

Teachers' Experience Using Technology to Provide Feedback That Enhances Students' Persuasive Writing Skills

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Abstract

This study explores the implementation of technology to facilitate students' persuasive writing skills within elementary school classrooms. Five teachers were interviewed regarding their experiences teaching persuasive writing to students using technology-mediated feedback. Teachers perceived the influence of technology on students' persuasive writing, on their own teaching practice, and on students' experiences as valuable for skill development for both themselves and for their students. However, students' unfamiliarity with technology was at times a hindrance.

Background

Persuasive Writing

Writing well is a necessity for students to achieve academic and professional success. Specifically, skilled persuasive writing predicts academic success and is a basic requirement for participation in civic life and in the global economy (Graham & Perin, 2007). However, few teachers feel adequately prepared to teach persuasive writing effectively, mostly because the process of teaching these skills involves several resources and steps rarely available in an average classroom. For example, to facilitate good writers, teachers need to teach the grammar of persuasive writing (i.e., organization and structure; Midgette & Haria, 2016), provide feedback on several written drafts (Schwartz, Tsang, & Blair, 2016), and encourage deliberate practice through the revisions of written drafts (Ericsson, Krampe, & Tesch-Romer, 1993).

Technology for Writing

Technology is increasingly acknowledged for its ability to support and promote writing development in a multitude of ways. Internet-based applications, such as blogs, wikis, and social networking sites, and mobile educational applications, including apps that teach content, are designed to be embedded within classroom instruction (Karchmer-Klein, 2013). Online cloud-based technologies with open-editing and review features have been used to promote collaborative writing and exchange of feedback among students (Suwantarathip & Wichadee, 2014; Zheng, Lawrence, Warschauer, & Lin, 2015), while word-processing and assistive features have been used to support the writing development of students with a variety of cognitive abilities and learning needs (Smith, 2016).

Students' Attitudes Towards Writing With Technology

Students generally feel positive about using technology to support the writing process, yet there is mixed evidence that doing so improves their writing overall. In one study, Grade 6 students reported positive attitudes towards using Google Docs to write and exchange feedback; however, the quality of students' writing did not improve following the intervention (Zheng et al., 2015). In a second study, one group of undergraduate students collaborated on writing assignments using Google Docs, while the control group wrote collaboratively in face-to-face groups. The technology users reported positive attitudes toward collaborative writing, high levels of collaborative learning, and a favourable perception of Google Docs as a learning tool. Additionally, students who used Google Docs achieved higher levels of achievement on their writing assessments on average compared to controls (Suwantarathip & Wichadee, 2014).

Students' Skill Improvement in Writing With Technology

A recent study looked more closely at how technology may support the writing process. Smith (2016) asked students to write two narrative texts: one with a technology (i.e., spell check, speech-to-text, word prediction, and *Read and Write* for Google) and one without technological support. They found that, when using word-processing tools, the students' overall score on their narrative text improved, regardless of whether the student had significant learning needs or learning strengths. More specifically, students with complex learning needs used more sophisticated vocabulary, made less spelling errors, and wrote higher quality texts. Similarly, the narrative writing of students described as gifted or talented was significantly longer in length, contained more complex sentences, and was of significantly better quality as measured by grade level compared to their writing without the use of technology. These results suggest that technology can positively contribute to students' writing development for both high- and low-achieving students, particularly in inclusive learning environments (Smith, 2016).

Feedback and Technology for Persuasive Writing

Technology can support student writing beyond word-processing tools. For example, technology can facilitate immediate access to student writing with the purpose of providing timely feedback. Feedback has been identified as a common yet important pedagogical practice across all subject areas, including writing. It is defined as "information that flows back to learners about the quality of their ideas and behaviours" (Schwartz et al., 2016, p. 64). Feedback can be directive by telling the student what needs to be fixed, or it can be facilitative by providing comments and suggestions to guide the students in their own revision. Both types of feedback can have a scaffolding effect on students' learning. Directive feedback can be utilized in the early stages of learning, while facilitative feedback can be used when the learner has developed an understanding of the subject matter (Shute, 2008).

In order for feedback to be most helpful, research has made several recommendations focused on the content of the feedback itself. If feedback is delivered at the right level (i.e., directed to the task,

rather than to the learner), it can help students to understand, engage, or develop effective strategies for reaching their learning goal (Hattie & Timperley, 2007). Effective feedback should be specific to help the learners take steps to reduce the discrepancy between their desired goal and their current performance. Second, feedback should be timely to enable learners to determine what led them to the error. Third, feedback should also be understandable for the learner, so that the learner can determine what to do to correct errors. Fourth, feedback should be delivered in a nonthreatening way. Finally, feedback should trigger the learner to revise and correct errors (Schwartz et al., 2016).

