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THE MEDIATING ROLE OF METACOGNITIVE LEARNING STRATEGIES IN COMMERCE ACHIEVEMENT

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ABSTRACT

Commerce education, encompassing disciplines like accounting, finance, economics, and business management, demands complex cognitive processing and adaptive learning. While cognitive abilities are fundamental, emerging research highlights the critical role of meta-cognitive learning strategies the awareness and regulation of one's own thinking processes in determining academic achievement within this domain. This article synthesizes current empirical evidence to investigate the mediating role of meta-cognitive learning strategies in the relationship between learner characteristics e.g., prior knowledge, motivation self-efficacy and environmental factors (e.g., teaching methods, curriculum design) on the one hand, and ultimate commerce achievement on the other. The review draws on prominent theoretical frameworks, including Flavell's meta-cognitive theory and Zimmerman's model of self-regulated learning, to conceptualize meta-cognitive learning strategies as encompassing planning (goal setting, task analysis), monitoring (comprehension checking, error detection), and evaluation (strategy assessment, performance appraisal) components. Evidence strongly suggests that students who effectively employ these strategies demonstrate superior understanding, problem-solving abilities, and retention of complex commercial concepts compared to their peers who rely on passive or superficial learning methods. Crucially, meta-cognitive learning strategies act not merely as a direct predictor but as a significant mediator. Factors like high self-efficacy or exposure to inquiry-based teaching positively influence meta-cognitive learning strategies engagement. In turn, the active deployment of meta-cognitive learning strategies such as planning study schedules for different commerce subjects, monitoring understanding of financial statements, or evaluating the effectiveness of memorization techniques for economic theories – directly enhances learning depth and application, thereby driving higher achievement in coursework and examinations. This mediation model underscores the importance of moving beyond content delivery to explicitly fostering meta-cognitive skills within commerce curricula. The findings have profound implications. Integrating explicit instruction through techniques like think-aloud protocols, reflective journals, strategy discussions, and guided practice with complex problems is essential for empowering commerce students to become self-directed, adaptable learners capable of navigating the dynamic demands of the field and achieving sustained academic success.

Keywords: Meta-cognitive Learning Strategies, Commerce Education, Academic Achievement, Self-Regulated Learning, Mediation Analysis

INTRODUCTION

Commerce education forms a critical pillar in preparing individuals for diverse roles in the global economy. Disciplines such as accounting, finance, economics, marketing, and management require students to master intricate conceptual frameworks, analytical techniques, problem-solving skills, and the application of theoretical knowledge to practical

scenarios (Smith & Smith, 2020). Achieving success in this domain is complex, influenced by a confluence of factors including prior academic background, cognitive aptitude, motivation, instructional quality, and the learning environment (Brown & Jones, 2018).

While cognitive abilities (e.g., logical reasoning, numerical aptitude) are undeniably important, research increasingly points towards the pivotal role of *how* students approach their learning specifically, their use of meta-cognitive learning strategies (MLS). Meta-cognition, broadly defined as "thinking about thinking" (Flavell, 1979), involves knowledge about one's own cognitive processes and the ability to monitor, control, and regulate these processes to achieve specific learning goals. MLS, therefore, encompass the deliberate activities learners employ to plan, monitor, and evaluate their comprehension and learning progress (Schraw & Dennison, 1994; Veenman et al., 2006).

This article argues that meta-cognitive learning strategies play a crucial *mediating* role in commerce achievement. Rather than acting merely as a direct influencer alongside other factors, meta-cognitive learning strategies often serve as the mechanism *through which* other learner characteristics (e.g., self-efficacy, intrinsic motivation) and environmental factors (e.g., teaching strategies, assessment design) exert their influence on academic outcomes. Understanding this mediating role is essential for designing more effective commerce education interventions. This paper synthesizes current research, explores the theoretical underpinnings, examines empirical evidence, discusses implications for practice, and identifies future research directions concerning the mediating function of meta-cognitive learning strategies in commerce achievement.

THEORETICAL FRAMEWORK: META-COGNITION AND SELF-REGULATED LEARNING

The conceptual foundation for understanding meta-cognitive learning strategies lies primarily in Flavell's (1979) seminal work on meta-cognition and the subsequent development of models of Self-Regulated Learning (SRL), notably by Zimmerman (2000, 2002).

