions).

v. Findings

- CQ positively correlates with higher problem-solving abilities [11].
- LL shows a moderate impact on PISA scores, suggesting its role in critical thinking tasks [35, 36, 39].
- Countries that emphasized CQ and LL in education policy had students who performed better in international assessments [28, 46, 47].

These results demonstrate that enhancing Cultural Intelligence (CQ) and Legal Literacy (LL) can better prepare students for international educational assessments. As a result, integrating CQ and LL into educational curricula is strongly recommended.

VII. CONCLUSION

This study underscores the critical role of Cultural Intelligence and Legal Literacy in shaping student outcomes in global educational assessments. While CQ enhances adaptability and critical thinking, LL provides a foundational understanding of rights and responsibilities, influencing decision-making in academic settings.

Future research should explore:

1. The longitudinal impact of CQ and LL on career readiness and workforce integration.
2. The effect of digital learning tools on improving CQ and LL among students.
3. Comparative studies across different educational systems to identify best practices for integrating these competencies into formal education.

By prioritizing these competencies, educators and policymakers can better prepare students for success in an increasingly interconnected world.

1. CONNECTION BETWEEN FINDINGS AND RESEARCH QUESTIONS

To ensure clear alignment between the study findings and the guiding research questions, this section summarizes how each core result directly addresses the corresponding research objective. This demonstration provides clarity for both academic readers and policymakers, and highlights the study's empirical contribution.

i. *Research Question 1: How does Cultural Intelligence (CQ) influence student performance in global educational assessments?*

Findings

- The hierarchical linear modeling analysis revealed that students with higher CQ scores performed significantly better in international assessments, specifically on the PISA test ($\beta = 0.45$, $p < 0.01$).
- CQ was most strongly associated with adaptability, critical thinking, and problem-solving items, as demonstrated by large effect sizes for metacognitive and behavioral CQ subscales.
- Qualitative findings reinforced that CQ enables students to interpret culturally embedded scenarios and reduces the risk of misinterpretation in global assessment environments.

These results provide direct empirical support for the first research question, showing that CQ is a robust and independent predictor of student achievement in global standardized tests, particularly for items requiring cross-cultural understanding.

ii. *Research Question 2: What role does Legal Literacy (LL) play in shaping student success in standardized international tests?*

Findings

- LL was found to have a moderate, statistically significant positive effect on PISA ($\beta = 0.29$, $p < 0.05$) and an even greater effect on TIMSS scores ($\beta = 0.38$, $p < 0.05$), especially for test items involving legal reasoning, rules, or ethical judgment.
- Students with higher LL demonstrated better performance on analytical and civics-related tasks within both test types.
- The results confirm that LL operates independently of CQ, with no significant interaction, indicating each competency makes a unique contribution.

This finding answers the second research question, substantiating that legal literacy is especially relevant for standardized test items rooted in legal contexts or requiring structured critical reasoning, and is valuable for both international and (as shown in additional analyses) local assessments.

iii. *Research Question 3: How can educational institutions integrate CQ and LL into curricula to enhance student competencies?*

Findings

- Case studies from leading institutions (e.g., University of Melbourne, Harvard Law School, Singapore Management University) demonstrated the effectiveness of curriculum modules, experiential learning, and teacher training for developing CQ and LL.
- Schools that incorporated interdisciplinary CQ/LL training and scenario-based learning showed higher overall student test scores, particularly in complex, real-world questions.
- Policy implication analysis indicated that curriculum reform, teacher development, and culturally relevant assessment design all resulted in measurable gains.

These results address the third research question by providing practical, evidence-based models and pedagogical strategies for curricular integration of cultural and legal competencies, with clear links to improved student learning outcomes.

iv. *Synthesis: Integrated Impact. Combining the answers to the three research questions, the overall findings demonstrate that:*

- Both CQ and LL are not only theoretically important but are measurable pedagogical levers for raising student achievement on global educational benchmarks.
- The study's empirical evidence validates the call for curriculum and policy reforms advocating the intentional, interdisciplinary development of these skills.

v. *Implication for Future Research and Policy.* By clearly establishing how each finding maps to its respective research question, the study provides transparent and actionable guidance for educators, curriculum designers, and policymakers seeking to prepare students for global academic challenges.

vi. *Future Research Directions*

Building upon the present findings, several concrete avenues for future research are warranted to deepen and expand our understanding of the role of Cultural Intelligence (CQ) and Legal Literacy (LL) in global education:

- *Longitudinal Designs*. Future studies should employ longitudinal research designs to track how individual CQ and LL competencies develop over time — across critical educational transitions (e.g., from lower to upper secondary, or secondary to tertiary education). Such studies can elucidate the causal trajectories of growth, the impact of classroom interventions, and the persistence of CQ and LL gains into adulthood.

- *Intervention Studies and Employment Outcomes*. Controlled intervention research is needed to evaluate whether targeted curricular modules or training programs that enhance CQ and LL lead to measurable improvements not only in academic performance, but also in non-academic outcomes such as employability. For instance, large-scale randomized controlled trials (RCTs) could assess whether students participating in CQ/LL workshops or international exchange programs exhibit higher post-graduate employment rates, workplace adaptability, and cross-cultural collaboration skills.

- *Mixed-Methods and Cross-Cultural Effects*. Combining quantitative and qualitative methods, future studies could examine how CQ and LL are influenced by cultural, national, and linguistic factors. Comparative research across different countries and cultural contexts especially low- and middle-income settings can reveal moderating effects and support the generalizability of interventions.

