

Web-Based Cognitive Writing Instruction (WeCWI): A Hybrid e-Framework for Instructional Design

Boon Yih Mah

Abstract—Web-based Cognitive Writing Instruction (WeCWI) is a hybrid e-framework for the development of a web-based instruction (WBI), which contributes towards instructional design and language development. WeCWI divides its contribution in instructional design into macro and micro perspectives. In macro perspective, being a 21st century educator by disseminating knowledge and sharing ideas with the in-class and global learners is initiated. By leveraging the virtue of technology, WeCWI aims to transform an educator into an aggregator, curator, publisher, social networker and ultimately, a web-based instructor. Since the most notable contribution of integrating technology is being a tool of teaching as well as a stimulus for learning, WeCWI focuses on the use of contemporary web tools based on the multiple roles played by the 21st century educator. The micro perspective in instructional design draws attention to the pedagogical approaches focusing on three main aspects: reading, discussion, and writing. With the effective use of pedagogical approaches through free reading and enterprises, technology adds new dimensions and expands the boundaries of learning capacity. Lastly, WeCWI also imparts the fundamental theories and models for web-based instructors' awareness such as interactionist theory, cognitive information processing (CIP) theory, computer-mediated communication (CMC), e-learning interactional-based model, inquiry models, sensory mind model, and leaning styles model.

Keywords—WeCWI, instructional discovery, technological discovery, pedagogical discovery, theoretical discovery.

I. INTRODUCTION

IN the midst of infowhelm age [1] in the 21st century, massive informative resources are accessible from the Internet by numerous methods such as searching, downloading, streaming, posting, tweeting, and scooping. As the Internet use goes increasingly mobile, its injection into e-learning has created the greatest impact and paradigm shift ever in educational technology—and “interactivity” is the single biggest gain an online learning program can offer [2]. With the rapid pace of web 2.0 being utilised in instructional technology, a diversity of e-learning programmes have shifted from personal desktops to web applications. WBI has become one of the fastest growing modes to disseminate the knowledge, particularly in English Language Teaching (ELT). Today's advanced computer technology has made ELT in

writing instruction more viable [3]. Many educators are gearing towards developing their personal web-based instructional materials in higher educational context.

The transformation of information accessed from “page” to “web” in instructional technology has brought the language instructors entering into the biggest linguistic revolution ever on the phonetic, lexical, syntactic, standards of language, as well as the use of “correct” language [4]. Similar to what [5] had emphasised, knowing English well also necessitates the skills of knowing how to read, write, and communicate in digital era. Techniques of manipulating and creating your own web materials, as well as methods of integrating web activities into ELT have become the fundamental skills of instructors in universities. For instance, one of the 21st century digital skills every instructor should possess is using a blog to create an online teaching platform [6]. Additionally, a blog is also one of the 40 must-know web 2.0 edutools [7]. Through blogging, students are also regarded as the 21st century literate netizens [8].

II. WEB-BASED COGNITIVE WRITING INSTRUCTION (WECWI)

A. WeCWI and Its Foundation

A web-based instruction can only effectively facilitate the learning process if its pedagogical activity design meets the relevant theoretical rationale [9]. Based on the literature, there have not been any studies synthesising the principles in language acquisition, cognitive theories, composition studies, and e-learning to construct an effective framework based on learners' information processing preferences particularly to enhance learners' writing performance and critical thinking. A theoretical-and-pedagogical e-framework “Web-based Cognitive Writing Instruction” or WeCWI was developed as a set of theoretical and pedagogical guidelines to design a WBI. The four main theoretical rationales—language acquisition, composition studies, cognitive theories, and e-learning—are seamlessly integrated as the core of WeCWI, which can be summarised into an equation as: (Language Acquisition + Composition Studies + Cognitive Theories) e-Learning = WeCWI. Fig. 1 displays the official logo of WeCWI.

