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## USING TECHNOLOGY TOOLS IN WRITING INSTRUCTION

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This review of the literature aims to provide an overview of the technology used to enhance writing instruction in face-to-face and online environments. The research questions have the goal of finding the most widely utilized collaborative and multimodal tools described in the literature, and what benefits these tools bring to teaching and learning writing. Results reveal three main categories: collaboration and presentation tools, evaluation and feedback tools, and organization tools. This evolving technology can greatly enhance writing instruction and increase communication and collaboration practices between teachers and learners.

*Keywords: collaboration, multimodal, technology, tools, writing instruction*

**Over** the first two decades of the 21st century, technology has permeated society and taken a central role in communication and collaboration practices across the globe. The growing incorporation of electronic tools in instruction has enabled a generation born into a digital world and able to speak the language of technology—the “digital natives” (Prensky, 2001, p. 1)—to become more actively engaged in a variety of classroom tasks (Blankenship & Margarella, 2014; Lotherington & Jenson, 2011; Nobles & Paganucci, 2015; Sessions, Kang, & Womack, 2016).

### Digital Literacy

The concept of digital literacy has evolved over the years. It encompasses technical ability as well as cognitive and sociological skills involved in performing tasks in the digital setting (Eshet-Alkalai, 2004). Digital technologies are changing the way learning takes place, as students make use of new media to create, connect, and interact with the community (Edwards-Groves, 2012). To take part in today’s participatory technological culture, which entails the use of multiple digital tools for getting ideas across, learners would benefit from being taught with a variety of media tools to expand their abilities and develop their critical thinking skills (Jenkins, Purushotma, Weigel, Clinton, & Robison, 2006). Unlike traditional forms of literacy, the multimodality of digital literacy affords more collaborative meaning-making processes, whose resulting products can be easily disseminated with the aid of technology.

This paper provides an overview of the technology currently being utilized to support writing instruction in varied classroom environments and categorizes the findings according to their uses and benefits for teaching and learning writing. The review of the literature was framed under the theoretical frameworks of sociocultural theory, multimodalities, and multiliteracy.

### Sociocultural Theory

Learning is a social process whose key tenets are human interaction and culturally mediated activity (Vygotsky, 1978). The dialogic process involved in writing makes it not only a means of communication,

but also a form of social action (Prior, 2006). Writing practices established through a collaborative dialogue enable mediated learning and the negotiation of meaning (Lantolf, 2000), and the use of technology can afford collaborative and interactive practices in various instructional environments. Online collaborative writing tasks encourage peer feedback and the exchange of ideas (Limbu & Markauskaite, 2015), increase engagement, and facilitate instructional feedback (Bikowski & Vithanage, 2016).

### **Multiliteracies and Multimodality**

The pedagogy of multiliteracies encompasses linguistic diversity and multimodal communication practices. Multimodality informs the meaning-making experiences, while multiliteracies provides the tools for such experiences to happen (New London Group, 1996; Rowsell & Walsh, 2011). The multimodality framework posits that meaning-making is established through a variety of modes, including but not limited to visuals, print, motion, speech, and sound (Smith, 2014). Digital technologies strengthen multimodal possibilities, influencing the way in which communication, learning, and social interactions take place (Lotherington & Jenson, 2011). Multimodal media enable us to substantiate how we think, and because learning is social, we can make use of these media to collaborate with others in the process of knowledge making (Cope & Kalantzis, 2015).

### **Methodology**

With the goal of finding the most widely utilized collaborative and multimodal tools described in the literature, our search was guided by the following research questions: (a) What technology tools are being used to enhance writing instruction in face-to-face and distance-learning environments? (b) What benefits can these tools bring when it comes to teaching and learning writing? The search on Academic Search Premier, ERIC EBSCO, ERIC ProQuest, Google Scholar, and PsychINFO included the keywords education, technology, Web 2.0 tools, online, EFL/ESL writing instruction, AWE tools, CALL, English language learners, and multimodal and digital literacies, and examined references cited in peer-reviewed papers that covered the topics of technology for writing instruction. The search for literature focused on publications from the past twenty years; the earliest result was published in 2008. The first stage of the review process consisted of a careful examination of the publications through the lens of the research questions and the theoretical frameworks supporting instruction, collaboration, and multimodal composition. Next, a comparison of key findings and a list of tools was compiled. These tools were then categorized into three main groups, described in Technology for Writing Instruction, below.