- *Mechanisms and Mediation Analysis*. Further research should investigate mediating mechanisms through which CQ and LL affect both assessment performance and life outcomes such as increased self-efficacy, resilience, or international mobility. Structural equation modeling could be employed to specify and test these pathways.

- *Digital and Informal Learning*. The role of technology and informal learning environments (e.g., social media, online courses, global virtual exchanges) should be explored as potential accelerators for CQ and LL development. Studies may analyze which digital platforms or pedagogical tools are most effective for diverse student populations.

- *Secondary Life Outcomes*. Long-term cohort studies can consider how early CQ and LL attainment is linked with broader adult outcomes such as civic engagement, legal compliance, multicultural competency in civic life, and international career trajectory.

Thus, by pursuing these focused research directions, the field can better assess both the direct and indirect benefits of fostering cultural intelligence and legal literacy not only for academic achievement in global education assessments but for holistic, lifelong success in an interconnected world.

2. SUMMARY OF KEY FINDINGS

This study investigates influences on student performance in global educational assessments. The manuscript studies the impact of cultural intelligence and legal literacy of Indonesian students upon their results in the test. It is motivated by the improving performance of Indonesian students in the test. The survey assesses 15-year-old law students every three years to test and compare their knowledge and skills across the world. It was administered for the first time in Indonesia in 2000 but had to be skipped until 2003 due to the monetary crisis. Most Indonesian students underperformed on the test, including in the following waves. However, achievements of Indonesian students have shown a significant improvement in the 2015 test, as compared to the previous tests. In view of this improvement, it is important to analyze the influences over achievement and similar test results to ensure improvements in similar future tests remain.

Data is collected from 5 countries - Uzbekistan, Indonesia, Germany, Sudan, Spain, with the list of names extending from A to M. Data on reading and science literacy are taken singly. The cultural intelligence

variable is patches on participation from 2008 until 2012. It includes three items measuring experience in the field of hotel industry and three items measuring experience in the field of other industries. Legal literacy is defined by 12 items asking about rights after an accident, when arrested, a signature, being accused of a crime, labor rights for youths, rights about living together, protection from internet transaction, leased goods, safe money saving, living near a garbage dump, and the rights of asylum seekers, among others. Data is analyzed using a set of random effects. The assessment of adult competencies is administered by an organization for economic cooperation and development. The survey covers 16 countries on literacy, numeracy and problem solving in technology-rich environments. Primary data is 2022/2023 academic year, N=804, 5 countries; Historical references we have: PISA 2012, 2015—used for national/regional trend comparison, also, we have certain variables (e.g., CQ trends) use historical records 2008–2012 as background controls.

3. CONTRIBUTIONS TO THE FIELD OF EDUCATION

Student performance in global educational assessments is viewed as critical on the world stage when measuring the capacity of countries to prepare students for a rapidly changing and increasingly competitive global economy. Within this context, students from the Uzbekistan are not as well prepared for a global economy and workforce. Student performance in global educational assessments has been linked with a general lack of preparedness for the global economy, and a superficial approach toward education about other countries. Many Uzbek students also experience a general lack of global competency. The effect of inadequate educational practices on student cultural sensitivity and preparedness for the global economy has been recognized as a problem, with the calls for changes to educational policy and recommendations continuing over a long period of time. The analysis is specifically grounded in issues of cultural competence and the literature on cultural intelligence (CQ) may provide a powerful tool to shape attitudes and behaviors toward international educational issues [6]. It is suggested that the measurement of the cultural intelligence (CQ) and the legal literacy of students is a previously overlooked predictor of student performance in global educational assessments. It is hypothesized that CQ and legal literacy are likely to prove significant factors determining student performance in global educational assessments.

4. FINAL THOUGHTS

The expansion of global educational assessments presents nations, particularly developing and transitional ones, with difficult, high stakes decisions about participation. Each level of engagement brings costs, known and unknowable, e.g., in administrative infrastructure, test administration, translation, professional development, policy response, and adaptations of curricula and instruction. Such costs must be balanced against potential individual and collective benefits, both manifest and speculative, e.g., diplomatic, commercial, developmental, societal, and improved learning and understanding of teachers, students, and systems. This is particularly vexing for small states, low income states, and the post-Soviet states due to the pressures of the testing companies, the national and regional politics regulating participation, understanding the reports and gaining 'buy-in' from multiple stakeholders, all under fluctuating policy and budget conditions. Implementation is further complicated by the differences in stakeholder knowledge and interest, which in Kyrgyzstan range from an interviewee who admitted he did not understand the issue to educators well prepared and engaged with the nature and defense of the exam. Such a wide net was cast in part to illustrate the deep roots and multifaceted nature of potential involvement. The experience and research provide historical, institutional and psychological context. More recent feedback from informed respondents provides details of possible best- and worst-case scenarios. The variety of responses is analyzed to suggest the importance of deep, rich engagement with knowledge mobilization when advocating for the incorporation of new educational practices. To this end, a draft proposal for national participation is made, and the insights have thus-far generated further avenues for future research. Cultural intelligence and its Four Capabilities of motivation, knowledge, strategy and metacognition can influence academic, life and work success and performance in globalized contexts. Also, people respond to cultural contexts depending

on their levels of CQ, motivating the need to distinguish CQ as a state or as a trait; furthermore, cultural contexts can vary in the knowledge, behavioral and emotional demands they place upon people, leading to the development of Cultural Geological Task Network.

Funding Statement

Author Contributions

All authors made an equal contribution to the development and planning of the study.

Data Availability Statement

Data are available from the authors upon request.

Conflict of Interest

The authors have no potential conflicts of interest, or such divergences linked with this research study.

Acknowledgements

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