



## Second language writing online: An update

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### Introduction

I last wrote an overview of developments in second language (L2) online writing 10 years ago (Godwin-Jones, 2008). Since that time, there have been significant developments in this area. There has been renewed interest in L2 writing through the wide use of social media, along with the rising popularity of computer-mediated communication (CMC) and telecollaboration (class-based online exchanges). The recognition of writing as a social act has also led to a significant rise in interest in collaborative writing. This has been aided by the popularity of tools providing a shared writing space, such as [Google Docs](#). The importance and recognition of genre in both student work and writing theory have grown considerably among practitioners and researchers. The increased practice of integrating multimedia into writing is reflected in the popularity of multimodal projects, such as digital storytelling. At the same time, digital tools for evaluating writing have become more widely available in the form of digital annotators and automated writing evaluation (AWE) software, which take advantage of advances in corpus linguistics and natural language processing (NLP). In addition, tools for processing and evaluating large data sets enable approaches from data mining that provide valuable insights into writing processes. The variety and, in some cases, the complexity of online writing environments has increased the need for both learner and teacher training.

### Teaching L2 Writing Today: Preparing Students for Tomorrow

Much of the writing in our students' personal and professional lives will be online (Chun, Kern, & Smith, 2016). They will need a wide repertoire of writing skills and genre knowledge, from applying the appropriate language register when participating in social media to ensuring language is grammatically correct in writing formal reports. For success in many fields, advanced writing skills are needed (Vandommele, Van den Branden, Van Gorp, & De Maeyer, 2017). L2 teachers need to help students in learning the mechanics of writing and also in being able to write critically in all modalities (Chun et al., 2016). The importance of skills and knowledge in this area is reflected in the large volume of research on L2 writing in recent years. That includes several meta-analyses (Chen, 2016; Chun et al., 2016; Lin, 2014) and conceptual essays or editorials (Elola & Oskoz, 2017; Kern, Ware, & Warschauer, 2017; Zheng & Warschauer, 2017). It is widely acknowledged that writing effectiveness depends on both the writing environment and learner characteristics (Lin, 2014). Those characteristics include learning goals, beliefs, attitudes, and learning histories (Strobl, 2015). The importance of affective factors has contributed to the interest in finding new ways to motivate students to write more and better. Moving students in that direction is seen increasingly as achievable through encouraging and validating L2 participation in social media and online communities of interest. Such activities supply rich opportunities to engage in substantial reading and writing.

A major emphasis in studies on L2 writing has been placed on examining the stages toward completion of a writing project. This is in line with the transition in the view of writing from product to process. Students are expected to improve writing projects through multiple drafts, based on teacher, peer, or automated feedback. Increasingly, writing is seen not only as an iterative process, but also as dialogic,

with a recognition that writing involves a negotiation with readers (Zheng & Warschauer, 2017). The growing emphasis on cultural and social aspects of language learning has led to a socio-cultural and social constructivist perspective on L2 writing (Kern et al., 2017). This model of writing as a communicative, meaning-making social action, aligns with the practice of process writing, seen as a set of reevaluations driven by internal reflection and audience considerations. Learning to write involves not only discrete language skills, but also socialization into and participation in L2 communities (King, 2015). Awareness of appropriate writing approaches and strategies is an important factor in that process.

Preparing students for participation in online communities involves rethinking how L2 writing is taught, so as to include informal writing opportunities. Elola and Oskoz (2017) call for a “reevaluation of literacy, writing genres, and associated instructional practices in the L2 classroom” (p. 5). Indeed, recent research in computer-based L2 writing advocates a shift away from assigning only tasks that represent structured, teacher-directed writing (Zheng & Warschauer, 2017). Studies have shown that in informal online writing, students tend to express their own voice and ideas more effectively (Smith, Pacheco, & de Almeida, 2017). This can lead students to be more motivated and engaged in writing experiences. Cole and Vanderplank (2016) suggest that we may want to revise classroom-based language learning to reflect aspects of informal learning that have proven to be motivating and effective. Lehtonen (2017) comments that “the classroom should somehow imitate learning in informal ways” (p. 57). At a minimum, an appropriate direction for classroom L2 writing seems to point toward a mix of traditional assignments with participation in online communities.

The introduction to and encouragement of online collaborative writing are likely to be increasingly important aspects of the instructional strategy for L2 writing. This is both a needed real-world skill and an activity aligning with what second language acquisition (SLA) theory tells us about the effectiveness of social constructivism in language learning. That holds true for multimodal writing as well. In both cases, we are beginning to learn more about process, outcome, and perceptions (Yim & Warschauer, 2017). The diversity of options and complexity in either case provide challenges to both teaching practice and research. Different theoretical frameworks have in recent years informed explorations of the dynamics of L2 writing online (Elola & Oskoz, 2017). Collaborative writing has been viewed in the context of action theory (Cho, 2017; Kessler, Bikowski, & Boggs, 2012; Thorne, 2003; Yu & Lee, 2016), which places artefacts in their historical context, emphasizing the influence of cultural practices and histories on the usage of tools or services. From this perspective, writing is a socially situated action. Participants’ individual profiles (background, goals, motivation), mediated by tool use, shape the nature of interactions. To fully understand individual actions, one needs to know the context in which the activity occurred. Multimedia projects have been examined from the perspective of social semiotics, which posits that all meaning making is media-determined (Smith et al., 2017). An individual has a repertoire of semiotic resources to draw on in communicative practices, combining resources, as needed, to address different audiences or communities. On the teacher’s part, this calls for “semio-pedagogical competence” (Elola & Oskoz, 2017, p. 57), namely the awareness of the affordances of different media and modes, as well as the knowledge of when their respective use is most appropriate for achieving learning goals.

The practical implementations of these frameworks in teaching can occur in multiple ways. To help learners engage in new genres of writing, Elola and Oskoz (2017) propose that teachers consider the use of “bridging activities” (Thorne & Reinhardt, 2008) in which learners follow a path of observing and collecting use of digital texts and practices of interest to them, participating themselves in the creative process. This is similar to a genre-based approach (Hyland & Hyland, 2001), in which learners study the affordances and conventions of a given genre, then, with the knowledge gained, engage themselves in writing within that genre. This kind of genre-based multiliteracy approach can “support learners as they ease into, and become aware of, new textual practices” (Elola & Oskoz, 2017, p. 57). This contributes to the preparation of students for the literacy practices common today. Becoming accustomed to different forms of digital communication in L2 learning, including collaborative and multimodal approaches, should be a goal in today’s L2 classroom.