- **Flavell's Meta-Cognitive Model:** Flavell distinguished between:
    a) *Meta-cognitive Knowledge:* Knowledge about oneself as a learner strengths/ weaknesses, the nature of learning tasks difficulty, requirements, and strategies available for learning (Flavell, 1979). For commerce students, this might involve knowing that understanding cash flow statements requires different strategies than memorizing marketing theories.
    b) *Meta-cognitive Experiences:* Conscious cognitive or affective experiences during a learning endeavour (e.g., feeling confused about a cost-volume-profit analysis, experiencing satisfaction upon solving a complex accounting problem).
    c) *Meta-cognitive Regulation Strategies:* The active control processes used to manage learning: Planning setting goals, selecting strategies, allocating resources, Monitoring tracking comprehension, checking progress, identifying errors), and Evaluation appraising strategy effectiveness and learning outcomes against goals) (Flavell, 1979; Schraw & Moshman, 1995).

- **Zimmerman's Cyclical Model of SRL:** Zimmerman (2000) integrated metacognition into a broader cyclical process of self-regulation:
    a) *Forethought Phase:* Involves task analysis goal setting, strategic planning and self-motivation beliefs self-efficacy, outcome expectations, intrinsic interest. Meta-cognitive learning strategies are central to task analysis.

b) *Performance Phase:* Involves self-control use of specific learning strategies, imagery, self-instruction and self-observation meta-cognitive monitoring, self-recording. Monitoring is a core meta-cognitive learning strategies component here.

c) *Self-Reflection* Phase: Involves self-judgment self-evaluation of performance against standards, causal attribution and self-reaction satisfaction/dissatisfaction, adaptive inferences. Evaluation is the key meta-cognitive learning strategies in this phase.

Within commerce education, meta-cognitive learning strategies theory posits that successful students proactively engage in this cycle: planning their approach to studying financial ratios, monitoring their understanding while reading an economics text, evaluating their performance on a management case study, and adapting their strategies for future tasks based on this reflection (Pintrich, 2000; Zimmerman & Martinez-Pons, 1988). The core argument is that learner characteristics like self-efficacy influence the initiation and quality of MLS use e.g., a confident student is more likely to plan effectively), and environmental factors (like formative feedback) provide the opportunities and guidance for meta-cognitive learning strategies application. MLS, in turn, are the proximal drivers of deep processing, comprehension, skill acquisition, and ultimately, achievement in commerce subjects.

META-COGNITIVE LEARNING STRATEGIES IN COMMERCE: COMPONENTS AND RELEVANCE

Commerce subjects present unique challenges that make meta-cognitive learning strategies particularly relevant:

a) *Conceptual Complexity:* Abstract theories e.g., macroeconomics, intricate systems (e.g., double-entry bookkeeping), and multifaceted problems e.g., financial investment decisions.

b) *Information Density:* Large volumes of technical terminology, formulas, regulations, and case-specific details.

c) *Application Demands:* Requiring transfer of knowledge from theory to practical scenarios, simulations, and real-world problem-solving.

d) *Interconnectedness:* Concepts often build upon and interrelate with each other across different commerce disciplines.

Effective meta-cognitive learning strategies help students navigate these challenges:

- **Planning:**

a) *Goal Setting:* Setting specific, measurable, achievable, relevant, time-bound goals for studying topics e.g., Master NPV calculation by Friday.

b) *Task Analysis:* Breaking down complex assignments (e.g., a business plan) into manageable steps, identifying required resources.

c) *Strategy Selection:* Choosing appropriate methods for different tasks e.g., concept mapping for economic models, practice problems for accounting procedures, flashcards for terminology (Kramarski &Michalsky, 2009).

d) *Time Management:* Allocating study time effectively across diverse subjects and tasks (Britton &Tesser, 1991).

- **Monitoring:**
  (a) *Comprehension Monitoring:* Continuously checking understanding while reading texts or listening to lectures e.g. does I truly grasp the difference between monopoly and monopolistic competition? Using self-questioning techniques.
  (b) *Progress Tracking:* Assessing advancement towards goals during study sessions or project work.
  (c) *Error Detection:* Identifying mistakes in calculations e.g., balance sheet reconciliation, logical flaws in arguments, or misunderstandings of concepts (Garner, 1987).
  (d) *Attention Monitoring:* Recognizing and redirecting focus when distracted during demanding tasks like financial analysis.
- **Evaluation:**
  (a) *Strategy Evaluation:* After completing a task or exam, reflecting on which strategies worked well and which did not e.g. did summarizing chapters help more than just re-reading?.
  (b) *Performance Appraisal:* Analyzing strengths and weaknesses in exam performance or assignment feedback e.g. I understand budgeting concepts but need practice with variance analysis.
  (c) *Goal Reassessment:* Adjusting future goals and plans based on evaluation outcomes (Zimmerman, 2002).

Commerce students adept at meta-cognitive learning strategies can strategically approach diverse learning tasks, identify gaps in understanding early, adapt their methods when encountering difficulty, and continuously refine their learning process based on reflection skills directly applicable to professional practice.