B. Justifications of Terms in “Web-Based Cognitive Writing Instruction”

The name “Web-based Cognitive Writing Instruction” or WeCWI is formulated based on the justifications that are supported by the literature. “Web-based (We)” refers to an Internet-based framework. Empirical studies show that WBI outcomes are similar [10] and better than offline face-to-face instruction [11]. Besides, according to [12], “The online

B. Y. Mah is a senior lecturer at Academy of Language Studies, UiTM, who is also a PhD candidate at Centre of Instructional Technology and Multimedia, USM. He is awarded a scholarship by the Malaysia's Ministry of Education to pursue his doctoral study in the field of e-learning (language development through technology). Web-based Cognitive Writing Instruction (WeCWI) is originated from his PhD research framework. He is attached with Universiti Teknologi MARA (Pulau Pinang), Jalan Permatang Pauh, 13500 Bukit Mertajam, Pulau Pinang, Malaysia (phone: +604-3823441; e-mail: mahboonyih@gmail.com).

environment can produce learning on par with that of traditional courses, however students can have much more control over their own learning with online instruction.” In addition, [13] also highlights that “e-Learning can be a great fit for all types of learners if you go about it in the right way.” WeCWI advocates the use of one of the most versatile Web 2.0 applications, blog, as an instructional tool together with the highly resourceful Web widgets and hypertext. With the use of the Internet, WeCWI encourages the educators to equip themselves with the knowledge and skills of using the blog to engage their learners towards language and cognitive developments, which can be fostered within a community of inquiry via CMC.



Fig. 1 The official logo of Web-based Cognitive Writing Instruction (WeCWI)

Meanwhile, “Cognitive (C)” denotes a brain-based basis. Reference [14] has emphasised that “All learning is “brain-based,” but teaching is not.” As supported by [15], “Learning styles is not a theory of instruction. It is a theory of how the mind works.” According to [16], the differences in learning styles theory come from working memory. “There is a link between language development and the capacity of our working memory, and that there are common cognitive mechanisms that support the ability to learn both your mother tongue and a second language.” [17]. Reference [18]’s language acquisition theories fall under innatism [19], which also exists in cognitive psychology field. Therefore, WeCWI promotes cognitive developments by focusing on the exploration of learners’ working memory, which associates with not only their writing process and product, but also their writing anxiety and learning styles.

In addition, “Writing (W)” indicates the writing process and product. WeCWI is initiated through a deductive approach: Investigate a problem from the macro perspective before venturing into the micro perspective. In macro perspective, SIL [20] as depicted in Fig. 2 summarises the L2 writing challenges commonly faced by the learners, instructors, and institutional e-learning system of the biggest university in Malaysia. By referring to the learner domain in SIL comprising reading habit, language proficiency, and first

language, WeCWI proposes a solution for the poor writing skill in seven different perspectives faced by the L2 learners in higher education context as follows:

- 1) the complexity of writing skill
- 2) low literacy skills
- 3) interlanguage errors
- 4) low language proficiency
- 5) lack of critical thinking,
- 6) low information literacy
- 7) L2 writing anxiety

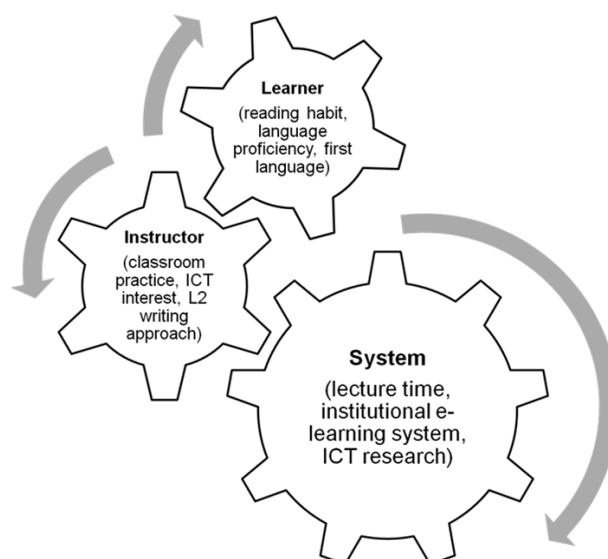


Fig. 2 SIL: System (S), Instructor (I), and Learner (L) [20]

Lastly, Instruction (I) stands for a guided orientation. It involves the theoretical-and-pedagogical principles in language acquisition, cognitive theories, composition studies, and e-learning to construct a synthesised framework of WBI. WeCWI advocates [21]’s six-step typical writing procedure based on [22]’s process genre approach. Educators specifically the writing instructors are encouraged to integrate the process genre approach into their pedagogy in order to guide their learners throughout the entire writing process. By following the six-step guided writing procedure, a writing task that demands multiple higher order thinking skills can be completed within a specific course duration with a better outcome.