## Motivating Learners to Write More and Better

Moving into new forms of digital writing may prove difficult for both learners and teachers. There may be resistance on the part of students to use familiar online environments for language learning. Shih (2011) found that to be the case in using Facebook, as some students did not want their student identities to spill over into their social lives. Reinhardt, Warner, and Lange (2014) introduced gaming for learning German through script writing, but discovered that students did not see this as an appropriate approach to language learning. In contrast, other studies have shown success using both Facebook (Guamán, 2012; Mills, 2011; Saeed & Ghazali, 2017) and gaming (Chik, 2014; Ryu, 2013; Thorne, 2012) for language learning. It may be an easier transition into new genres to use forms already associated with learning, rather than those deeply immersed with student social life or leisure activities. That has proven to be the case, for example, in introducing wikis for content-based language instruction. Kessler (2009) had Mexican teacher trainees use a wiki to create content related to culture in the English-speaking world. Students responded positively to the project, viewing the assignment as “a lot of fun,” due in large part to the lack of an explicit focus on grammar (p. 90). In that learning atmosphere, students produced more output, providing more opportunity for practice, as well as a greater sense of autonomy. Similarly, students collaborating in writing and revising articles for Wikipedia became deeply invested in that role, finding themselves “writing not as students, but instead as writers” (King, 2015, p. 119). The learners took on this identity beyond their conventional institutional role in large part because they were writing for the public and as real, engaged participants in an online community. This kind of learner investment is crucial in building communal identities (Thorne, Sauro, & Smith, 2015). This can be a major contributing factor to the success of socially engaged L2 writing projects. Issues of identity formation, as they affect L2 writing, have been explored in the contexts of Internet interest communities, social networks, and online gaming (see Sauro, 2017a; Thorne et al., 2015).

If students are invested in their online writing, they are likely to be motivated to engage in it more fully and more frequently. In itself, that is likely to result in gains in confidence and in holistic writing ability. However, it may not be accompanied by an increase in accuracy. Despite prompting learners to strive for grammatical correctness in their wiki writing, Kessler (2009) found that learners focused almost exclusively on content and design, not bothering with grammar unless it interfered with understanding. In the hands-off stance of the teacher in this case, the students on their own used a low bar to find an acceptable level of tolerance for errors. As Kessler comments, there is a trade-off in terms of the teacher’s role in whether to encourage autonomy by not intervening, or to encourage accuracy by providing commentary or corrective feedback. Kessler (2009) advocates for a “sequence of regularly scheduled activities alternating between a focus on content and accuracy” (p. 92). Elola and Oskoz (2010), likewise recommend using a variety of approaches, particularly combining individual work and collaborative writing. They found that learners expressed a preference to work on grammar on their own. In their wiki project, students tended to overlook grammar in favor of content and structure. In fact, wiki writing seemed to lead users to focus more effectively than in other genres on structure and organization (Oskoz & Elola, 2011). Working with different genres and assigning writing texts of different length and complexity is likely to lead students to appreciate styles, conventions, and affordances of different genres. Collaborative writing with wikis, for example, not only encourages learners to pay attention to structure and organization, but also to engage in necessary pre-planning activities needed for such projects (Yim & Warschauer, 2017). Blogging, on the other hand, supplies a strong authorial voice (Li & Storch, 2017) and encourages extensive writing (Sun, 2010), while tending to maintain hierarchical identities (Thorne et al., 2015). Synchronous chat or SMS emphasizes informal language use and greater “visual salience of forms” (Sauro, 2009, p. 100). Email, by contrast, encourages reflection and may result in more attention to form (Schenker, 2016). Digital storytelling tends to emphasize a personal and engaged writing style, while inviting collaborative exploration of media integration (Elola & Oskaz, 2017).

According to Zheng, Yim, & Warschauer (2018), the use of CMC in L2 learning can provide an “apprenticeship of students into collaborative research and writing discourse communities, which are

typical in most professional and academic settings” (p. 4). This possibility of building learner identities as authentic writers tends to make learners “highly motivated, deeply engaged and more thoughtful when constructing texts” (Zheng & Warschauer, 2017, p. 62). Lehtonen (2017) provides a real-world context that demonstrates how this can happen. Law students in Finland submitted e-portfolios documenting their English learning through participation in a community of practice, namely as working interns in a law office. The students in effect “turned the workplace materials into self-instructional materials” (p. 56). One participant described how that happened:

I have never taken courses in legal English. Yet I have been writing contracts [...] and other legal documents in English on a daily basis for almost three years. The skills that I have today I have mainly acquired through trying to learn as much as I can from every single document that I have had in my hands. Especially at my previous job [...] where I was really fortunate to have access to a wealth of legal documents in English, I would make it my mission to read through as many as I could. Doing that I killed two birds with one stone—I learned a lot about the legal content and also about the language. Some of the learning obviously has had to happen through trial and error—good thing at a law firm virtually no one ever works on a case alone but in teams who check each other’s writings. (cited in Lehtonen, 2017, p. 56)

The real-world need for English writing competence led the intern to considerable effectiveness as an autonomous learner. The writing experiences here echo the focus on writing as process, as practiced in instructed language learning. However, the classroom does not normally supply this variety of text types and skills—translating, searching, summarizing, and note-taking. The writing tasks are open-ended and project-related, thus likely quite different in nature from the typical writing assignments in the L2 classroom. The exception may be courses in language for special purposes, in which this combination of subject knowledge and information literacy skills may be a central characteristic. Integrating tasks that combine a focus on content with acquisition of genre-related knowledge can be beneficial in any L2 writing instruction.

## Collaborative Writing

In many work environments, there is an expectation for employees to work together to prepare written documents. That may happen in a variety of ways, including through the use of the *Track Changes* feature in a word processor, such as Microsoft Word. Increasingly, however, users and businesses are choosing to use web-based tools such as Google Docs. Google Docs allows for fine-grained sharing permissions, with the ability to share with anyone or with a designated group of users. It can be easily set up for group collaboration, with each group having its own shared online space. The instructor is able to monitor all users on pages connected to the teacher’s account (requires a free Google account) and can change share settings to allow finished projects to be accessed by the entire class at any time. A document in Google Docs can be reviewed and edited simultaneously by anyone with allowed access. Google Docs keeps a complete revision history, making it possible to revert to prior versions, and to see just what each user has written or edited. The complex interactions enabled by Google Docs complicate the understanding of the collaborative writing process, as well as challenging individual assessment. Recent tools in data-mining hold the promise of supplying help in untangling those complexities (see Yim & Warschauer, 2017).