### **Findings**

A total of 39 publications were included in this review. The majority (79%) represented empirical studies, and the others were practitioner-oriented articles (21%). The publications were mostly focused on face-to-face instructional environments (62%), and only some of their articles described technology tools used in support of writing instruction in online and hybrid settings (38%).

The following section describes three main categories of technology and Web 2.0 tools found in the literature: (a) Collaboration and presentation tools, (b) evaluation and feedback tools, and (c) organization tools. These groupings have been organized by their prominence, and the order of the tools in each category is listed by frequency of use.

### **Technology for Writing Instruction**

#### **Collaboration and Presentation Tools**

**Blogs.** Blogs are the most prevalent collaborative tools in the literature (Alharbi, 2015; Boling, Castek, Zawilinski, Barton, & Nierlich, 2008; Calvert, 2014; Clark, 2010; Collier, Foley, Moguel, & Barnard, 2013;

Davis & McGrail, 2011; Dzekoe; 2017; Kilpatrick, Saulsbury, Dostal, Wolbers, & Graham, 2014; Lacina & Griffith, 2012; Margaryan, Littlejohn, & Voit, 2011; Martin & Lambert, 2015; Mills & Exley, 2014; Miyazoe & Anderson, 2012; Morton-Standish, 2014; Nobles & Paganucci, 2015). The use of blogs can be of benefit in writing instruction when utilized as multimodal presentation tools, and their instant publication allows creators to edit and revise content easily (Boling et al., 2008). One of the most user-friendly multimodal blogs is Glogster, through which users can create multimedia online posters (Dzekoe, 2017; Kilpatrick et al., 2014). Other multimodal blogs can be created using EduBlogs, KidzWorld, KidBlog, and ThumbScribes (Morton-Standish, 2014). Escrapbooking.com is also suggested as a resource for creating and constructing blogs (Lacina & Griffith, 2012).

**Fan sites and social media pages.** Fan sites and tribute pages are also collaborative, multimodal tools in which learners can describe their favorite authors and their work, using images, music, avatars, games, and puzzles. Their use can support writing instruction by facilitating students' engagement with the material and providing a space for them to post testimonials, favorite quotes, and new narratives, which can be additional or related stories involving the same characters as in the original (Unsworth, 2008); Mugglenet is a great example of a fan site for Harry Potter books. Another idea to encourage students to write is using "Fakebook pages" (<https://www.classtools.net/FB/home-page>), where they can pay homage to and celebrate their favorite book characters, historical figures, or authors (Morton-Standish, 2014).

**Movie-making and digital story tools.** MovieMaker, iMovie, and Animoto are other very popular tools referred to in the literature (Baepler & Reynolds, 2014; Calvert, 2014; Clark, 2010; Edwards-Groves, 2012; Kilpatrick et al., 2014; Martin & Lambert, 2015; Mills & Exley, 2014; Nobles & Paganucci, 2015; Yuan & Bakian-Aaker, 2015). These collaborative programs empower students when sharing their stories, while enabling them to post such narratives online (Calvert, 2014; Clark, 2010). Students utilizing technology for storytelling are able to increase their motivation for writing while also improving their language skills (Sessions et al., 2016). Other recommendations for video animations, storytelling, and voiceovers are Powtoon, iStopMotion, Puppet Pals, and Toontastic (Yuan & Bakian-Aaker, 2015), and Knowmia and Educreations for recording and creating videos (Kilpatrick et al., 2014). More examples of highly interactive and multimodal storytelling and presentation tools are VoiceThread, Prezi, Flipsnack (Martin & Lambert, 2015); Book Creator (Kervin & Mantei, 2016; Rowe & Miller, 2016; Saulsbury, Kilpatrick, Wolbers, & Dostal, 2015); JayCut (Baepler & Reynolds, 2014); Little Bird Tales, iBooks Author (Kilpatrick et al., 2014), Storybird, Storyjumper, Bookemon (Morton-Standish, 2014), Drawing Pad (Rowe & Miller, 2016), Tellagami (Kervin & Mantei, 2016) and Strip Designer (Kilpatrick et al., 2014). Stories can also be told through the creation of made-up newspaper clippings using Fodey, which can then be published onto websites, wikis, blogs, or Twitter (Kilpatrick et al., 2014).

