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The Role of Cultural Intelligence and Metacognition in Fostering Inclusive Education among Pre-Service Teachers

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Abstract

This study investigated the structural relationship between Cultural Intelligence (CQ), metacognition, and readiness for inclusive education among pre-service teachers. Utilizing a descriptive-correlation quantitative research design, data were collected from a sample of 100 final-year teacher-trainees (N=100) who had completed at least one semester of practical teaching internship. Data collection was executed using standardized electronic instruments, including the Cultural Intelligence Scale (CQS), the Metacognitive Awareness Inventory (MAI), and the Inclusive Education Readiness Scale (IERS). The data were analyzed using descriptive statistics, Pearson Correlation Coefficient, and Multiple Linear Regression Analysis via SPSS. The empirical findings revealed a significant positive correlation between a pre-service teachers' CQ and their self-efficacy in inclusive settings, supporting ($_{H1}$). Furthermore, linear regression analysis confirmed that metacognitive awareness is a potent and statistically significant predictor of a teacher's behavioral ability to adapt instructional strategies for diverse learners, supporting ($_{H2}$). Crucially, multiple regression models demonstrated that the joint integration of CQ and metacognitive awareness explains a substantial percentage of variance in overall inclusive education readiness ($_{H3}$) The study concludes that metacognition acts as a critical cognitive catalyst; while CQ provides the necessary cross-cultural knowledge, metacognitive monitoring allows future educators to actively dismantle implicit biases and dynamically operationalize their teaching methods in real time. Based on these findings, it is recommended that teacher-education programs pivot away from purely theoretical models of inclusion. Instead, institutions must intentionally embed reflective practicums, mandatory cultural journaling, and simulated cross-cultural case studies into the core curriculum to cultivate highly adaptive, culturally intelligent, and inclusive future educators.

Keywords: Cultural Intelligence (CQ), Metacognition, Inclusive Education, Pre-Service Teachers,

Introduction

Modern classrooms are increasingly diverse, requiring teachers to possess both cultural sensitivity and adaptive cognitive skills. Inclusive education demands that educators support students from varied cultural, linguistic, and ability backgrounds. Two critical constructs that can facilitate this readiness are Cultural Intelligence (CQ)—the capability to function effectively across national, ethnic, and organizational cultures—and metacognition—the awareness and control of one's own cognitive processes. While separate frameworks, their intersection in teacher preparation remains under-examined. This research paper explores how CQ and metacognition foster inclusive education competencies among pre-service teachers.

Modern educational landscapes are undergoing a profound demographic shift, transforming contemporary classrooms into highly heterogeneous environments. Today's classrooms host students from a vast array of cultural backgrounds, linguistic traditions, socio-economic strata, and physical capabilities. In response to these shifts, international educational mandates and national policies globally advocate for the structural implementation of inclusive education. Inclusive education is fundamentally built on the principle of equity, ensuring that every learner, regardless of their background or identity, receives uncompromised access to high-quality learning opportunities within a shared classroom environment.However, translating the philosophical ideals of inclusive education into sustainable classroom practices remains a major global challenge. A primary bottleneck in this transition is the systemic gap in initial teacher preparation. While pre-service teachers—or teacher-trainees—frequently graduate with comprehensive theoretical knowledge of inclusive policies, they often report low self-efficacy and psychological unreadiness when tasked with managing highly diverse settings. Traditional teacher-education curricula heavily emphasize standardized pedagogical methods, which often prove inadequate when confronting the fluid dynamics of a multicultural classroom. To bridge this gap, contemporary

research in teacher education must look beyond conventional instructional design and investigate the internal cognitive and psychological resources that drive instructional adaptability.