The dynamics of using Google Docs are quite different from using a regular word processor or other collaborative tools such as wikis. Users can see, in real time, who else is viewing the document and can see changes being made immediately. Different colors indicate which user is writing or editing. This could be disconcerting initially, particularly as one may watch one’s own composed paragraph being deleted. Some users may have a strong sense of ownership in their writing or may feel reluctant to share draft versions of their work (Kessler et al., 2012). In fact, one could copy and paste text written previously into Google Docs, allowing individuals to polish the writing before being seen by others. The simultaneous writing and editing functionality Google Docs supplies supports the interaction hypothesis of SLA, namely that learners profit in their language learning from communication interactions with

others. Indeed, Google Docs represents an ideal vehicle for negotiating meaning among learners, as they pool their language resources to improve their writing. Upon noticing errors or room for improvement in content or formulations, learners can make adjustments. This kind of learner interaction by output modification is a valuable process in language learning (Schenker, 2016).

The presence of the interaction dynamic in collaborative writing is supported by studies using Google Docs. Kessler et al. (2012) found an increase in volume of writing and also that students demonstrated “experimentation with alternate phrasings” (p. 100). Most changes did not go deep, being mostly in spelling and punctuation. When grammatical structures were revised, however, they were accurate. Overall, the work in Google Docs showed that students paid attention to process. They were willing to work together on revisions. They engaged in in-process planning, sharing strategies, providing feedback, and discussing organization. Other studies on collaborative writing show similar results (Elola & Oskoz, 2010; Strobl, 2014), finding that the overall focus in students’ writing typically remained on content. In these environments, students tend to be relatively unconcerned with the accuracy of others’ writing, so long as the language is comprehensible. Elola and Oskoz (2010) speculate the students may be reluctant to correct others’ language, or consider it “inappropriate” (p. 62).

Students writing together in Google Docs can take advantage of the commenting feature to offer metalinguistic or content comments or suggestions. This could take the form of a one-off comment or could develop into a conversation thread. It is also feasible in collaborative writing projects to encourage students to engage with one another using additional modes of communication, such as chat or email. In some reported projects, students used voice and text chat to plan and discuss their writing. Cho (2017) analyzed the use of Skype conversations to study interaction patterns among groups using Google Docs for class projects. Elola and Oskoz (2010) found the use of synchronous web-based text and audio applications increased “the level of interaction and accountability of the participants” (p. 53). Using a variety of tools for joint writing tasks provides more flexibility for student discussions and helps students to learn the usage patterns of different kinds of online exchanges.

Research studies in collaborative writing have begun to delve into the dynamics of student interactions in such projects. Li and Zhu (2017) found that student perceptions of learning goals influenced patterns of interaction. Perceived goals and learner attitudes may affect the success of collaborative writing, depending on whether there is agreement and harmony in these areas. Li and Zhu point out that effective collaboration is not a given, as “collaboration in the sense of high equality and mutuality may depend on group members’ effort and ability to align, negotiate, and co-construct goals, agency, and emotion” (p. 14). This makes group formation an important factor in such assignments. Li and Zhu point to the selection of group leaders as a factor in successful cooperation. They advocate, when possible, mixing students with different first languages (L1s) in groups, so as to foster intercultural communication skills as well as to guide students toward use of the target language as their lingua franca.

Bikowski and Vithanage (2016) discuss other factors in group formation, such as considering complementary skills and knowledge. In any case, they assert, high levels of mutual interaction and a willingness to negotiate are crucial for successful collaboration. More work on interaction dynamics in online collaborative writing is needed to flush out our knowledge, which is still sketchy (Chun et al., 2016). If concrete guidelines develop out of documented successes, it can be helpful in encouraging teachers to engage in collaborative learning. Teachers may be hesitant to embark on a project that makes significant demands in the knowledge of the mechanics and affordances of online writing tools and services, as well as in the area of group psychology. Having students work together online is quite different from in-class group work, during which teachers can observe behavior and make adjustments if needed. Online, teachers are mostly flying blind, with students working collaboratively without supervision. Teachers may only be directly involved if students report conflicts in group work. Including reflective journals as part of writing assignments can be effective in teachers being able to gain more insight into the collaborative process. It also encourages student reflection on writing and collaboration.

## Multimodal Writing

Collaboration is likely to be involved in the creation of multimodal L2 projects, combining text with other media. The interest in this direction of L2 writing coincides with the “visual turn in writing studies” (Li & Storch, 2017, p. 1). In today’s media landscape, written texts (e.g., SMS, email, Twitter, Facebook, etc.) frequently integrate images. Indeed, communication in some instances is primarily visual (Instagram, Snapchat), with the integration of video increasingly supported in communication modes and services (Facebook Messenger, Twitter). The omnipresence in society makes multimedia integration for students a known and accepted—maybe even expected—practice in creating school projects. That might range from traditional practices, such as inserting images into a Word document or slide presentation to creating a set of media-rich webpages or shooting a self-scripted digital video. Integrating other media has been shown to have a positive impact on student writing (Darrington & Dousay, 2015). Dzekoe (2017) used text-to-speech (through [NaturalReader](#)) to have students written texts read back to them, which students found effective in helping to notice problems as well as “less stressful and more fun” than reading the essays by themselves (p. 84). For the finished products, students created interactive posters (using [Glogster](#)), adding visuals to their essays.

Integrating multimedia into writing assignments can be “transformational” (Darrington & Dousay, 2015, p. 830), turning assigned writing tasks into an opportunity to add personally designed or collected materials. Hafner (2014) found that including a range of modes motivated students. He had students in an English for science course conduct a simple scientific experiment, which they reported both in a written lab report and through recording a short video documentary shared on YouTube. Similarly, Talaván, Ibáñez, and Bárcena (2016) had ESL students engage in video subtitling (using [Aegissub](#)) as another method of combining writing and video. Sauro (2017b) reports on the practices of *fansubbing* and *scanlation*. Fansubbing is the amateur subtitling of videos (e.g., movies, TV shows, or anime). Scanlation refers to translation of image-based materials such as comic books or manga. Sharing projects online adds a further motivational element, as it provides membership into online communities. Knowing that the end product will be public can motivate students to polish both content and language.