Other research has focused on the timing of the feedback. Feedback needs to be provided to the learner almost immediately, while the learner is still completing a task (Van der Kleij, Feskens, & Eggen, 2015). Immediate feedback has been associated with faster gains, greater success on difficult tasks, and better retention of procedural and conceptual knowledge, especially for struggling learners (Shute, 2008). Researchers who examined the effect of feedback timing found that students who received feedback within approximately 20 minutes of finishing their assignment significantly outperformed students who received feedback within 24 hours. Thus, timing of feedback is an important factor for student success (Kulkarni, Bernstein, & Klemmer, 2015).

Teachers' Attitudes Towards Technology as a Pedagogical Tool

Studies examining the relationship between technology and student achievement suggested that the impact of technology on student learning depends on the attitudes and beliefs of the teacher (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Jonassen, Howland, Marra, & Crismond, 2008; Twyman & Sota, 2016). When a teacher endorses a positive attitude towards technology, the likelihood of technology being used by students in the classroom increases. In the same way, when teachers feel competent and believe in their ability to use technology, students' use of technology in the classroom also increases. In contrast, a lack of technology support and accessibility discourages teachers from using educational technology within their classrooms (Buabeng-Andoh, 2012). Other common barriers to using technology in the classroom include teachers' resources, training, knowledge and skills, as well as attitudes and beliefs (Ertmer et al., 2012). Nevertheless, teachers play a pivotal role in the uptake of technology in the classrooms, more so than the provision of adequate resources.

Purpose of the Study

Teachers' perspectives are vital to ensure the success of writing interventions. The purpose of this study was to explore the perspectives of teachers with regards to the impact of technology on their teaching of persuasive writing with feedback, as well as their students' learning experiences. We focus on a subset of five teachers, from a larger sample, who shared their perceptions regarding the influence of persuasive writing with technology on their own teaching practice and on their students' writing experiences.

Methodology

Research Context

The current study is situated within a larger mixed-method community-based research study design (i.e., a collaboration among Alberta Education, the University of Alberta, and two school jurisdictions). Community-based participatory research promotes 1) power sharing in decision making, 2) mutual transfer of expertise, and 3) data sharing across partners (Jones & Wells, 2007). As such, the academic research team becomes part of the community, while the community members become part of the research team (Jones & Wells, 2007). Thus, researchers partnered with teachers by engaging them in the research process with the goal of creating useful and relevant resources to guide the implementation of technologies that support the academic writing skills of students in inclusive classrooms. The researchers and educators co-created a persuasive writing unit using technology and feedback provisions for the Grade 5 students. Ten teachers and their students ($n = 246$) from eight elementary schools (grades 4-6) within two school districts in urban and rural Alberta, Canada participated in the overarching study. The mean class size was 25 students.



Fig. 1: Research community of practice – Teachers and researchers co-developed the research project

Teachers were brought together prior to implementing a persuasive writing unit to explore appropriate tools and resources that support student academic writing within the curriculum and to provide input on the writing unit and activities developed by researchers (see Figure 1). Then, teachers taught the same persuasive writing unit with eight lessons. Students were instructed to complete their writing assignments on a device (e.g., iPad, laptop, Chromebook, desktop computer) available at their schools. Most teachers used Google Classroom to implement the persuasive writing unit with their students, a learning platform that uses Google Docs and other Google products, including Google Forms, Google Slides,

and YouTube. Each lesson contained several activities and graphic organizers. Teachers were instructed to complete as many activities as they could. Most students had one-to-one access to devices, including Chromebooks and iPads, while one class used computers in a school-wide computer lab. Students received feedback through the comment feature of Google Docs from three graduate research assistants (RAs) who acted as writing coaches, providing feedback to students on their writing assignments according to a *Writing Assessment Rubric* developed to describe the quality and grade level of students' writing. Teachers were able to view the feedback their students received. Using the revision history of Google Docs, teachers could view any revisions students made after receiving feedback.