III. WECWI: THE INSTRUCTIONAL DESIGN

Generally, WeCWI is a hybrid e-framework employed to develop a WBI, which promotes the learners’ language, literacy, cognitive, and psychological developments. Since the Internet use goes increasingly mobile, its injection into this framework has brought “interactivity” as the biggest gain for WeCWI to become a hybrid e-framework. WeCWI is developed with the aim to enhance the learners’ performance in writing and critical thinking, which involves the application of theoretical-and-pedagogical principles of language acquisition, composition studies, cognitive theories, and e-

learning together with the different user interface designs to suit the learning preferences. To enhance teaching and learning experience, the instructional design of WeCWI will be further discussed in macro and micro perspectives. In macro perspective, WeCWI highlights on the instructional and technological discoveries, while the pedagogical and theoretical discoveries are the focus in micro perspective.

A. Macro Perspective: Instructional Discovery

To make the 21st century education happen, communication, collaboration, and critical thinking are the keys being highlighted in WeCWI. With the help of the Internet as one of the greatest creations of mankind, WeCWI is gearing towards the development of an interactive online learning environment that can engage the learners to communicate interactively, collaborate actively, and think critically. To attain these achievements, an educator's role is no longer a knowledge supplier, but a facilitator who leads and engages their learners dynamically throughout the journey of knowledge acquisition.

Knowledge is power and reading is the source of knowledge. Through a myriad of learning resources made available online, the Internet has transformed the ways of how a learner can access information and an educator can publish his or her instructional content to engage the learners inside and outside the classrooms. By adopting the current technology, WeCWI aspires to transform an educator to become an instructor with multiple roles for knowledge sharing: aggregator, curator, publisher, social networker, and web-based instructor. These roles can be achieved efficiently with the help of technology.

B. Macro Perspective: Technological Discovery

Some contemporary web tools and mobile applications are recommended to the 21st century educators based on the suggested roles for knowledge sharing. These tools are highly supportive for aggregation, curation, publishing, social networking, and web-based instruction. Flipboard, StumbleUpon, and Digg are among the recommended aggregation applications that can automatically gather the related free content from the web based on the key words. Besides, curation tools are also useful as they allow educators to manually source the best content online. Basically, curation tools can be found in two forms: bookmarklet (Diigo, Pocket, Delicious) and board (Scoop.it!, Pinterest, Joota).

To exemplify some publishing tools, Slideshare, Issuu, and Scribd are among the most popular applications to share the educators' slides, articles, and documents online. Furthermore, the social networking applications like LinkedIn, Facebook Page, and ResearchGate, which allow the educators to share the information with professional and academic social communities are also not to be missed. To be a web-based instructor, Blogger is the recommended online learning and blogging platform besides WordPress. The right choice and proper integration of web widgets and hypertext on the blog are the determining factors for successful achievement of the instructional purposes and learning outcomes.

C. Micro Perspective: Pedagogical Discovery

The three emerging e-learning trends of the 21st century are blended learning, flipped classroom, and massive open online courses (MOOCs). The contributions of these new movements in e-learning have evidently highlighted how technology can smartly be used as a stimulus for enhancing the process and product of learning. Though technology has added new dimensions and expanded the bounds of learning capacity, pedagogy still plays its inimitable role in the use of the advanced technological tools significantly. WeCWI focuses on the effective use of pedagogical approaches as one of the micro perspectives of instructional design.