A popular genre in multimodal writing is digital storytelling (for an overview, see Oskoz & Elola, 2016b). Traditionally, such projects involve students telling personal stories in a 3–5 minute video, for which they write the script, find or create images, select background music, and narrate the story (Godwin-Jones, 2012). Digital storytelling can also be collaborative, with students creating historical documentaries or profiling cultural practices. Reported gains through digital storytelling involve areas such as pronunciation, media skills development, increased language production, and syntactical complexity (Oskoz & Elola, 2016b). One of the most frequently reported outcomes is an increase in student motivation. This may be in part because using a multimodal approach to narration is more applicable to future job skills students might feel they need (Darrington & Dousay, 2015). This is particularly evident among lower-achieving students. For those struggling with standard writing practices in educational settings, engaging in multimodal projects can provide a welcome alternative mode (Oskoz & Elola, 2016a). Smith et al. (2017) found that students have different mode preferences and, for some, especially adolescents, expressing themselves visually may be a more effective avenue for self-reflection and expression than writing. For younger populations, this approach might bring social acceptance, raising self-esteem and confidence.

Vandommele et al. (2017) found that multimodal L2 writing proved to be an especially effective way to reach migrant youth (in the Netherlands). Adolescents often disengage from literacy practices in the classroom, and that is likely to be exacerbated by struggles to communicate within a different culture. Multimodal writing may be especially beneficial to struggling writers (L2 learners and migrants) because it allows them to take on identities as productive students. It may also allow them to share their personal backgrounds in a positive environment, as well as to showcase knowledge of other languages. The validation that comes with recognition of learners’ personal linguistic background is evident in the project discussed in Smith et al. (2017), involving bilingual students. Students in that case created multimodal

presentations focusing on a theme of *my hero*. Students chose someone of importance in their own lives, which often meant integration of heritage culture and language.

Students may be more motivated to work on multimodal projects compared to traditional essay writing. However, they will need to adjust the writing style and tone to this different, more personal medium. That will likely take some coaching and training. Nelson (2006) found that students, accustomed to an academic writing style, struggled in trying to compose a movie script. Projects like digital storytelling involve a complex creation process. Guidance, along with scaffolding support, is needed as students learn best approaches to using the unique characteristics of different media. Smith et al. (2017) advocate providing multiple entry points into such projects and not, for instance, insisting first on storyboarding or scripting. This allows students to proceed at their own speed and comfort level, reducing the likelihood of stress and cognitive overload. Optimally, students become creative designers, who find their own unique approach, making the process more personal, engaging, and memorable. Vandommele et al. (2017) point out that in such projects, traditional power relationships may change, as age and official authority yield to digital skills.

### Providing Corrective Feedback

One of the areas studied most frequently in connection with L2 writing is that of written corrective feedback (WCF), namely how to provide it effectively and, in fact, whether it is useful at all for improving writing (Truscott, 1996). The question of how feedback contributes to language learning “has been and remains one of the most controversial issues in language pedagogy” (Ellis, 2005, p. 214). Storch (2010), in her meta-analysis of feedback, asserts that the “majority of studies now provide evidence for a positive and statistically significant effect for WCF” (p. 39). Nevertheless, the question of just how to provide that feedback remains a “subject of heated debate” (Cotos, 2011, p. 422). In fact, this issue goes back to the earliest days of computer-assisted language learning (CALL), with its struggles to determine the nature and volume of feedback on user interactions with tutorials (Otto, 2017). The question is difficult in part because there are so many different options, just in terms of grammar. Feedback can be direct—providing specific information on the error, possibly including a correct form—or indirect—giving metalinguistic information about the error. Many other options exist, such as repetition, translation, clarification, referral to reference materials, referral to practice exercises, and so forth (see Ellis, 2009). WCF can be *focused* (i.e., directed toward specific language constructions or problems) or *unfocused* (i.e., feedback provided on all writing issues). Computer-based corrective feedback has made the issue complex, with the electronic options extending the possibilities considerably. One of those, for example, is to provide recorded audio feedback, which has proven to be successful in reported projects, such as using screencast software (Ducate & Arnold, 2012; Elola & Oskoz, 2016). Although there is no agreement on a single best approach, there does seem to be a consensus that simply providing the correct form may not lead to deep learner processing or internalization. Indirect feedback requires a more active learner role, encouraging reflection on the error (Hamel, Slavkov, Inkpen, & Xiao, 2016).

An area in which there has been considerable interest in research in recent years is electronically delivered peer feedback (Lee, 2015). Research has looked at its effectiveness, as well as at its impact on motivation and cooperation among learners. Peer feedback may provide more social or affective support than teacher feedback; learners may find it less threatening (Lee, 2015). Peer feedback can “enhance a sense of audience and text ownership” (Lee, 2015, p. 2), leading students to take their role seriously, creating the potential for reflection and discussion on language issues. In her meta-analysis of technology-supported peer feedback, Chen (2016) indicates that students often feel more comfortable providing feedback electronically than they do face-to-face. She also reported that the feedback in some studies showed considerable lexical range and focus. Peer feedback can be enabled in a variety of ways, with the context determining what is most appropriate. It may be built into collaborative writing in media such as wikis or Google Docs. Alternatively, it can be a separate assigned task, using a learning management system (e.g., Moodle), web sharing service (e.g., Dropbox), or word processor (with the comment or

review functions). AbuSeileek and Abualsha'r (2014) found that the track changes function in Word was more effective in peer feedback than providing recasts or metalinguistic information about the error. The authors speculate that this may have been because the original form was preserved in this method and the correction was more prominent, leading to a higher likelihood of it being noticed and acted upon. One of the concerns mentioned about the use of peer feedback is the possibility that peers may provide inaccurate or unhelpful comments (Liao, 2016; Tai, Lin, & Yang, 2015).

Tai et al. (2015) advocate, as do others, for the use of a mix of peer and teacher feedback. Yu & Lee (2016) found that the benefits of peer feedback could be enhanced through training students in group interaction strategies. They suggest providing opportunities for students to share productive peer feedback experiences. They also advise having students explore a variety of approaches to giving peer feedback, including the use of their L1. This corresponds to other general recommendations on the use of corrective feedback, namely to include a range of options whenever feasible (Storch, 2010). Storch (2010) discusses also the concern that providing a massive amount of feedback can be counterproductive, as that may overwhelm learners. Feedback is only useful if students are willing and able to use it, which is more likely if the feedback fits their particular needs and preferences. That is determined by factors such as proficiency level, individual learning style, and curricular context. Sauro (2009) highlights the importance of context in stating that studies "have found advantages for certain types of corrective feedback for certain forms and for certain learners" (p. 97). This carefully qualified assertion is one that most researchers are likely to endorse. Even Truscott (1996), a well-known sceptic on the effectiveness of WCF, is forced to admit that "certain subgroups of learners can benefit from correction under certain circumstances" (p. 361). Strobl (2017) makes the further qualification that the form of feedback students prefer may not be that which is most effective. Learner training can optimize effectiveness, as students gain insight into best practices for language learning, as informed by SLA theory.

