Re-conceptualizing Techno-Linguistics:
Using Technology for English Language Teaching?

Xiaodong Zhang
Beijing Foreign Studies University, Bejing, China
`zxdman588@gmail.com`

Abstract—This short paper discusses the potential value of integrating linguistics theories with technological devices in English language teaching (ELT). In particular, the paper presents how systemic functional linguistics could be used to complement technology-based ELT. The paper ends with a proposal of a new understanding of techno-linguistics (a term derived from technology and linguistics) to better benefit language learners in this digitalized world.

1 Technology-Based English Language Teaching

In this digitalized world, technology has been increasingly used in English language teaching (ELT) classrooms (e.g., speaking, listening, writing, and reading) [1]. The technological devices that are commonly used for ELT are laptops, mobile applications, and tablets among others [2]. Some of the affordances that technology extends to classrooms include multimedia functions, collaborative spaces, and materials sharing and delivery [1] [3]. Compared to traditional communications per se in and out of the classroom, the use of technology has been found to motivate students' engagement in learning, facilitate their collaborative learning with each other, and support their flexible and autonomous use of after-class time [4] [5].

Nevertheless, relevant research seems to have failed to recognize the relationship between technology use and English learners' meta-linguistic knowledge that guides their authentic language use. These studies primarily rely on technological devices to teach vocabulary or structural rules [1] [4], and fail to focus on developing students' knowledge of authentic literacy [6]. Language learners' knowledge of authentic literacy refers to their understanding of language use as a meaning-making process where contextually embedded choices of language, beyond structural accuracy, are made to convey meanings [7] [8].

Indeed, ELT scholars have emphasized meaning-based teaching, as language learners ultimately have to understand meanings and convey meanings in relation to contextually appropriate resources [6]. Meanwhile, researchers have also demonstrat-

ed how systemic functional linguistics (SFL) fits in with meaning-based ELT, and they have presented positive teaching outcomes [8]. In the following sections, this paper will present SFL, followed by a discussion of its potential graft with technology to improve ELT.

2   SFL and its Synergy with Technology-Based ELT

Among potentially useful language theories, SFL seems to be one theory that can be grafted with technology-based ELT. First, as a language learning theory, SFL highlights language learning as a contextual meaning-making process [9]. This aligns with the instructional demands to authentically benefit language learners' language use [6]. However, SFL is not merely canvassed at this level. Rather, in addition to its focus on structural accuracy, it provides a multilayered explanation of grammar to understand the use of language as meaningful activities [9]. Its grammar differs from traditional grammar (i.e., structure-based grammar) that simply emphasizes the correct arrangement of word categories [8].

With regard to SFL's grammar system at the meaning level, it has ideational meaning, interpersonal meaning, and textual meaning—the three constructs for understanding the content or meaning constituents of language activities or discourse (spoken or written) [9]. Ideational meaning reveals that one meaning constituent of discourse is the language user's thoughts about a topic, including the logical relationships between thoughts (i.e., what is the discourse concerned about?). Interpersonal meaning highlights another meaning constituent: the emotional or attitudinal trace left in discourse (i.e., who is the discourse aimed at and how do the discourse participants feel?). Textual meaning highlights that information is combined into a holistic unit (i.e., how is the flow of information presented?). The three meanings are simultaneously enclosed in a sentence. Take two adjacent English sentences as an example. *Global warming is an environmental problem. It may be caused by excessive carbon dioxide emissions.* When using the meaning construct, we can clearly understand the content of the two sentences:

- **Ideational meaning**: The discourse is about global warming and one potential cause
- **Interpersonal meaning**: The discourse is relatively objective in its information delivery, without explicit authorial stances
- **Textual meaning**: The two sentences read fluently. This helps create fluency between the two sentences as a discourse unit. In all, knowing the grammatical categories of the three meanings helps conceptualize the content of a discourse with a clear and stratified lens on the meanings of our communication [7].

Beyond the meaning level, SFL also provides more specific grammatical codes to understand the relationship between linguistic choices and meanings [9]. For instance, at the level of ideational meaning, it has codes such as participants, processes, and logical connectors. Respectively, these codes help to reveal the mechanism of meaning in terms of the features of nouns/noun phrases, verbs/verb phrases, and logical

relationships in diverse genres and contexts. Take the aforementioned sentences as an example. Educators can help learners understand scientific language use, such as nominalization (e.g., *global warming*, *emissions*) and causal verbs (e.g., *cause*) when deconstructing science texts. In turn, this knowledge gained from reading texts can be carried over to students' own independent work, such as writing, speaking, or listening. At the level of interpersonal meaning, useful codes help reveal the intricacies in different contexts, including attitude and engagement. For example, authorial attitude is hidden in informational writing, while it is overt in argumentative writing. Yet, as shown by the label of engagement, both types of writing favor citations as a way of showing information certainty or the use of hedging expressions (e.g., modal verb *may*) to present information in a calibrated way. For textual meaning, labels include cohesive devices, such as conjunction words, pronouns and their references (e.g., *global warming* and *it*), and synonyms and antonyms across sentences to form interrelationships between sentences. This regularly happens in written discourse. What can be seen from the SFL-based system is that its codes at the lexical level well explain the meaning construction in different contexts, making it readily usable to help learners while integrating with technological affordances.

3   Discussion and Implications

In all, this article discusses the pedagogical potential and imperativeness of synergizing linguistics theories with technology for ELT, because of the probable augmented effects from the two instructional praxes. SFL is a promising language theory that could be applied to technology-based language teaching, given its emphasis on meaning and its meaning-based grammar. Nevertheless, limited empirical research has been conducted thus far.

Techno-linguistics (a term derived from technology and linguistics) was first proposed by Coppen [11], and can be understood as the use of technological solutions to address language-related issues. In response to the research gap mentioned above, this paper also proposes an expanded understanding of techno-linguistics, which calls for an empirical integration of linguistics theories (e.g., SFL) with technology in the classroom. Understandably, teachers who excel in both technology and linguistic theories would be small in number. Researchers from the two areas could collaborate and help teachers integrate technology with linguistics theories in the classroom. For example, teacher educators who specialize in SFL could help language teachers learn SFL-based knowledge; technology experts could familiarize teachers with applications to deliver or apply SFL knowledge through technological assistance [11] [12] [13]. In the process, using technological functions (e.g., multimedia features or applications), teachers could also be assisted in developing SFL materials designed for pre- and post-learning activities to deliver or enhance students' SFL knowledge and its application to academic literacies [14].

4   Acknowledgement

5   References

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6   Author

Xiaodong Zhang is with School of English and International Studies, Beijing Foreign Studies University, China.