Empirical Evidence: Meta-Cognitive Learning Strategies as a Mediator in Commerce Achievement

A growing body of research supports the mediating role of MLS in commerce achievement. Studies typically employ correlational designs, structural equation modelling or path analysis to test mediation models (Baron & Kenny, 1986; Hayes, 2018).

- **Mediation between Learner Characteristics and Achievement:**
  i. *Self-Efficacy:* Numerous studies find that self-efficacy (belief in one's capability) predicts commerce achievement, but this relationship is significantly mediated by meta-cognitive learning strategies use. Students with high self-efficacy are more likely to engage in planning, persist in monitoring comprehension when challenged, and effectively evaluate their learning, which subsequently leads to higher grades. For instance, Chen and Wang (2021) found that meta-cognitive learning strategies fully mediated the relationship between accounting self-efficacy and course performance among undergraduates. Similarly, Sharma and Sharma (2019) demonstrated that meta-cognitive learning strategies partially mediated the link between general academic self-efficacy and overall commerce stream achievement in high school students.
  ii. *Achievement Motivation (Goal Orientation):* Students with mastery goals (focus on learning and understanding) tend to use deeper cognitive and meta-cognitive

strategies compared to those with performance goals (focus on grades or outperforming others). Research by Lee and Tai (2023) showed that the positive impact of mastery goals on finance course grades was significantly mediated by the use of planning and monitoring strategies. Performance-approach goals showed a weaker, often non-mediated or partially mediated link, sometimes even negative if linked to superficial strategies.

iii. *Prior Knowledge:* While prior knowledge directly influences new learning, its effect on achievement in advanced commerce topics is often mediated by meta-cognitive learning strategies. Students with stronger foundational knowledge may be better equipped to deploy effective meta-cognitive learning strategies for complex new material, as they have a better schema for integrating information and assessing their understanding (Veenman et al., 2006). A study by Gupta et al. (2020) on economics learning found that prior mathematics ability influenced achievement primarily through its effect on students' metacognitive monitoring accuracy during problem-solving.

iv. *Anxiety:* High levels of test or subject-specific anxiety (e.g., math anxiety in accounting) can impair cognitive processing. However, research suggests that MLS can act as a buffer. Students who can effectively plan their study, monitor their stress levels and understanding, and use positive self-talk (a monitoring/evaluation strategy) mitigate the negative impact of anxiety on performance. Khan and Malik (2022) found evidence that MLS partially mediated the negative relationship between exam anxiety and business statistics scores.

- **Mediation between Environmental Factors and Achievement:**

i. *Teaching Methods:* Instructional approaches that explicitly model and encourage meta-cognitive learning strategies e.g., problem-based learning, think-aloud demonstrations, reflective prompts, strategy instruction embedded in content) significantly enhance student achievement. Crucially, this enhancement often occurs *through* increased student use of meta-cognitive learning strategies. Kramarski and Mizrachi (2006) demonstrated that students in mathematics classrooms (relevant to quantitative commerce subjects) using a meta-cognitive instructional approach (IMPROVE) showed significantly greater improvement in mathematical reasoning and achievement compared to a control group, mediated by their increased use of planning, monitoring, and evaluation strategies during problem-solving. Similar findings are emerging in specific commerce contexts like accounting (Wolcott & Lynch, 2019).

ii. *Assessment Design:* Formative assessments with timely, specific feedback provide crucial information that students can use for meta-cognitive monitoring and evaluation. This feedback loop allows students to identify misconceptions, assess strategy effectiveness, and adjust their learning *before* summative assessments. Studies indicate that the positive effect of formative feedback on final achievement is mediated by students' engagement in meta-cognitive evaluation and subsequent strategy adaptation (Nicol & Macfarlane-Dick, 2006). For example, feedback on draft business reports allows students to evaluate their analysis and writing strategies before the final submission.

iii. *Learning Environment:* Supportive classroom environments that encourage questioning, reflection, and collaborative learning foster MLS development. The positive impact of such environments on commerce achievement appears mediated by increased student engagement in meta-cognitive processes (Vrugt & Oort, 2008).

Conversely, highly competitive or purely lecture-based environments may discourage deep meta-cognitive engagement.

IMPLICATIONS FOR COMMERCE EDUCATION

Recognizing the mediating role of MLS necessitates a paradigm shift in commerce education, moving beyond solely content delivery towards fostering students' ability to learn how to learn.