One of the ways to build feedback options is to draw on examples from collected learner language incorporated into a corpus. In fact, learner corpora can be used to analyze L2 writing, to uncover both positive and negative writing practices, and to provide correlating examples. A learner corpus of texts written by Chinese learners of Italian was shown to be helpful in providing guidance for learners on the use of collocations (Siyanova-Chanturia, 2015). Strobl (2017) used a corpus of Belgian learners' texts in German to improve the use of cohesion devices. A number of tools and approaches have been developed specifically to analyze collected L2 writing for features such as lexical complexity ([Coh-metrix](#)), formulaic competence (Bestgen, 2017), lexical sophistication ([TAALES](#)), syntactic complexity (Yoon, 2017), and text cohesion ([TAACO](#)). Such approaches can be helpful in variety of ways (Godwin-Jones, 2017a). Corpus-based analysis provides a representation of an individual user's inventory of use in a particular area, compared to that of native speakers. This might be in areas such as the frequency of collocations use or lexical sophistication, important indicators of overall writing quality (Bestgen, 2017). Compilations of examples of targeted constructions can provide useful classroom or online teaching materials. Results may point to gaps in instructional methods or materials.

## Automated Writing Evaluation

One of the approaches to evaluating student writing that has developed substantially in the last decade is AWE. This has been especially important in English language instruction. Commercial products, such as [Criterion](#) (from ETS) or [My Access!](#) (from Vantage Learning), are used to provide assessments of formal and academic writing in English. They grew out of the development of automated essay correction software in the 1960s (Warschauer & Ware, 2006). The use of AWE has grown due to the promise of cost savings and the potential of freeing up of instructor time for other activities. AWE programs have progressively added more capabilities to their systems, incorporating reference handbooks, templates, editors, word banks, and other tools for both writers and teachers (Cotos, 2014). Cotos (2014) characterizes research on the use of AWE with L2 learners as "in its infancy" (p. 52), describing results of research studies as mixed. Users tend to find the feedback from such systems to be static, repetitive, and

unspecific. The development of AWE systems has focused primarily on reliable and accurate scoring mechanisms, rather than on providing useful feedback for improving writing (Warschauer & Ware, 2006). It has been suggested that AWE use in language instruction is best combined with teacher feedback and is most effectively used in early writing drafts (Li, Dursun, & Hegelheimer, 2017). That was the experience of Chen and Cheng (2008) in using My Access! in EFL classes in Taiwan. Their study found that the autonomous use of AWE as a writing coach led to widespread student frustration. Several studies have found AWE to be helpful if used in carefully controlled L2 contexts. Bestgen (2017) points to their value in providing a preliminary assessment of writing quality. That is also the finding of Li, Hui-Hsien, and Saricaoglu (2017). Using Criterion, they found that it was most helpful for grammar checking for lower-level ESL learners. Use of the [CorrectEnglish](#) AWE tool among EFL students in Taiwan was shown to enhance writing accuracy and autonomy awareness (Wang, Shang, & Briody, 2013).

Commercial AWE systems are quite expensive and not designed primarily for language learning. The development of successful AWE is a technically demanding and costly process. Nevertheless, non-commercial systems are available, which are primarily designed for use in L2 instruction. The Writing-Pal or W-Pal (from the SOLET lab at Arizona State University) is designed for use as a writing strategy tool. It includes a suite of educational games intended to increase writing engagement and provide opportunities for practice in an informal, fun setting. The different models and games cover different stages of the writing process, from planning to drafting to revising. It incorporates AWE that allows students to receive feedback on their writing. As do other AWE systems, the writing evaluated is not free form, but is predicated on writing in response to fixed, essay-type prompts. One of the advantages of W-Pal is the ability for students to use individual components, without having to produce an entire essay. This adds to its usefulness as a learning tool. A similar approach is used in the Research Writing Tutor, a genre-based AWE system (Cotos, 2011). [LightSIDE](#) (from Carnegie-Mellon University) is text-mining software, with extensive statistical options. AWE is hardly the “perfect solution” (Cotos, 2011, p. 423) or “silver bullet” (Warschauer & Ware, 2006, p. 19) for evaluating L2 writing. As Warschauer & Ware (2006) comment, researchers examining new literacies “will be wary of automated writing assessment, which at face value seems to negate much of what we celebrate as liberating in new media use” (p. 20). At the same time, judicious and informed use, combined with other evaluation and feedback options, may be helpful in some contexts, particularly in large enrollment EFL programs.

## Tools for Writing

Studies have shown that students expect to have errors marked, and if text is not corrected by the teacher, they may well assume that it is correct (AbuSeileek & Abualsha’r, 2014; Lee, 2015). It is likely that most language teachers have developed a system on their own for evaluating student L2 writing and providing feedback. That probably involves some type of error annotation scheme (Lalande, 1982). Typically, a teacher inserts a code into a corrected essay that indicates the type of error made. Students are provided with rubrics or keys, enabling them to understand what each mark-up indicates. This enables the students to make revisions as needed. The teacher’s annotations normally target both form and content, including style and organization. The process is not only time-consuming, it is also repetitive, with teachers often marking similar errors throughout an essay. The teacher may recall that a student has made similar errors in the past and provide appropriate feedback, pointing the student to resources which may help with improving that particular aspect of writing. Teachers strive to be consistent and systematic in their mark-up and comments. Dealing with repetitive tasks, providing consistency and systematization, keeping track of learner histories, and linking errors to resources, are all actions for which software is ideally suited.

There is an increasing variety of software tools for both improving and evaluating writing. The use of the revision features in word processors is likely familiar to both students and teachers. In addition to the review features, other features of word processors can help with providing electronic feedback, including using font formatting, voice annotation, and hyperlinks (see Krajka, 2002). Teachers are likely to point students to the use of standard features built into word processors such as spell and grammar checkers.

These are also available as standalone applications, such as [Antidote](#) (for English), [BonPatron](#) (for French), or [Duden](#) (for German). Online grammar checkers for English include [Grammarly](#), [Grammarly](#), and [SpellCheckPlus](#). [LanguageTool](#) is available for 24 languages.