Moreover, WeCWI draws attention to the pedagogical discoveries by focussing on three primary aspects: reading, discussion, and writing. To foster the learners' language and cognitive developments through web-based instruction, according to [18], free reading and enterprises are the two basics to initiate reading activities. To become a critical thinker, discussion [18] is another activity initiated by enterprises in WeCWI to promote interactions among the learners, instructor, and digital content. In addition, WeCWI adopts process genre approach [22] as a guided writing approach to enhance cognitive development through the writing tasks.

D. Micro Perspective: Theoretical Discovery

WeCWI embraces the principle that all learning is "brain-based" [14]. In other words, the potentials and limitations of human brain shape the way people learn. In the process of browsing the online learning materials published on a web, learning evolves from working memory to process the incoming information together with the existing knowledge, which is interwoven with thinking in multiple layers [23]. Hence, by understanding how the brain functions through CIP theory, sensory mind model, and learning styles model, WeCWI is used to create an instructional tool that comes with an adaptable learning environment for learners with different learning preferences.

Besides, four main theoretical rationales in language acquisition, composition studies, cognitive theories, and e-learning as the core of WeCWI are seamlessly integrated. The adopted theories and models such as interactionist theory, CMC, e-learning interactional-based model, and inquiry models are accentuated to create an engaging and meaningful communication. The elements found in the interactionist theory—input, output, negotiation of meaning, and feedback—take place via synchronous and asynchronous communications, which corresponds with e-learning interactional-based model that involves interactions among the learners, instructor, and digital content.

IV. CONCLUSION

As mentioned by [24], the author of Brain Gain: Technology and the Quest for Digital Wisdom, the very best thing a 21st educator should do is to propagate a more sharing "attitude" and "mode". WeCWI supports the culture of knowledge sharing in instructional design and language

development. Hence, WeCWI conducts both course and training series, whereby the further details can be accessed at <http://wecwi.blogspot.com/p/enterprises.html>. To foster the exchange of knowledge, expertise, experiences, and ideas among the global professionals in addressing the issues of language development through technology, a LinkedIn group namely Web-based Cognitive Writing Instruction Special Interest Group (WeCWI SIG) is created, which is accessible at <https://www.linkedin.com/groups/WeCWI-SIG-5129286/> about. At present, WeCWI SIG has attracted 313 LinkedIn members from different professionalisms, designations, and industries to be part of this specialised learning community. Most of the topics posted in WeCWI SIG are curated from the web, which are found relevant to the four main studies: language acquisition, composition studies, cognitive theories, and e-learning. To encourage more idea sharing, Additionally, WeCWI also appears on other social media platforms such as Facebook, Twitter, Google+, Pinterest, Blogger, and Yapp as follows:

- 1) WeCWI Page: www.facebook.com/WebbasedCognitiveWritingInstruction
- 2) WeCWI Tweet: twitter.com/mahboonyih
- 3) WeCWI Plus: plus.google.com/u/0/+BoonYihMah
- 4) WeCWI Board: pinterest.com/mahboonyih/web-based-cognitive-writing-instruction
- 5) WeCWI Blog: wecwi.blogspot.com
- 6) WeCWI App: my.yapp.us/MTGGZS

ACKNOWLEDGMENT

Boon Yih Mah would like to express a deep sense of gratitude to UiTM for the support and the Ministry of Higher Education, Malaysia for offering the scholarship to further his PhD study at Universiti Sains Malaysia (USM), 11800 USM, Penang, Malaysia. Besides, he also likes to express his profound gratitude to his supervisors, Irfan Naufal Umar and Thomas Chow Voon Foo, for their exemplary guidance and constructive comments throughout the course of his PhD study.

