

*Editorial*

## **Technology in Applied Linguistics**

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If applied linguistics is taken in its broader sense to mean the application of the theory of language to real life problems wherever they occur, technology in applied linguistics would include a wide variety of technological applications to natural language as used across the board. In fact, language and technology have gone hand in hand throughout history (Halliday, 1985). This is particularly true of a variety of writing technologies, which have enabled discourse to be recorded and the written language to start developing in a new direction. Those early technologies were mostly restricted to inventions such as papyrus, parchment, paper or the printing press.

The 20th century saw the advent of new technologies extending their capabilities to speech. It is interesting to see that these were filtered through the lens of a then new and upcoming discipline, namely linguistics. It is actually Bloomfield's linguistic approach which relied on the native speaker informant that gave rise to the use of a tape recorder in applied linguistics (Yule, 2014). Ever since, wireless and digital technologies have continued to forge a symbiosis with applied linguistics and, more specifically, language teaching. It is interesting that the awareness of technology use has become apparent in the 1980s, when the first research articles regarding the use of computational technology in language education started to appear in academic and professional language related journals.

However, long before that, human imagination was captivated by the potential reaches of technology. Thus, the German Romantic Period writer, E.T.A. Hoffmann, depicts a character who is in essence an automaton, though capable of speech and even meaningful verbal exchange with humans (Žmegač, 1984). This fascination with what is to become known as artificial intelligence continued into the 20th century, where science fiction saw the machines as capable of speech before they were able to accomplish other, nowadays deemed to be much simpler tasks (Dodigovic, 2005).

Linguistics, with its early mathematical affinity, was quick to test the linguistic limits of machines, as soon as mainframe computers became more common in the mid-20th century. Unfortunately, machine translation, as one of the first foreseen capabilities of modern technology, was condemned in a report produced in the 1960s (Dodigovic, 2005). However, the hope that machines would be not only able to speak and write, but also translate and interpret, was not abandoned and to some extent, technology developments continued without drawing heavily on advances in other areas of mainstream linguistics. In the meantime, the energies of linguists and applied linguists became focused on more manageable tasks, such as compiling language corpora and using the available technologies to teach and learn languages. In the 21st century, not only has machine translation reached unprecedented standards, but

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digital technologies have become ubiquitous and many have been used to enhance or facilitate language teaching, learning, assessment or research. Recent years have seen on the one hand a closer relationship between linguistic and computational methodologies for language reference tools and digital research, and on the other hand language teachers and language researchers have shown a deeper engagement exploring and managing the impacts of broader technologies on language learning and teaching.

This issue endeavours to capture the plethora of such technologies in practice, using a variety of approaches which range from top-down institutional effort to bottom-up student-led grass-roots movements. The topics thus range from plagiarism detection to grammar, style and spell-checkers, including sub-topics such as Web-based learning, automated translation, social annotation tools, automated generation of language tasks, language corpora and concordancing. Accordingly, most of these themes are featured in the interview with Laurence Anthony, the creator of the well-known concordancer, AntConc (2019). This interview successfully encapsulates the sum total of applied linguistic encounters with technology, serving as the culmination of ideas presented in this issue.

In the same vein, individual articles endeavour to explore at least some of the breadth and depth of the emerging technologies, as they are applied in teaching practice and the learning process. In the following we give a brief overview of the articles appearing in this issue.

One of the ways technology has enhanced language learning activities both in the classroom and for online teaching has been through the development of new platforms for collaboration. At the forefront of Content Based Instruction (CBI) and English for Specific Academic Purposes (ESAP), collaborative language tasks offer teachers new ways to foster learner engagement with core concepts and attention to specialised vocabulary. Lin (this issue) presents a pilot study using Hypothes.is for annotation of web documents on the topic of neoliberalism. Firmly grounded in the framework of The Threshold Concept (Meyer & Land, 2003), the paper describes the developing understanding of students through analysis of their annotations and evaluates the use of this platform through survey responses and analysis of subsequent student written work. This paper provides inspiration for use of social annotation tools in CBI and ESAP, but also has relevance for content courses delivered with English as the Medium of Instruction.