Teachers can use online tools to mark-up learner text with annotations. Annotators such as [Sacodeyl](#) can save marked-up texts, creating a searchable database or corpus. With an open source system like [Brat](#), annotation schemes can be defined for specific kinds of text (Stenetorp et al., 2012). Error annotators especially developed for L2 writing offer additional functionality. The Online Annotator for ESL Writing consists of an error annotation editor, database manager, and error analyzer (Yeh & Lo, 2009). [Markin](#) (Windows software) offers similar functionality, with the added ability to create reusable snippets of text (Krajka, 2002). The MyAnnotator tool from the University of Ottawa makes extensive use of NLP to facilitate and automate text tagging, with extensive statistical output options (Hamel et al., 2016). It also features a student panel, allowing students to view annotations and to revise their texts within the software. The system has considerable flexibility, allowing teachers to determine the extent of feedback to provide, for example, whether to include metalinguistic information.

## Conclusion

Recently, software has become available that enables processing of large collections of texts with more powerful analytical tools that derive from advances in artificial intelligence (Godwin-Jones, 2017b). These text mining tools provide new insights into aspects of student writing. A study by Chiu and Fujita (2014) collected extensive CMC data and used statistical analysis to reveal particular characteristics, such as gender differences in language use. An open source mining tool, [SCAPES](#), can analyze the revision history of multiple Google Docs and provide fine-grained statistics on collaborative writing processes (Yim & Warschauer, 2017). Tools that provide visual representations of collaborative writing, such as [DocuViz](#) or [AutoVIZ](#), can be especially helpful in revealing to both teachers and students how collaborative texts have been created (Yim & Warschauer, 2017).

Such tools can help teachers in assessment of collaborative writing—a more difficult process than assessing individual texts. Another area difficult to assess is multimodal projects (Elola & Oskoz, 2017; Zheng & Warschauer, 2017). Part of the difficulty in that process is for the teacher to be knowledgeable in terms of tools and resources. That knowledge is necessary to evaluate how successful students have been in integrating multimodal resources into their projects. On the teacher's part, this involves developing an understanding of evolving genres of writing. Writing fanfiction, for example, has been shown to be an effective device for L2 learning (Sauro, 2014). The benefits derive in large part from learners' enthusiasm to engage in such activities. The greater motivation is likely to result in an increased volume of writing activity. Writing associated with online gaming is another such opportunity. This broader, ecological perspective on language learning should lead us to encourage students to do things with language online appropriate to contexts and individual interests.

It is clear that to learn more about the dynamics of collaborative writing, multimodal projects, and participation in online communities, we need both quantitative and qualitative studies. We are likely to see more development of text mining tools, which provide valuable snapshots and archival analyses of writing activities. Storch (2010) calls for more research on corrective feedback that goes beyond experimental, short-term studies. While I endorse her call for more consideration of classroom practices over artificial experimentation, being able to supply generalizable findings, useful in instruction, is difficult, given the highly contextual nature of the feedback process. Ideally, if there are enough studies in a variety of contexts, they can give practitioners the possibility of finding an approach that fits their particular situation. Li and Storch (2017) call for studies with larger sample sizes. That may lead to more reliable data and more generalizable practices. Storch (2010) also calls for more longitudinal studies. As in other uses of CALL, those would be highly useful, particularly as some of the benefits of WCF appear to be only short-term (see Li et al., 2017). Qualitative studies will continue to provide important perspectives on L2 writing. This is all the more the case today, when there are so many options for

involvement in online writing. Studies of practitioners of fanfiction (Black, 2009; Sauro, 2014) are prime examples of how individual case studies provide valuable insights into the development of L2 writing abilities and on the complexities of identity formation online.

The prominence of online writing in CALL research is a welcome development, correcting the long-time bias toward oral communication, derived from the rise of communicative language learning. This is not likely to change, given the central role that digital texts play in our everyday lives.

## References

- AbuSeileek, A., & Abualsha'r, A. (2014). Using peer computer-mediated corrective feedback to support EFL learners' writing. *Language Learning & Technology*, 18(1), 76–95. <https://dx.doi.org/10125/44355>
- Bestgen, Y. (2017). Beyond single-word measures: L2 writing assessment, lexical richness, and formulaic competence. *System*, 69, 65–78.
- Bikowski, D., & Vithanage, R. (2016). Effects of web-based collaborative writing on individual L2 writing development. *Language Learning & Technology*, 20(1), 79–99. <https://dx.doi.org/10125/44447>
- Black, R. W. (2009). Online fan fiction, global identities, and imagination. *Research in the Teaching of English*, 43, 397–425.
- Chen, C.-F. E., & Cheng, W.-Y. E. (2008). Beyond the design of automated writing evaluation: Pedagogical practices and perceived learning effectiveness in EFL writing classes. *Language Learning & Technology*, 12(2), 94–112. <https://dx.doi.org/10125/44145>
- Chen, T. (2016). Technology-supported peer feedback in ESL/EFL writing classes: A research synthesis. *Computer Assisted Language Learning*, 29(2), 365–397.
- Chik, A. (2014). Digital gaming and language learning: Autonomy and community. *Language Learning & Technology*, 18(2), 85–100. <https://dx.doi.org/10125/44371>
- Chiu, M. M., & Fujita, N. (2014). Statistical discourse analysis: A method for modeling online discussion processes. *Journal of Learning Analytics*, 1(3), 61–83.
- Cho, H. (2017). Synchronous web-based collaborative writing: Factors mediating interaction among second-language writers. *Journal of Second Language Writing*, 36, 37–51.
- Chun, D., Kern, R., & Smith, B. (2016). Technology in language use, language teaching, and language learning. *Modern Language Journal*, 100(S1), 64–80.
- Cole, J., & Vanderplank, R. (2016). Comparing autonomous and class-based learners in Brazil: Evidence for the present-day advantages of informal, out-of- class learning. *System*, 61(1), 31–42.
- Cotos, E. (2011). Potential of automated writing evaluation feedback. *CALICO Journal*, 28(2), 420–459.
- Cotos, E. (2014). *Genre-based automated writing evaluation for L2 research writing: From design to evaluation and enhancement*. Berlin, Germany: Springer.
- Darrington, B., & Dousay, T. (2015). Using multimodal writing to motivate struggling students to write. *TechTrends*, 59(6), 29–34.
- Ducate, L., & Arnold, D. (2012). Computer-mediated feedback: Effectiveness and students' perceptions of screen-casting software vs the comment function. In G. Kessler, A. Oskoz, & I. Elola (Eds.), *Technology across writing contexts and tasks* (pp. 31–56). San Marcos, TX: CALICO.
- Dzekoe, R. (2017). Computer-based multimodal composing activities, self-revision, and L2 acquisition through writing. *Language Learning & Technology*, 21(2), 73–95. <https://dx.doi.org/10125/44612>