- **Curriculum Design:**
  a) *Explicit Integration:* Embed meta-cognitive strategy instruction directly into the commerce curriculum, not as an add-on. Dedicate time to teaching what meta-cognitive learning strategies are, why they are important for specific commerce tasks, how to apply them, and when to use different strategies (Pressley et al., 1992).
  b) *Scaffolding:* Provide structured support initially (e.g., guided planning templates, comprehension checklists, reflection prompts) and gradually fade it as students become more proficient (Vygotsky, 1978).
  c) *Authentic Tasks:* Design assignments and assessments that inherently require planning, monitoring, and evaluation e.g., multi-stage projects, case studies with incomplete information, simulations requiring iterative decision-making.
- **Instructional Strategies:**
  a) *Modelling:* Teachers should explicitly 'think aloud' while solving commerce problems, demonstrating their own planning, monitoring e. g. does this answer make sense given the data? and evaluation processes e.g. That approach was inefficient, next time I'll try....
  b) *Guided Practice:* Provide opportunities for students to practice meta-cognitive learning strategies with guidance and feedback. Use collaborative learning where students explain their strategies to peers.
  c) *Promoting Reflection:* Incorporate regular reflective activities: learning journals focusing on strategy use, post-assignment analyses, 'exam wrappers' asking students to reflect on preparation strategies and performance (Lovett, 2013).
  d) *Socratic Questioning:* Use questions that prompt meta-cognition: What is your plan for tackling this case? How do you know you understand this concept? What strategy did you use, and how effective was it? What would you do differently next time?
- **Assessment Reform:**
  a) *Emphasis on Process:* Include marks or feedback specifically related to the quality of planning, monitoring e.g. showing work, identifying assumptions and evaluation e.g. reflecting on strategy in assignments and projects, not just the final product.
  b) *Formative Focus:* Prioritize formative assessments designed to provide feedback that students can use meta-cognitively to improve. Ensure feedback is timely, specific, and actionable.
  c) *Self and Peer Assessment:* Integrate self-assessment and peer assessment activities, which inherently require meta-cognitive monitoring and evaluation skills (Topping, 2009).

- **Student Development:**

a) *Awareness Raising:* Help students understand the concept of meta-cognition and its direct link to their success in demanding commerce subjects.

b) *Strategy Toolbox:* Equip students with a repertoire of specific MLS applicable to different commerce learning tasks (concept mapping, self-explanation, worked example analysis, error analysis).

c) *Growth Mindset:* Foster a belief that learning strategies can be developed and improved through effort and practice (Dweck, 2006).

Future Research Directions

While significant progress has been made, further research is needed:

(i) *Domain-Specificity:* Investigate which specific MLS are most critical for different commerce sub-disciplines (e.g., accounting vs. marketing vs. economics) and different types of tasks (calculation-heavy vs. conceptual analysis vs. case-based decision making).

(ii) *Longitudinal Studies:* Track the development of MLS use and its mediating role on achievement over extended periods within commerce programs to understand long-term impacts and intervention sustainability.

(iii) *Technology-Enhanced MLS:* Explore how digital tools (adaptive learning platforms, learning analytics dashboards, AI tutors) can best scaffold and enhance MLS development and application in commerce contexts (Azevedo et al., 2013).

(iv) *Individual Differences:* Examine how factors like cultural background, learning disabilities, or personality traits interact with MLS training effectiveness in commerce education.

(v) *Teacher Professional Development:* Investigate effective methods for training commerce educators to integrate meta-cognitive instruction seamlessly into their pedagogy.

(vi) *Advanced Mediation Models:* Employ more sophisticated statistical techniques e.g. moderated mediation, latent growth modelling to uncover nuanced relationships and contextual factors influencing the mediation process.

CONCLUSION

Achievement in commerce education is not solely a product of innate ability or content exposure. This review has highlighted compelling evidence that meta-cognitive learning strategies encompassing planning, monitoring, and evaluation play a pivotal mediating role. Meta-cognitive learning strategies serve as the crucial link through which key learner characteristics like self-efficacy, motivation and environmental factors like teaching methods, assessment design ultimately influence academic success in commerce disciplines.Students who effectively plan their learning, monitor their comprehension, and evaluate their strategies are better equipped to master complex concepts, solve intricate problems, and adapt to the evolving demands of commerce subjects. Recognizing this mediating role necessitates a fundamental shift in educational practice. Commerce educators and curriculum designers must prioritize the explicit teaching, modelling, and scaffolding of metacognitive strategies, embedding them within the fabric of instruction and assessment.Investing in the development of students' metacognitive capabilities is an investment in their capacity for lifelong learning and professional adaptability essential attributes for success in the dynamic world of

commerce. Future research should continue to refine our understanding of domain-specific meta-cognitive learning strategies applications and effective intervention strategies to empower the next generation of commerce professionals.

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