**Online collaborative writing and storing tools.** The use of Google Docs is also frequently cited in the literature (Bikowski & Vithanage, 2016; Boling et al., 2008; Brodahl, Hadjerrouit, & Hansen, 2011; Calvert, 2014; Dzekoe; 2017; Zhou, Simpson, & Domizi, 2012) as it affords online collaboration in writing and revising documents, as well as storage. This type of collaborative technology, which allows simultaneous editing, enables students to negotiate meaning as they work together to write documents online (Bikowski & Vithanage, 2016); the researchers noted how the use of technology helped participants improve their writing and organization skills, while allowing for "flexibility and student experimentation" in the collaborative process (p. 90). Other collaborative tools found in the literature were Etherpad (Brodahl et al., 2011) and Dropbox (, 2013; Kilpatrick et al., 2014).

**Wikis.** Wikis are highly useful and user-friendly presentation and collaboration tools mentioned in the literature (Alharbi, 2015; Boling et al., 2008; Kilpatrick et al., 2014; Margaryan et al., 2011; Martin & Lambert, 2015; Miyazoe & Anderson, 2012). As opposed to more traditional pencil-and-paper writing activities, wikis can motivate users to create and share content (Boling et al., 2008). A great tool for sharing multimodal media is Wikispaces (Kilpatrick et al., 2014).

**Discussion boards and forums.** These tools are frequently utilized in hybrid and online environments (Alharbi, 2015; Calvert, 2014; Comer, Clark, & Canelas, 2014; Jose & Abidin, 2016; Margaryan et al., 2011; Miyazoe & Anderson 2012). Online forum discussions can increase EFL students' interest and motivation in interacting with others. They also support brainstorming, organization, and revision/editing, and stimulate the creation of original and authentic writing (Jose & Abidin, 2016). Word-of-the-day forums can also be an excellent tool for teaching vocabulary while incorporating discussion opportunities where students can engage with others using the newly acquired lexicon (Calvert, 2014).

**ePortfolios.** These digital, multimodal versions of traditional paper-based portfolios, on which users can display artifacts representing their schoolwork, are increasingly growing in popularity. Because they are digital, ePortfolios afford instant publication and revision opportunities (Alshahrani & Windeatt, 2012; Baepler & Reynolds, 2014; Clark, 2010).

**Podcasts.** Users can also plan and tell stories using podcasts—digital audio files that can be shared online or through mobile apps (Boling et al., 2008; Margaryan et al., 2011; Mills & Exley, 2014). One of the most user-friendly tools is GarageBand (Mills & Exley, 2014). While creating their scripts for recording the podcasts, students are utilizing key writing skills for an authentic audience, which can be motivating to learners. A successful example is cited in Boling et al. (2008), where a sixth-grade writing teacher posted his students' podcasts on his Youth Radio blog (<https://youthradio.wordpress.com/>) in order to connect these young writers to their communities and provide them with a space to share their stories and interests.

Table 1 summarizes the findings and reports the number of publications in which each type of product is discussed.

Table 1

*Technology Tools for Collaboration and Presentation*

COLLABORATION AND PRESENTATION TOOLS	
Type of Product	n*
Blogs, fan sites, and social media pages	15
Movie making and digital story tools	15
Online collaborative writing and storing tools	7
Wikis	6
Discussion boards and forums	6
ePortfolios	3
Podcasts	3

\*Some publications included more than one type of product, which were double coded.