Participants and Recruitment

At the end of the persuasive writing unit, teachers were asked if they were willing to be interviewed about their experiences using technology and feedback to implement the persuasive writing unit. Five (four females and one male) of the 10 teachers from the overarching study participated in semi-structured one-to-one phone interviews, which provided an opportunity to understand their unique perspectives and experiences. Interviews were conducted over the course of two weeks and each interview lasted approximately 30 minutes. Student participation in the study ranged from 87.5 percent to 100 percent across the five classrooms. On average, 97.6 percent of the students within the five classrooms participated in the study and received online feedback on their persuasive writing. A description of the study participants is shown in Table 1.

Table 1

Description of the study participants

Teacher	Class size	Grade	Gender
Michelle	20	5	Female
Melissa	22	5/6	Female
Mary	24	4/5	Female
Anna	24	5	Female
Daniel	27	5	Male

Note: Real names were replaced with pseudonyms.

Data Sources: Teacher Interviews

Data consisted of teacher interviews. Teachers were asked how they used technology in their classroom aside from the research project, how they felt about using technology to implement the persuasive writing unit, what worked and did not work about technology-mediated feedback, how students responded to the feedback, and whether they would consider using Google Classroom to give feedback to their students in the future. Interview questions were devised based on the core aspects of the persuasive writing intervention, with a focus on technology and feedback. The graduate students who had worked with each classroom over the course of a term were assigned to conduct interviews with the corresponding teachers with whom they had already developed a rapport. All teacher interviews were completed over the phone. When possible, the interviews were audio recorded to allow for accuracy of transcription. Interviews were transcribed from audio into text format prior to data analysis.

Data Analysis

A basic interpretive qualitative research approach was employed for this study. This approach seeks to “uncover and interpret” participants’ understandings of their experiences through the identification and exploration of themes and patterns in the data (Merriam & Tisdell, 2015). Specifically, the collective case study method was employed to gauge themes across several cases and to gain a deeper understanding of teachers’ experiences (Miles & Huberman, 1994). Teacher interviews were coded, and patterns and themes were extracted and agreed upon by the research team. The answers were coded according to two orthogonal dimensions: student/teacher and advantages/disadvantages perceived by teachers of using technology for persuasive writing.

Resulting Themes

Several themes emerged from the interviews: (1) integration of technology to support writing, (2) technology-mediated feedback, and (3) accessibility of technology, as shown in Table 2.

Table 2

Teachers' perceived advantages and disadvantages of using technology for persuasive writing from the perspective of both themselves and of their students

	Advantages	Disadvantages
T E A C H E R	<p>Accessibility:</p> <ul style="list-style-type: none"> Ubiquitous <p>Technology:</p> <ul style="list-style-type: none"> Students and teachers were familiar with Google Classroom to exchange information (e.g., assignments) Easier to collect students' work – paperless Teachers/RAs can see/access students' work, feedback, and revision history <p>Feedback:</p> <ul style="list-style-type: none"> Transfer: Encouraged teachers to provide more feedback on other assignments or classes Technology/feedback worked well Appreciation for the support of the RAs for giving feedback to students 	<p>Accessibility:</p> <ul style="list-style-type: none"> One school provided access to a computer lab, not to 1:1 devices <p>Technology:</p> <ul style="list-style-type: none"> Difficult to track all the documents or when students handed things in/revised Would not allow assigning letter grades or percentile ranges Necessary documents were not always in the same format <p>Feedback:</p> <ul style="list-style-type: none"> Comments would disappear when students resolved them and it was an extra step for the teacher to retrieve them Overwhelming: there were a lot of different moving pieces to track
S T U D E N T	<p>Accessibility:</p> <ul style="list-style-type: none"> Ubiquitous: work on feedback anytime (school and home); cannot lose assignments <p>Technology:</p> <ul style="list-style-type: none"> Found it easy to cut, paste, or change sentences (as opposed to written work) Liked the overall process and were more engaged <p>Feedback:</p> <ul style="list-style-type: none"> Timely: can easily make revisions while working and they can look up ways of making the changes Specific: examples within feedback – helpful Directive: highlighted sections and comments enabled students to locate the suggestions and where to make changes More likely to make the suggested changes when RAs delivered feedback 	<p>Accessibility:</p> <ul style="list-style-type: none"> One school provided access to a computer lab, not to 1:1 devices <p>Technology:</p> <ul style="list-style-type: none"> Had difficulty typing, could not use assistive technology (e.g., voice-to-text) Could not see feedback on iPads Did not know how to use revision history Had little prior Google Docs experience <p>Feedback:</p> <ul style="list-style-type: none"> Students poor self-regulatory processes interfered with effective feedback use Feedback was not always understood, so the teacher would have to clarify Students would read feedback too quickly and not understand it Not all students read the feedback Teachers had to direct students to attend to feedback

