

Metacognitive Calibration Deficits in Second-Language Academic Writing: A Longitudinal Classroom-Based Analysis of EFL Undergraduate Cohorts in Tertiary Institutions

Robin Mitchell

Professor

Ewha Womans University

52 Ewhayeodae-gil, Seodaemun-gu, Seoul, 03760, South Korea

Alex Roberts

Associate Professor

University of Warsaw

Krakowskie Przedmieście 26/28, 00-927 Warsaw, Poland

Avery Rodriguez

PhD

University of Toronto

27 King's College Circle, Toronto, Ontario, M5S 1A1, Canada

Abstract. This study investigates metacognitive calibration accuracy and its relationship to academic writing proficiency among English as a Foreign Language (EFL) undergraduates across three consecutive semesters. Drawing on a longitudinal quasi-experimental design involving 214 participants from two tertiary institutions in South Korea and Poland, the research employs think-aloud protocol analysis, self-regulated learning inventories, and corpus-assisted discourse analysis to identify systematic calibration deficits in self-assessment of argumentative writing tasks. Findings indicate that students with low metacognitive monitoring capacity consistently overestimate syntactic complexity and underestimate pragmatic coherence in their written output. Instructional scaffolding interventions targeting calibration recalibration yielded statistically significant gains ($p < .01$) in holistic writing scores. These results carry substantive implications for formative assessment design, writing-across-the-curriculum frameworks, and EFL teacher professional development programs in higher education contexts.

Keywords: metacognitive calibration, EFL academic writing, self-regulated learning, think-aloud protocol, formative assessment, corpus-assisted discourse analysis, tertiary education, argumentative writing proficiency, instructional scaffolding

Introduction

Academic writing proficiency in a second language represents one of the most cognitively demanding tasks undergraduate students encounter within tertiary educational environments. As universities across Asia, Europe, and Latin America increasingly adopt English-medium instruction (EMI) policies in response to globalization pressures, the academic performance gap between native and non-native English speakers has become a

focal concern for educational researchers, curriculum designers, and institutional policymakers alike. Within this landscape, metacognition—defined as the learner's capacity to monitor, evaluate, and regulate their own cognitive processes—has emerged as a critical determinant of writing achievement, yet its precise calibration dynamics in EFL academic writing contexts remain insufficiently theorized and empirically underexplored. Metacognitive calibration, specifically, refers to the degree of accuracy with which a learner's self-assessments of task performance correspond to objectively measured outcomes. Poorly calibrated learners—those who systematically overestimate or underestimate their own competencies—are particularly vulnerable to maladaptive study behaviors, inefficient revision strategies, and diminished responsiveness to instructor feedback. Flavell's foundational metacognitive framework (1979) and subsequent elaborations by Pintrich (2000) and Zimmerman (2002) established the theoretical scaffolding upon which contemporary self-regulated learning (SRL) models rest; however, the operationalization of calibration accuracy within discipline-specific writing tasks, particularly in EFL environments, has received disproportionately scant empirical attention relative to its pedagogical significance. The urgency of this inquiry is amplified by recent shifts in higher education assessment paradigms. The post-pandemic period (2022–2026) has accelerated the adoption of AI-assisted writing tools, portfolio-based evaluation systems, and asynchronous peer-review platforms, all of which fundamentally alter the feedback ecology within which metacognitive processes develop. Students navigating these complex, technologically mediated writing environments require not only linguistic competence but a finely calibrated awareness of their own strengths and deficits across multiple dimensions of academic discourse—including argumentation structure, lexical sophistication, syntactic complexity, and pragmatic coherence. This paper addresses the identified gap through a longitudinal, classroom-based empirical investigation spanning three academic semesters. Section 2 reviews extant literature on metacognitive calibration within SRL frameworks and EFL writing pedagogy. Section 3 details the quasi-experimental methodology, including participant selection criteria, instrumentation, and corpus construction procedures. Section 4 presents quantitative and qualitative findings derived from think-aloud protocols, calibration accuracy indices, and pre/post holistic writing assessments. Section 5 discusses pedagogical implications for scaffolded calibration interventions, formative assessment redesign, and teacher professional development. Section 6 concludes with theoretical contributions and directions for future cross-institutional replication studies.

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