REFERENCES

- [1] M. Kharbach, "What teachers need to know about infowhelm," Educational Technology and Mobile Learning, 2013. (Online). Available: <http://www.educatorstechnology.com/2013/03/what-teachers-need-to-know-about.html>. (Accessed: 04-Apr-2013).
- [2] H. Arsham, "Impact of the Internet on learning and teaching," USDLA J., vol. 16, no. 3, 2002.
- [3] Y. C. J. Chao and C. K. Huang, "The effectiveness of computer-mediated communication on enhancing writing process and writing outcomes: The implementation of blog and wiki in the EFL writing class in Taiwan," in World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007, 2007, pp. 3463–3468.
- [4] L. Wu and D. Ben-Canaan, "The impact of globalization and the Internet on English language teaching and learning," Aust. J. Educ., pp. 1–15, 2006.
- [5] M. Warschauer, "Researching technology in TESOL: Determinist, instrumental, and critical approaches," TESOL Q., vol. 32, no. 4, pp. 757–761, 1998.
- [6] M. Kharbach, "The 33 digital skills every 21st century teacher should have," Educational Technology and Mobile Learning, 2012. (Online). Available: <http://www.educatorstechnology.com/2012/06/33-digital-skills-every-21st-century.html>. (Accessed: 04-Apr-2013).
- [7] Mohamed Amin Embi, 40 Must-know web 2.0 edutools: A quick guidance. Selangor: Centre for Academic Advancement, Universiti Kebangsaan Malaysia, 2013, pp. 106–119.
- [8] C. Arena, C. T. Jefferson, and B. Center, "Blogging in the language classroom: It doesn't 'simply happen,'" Teach. English as a Second Lang. Electron. J., vol. 11, no. 4, pp. 1–7, 2008.
- [9] M. Hamzah, "A theoretical rationale in the application of computer-mediated communication (CMC) in an English for specific purposes (ESP) setting," in AARE 2001 Conference, 2001.
- [10] J. P. Merisotis and R. A. Phipps, "What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education," Washington, 1999.
- [11] A. H. Schulman and R. L. Sims, "Learning in an online format versus an in class format: An experimental study," Journal, vol. 26, no. 11, 1999.
- [12] Mohamed Amin Embi, Computer-mediated communication: Pedagogical implications of Malaysian research findings. Selangor: Karisma Publications Sdn. Bhd., 2009.
- [13] B. Martin, "Is online education right for your learning style?," 2013. (Online). Available: <http://elearnmag.acm.org/blog/?p=516>. (Accessed: 24-Jul-2013).
- [14] M. Hardiman, "The brain-targeted teaching model: A comprehensive model for classroom instruction and school reform," New Horizons Learn., vol. 8, no. 1, Apr. 2010.
- [15] D. Willingham, "Learning Styles FAQ," (Online). Available: <http://www.danielwillingham.com/learning-styles-faq.html>. (Accessed: 24-Jul-2013).
- [16] S. B. Kaufman, "In defense of working memory training," Scientific American, 2013. (Online). Available: <http://blogs.scientificamerican.com/beautiful-minds/2013/04/15/in-defense-of-working-memory-training/>. (Accessed: 24-Jul-2013).
- [17] S. I. S. Ekra, "Language is in our biology," Gemini, Trondheim, Apr-2013.
- [18] S. Krashen, Fundamentals of language education. New Jersey: Laredo Publishing, 1992.
- [19] C. C. M. Goh and R. E. Silver, Language acquisition and development: A teacher guide. Singapore: Pearson Education South Asia, 2004, p. 166.
- [20] B. Y. Mah, Irfan Naufal Umar, and V. F. Thomas Chow, "L2 writing challenges for the undergraduates: A performance analysis and a literature review on SIL domains," in The Asian Conference on Language Learning Conference Proceedings 2013, 2013, pp. 302–316.
- [21] G. Yan, "A process genre model for teaching writing," English Teach. Forum, vol. 43, no. 3, pp. 18–27, 2005.
- [22] R. Badger and G. White, "A process genre approach to teaching writing," ELT J., vol. 54, no. 2, pp. 153–160, 2000.
- [23] D. Maya, "The educational media of the web: Levels of cognitive involvement," in Proceedings of SOLON-Sofia Lectures of Ontology, 2007.
- [24] M. Prensky, "Q&A: Marc Prensky Talks About Learning in the 21st Century," 2012. (Online). Available: http://blogs.edweek.org/edweek/DigitalEducation/2012/09/qa_marc_prensky_talks_about_le.html. (Accessed: 14-Oct-2014).