Integration of Technology to Support Writing

All teachers reported already using technology within their classrooms. Google Classroom was regularly used to distribute assignments, share information and resources, and to collect student work. Melissa reported: “We are a one-to-one device school, so the technology piece was very easy for us. There was not a learning curve in that.” All the teachers reported that their students benefited from the various features afforded by Google Docs throughout the writing process. As opposed to writing in a paper-and-pencil format, Michelle revealed that her students could easily make revisions and changes based on feedback using cut-and-paste functions. Additionally, Michelle reported that her students benefited from the easy access to online resources to help support their opinion. Anna noted that her students with learning needs were easily able to use speech-to-text functions during their writing process.

Although all teachers identified many possibilities when it came to integrating technology to teach writing, practicalities and challenges were also noted. Teachers noted that the technology was not always easy to use. Students were working on various assignments and making changes, and the notification system to track students’ work was not always smooth or efficient. Michelle noted that it was hard to track when students turned in assignments for revision and when they had made revisions. Due to all the moving parts, Melissa reported concern that she might have missed something, which could easily happen given that a notification was not always sent depending on the nature of the work or changes completed by the student.

Students also experienced some difficulty using some features of the technology. Two of the five teachers suggested that some of their students were unfamiliar with Google Docs features. Students needed to learn how to use the revision history, otherwise some of their work appeared lost. Students also had to learn how to use the comments tool. Some students would hit “resolve” to archive the comment and needed help retrieving it. In reference to her students’ lack of knowledge and experience with Google Docs, Mary shared: “I just assumed that because I know how to do it, they know how to do it. They’ve never done this.” Students required prior teaching to be able to utilize advanced features of Google Docs. Additionally, some teachers reported that their students did not take full advantage of the technology or had difficulty using their devices. Some students had difficulty typing. Other students did not use the assistive technology built into their devices to help with their writing. Daniel noted: “My students also know how to dictate but I don’t think any of them used it for this assignment.”

Despite some of the challenges students faced interacting with the technology, most teachers suggested that their students were highly engaged when using technology for writing. Melissa noted: “The kids loved being on the technology to write and complete and do everything.” Similarly, Daniel noted: “Students were always engaged. [...] Some students can go ahead – this way I don’t have the idle students. Go back, review, revise, and do edits.”

Technology-Mediated Feedback

When it came to receiving feedback, teachers reported that viewing the feedback through Google Docs allowed students to see exactly what the suggestions were and where to address the suggestions within their text. The comments appeared right next to the target sentence, so students were not required to search for where to apply the relevant feedback. In addition, two of the teachers shared that integrating technology and feedback to teach writing created a collaborative environment for students. Daniel stated that using technology allowed his students to “[work] together but on different lessons,” and Melissa mentioned that students would share feedback amongst each other.

All teachers emphasized the benefits of providing their students with timely feedback. Melissa stated that: “It is definitely something that will help them and guide them.” Anna reported that her students loved receiving feedback. She recalled that her students liked that they were able to engage in a conversational manner with the writing coach, allowing them a personal connection to the feedback. Both Daniel and Anna reported being so encouraged by the process and nature of the informative and facilitative feedback that they took it upon themselves to engage in the process of giving feedback through Google Docs for other assignments. Consistency, specificity, and timeliness of feedback were identified by teachers as important factors for feedback. Melissa reported that the immediate feedback was beneficial to her students, while Mary identified that the constant feedback was useful for her students’ steady progression in their writing, and Michelle identified that students benefited from feedback that was “straight to the point.” Michelle also indicated that her students found examples provided within feedback helpful. Anna noted that having her students receive feedback electronically allowed for the feedback to be more personalized and private, enabling her students to engage more with the comments.

Three of the five teachers also noted that sometimes students’ poor self-regulatory and self-determined processes interfered with their ability to make the best use of feedback. Teachers reported that their students often read the feedback too quickly to be able to fully understand and apply it to their writing. Michelle reported that, to help students understand the feedback given, she would have to prompt her students to reread the feedback and think about it in relation to their writing. Some students simply did not read the feedback. Mary noted: “A few of them looked at it. Others didn’t quite get it.” Students did not necessarily take the initiative to implement the needed changes. Mary noted: “You give them feedback and they don’t implement the feedback further.” Anna reported her students would read feedback, but their responses were typically, “oh I’ll do that next time,” rather than immediately applying the feedback to their current work. Daniel indicated that he would direct his students to both look at and implement the feedback as he found that some students would not do so on their own.

