

BUILDING ON PRIOR KNOWLEDGE AND MAKING CONNECTIONS: CASE OF TEACHING COMPLEX NUMBERS

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This study explores the role of mathematical connections in the teaching of complex numbers at the upper-secondary level. Drawing on the Extended Theory of Mathematical Connections (ETMC), we examine how teachers establish links between prior knowledge and new concepts to promote conceptual understanding. Through the analysis of video-recorded lessons from 10 teachers of G.C.E. (A/L) Combined Mathematics, we identify instances of Instruction-Oriented Connections (IOC), Different Representations (DR), and Part-Whole Relationships (PWR). Additionally, our findings reveal two previously unclassified types of connections: Extensional Connections (6), where new concepts are framed as extensions of prior knowledge, and Structural Connections (4), which highlight similarities in mathematical structures. Results emphasize the importance of these connections in fostering deeper comprehension and suggest their applicability across broader mathematical domains. This study contributes to the ongoing discourse on mathematical pedagogy by providing practical insights for educators to enhance student learning through purposeful connections.

Keywords: Complex numbers, Conceptual understanding, G.C.E. (A/L), Mathematical connections