Another way technology can be used to enhance language teaching is to construct scenarios in which students can complete tasks with a stronger sense of their application to real life. In a study with senior high school students and university students, Zhang and Luo (this issue) demonstrate the way a virtual teacher and a virtual senior student can be used to deliver elements of a writing task which draws on ideas from several important reading texts. They demonstrate that the scenario-based version of the task produces a deeper engagement with the ideas from the reading and ultimately improves the quality and depth of the written assignments too.

Zannetti, Volodina and Graën (this issue) examine the use of language corpora to automatically generate learning materials. This is a combination of a corpus approach and artificial intelligence in language teaching and learning, providing an exciting and novel approach. This and similar applications are likely to relieve the language teacher of an ever growing task to generate as many meaningful examples of language use as possible, which are also accessible to language learners and can be incorporated in exercises. From this article, the readers can learn about the methods used in the realization of the project.

Plagiarism detectors, which combine the strength of computers in executing simple searches with intelligent applications, such as latent semantic analysis (Kakkonnen & Mozgovoy, 2010), are nowadays widely used in academic settings. Zheng (this issue) reflects on the use of one such product in a Chinese context. While her approach is mostly based on ‘soft data’ (Johns, 1997), i.e. the results of a survey, it reveals a predominantly positive attitude of Chinese tertiary students toward the use of this software. This is an important milestone, which paired with Turnitin’s potential to improve the originality of student work (Dodigovic, 2013), means that its implementation could be easier than perhaps anticipated.

The freedom from the temptation to copy someone else's work ultimately means the freedom to produce the target language, which is an outcome any language teacher would welcome.

Tovmassyan and Dodigovic (this issue) undertake the task of evaluating one of the uses of artificial intelligence in writing assessment. They scrutinize the feedback provided by one such application, called Grammarly, in terms of its linguistic accuracy with respect to learner grammar use. While they find that the feedback provided is mostly accurate, caveats remain. Thus, some learner errors are overlooked, while others might be misdiagnosed, including even instances where correct student output is flagged as incorrect. Based on that information, the authors attempt to assess the usefulness of the software. Their recommendation is for Grammarly feedback to be monitored by the teacher.

Another application of artificial intelligence discussed in this issue pertains to online tools of automated translation. In his article, Ye (this issue) examines the features of the output from Bing and Youdao when translating from Chinese to English, with the view of understanding the similarities and differences between machine translation and learner writing. The focus here is on polysemous words, those that have more meanings in Chinese than they do in English. Previous research (Dodigovic, Ma & Jing, 2017) has shown that such words are often misused in English by speakers of Chinese. Ye finds that machine translation is sufficiently different in this respect from typical learner output. This clue may be of importance to language teachers who might be wondering whether their students are enlisting the help of a translation machine in their written assignments.

Finally, Jeaco (this issue) presents Laurence Anthony's views on a range of topics related to language and technology, through an interview exploring his first interests in both computer programming and language teaching; his views on English for Academic Purposes; and his experience developing and using technologies in the classroom. The interview provides a personal insight into Anthony's scientific approach to language data as well as glimpses into his education and other milestones on his path to becoming an important figure in English for Specific Purposes (ESP), Natural Language Processing (NLP) and Educational Technology. The interview presents challenges to all of us as language teachers, encouraging more research and reflection of the ways technology is used and should be used for ESP, given the changes that are happening within and outside the classroom, and as we move to a new era of machine translation, machine evaluation and technological enhancements for both work and study life.

We hope that you will agree that this collection of papers brings together some of the most important current issues for technology and language teaching, providing both inspiration for us to do more through technology, and encouragement to re-think or re-work existing technologies as we help our students develop language skills and new life skills for the future world.

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