Accessibility of Technology

Teachers appreciated having all the students’ work housed in one place on the Google Classroom platform. Students had access to necessary resources on Google Classroom as they worked on their writing assignments. Daniel shared: “When I handed the assignment to students on Google Classroom, I also gave them the PowerPoint [slides from the lesson]. I liked that they always had access to go back

and review [to] see what needed to be done.” Both students and teachers had access to writing assignments and the feedback provided at any time, both at home and at school. “They were able to edit it and work on it wherever,” shared Mary. Teachers could see each student’s work individually, organized by name. In addition, students’ past revisions were also available to teachers. Sharing all information, resources, and assignments on Google Classroom created a paperless learning environment. Daniel shared that this benefited him as a teacher: “I don’t have to take anything home. I can review and look at [assignments] without papers getting lost.” Both Anna and Michelle commented that their students were not losing pieces of paper or coming to class unprepared, as all the needed materials were found within their Google Classroom. Further, Anna indicated that she could monitor what students worked on within a day, what they had completed, and the progress made. She noted that the technology made it easier to collect students’ work. She could see right on her computer screen who had and had not turned in their assignments.

Although, all teachers highlighted the benefits of housing the persuasive writing material and assignments online through Google Classroom, some teachers indicated that this format was sometimes impractical in classrooms where access to technological devices was limited. Only two of the five teachers interviewed taught in one-to-one device environments, where students had access to their individual devices. One teacher accessed technology through the school’s computer lab, whereas all other teachers booked a cart of Chromebooks or tablet technology available within the school. Mary notes that, “not having the technology to do it as I was supposed to was really difficult” and that, “we only use technology in the computer lab.” Not all features of Google Docs were universally accessible across all device types. Anna reported a preference for using Chromebook technology over tablet technology due to its compatibility with Google Classroom. When her students worked on tablet technology, she indicated that time was lost to troubleshooting technology-related challenges. Melissa’s students all used iPads as their primary devices. On these devices, students were not able to see the feedback comments left by the writing coach. Students had to use alternative devices, such as Chromebooks, to view the feedback comments. In these cases, teachers needed to book the Chromebooks from the school. It is important to consider which technological features are universal to all devices and which are not when integrating technology in the classroom.

Discussion

This study aimed to explore elementary school teachers’ perceptions of their interactions and of their students’ interactions with technology for a persuasive writing intervention. Results of the teacher interviews provided a deeper understanding of teachers’ perceived practices and experiences. Three themes emerged from teachers’ responses: (1) integration of technology to support writing, (2) technology-mediated feedback, and (3) accessibility of technology. First, integration of technology to support writing was embraced by the majority of teachers and students, which is largely in concordance with existing literature. Second, technology-mediated feedback provided value for both teachers and students. Third, accessibility of technology was generally helpful, but teachers also reported some

challenges associated with it, including sporadic technology malfunction, variability in familiarity with technology (both theirs and their students'), as well as students' abilities to understand and process the feedback.

Theme 1: Integration of Technology to Support Writing

Although they used technology in slightly varied ways, depending on the hardware they had at their disposal or their school culture, teachers used Google Classroom regularly to distribute assignments, share information and resources, and collect student work. All teachers reported that their students benefited from the various features of Google Docs throughout the writing process. Their reasons included the ability to easily make revisions and changes using cut-and-paste functions and easy access to online resources to support writing. In addition to technology as a practical tool, teachers also saw technology as a motivator for students who would otherwise be less enthusiastic about writing. Teachers reported that their students enjoyed using technology to improve their writing, partly because it was easier for them to change their writing and partly because they enjoyed the process of receiving individualized feedback. This result is consistent with prior literature highlighting students' positive attitudes towards the use of Google Docs for writing, editing, and feedback (Suwantarathip & Wichadee, 2014; Zheng et al., 2015).

Teachers also noted practicalities and challenges when it came to integrating technology to support writing. Teachers noted that technology was not always easy to use and it sometimes malfunctioned. Some students were unfamiliar with Google Docs and required teaching to utilize more advanced features. When using technology to support learning, students may not be able to take full advantage of the technological features unless explicitly taught.

