WeCWI and the Science of Web-based Instruction for 21CLD Enhancement

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Abstract: English as a second language (ESL) learners' limited writing capabilities from language and content perspectives are validated by the previous WeCWI-related studies, which are identified in the performance analysis and qualitative systematic literature review defined in the system (S), instructor (I), and learner (L) or SIL domains. These domains cover three perspectives of the nine L2 writing hurdles: lecture time, institutional e-learning system, internet, and communication technology (ICT) research, instructional practices, ICT interest, L2 writing style, reading habits, language competency, and the first language. There is a tremendous demand for establishing supplemental web-based instruction (WBI) and a comprehensive framework to effectively address these L2 writing challenges. Additionally, the learning management system (LMS) should not be the exclusive mode of e-learning used in higher education; instead, WBI developed through Web 2.0 should be regarded as the future e-learning mode in classroom practices. Web-based Cognitive Writing Instruction (WeCWI) is a set of theoretical-and-pedagogical principles for designing and developing a web-based instruction (WBI) as a form of instructional delivery or tool. Theoretically, WeCWI incorporates elements from language acquisition, cognitive theories, composition studies, and e-learning to create a guiding framework based on learners' information processing preferences. These four pillars of theoretical rationales are flawlessly interwoven and summarised in an equation known as the WeCWI Integrated Formula: (Language Acquisition + Composition Studies + Cognitive Theories) E-learning = Language & Cognitive Developments. WeCWI provides a systematic and iterative approach to developing a learning experience that fosters language skills and critical thinking. By integrating reading, discussion, and writing tasks as part of the pedagogical instructions within the e-learning environment, the WeCWI-enabled instructional tools can improve learners' language and cognitive development. WeCWI can be integrated into current instructional system design (ISD) models such as the ADDIE model, especially during the design and development phases, which helps educators redesign their existing lessons and learning activities to build learners' 21st-century skills. To foster the 21st Century Learning Design or 21CLD, the rubrics for 21CLD aim to assist educators in identifying and comprehending the chances that learning activities provide learners to develop 21st-century competencies. Each 21CLD rubrics—Collaboration, Skilled Communication, Knowledge Construction, Self-regulation, Real-world Problem-solving and Innovation, and Use of ICT for Learning—represents a vital ability or skill for learners to achieve or develop with respective critical attributes. 21CLD enhancement is achievable by using Microsoft technology as a tool to amplify the educator's teaching; WeCWI is applied as the Microsoft technology's manual with the relevant pedagogical-and-theoretical rationales to enhance the hybrid learning effectiveness, which caters to what they learn, how they learn, and how they demonstrate their learning.

Keywords—Web-based Cognitive Writing Instruction (WeCWI), SIL domains, web-based instruction (WBI), instructional system design (ISD), 21st Century Learning Design (21CLD), hybrid learning