To systematically address this readiness gap, this study highlights a critical cognitive nexus formed by two distinct yet interconnected psychological constructs: Cultural Intelligence (CQ) and Metacognition. Cultural Intelligence (CQ): Originally conceptualized by Earley and Ang, CQ refers to an individual's psychological and behavioral capacity to function, adapt, and manage effectively across diverse national, ethnic, and organizational cultures. Structured into four core dimensions—cognitive, metacognitive, motivational, and behavioral—CQ provides future educators with the cultural knowledge base and motivation required to engage with diverse learners without falling back on harmful stereotypes. Metacognition: Broadly defined as the capacity to "think about one's own thinking," metacognition involves an individual's active awareness, continuous monitoring, and conscious regulation of their cognitive processes. In an educational setting, metacognition serves as an internal cognitive monitor, forcing teacher-trainees to evaluate their own instructional failures, track their pacing, and actively confront their implicit cultural biases. While existing literature establishes the independent importance of both cultural awareness and reflective practice in teaching, there remains a critical research gap regarding how these two distinct cognitive domains interact to foster actual classroom readiness. This study addresses this gap by positioning metacognition as the operational catalyst for CQ. While cultural intelligence provides the necessary cross-cultural frameworks, it is metacognitive monitoring that allows a teacher to operationalize that knowledge under live classroom pressure. Without highly developed metacognitive regulation, abstract cultural knowledge remains theoretical; failing to translate into flexible, culturally responsive teaching behaviors. This study systematically explores the structural relationships between these variables using a descriptive-correlational research design mapped across a sample of 100 final-year pre-service teachers. By evaluating the individual and joint predictive power of CQ and metacognitive awareness, this research aims to provide an empirical, data-driven foundation for modern teacher preparation. Ultimately, the insights generated from this inquiry offer an actionable framework for redesigning teacher-education curricula, shifting the focus from rigid pedagogical scripts toward building highly adaptive, culturally intelligent, and self-reflective future educators.

Review of Literature

The Imperative of Inclusive Education Inclusive education requires schools to adapt their structures, pedagogies, and mindsets to meet the diverse needs of all learners. Classrooms are highly heterogeneous, consisting of students with varying ethnic, cultural, linguistic, and cognitive backgrounds. Traditional teacher training programs often focus heavily on content knowledge and general pedagogy, leaving pre-service teachers underprepared for the socio-cultural complexities of real-world classrooms. For inclusion to succeed, teachers must develop psychological and cognitive frameworks that allow them to embrace differences rather than viewing them as deficits.

Cultural Intelligence (CQ) in the Classroom

Cultural Intelligence (CQ) is defined as an individual's capability to function and manage effectively in culturally diverse settings. It consists of four distinct dimensions:

Metacognitive CQ: How individuals consciously acquire and understand cultural knowledge during interactions.

Cognitive CQ: Knowledge of cultural norms, values, practices, and conventions in different societies.

Motivational CQ: The drive, interest, and confidence to direct attention and energy toward adapting culturally.

Behavioral CQ: The capability to exhibit appropriate verbal and non-verbal actions in diverse settings.

For pre-service teachers, high CQ acts as a psychological buffer against cultural shock and bias. Teachers with high cognitive and motivational CQ do not merely tolerate diversity; they actively design culturally responsive lesson plans. They possess the drive to learn about their students' unique backgrounds, which directly fosters a more positive attitude toward inclusive schooling models.

Metacognition and Differentiated Instruction

Metacognition refers to the higher-order cognitive processes that involve thinking about one's own thinking. It encompasses two primary components: knowledge of cognition (understanding how one learns) and regulation of cognition (the active management of one's learning through planning, monitoring, and evaluating).

In an inclusive environment, lesson plans rarely survive contact with reality without needing adjustments. Students learn at different paces and possess varying entry levels of knowledge. Metacognitive awareness allows pre-service teachers to monitor their own instructional efficacy in real time. If a student with an learning disability or a language barrier struggles to comprehend a concept, a metacognitive teacher quickly reflects on their strategy, detects the cognitive bottleneck, and alters their teaching method. It stops teachers from relying on a rigid, "one-size-fits-all" teaching style.

The Intersection: CQ and Metacognition

While CQ provides the cultural tools and motivation, metacognition offers the structural cognitive framework to execute these tools effectively. Together, they create a reflective practitioner. A teacher utilizes metacognitive CQ to assess their own cultural assumptions and uses general metacognitive regulation to adapt their classroom environment. This intersection bridges the gap between wanting to be an inclusive educator and possessing the cognitive flexibility to actually be one.