Theme 2: Technology-Mediated Feedback

Overall, teachers reported that feedback was beneficial to their students. Two of the teachers indicated that they were able to apply lessons learned from weaving technology into the persuasive writing process to other classes and even other content domains. Despite teachers recognizing the benefits of timely and individualized feedback for students, it is often difficult in a regular classroom to provide students with the feedback they need and to improve their conceptual understanding of the elements of persuasive writing. Consistency, specificity, and timeliness of feedback were identified by teachers as important factors for feedback. These factors are also present within literature examining the principles of effective feedback (Hattie & Timperley, 2007; Schwartz et al., 2016). Some teachers observed that sometimes students' poor self-regulatory and self-determined processes interfered with their ability to apply the feedback. Students needed to be prompted to apply the feedback immediately. Even when consistent feedback is provided, students require encouragement to engage in a deliberate practice of revision (Ericsson et al., 1993). Winstone, Nash, Parker, and Rowntree (2016) describe "proactive recipience" as a state of active engagement in the feedback process. Thus, teachers confirmed that, for feedback to be effective, learners needed to share responsibility.

Theme 3: Accessibility of Technology

Many practical benefits of the Google Classroom platforms were noted. Teachers reported that using Google Classroom enabled both students and teachers to access necessary resources from any location at any time, decreasing the incidence of lost materials and assignments. Of course, some malfunctions were noted. Access to Google Classroom was not universal across devices. For example, students in one classroom could not view feedback comments using their tablet device. Additionally, physical access to technology was limited, as not all students had access to one-to-one devices. While teachers in our study were able to overcome the technological obstacles of embedding technology into their writing instruction, a lack of technology support and access can discourage teachers from using educational technology in their practices (Buabeng-Andoh, 2012).

Limitations

A major limitation of this study is that teachers self-selected to participate in the study. Only the teachers who agreed to being interviewed participated. Therefore, it is unclear whether the views of the five teachers interviewed are representative of the experience of the larger group of teachers who participated in the overarching study.

Recommendations

The following recommendations on how to integrate technology into teaching persuasive writing to best support teachers and students emerged from the study findings:

- discuss technology options and develop a plan of action in collaboration with the teachers, as they know best the capabilities of their students and of their school's technologies
- design a training step for both teachers and students with regards to the technology used, so that teachers can become aware of possible bottlenecks for students and guide the students
- ensure that students can access and can understand the feedback provided
- recognize that students may require different ways of delivering the same feedback content and that the feedback must be divided into smaller units that can be acted on in isolation

Conclusions and Implications for Practice

The study contributes to an understanding of resources and methods that will foster high-quality learning environments for students. Thus, it contributes to the literature on integrating technology into teaching and learning of persuasive writing in elementary classrooms. Results indicate that both teachers and students found the intervention that blended technology, feedback, and persuasive writing pedagogy to be useful and enjoyable. The study aimed to explore five elementary teachers' perceptions of their practice in teaching persuasive writing, as well as their perceptions of their students' engagement with

persuasive writing when technology was integrated into the teaching and learning process. Specifically, technology was employed to provide feedback on students' persuasive writing as a way to support teachers in facilitating students with timely, personalized feedback. As such, teachers found technology-mediated feedback to be a valuable tool that can be incorporated in persuasive writing, as well as in other domains. As they are assisted in exploring new ways of harnessing technology to teach persuasive writing, as well as in developing and implementing writing activities that support and augment these skills, teachers can help students become better writers. Using the affordances of technology, teachers can also reflect on their own persuasive writing teaching practices, as well as on their perceived students' experiences with persuasive writing. Recommendations for implementing similar types of interventions should take into account the volatile nature of using technology in real time (e.g., access, hardware malfunction, Internet issues, etc.) for disseminating information among teachers, students, and researchers, as well as the variability in types of technology, in levels of familiarity with technology, and in student abilities and experiences.

This study also empowered students to augment their learning of persuasive writing skills by acquiring process knowledge, not only persuasive writing domain knowledge. Specifically, students engaged in deliberate practice by writing and rewriting on their favourite topics. Students were also more invested in their work, as they received personalized feedback based on their skill levels and could request continuous guidance from the teacher and the RAs, both face-to-face in school and also virtually after school via the online Google Classroom platform. Thus, technology has the potential to expand the classroom time and offer both teachers and students a meaningful experience and a fruitful learning experience, offering a platform for teachers to connect even more with their students and be more aware of their students' strengths and weaknesses. Finally, this experience was equally beneficial to the research team who explored and analyzed effective pedagogies that the teachers had already applied successfully in their classrooms, combining these pedagogies with evidence-based approaches to codevelop materials that were relevant to both children and their teachers.

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