**Evaluation and Feedback Tools**

**Automated writing evaluation (AWE) tools.** In this second category, AWE tools are the most pervasive evaluation and feedback instruments found in the literature. There are several free and commercially available AWE tools, including Grammarly (Nova, 2018) and PaperRater (Paper Rater, n.d.), both of which also have paid versions that provide more advanced feedback features. Educational institutions can make use of commercial tools such as Criterion, MY Access!, Turnitin Feedback Studio and Revision Assistant, W-Pal, and WriteToLearn (Burstein, Chodorow, & Leacock, 2004; El Ebyary & Windeatt, 2010; Grimes & Warschauer, 2010; Laing, El Ebyary, & Windeatt, 2012; Landauer, Lochbaum, & Dooley, 2009; Lavolette, Polio, & Kahng, 2015; Li, Link, & Hegelheimer, 2015; Roscoe & MacNamara, 2013). A main advantage of using AWE tools is that students can obtain instant assessment and feedback on their

written assignments, which in turn gives teachers more time to focus on other important aspects of writing instruction.

**Annotation tools.** Screencomp is suggested for recording and annotating, functioning like notes you would make on a whiteboard. The work can then be shared with others online (Kilpatrick et al., 2014). VideoANT enables video annotation and feedback, facilitating peer review directly onto the video. Video and written annotations appear side by side in the same document, which enables users to reflect on their scripts and improve their communication skills (Baepler & Reynolds, 2014).

Table 2 summarizes the findings and reports the number of publications in which each type of product is discussed.

Table 2

*Technology Tools for Evaluation and Feedback*

EVALUATION AND FEEDBACK TOOLS	
Type of Product	n*
Automated writing evaluation (AWE) tools	9
Annotation tools	2

\*Some publications included more than one type of product, which were double coded.

**Organization Tools**

**Mind maps and graphic organizers.** Popplet is the most widely cited tool found in the literature. It allows users to create mind maps, timelines, graphic organizers, and many other ways in which to visually organize information (Kervin & Mantei, 2016; Kilpatrick et al., 2014; Saulsburry et al., 2015; Sessions et al., 2016).

**Online storyboards.** Another excellent tool for the creation of digital outlines of narratives is the use of online storyboards such as StoryboardThat and Storyboard Pro (Morton-Standish, 2014).

**Organization and notetaking tools.** Corkulous and Padlet can help students’ writing by providing them with tools for notetaking, organization, multimedia, collaborative brainstorming, and editing (Kilpatrick et al., 2014). Notability, Evernote, and UPAD are additional options that allow users to organize their writing, create outlines, and share content (Kilpatrick et al., 2014).

Table 3 below summarizes the findings and reports the number of publications in which each type of product is discussed.

Table 3

*Technology Tools for Organization*

ORGANIZATION TOOLS	
Type of Product	n*
Mind maps and graphic organizers	4
Online storyboards	1
Organization and notetaking tools	1

\*Some publications included more than one type of product, which were double coded.

**Discussion**

Technology tools used for collaboration and presentation can enhance student motivation, increase engagement, and enable peer editing and sharing learners’ work. The most prevalent tools in the literature are blogs, fan sites, social media pages, and movie-making and digital story tools. Teachers can use them to assign final projects or as a means for formative assessment. Tools for online collaborative

writing, wikis, discussion boards, forums, and podcasts are other engaging ways in which teachers can enhance their writing instruction and increase student participation. The use of ePortfolios enables a multimodal form of authentic assessment (both formative and summative), while also facilitating demonstration and sharing of the content. In addition, writing instruction can be complemented with AWE tools, which provide students with evaluation and feedback, enabling teachers to focus on other important aspects involved in the teaching of writing. Moreover, organization and annotation tools such as mind maps, video annotation software, online storyboards, and notetaking software can provide multimodal support to students as they create their work.

These findings confirm that technology has indeed taken a central role in communication and collaboration practices, and that the use of multimodal tools can greatly enhance instruction and the construction of student artifacts. Still, significant questions arise and further research is needed to address matters such as access to technology as well as teacher training that would enable them to feel fully confident in using tools that support the instruction of writing. Nevertheless, it is worth noting how expanding the use of technology in instructional settings has tremendous potential to support writing teachers and enable learners, most of whom are “digital natives” (Prensky, 2001, p. 1), to become increasingly proficient and skilled writers.

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