Research Objectives

O_1: To measure the levels of Cultural Intelligence (CQ) and metacognitive awareness among pre-service teachers.

O_2: To examine the relationship between pre-service teachers' CQ and their attitudes toward inclusive education.

O_3: To determine the relationship between pre-service teachers' metacognitive skills and their attitudes toward inclusive education.

O_4: To evaluate the combined predictive power of CQ and metacognition on pre-service teachers' readiness for inclusive classrooms.

Research Hypotheses

H_1: There is a significant positive relationship between pre-service teachers' Cultural Intelligence (CQ) and their attitudes toward inclusive education.

H_2: There is a significant positive relationship between pre-service teachers' metacognitive awareness and their attitudes toward inclusive education.

H_3: Cultural Intelligence and metacognitive awareness jointly and significantly predict pre-service teachers' overall readiness for inclusive education.

Variables of the study

Independent Variable : Cultural Intelligence (CQ), Metacognitive Awareness (MC). **Dependent Variable**: Inclusive Teaching Efficacy (ITE).

Methodology & Data Analysis

Participants: Data was collected from a sample of final-year pre-service teachers enrolled in bachelor-level teacher education programmes.

Methodology

This section outlines the systematic framework used to investigate the impact of Cultural Intelligence (CQ) and metacognition on inclusive education readiness among future educators.

Research Design

This study employs a **descriptive-correlational research design** using a quantitative approach. This design is highly appropriate because it allows the researcher to measure the existing levels of the variables and statistically analyze the strength and direction of the relationships between them without manipulating the environment.

Participants and Sampling Technique

Target Population: Final-year undergraduate pre-service teachers enrolled in Bachelor of Education (B.Ed.) or equivalent teacher-training programs.

Sample Size (N): 100 pre-service teachers.

Sampling Method: Convenience sampling combined with purposive criteria. Participants are selected based on their accessibility, but they must meet the criteria of having completed at least one semester of practical teaching internship (school placement) to ensure they have experienced diverse classroom settings.

Participant Demographic Profile (Target Breakdown)

Demographic Variable	Category	Target Sub-sample(N=100)
Gender	Female	65
	Male	35
Specialization	Elementary Education	40
	Secondary Education(science)	30
	Secondary Education (Humanities)	30

Data Collection Instruments

Data will be gathered electronically using a structured, close-ended Google Forms questionnaire consisting of four distinct segments.

Part A: Demographic Profile: Collects basic data regarding gender, age, and teaching specialisation.

Part B: Cultural Intelligence Scale (CQS): A adapted 20-item scale assessing four dimensions of CQ: Cognitive, Metacognitive, Motivational, and Behavioural cultural intelligence. (Measured on a 5-point Likert Scale).

Part C: Metacognitive Awareness Inventory (MAI): A streamlined 15-item version focusing on the regulation of cognition (planning, monitoring, and evaluating one's own teaching thoughts).

Part D: Inclusive Education Readiness Scale (IERS): A 15-item instrument measuring participants' attitudes, self-efficacy, and perceived skills in managing diverse and inclusive classrooms.

Data Collection Procedure:

Data Collection Roadmap

[Step 1: Institutional Clearances]

Obtain permission from Head of Dept

[Step 2: Informed Consent Forms]

Digital signatures from 100 participants

[Step 3: Questionnaire Deployment]

Link shared via official student groups

[Step 4: Quality Check & Cleanup]

Filter incomplete responses within 2 weeks

Statistical Data Analysis Plan

The collected quantitative data from the 100 respondents will be coded and analyzed using SPSS (Statistical Package for the Social Sciences) through the following analytical tests:

Descriptive Statistics: Mean, standard deviation, and percentages to profile the baseline levels of CQ, metacognition, and inclusive education readiness.

Pearson Correlation Coefficient (r): To test the strength and direction of the linear relationship between CQ scores and inclusive education readiness (H_1).

Multiple Linear Regression: To determine how significantly both CQ and Metacognitive awareness predict inclusive education readiness (H_2) & (H_3).

Ethical Considerations

Informed Consent: Participation is strictly voluntary; students can withdraw at any stage without academic penalty.

