THE COGNITIVE WORKBENCH: THE ROLE OF WORKING MEMORY IN SECOND LANGUAGE ACQUISITION

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Abstract: This article examines working memory as a mental workspace in second language learning, showing how differences in capacity affect vocabulary growth, grammar processing, and fluency, while outlining key advantages, challenges, and future directions in cognitively informed education.

Keywords: innovation, internet, education, resources, technology, learning, benefit.

Annotatsiya: Ushbu maqola ishchi xotirani ikkinchi til o‘rganishda kognitiv “ish maydoni” sifatida ko‘rib chiqadi va uning sig‘imidagi farqlar lug‘at boyligini o‘zlashtirish, grammatikani qayta ishlash hamda nutq ravonligiga qanday ta’sir qilishini tushuntiradi, shuningdek afzalliklar, muammolar va kelajak yo‘nalishlarini yoritadi.

Kalit so’zlar: innovatsiya, internet, ta’lim, resurslar, texnologiya, o‘rganish, foyda.

Working memory (WM) plays a central role in second language acquisition (SLA), functioning as a cognitive “workspace” where learners temporarily store and process linguistic information. This mental system enables individuals to manipulate new words, grammatical structures, and meanings while actively engaging in communication. Contemporary research highlights that WM is not merely a passive storage system but an active mechanism that supports language comprehension, production, and learning efficiency [1, 2023; 2, 2014].

One of the most significant contributions of working memory to SLA is its influence on vocabulary acquisition. Learners with higher WM capacity tend to retain and recall new lexical items more effectively, as they can hold phonological and semantic information long enough for deeper processing. This ability facilitates both intentional and incidental vocabulary learning, especially in immersive or task-based environments [3, 2016]. In addition, WM supports the recognition of patterns in language input, allowing learners to form connections between words and meanings more efficiently.

Working memory also plays a crucial role in grammatical processing. During language use, learners must simultaneously recall rules, apply them, and monitor their output. Individuals with stronger WM capacity are generally better at handling complex syntactic structures and maintaining grammatical accuracy. This is particularly evident in tasks that require real-time language production, such as speaking or writing, where multiple cognitive demands occur simultaneously. Furthermore, WM contributes to the development of fluency by enabling faster retrieval and integration of linguistic elements.

Despite these benefits, there are notable challenges associated with working memory in SLA. WM capacity is limited and varies significantly among individuals,

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which can lead to differences in learning outcomes. Learners with lower WM capacity may struggle with processing large amounts of input, especially in fast-paced or cognitively demanding contexts. This limitation can affect their ability to acquire vocabulary, understand complex grammar, and achieve fluency. Moreover, excessive cognitive load in instructional settings may hinder rather than support learning, emphasizing the need for balanced and adaptive teaching strategies.

In modern education, understanding the role of working memory has important implications for instructional design. Educators are increasingly encouraged to adopt cognitively informed approaches that reduce unnecessary cognitive load and provide structured input. Techniques such as chunking, repetition, and multimodal learning can enhance WM efficiency and improve language acquisition outcomes. Additionally, integrating technology and digital resources can support personalized learning experiences and compensate for individual differences in WM capacity.

Future research in this field continues to explore the dynamic interaction between working memory and other cognitive factors in SLA. By examining how WM interacts with attention, motivation, and prior knowledge, scholars aim to develop more effective and inclusive language learning models. As noted in broader linguistic studies, including those on figurative language and proverbs, cognitive processes play a vital role in interpreting and producing meaningful language [4, 2024].

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