- Ellis, R. (2005). Principles of instructed language learning. *System*, 33(2), 209–224.
- Ellis, R. (2009). A typology of written corrective feedback types. *ELT Journal*, 63(2), 97–107.
- Elola, I., & Oskoz, A. (2010). Collaborative writing: Fostering foreign language and writing conventions development. *Language Learning & Technology*, 14(3), 51–71. <https://dx.doi.org/10125/44226>
- Elola, I., & Oskoz, A. (2016). Supporting second language writing using multimodal feedback. *Foreign Language Annals*, 49(1), 58–74.
- Elola, I., & Oskoz, A. (2017). Writing with 21st century social tools in the L2 classroom: New literacies, genres, and writing practices. *Journal of Second Language Writing*, 36, 52–60.
- Godwin-Jones, R. (2008). Emerging technologies: Web-writing 2.0: Enabling, documenting, and assessing writing online. *Language Learning & Technology*, 12(2), 7–13. <https://dx.doi.org/10125/44138>
- Godwin-Jones, R. (2012). Digital video revisited: Storytelling, conferencing, remixing. *Language Learning and Technology*, 16(1), 1-9. <https://dx.doi.org/10125/44268>
- Godwin-Jones, R. (2017a). Data-informed language learning. *Language Learning & Technology*, 21(3), 9–27. <https://dx.doi.org/10125/44629>
- Godwin-Jones, R. (2017b). Scaling up and zooming in: Big data and personalization in language learning. *Language Learning & Technology*, 21(1), 4–15. <https://dx.doi.org/10125/44591>
- Guamán, L. (2012). EFL teenagers' social identity representation in a virtual learning community on Facebook. *PROFILE Issues in Teachers' Professional Development*, 14(2), 181–194.
- Hafner, C. A. (2014). Embedding digital literacies in English language teaching: Students' digital video projects as multimodal ensembles. *TESOL Quarterly*, 48(4), 655–685.
- Hamel, M. J., Slavkov, N., Inkpen, D., & Xiao, D. MyAnnotator: A tool for technology-mediated written corrective feedback. *Revue TAL*, 57(3), 119–142.
- Hyland, F., & Hyland, K. (2001). Sugaring the pill: Praise and criticism in written feedback. *Journal of Second Language Writing*, 10, 185–212.
- Kern, R., Ware, P., & Warschauer, M. (2017). Network-based language teaching. In N. Van Deusen-Scholl and S. May (Eds.), *Second and foreign language education. Encyclopedia of language and education* (pp. 197–209). Berlin, Germany: Springer.
- Kessler, G. (2009). Student-initiated attention to form in wiki-based collaborative writing. *Language Learning & Technology*, 13(1), 79–95. <https://dx.doi.org/10125/44169>
- Kessler, G., Bikowski, D., & Boggs, J. (2012). Collaborative writing among second language learners in academic web-based projects. *Language Learning & Technology*, 16(1), 91–109. <https://dx.doi.org/10125/44276>
- King, B. W. (2015). Wikipedia writing as praxis: Computer-mediated socialization of second-language writers. *Language Learning & Technology*, 19(3), 106–123. <https://dx.doi.org/10125/44436>
- Krajka, J. (2002). Correcting student work with the computer-using dedicated software and a word processor. *Teaching English with Technology*, 2(4), 46–52.
- Lalande, J. F. (1982). Reducing composition errors: An experiment. *Modern Language Journal*, 66(2), 140–149.
- Lee, M. K. (2015). Peer feedback in second language writing: Investigating junior secondary students' perspectives on inter-feedback and intra-feedback. *System*, 55, 1–10.

- Lehtonen, T. (2017). You will certainly learn English much faster at work than from a textbook. *System*, 68, 50–59.
- Li, M., & Storch, N. (2017). Second language writing in the age of CMC: Affordances, multimodality, and collaboration. *Journal of Second Language Writing*, 36, 1–5.
- Li, M., & Zhu, W. (2017). Explaining dynamic interactions in wiki-based collaborative writing. *Language Learning & Technology*, 21(2), 96–120. <https://dx.doi.org/10125/44613>
- Li, Z., Dursun, A., & Hegelheimer, V. (2017). Technology and L2 writing. In C. Chapelle & S. Sauro (Eds.), *The handbook of technology and second language teaching and learning* (pp. 77–92). New York, NY: John Wiley & Sons.
- Li, Z., Hui-Hsien, F., & Saricaoglu, A. (2017). The short-term and long-term effects of AWE feedback on ESL students' development of grammatical accuracy. *CALICO Journal*, 34(3), 355–375.
- Liao, H. C. (2016). Enhancing the grammatical accuracy of EFL writing by using an AWE-assisted process approach. *System*, 62, 77–92.
- Lin, H. (2014). Establishing an empirical link between computer-mediated communication and SLA: A meta-analysis. *Language Learning & Technology*, 18(3), 120–147. <https://dx.doi.org/10125/44387>
- Mills, N. (2011). Situated learning through social networking communities: The development of joint enterprise, mutual engagement, and a shared repertoire. *CALICO Journal*, 28, 326–344.
- Nelson, M. E. (2006). Mode, meaning, and synesthesia in multimedia L2 writing. *Language Learning & Technology*, 10(2), 56–76. <https://dx.doi.org/10125/44061>
- Oskoz, A., & Elola, I. (2011). Meeting at the wiki: The new arena for collaborative writing in foreign language courses. In M. J. W. Lee & C. Mcloughlin (Eds.), *Web 2.0-based e-learning: Applying social informatics for tertiary teaching* (pp. 209–227). Hershey, PA: IGI Global.
- Oskoz, A., & Elola, I. (2016a). Digital stories: Bringing multimodal texts to the Spanish writing classroom. *ReCALL*, 28(3), 326–342.
- Oskoz, A., & Elola, I. (2016b). Digital stories: Overview. *CALICO Journal*, 32(2), 155–173.
- Otto, S. E. (2017). From past to present: A hundred years of technology for L2 learning. In C. Chapelle & S. Sauro (Eds.), *The handbook of technology and second language teaching and learning* (pp. 10–25). New York, NY: John Wiley & Sons.
- Reinhardt, J., Warner, C., & Lange, K. (2014). Digital games as practices and texts: New literacies and genres in an L2 German classroom. In J. P. Guikema & L. Williams (Eds.), *Digital literacies in foreign and second language education* (pp. 159–190). San Marcos, TX: CALICO.
- Ryu, C. (2013). Play to learn, learn to play: Language learning through gaming culture. *ReCALL*, 25(2), 286–301.
- Saeed, M. A., & Ghazali, K. (2017). Asynchronous group review of EFL writing: Interactions and text revisions. *Language Learning & Technology*, 21(2), 200–226. <https://dx.doi.org/10125/44618>
- Sauro, S. (2009). Computer-mediated corrective feedback and the development of L2 grammar. *Language Learning & Technology*, 13(1), 96–120. <https://dx.doi.org/10125/44170>
- Sauro, S. (2014). Lessons from the fandom: Task models for technology-enhanced language learning. In M. González-Lloret & L. Ortega (Eds.), *Technology-mediated TBLT: Researching technology and tasks* (pp. 239–262). Amsterdam, Netherlands: John Benjamins.
- Sauro, S. (2017a). Fandom and online interest groups. In S. Thorne & S. May (Eds.), *Language, education, and technology. Encyclopedia of language and education* (pp. 1–12). Berlin, Germany: Springer.