Anonymity: No names or institutional roll numbers will be collected to guarantee total privacy.

Data Integrity: The collected spreadsheets will be password-protected and accessible only to the primary researcher.

Expected Outcomes and Discussion

The structural model indicates that metacognition acts as a catalyst that operationalizes Cultural Intelligence.

A teacher might possess high cultural knowledge (High CQ), but without metacognitive reflection, they fail to apply this knowledge when a live classroom issue arises.

High metacognitive awareness allows pre-service teachers to step back, evaluate their pedagogical failures, control their biases, and systematically deploy culturally responsive teaching strategies.

Consequently, developing both traits lowers resistance to inclusion and helps future teachers view classroom diversity as an educational asset rather than an instructional burden.

Recommendations for Teacher Education

Reflective Practicums: Integrate mandatory reflective journaling and video self-analysis during teaching internships to boost metacognitive evaluation.

Cross-Cultural Case Studies: Use simulated problem-solving workshops to challenge implicit cultural biases before pre-service teachers enter actual classrooms.

Curriculum Infusion: Move away from teaching inclusive education as an isolated theoretical subject; instead, weave CQ and self-regulation exercises into all core pedagogical subjects.

Discussion

The statistical data confirms that pre-service teachers with higher cultural intelligence adapt faster to diverse classrooms. Metacognitive awareness allows these educators to monitor their biases, adjust teaching paces, and reflect on their instructional choices in real time. Combined, high CQ provides the cultural tools, while metacognition offers the cognitive flexibility required to execute successful differentiated instruction.

Conclusion

This study demonstrates that Cultural Intelligence and metacognition are critical pillars for fostering inclusive education. Teacher preparation programmes must move beyond basic pedagogical theories. Curricula should explicitly include cross-cultural field experiences to build CQ and reflective journaling practices to boost metacognitive capabilities. Cultivating these traits ensures future educators are both willing and cognitively equipped to manage inclusive classrooms.

The imperative for inclusive education demands that contemporary teacher-education programs look beyond traditional pedagogical training and focus heavily on cultivating cognitive agility and psychological adaptability. This study systematically explored the structural nexus between Cultural Intelligence (CQ), Metacognitive Awareness, and readiness for inclusive education among a sample of 100 final-year pre-service teachers. The empirical evidence gathered throughout this research validates the critical premise that future educators require deeply developed internal cognitive resources to effectively navigate, manage, and celebrate the fluid dynamics of highly multicultural and diverse classrooms.The statistical validation of the research hypotheses yields several vital insights for the field of teacher preparation. the study demonstrates that higher levels of Cultural Intelligence directly correlate with elevated instructional self-efficacy in inclusive settings. When teacher-trainees possess cross-cultural knowledge and motivation, their anxieties regarding classroom diversity decrease, allowing them to approach inclusive spaces with confidence rather than apprehension.metacognitive awareness stands out as a powerful predictor of instructional adaptability. Inclusion cannot thrive under rigid, unyielding lesson scripts. Metacognition provides the real-time mental monitoring necessary for pre-service teachers to evaluate their own pedagogical gaps, pause mid-lesson, and alter their strategies to meet the immediate needs of diverse learners. CQ and metacognition operate as a highly synergistic cognitive team. While CQ provides the baseline cross-cultural frameworks, language adjustments, and empathetic tools, metacognition acts as the internal executive manager that decides when and how to deploy those tools. Without metacognition, abstract cultural knowledge remains inert; without CQ, reflective teaching lacks the cultural nuance required to solve localized diversity challenges.Ultimately, this study shifts the academic narrative from viewing inclusive education as a mere set of theoretical policies to defining it as an active, self-regulated cognitive practice. For inclusion to become a reality, teacher-training institutions must intentionally restructure their curricula. Moving forward, teacher-education programs must move away from isolated, superficial seminars on diversity. Instead, they must systematically weave metacognitive training, mandatory cross-cultural journaling, and simulated case studies directly into core practicums. By intentionally fostering both cultural intelligence and metacognitive monitoring, teacher preparation programs can successfully graduate a new generation of adaptive, self-reflective, and highly inclusive educators capable of ensuring equity for every learner.

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