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SEMANTIC AMBIGUITY IN ENGLISH VOCABULARY AND ITS IMPACT ON LEARNING COMPUTER SCIENCE CONCEPTS: A BLOOM'S TAXONOMY APPROACH

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Abstract

Semantic ambiguity presents a significant challenge for English-as-a-Second-Language (ESL) students studying Computer Science (CS) in English-medium contexts. Many common English words, such as stack, queue, port, thread, and class, acquire specialized meanings in CS that diverge sharply from their everyday usage, creating cognitive interference that can hinder conceptual understanding and the application of CS principles. This phenomenological study investigates how seven Year 13 ESL learners enrolled in the Cambridge 9618 A Level Computer Science syllabus experience, interpret, and resolve ambiguity within CS vocabulary. Data were collected through semi-structured interviews, classroom observations, and student reflections, and analysed thematically. Three key themes emerged: (1) cognitive dissonance triggered by competing everyday and technical meanings, (2) learner-driven strategies including visualization, analogy, and scaffolded explanation, to reconcile semantic conflict, and (3) the role of instruction grounded in Bloom's Taxonomy in promoting conceptual clarity, retention, and higher-order thinking. Findings indicate that semantic ambiguity affects learners across all cognitive levels, from basic recall to advanced abstraction. The

study proposes a taxonomy-based instructional toolkit that emphasizes explicit contrastive teaching, multimodal scaffolding, and analogy-supported explanations. Implications for pedagogy, curriculum design, and vocabulary support in ESL-STEM learning environments are discussed.

Keywords:

Semantic Ambiguity, ESL Learners, Computer Science Vocabulary, Bloom's Taxonomy, Phenomenology