Metacognitive Scaffolding Deficits in Early Adolescent L2 Learners: A Longitudinal Classroom-Based Analysis of Self-Regulated Writing Strategy Acquisition in CLIL Environments

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Abstract. This study investigates the longitudinal development of self-regulated writing strategies among early adolescent second-language (L2) learners enrolled in Content and Language Integrated Learning (CLIL) programs across three middle schools in the Flemish Community of Belgium. Drawing on Zimmerman's cyclical model of self-regulation and Flavell's metacognitive monitoring theory, the research tracked 214 learners (ages 11–14) over 18 months using think-aloud protocol analysis, portfolio assessment rubrics, and multilevel structural equation modeling (MSEM). Findings reveal statistically significant deficits in metacognitive scaffolding uptake among learners transitioning from L1-dominant instructional contexts, with teacher feedback calibration emerging as the strongest predictor of autonomous strategy deployment. These results carry direct implications for CLIL curriculum sequencing, formative assessment design, and pre-service teacher training in multilingual educational settings.

Keywords: metacognitive scaffolding, self-regulated learning, CLIL pedagogy, L2 writing strategy acquisition, formative assessment, think-aloud protocol, multilevel structural equation modeling, early adolescent literacy, content and language integrated learning

Introduction

The intersection of metacognition and second-language literacy development represents one of the most empirically underexplored domains within contemporary educational research. As multilingual policy frameworks proliferate across European, East Asian, and Latin American educational systems, the structural demand for effective Content and Language Integrated Learning (CLIL) implementation has intensified markedly between 2024 and 2026, driven by institutional mandates from supranational bodies including the

European Commission's Language Education Policy Division and UNESCO's Global Education Monitoring apparatus. Despite this institutional momentum, a persistent and consequential gap exists in our mechanistic understanding of how early adolescent learners—those navigating the cognitively turbulent transition from primary to secondary schooling—develop, internalize, and deploy metacognitive self-regulation strategies when composing academic texts in a second language. Metacognitive scaffolding, broadly defined as the externally mediated instructional support that gradually transfers regulatory control from teacher to learner across iterative task cycles, remains inadequately operationalized in CLIL-specific pedagogical literature. Seminal contributions by Zimmerman (1989, 2002) established the cyclical forethought–performance–self-reflection model of self-regulated learning (SRL), while Flavell's (1979) tripartite taxonomy of metacognitive knowledge—person, task, and strategy variables—provided the theoretical scaffolding upon which subsequent writing strategy research was constructed. However, the transposition of these constructs into CLIL writing classrooms, where learners are simultaneously navigating content acquisition and linguistic form-meaning mapping under heightened cognitive load, has not been sufficiently examined through longitudinal empirical lenses. The present study addresses this gap by conducting an 18-month classroom-based longitudinal analysis within CLIL middle school programs in the Flemish Community of Belgium—a jurisdiction selected for its institutionally mature bilingual education infrastructure and its policy-mandated L2 academic writing benchmarks. We employ a mixed-methods convergent design integrating think-aloud verbal report protocols, analytic writing portfolio rubrics calibrated against CEFR B1–B2 descriptors, and multilevel structural equation modeling (MSEM) to disentangle individual-level metacognitive variance from classroom-level instructional effects. Particular analytical attention is directed toward teacher feedback calibration practices and their mediating role in scaffolding autonomous strategy deployment across the SRL forethought and self-reflection phases. The article proceeds as follows. Section 2 situates the study within current theoretical frameworks of metacognition, SRL, and CLIL-specific literacy pedagogy. Section 3 details the research design, participant sampling procedures, instrumentation, and analytic strategy. Section 4 presents quantitative and qualitative findings organized around the three primary research questions. Section 5 offers an interpretive discussion linking empirical outcomes to formative assessment design principles and pre-service teacher preparation. Section 6 concludes with implications for CLIL curriculum sequencing and directions for future longitudinal inquiry across diverse multilingual ecologies.

References

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