- Sauro, S. (2017b). Online fan practices and CALL. *CALICO Journal*, 34(2), 131–146.
- Schenker, T. (2016). Syntactic complexity in a cross-cultural e-mail exchange. *System*, 63, 40–50.
- Shih, R. (2011). Can Web 2.0 technology assist college students in learning English writing? Integrating Facebook and peer assessment with blended learning. *Australasian Journal of Educational Technology*, 27(5), 829–845.
- Siyanova-Chanturia, A. (2015). Collocation in beginner learner writing: A longitudinal study. *System*, 53, 148–160.
- Smith, B. E., Pacheco, M. B., & de Almeida, C. R. (2017). Multimodal codemeshing: Bilingual adolescents' processes composing across modes and languages. *Journal of Second Language Writing*, 36, 6–22.
- Stenetorp, P., Pyysalo, S., Topić, G., Ohta, T., Ananiadou, S., & Tsujii, J. I. (2012). BRAT: A web-based tool for NLP-assisted text annotation. In *Proceedings of the demonstrations at the 13th Conference of the European Chapter of the Association for Computational Linguistics* (pp. 102–107). Avignon, France: Association for Computational Linguistics.
- Storch, N. (2010). Critical feedback on written corrective feedback research. *International Journal of English Studies*, 10(2), 29–46.
- Strobl, C. (2014). Affordances of Web 2.0 technologies for collaborative advanced writing in a foreign language. *CALICO Journal*, 31(1), 1–18.
- Strobl, C. (2015). Attitudes towards online feedback on writing: Why students mistrust the learning potential of models. *ReCALL*, 27(3), 340–357.
- Strobl, C. (2017). The potential of automated corrective feedback to remediate cohesion problems in advanced students' writing. In K. Borthwick, L. Bradley, & S. Thouësny (Eds.), *CALL in a climate of change: adapting to turbulent global conditions - Short papers from EUROCALL 2017* (pp. 294–299). Research-publishing.net. Retrieved from <https://research-publishing.net/publication/chapters/978-2-490057-04-7/729.pdf>
- Sun, Y. C. (2010). Extensive writing in foreign language classrooms: A blogging approach. *Innovations in Education and Teaching International*, 47(3), 327–339.
- Tai, H. C., Lin, W. C., & Yang, S. C. (2015). Exploring the effects of peer review and teachers' corrective feedback on EFL students' online writing performance. *Journal of Educational Computing Research*, 53(2), 284–309.
- Talaván, N., Ibáñez, A., & Bárcena, E. (2017). Exploring collaborative reverse subtitling for the enhancement of written production activities in English as a second language. *ReCALL*, 29(1), 39–58.
- Thorne, S. L. (2003). Artifact and cultures-of-use in intercultural communication. *Language Learning & Technology*, 7(2), 38–67. <https://dx.doi.org/10125/25200>
- Thorne, S. L. (2012). Gaming writing: Supervernaculars, stylization, and semiotic remediation. In G. Kessler, A. Oskoz, & I. Elola (Eds.), *Technology across writing contexts and tasks* (pp. 297–316). San Marcos, TX: CALICO.
- Thorne, S. L., & Reinhardt, J. (2008). “Bridging activities,” new media literacies, and advanced foreign language proficiency. *CALICO Journal*, 25(3), 558–572.
- Thorne, S. L., Sauro, S., & Smith, B. (2015). Technologies, identities, and expressive activity. *Annual Review of Applied Linguistics*, 35, 215–233.
- Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning*, 46(2), 327–369.

- Vandommele, G., Van den Branden, K., Van Gorp, K., & De Maeyer, S. (2017). In-school and out-of-school multimodal writing as an L2 writing resource for beginner learners of Dutch. *Journal of Second Language Writing, 36*, 23–36.
- Wang, Y. J., Shang, H. F., & Briody, P. (2013). Exploring the impact of using automated writing evaluation in English as a foreign language university students' writing. *Computer Assisted Language Learning, 26*(3), 234–257.
- Warschauer, M., & Ware, P. (2006). Automated writing evaluation: Defining the classroom research agenda. *Language Teaching Research, 10*(2), 157–180.
- Yeh, S. W., & Lo, J. J. (2009). Using online annotations to support error correction and corrective feedback. *Computers & Education, 52*(4), 882–892.
- Yim, S., & Warschauer, M. (2017). Web-based collaborative writing in L2 contexts: Methodological insights from text mining. *Language Learning & Technology, 21*(1), 146–165.  
<https://dx.doi.org/10125/44599>
- Yoon, H. J. (2017). Linguistic complexity in L2 writing revisited: Issues of topic, proficiency, and construct multidimensionality. *System, 66*, 130–141.
- Yu, S., & Lee, I. (2016). Exploring Chinese students' strategy use in a cooperative peer feedback writing group. *System, 58*, 1–11.
- Zheng, B., & Warschauer, M. (2017). Epilogue: Second language writing in the age of computer-mediated communication. *Journal of Second Language Writing, 36*, 61–67.
- Zheng, B., Yim, S., & Warschauer, M. (2018). Social media in the writing classroom and beyond. In J. I. Liantas (Ed.), *The TESOL encyclopedia of English language teaching* (pp. 1–5). New York, NY: Wiley-Blackwell.