Literature Review: Educational Technology in the ELAR Classroom

Waneta Hebert

University of Houston

Curriculum and Instruction: Learning, Design, and Technology

Contents

Abstract

As technology becomes a bigger part of everyday life, it is inevitably becoming intertwined with education as well. Especially in English Language Arts and Reading classrooms, the integration of technology is not only important for students learning the technological skills, but it helps students understand and interact with the content more deeply. ELAR teachers devote their precious time to integrating technology as administrators devote monetary resources. Students benefit from online collaboration because it brings them together and allows them to learn from others. Multimodal aspects of technology create deeper levels engagement and understanding. A flipped classroom model allows for deeper thinking and interaction with learning to occur in the classroom with the teacher. Online collaboration allows for discussions in which students have the time to thoroughly consider their responses to each other and everyone gets a voice. It also allows students to collaborate with those not usually a part of the classroom. Publication opportunities motivate students to put their best effort into their work and encourage them to consider their audience.

Key words: *classroom, collaboration, educational technology, English, ELAR, publication*

Introduction

Walk into any secondary English Language Arts and Reading classroom and odds are that you will see technology in some form. Whether it's a full one-to-one integration or simply a projector aimed at a wall, English classrooms are no longer oriented to just paper and pencil.

Education has shifted away from a focus on simply learning to read and write. 21st century skills are now indelibly interwoven within every subject and every aspect of students' lives. The advancements in technology over the past 100 years have had a far-reaching effect on the way we teach and learn, and as a result, the English classroom of the 21st century looks entirely different than the English classroom of the 19th and 20th centuries.

This literature review attempts to provide an overview of the current research and discussion regarding educational technology in the ELAR classroom, provide suggestions for further research based on gaps in the current research, and discuss implications of the research on current and future teaching practices and research.

Context and Significance

Teachers of English have an even higher responsibility to integrate technology into the classroom that other subject teachers, as technology is interwoven with many state standards for English (Hutchison & Colwell, 2014). 21st century literacies are becoming more and more entwined with traditional literacies. Literacy is now making meaning from all kinds of texts, no longer just print (Haiken, 2017; Hughes, 2009). The National Council of Teachers of English (NCTE) released a Framework for 21st Century Curriculum and Assessment (2013) stating that the increase in technology has also increased the "intensity and complexity of literate environments" (n.p.). Instead of creating a separate strand, the Common Core State Standards integrate the use of digital technologies into the ELA standards (Hutchison & Colwell, 2014).

Middle school students in Texas are required in the new Texas Essential Knowledge and Skills for English Language Arts and Reading (2017) to "produce a multimedia presentation […] using available technology" as well as "use reference aids such as a glossary, dictionary, thesaurus, and available technology to determine meanings and pronunciations" (Texas Education Agency, n.p.). Additionally, high school students in Texas are required to "produce research projects […] using available technology" (Texas Education Agency, 2008, n.p.). English teachers today are suddenly finding themselves responsible for teaching these new 21st century literacies on top of the traditional literacies. Therefore, it is imperative that teachers of English are aware of the reasoning and benefits of integrating technology into their classrooms, as well as the best methods to do so.

Organization

As in life, the people behind the technology are the most important. Therefore, this literature review seeks to first look at the human aspects of integrating technology; first by looking at the importance of the teacher, and second by looking at the impacts for the students. This is followed by an overview of the different types of technologies presently being used and studied in ELAR classrooms. Finally, implications for current teaching and future research are discussed in the concluding remarks.

Considering the Human Aspect

Teachers

Before looking at the technology specifically used in ELAR classrooms, one must consider the challenges of integrating technology for any teacher. Incorporating technology in any classroom is not a simple process. Teachers must be willing to invest their personal time as integrating technology requires an increase in planning time (Shapley, 2011; Zawilinski et al.,

2015). Zawilinski, et al (2015) noted that the additional hours spent "digitizing existing or creating new electronically accessible presentations and demonstrations" were "not surprising" as it should be expected when implementing any kind of new approach (p. 706). However, Grisham and Wolsey (2006) noted that the time spent planning for technology use was the same as any other learning activity. The International Society for Technology in Education (ISTE) Standards for Educators (2016) state that "[e]ducators dedicate planning time to collaborate with colleagues to create authentic learning experiences that leverage technology" (standard 4). Whether or not it is an addition to the time teachers already spend planning, all can agree that technology integration does require a significant time commitment in order to be effective.

Additionally, as in all cases, administrators must support and listen to teachers. Without teacher buy-in, technology integration will have no effect or possibly have a negative effect on student learning. Administrators are wasting their money on electronic textbooks, online assessments, and virtual coursework if they cannot secure teacher buy-in (Alvermann & Harrison, 2016; Shaffer, 2015; Shapley, 2011; Zawilinski et al., 2015). Before the students can utilize the technology, the teacher must first understand its utilization, meaning that professional development is often necessary (Shaffer, 2015; Shapley, 2011). However, professional development is not always offered by school districts or, if offered, is insufficient (Shaffer, 2015). When professional development is not available, teachers must take the initiative and train themselves. Zawilinski et al. (2015) made use of online video tutorials for both learning new technology and troubleshooting problems with the technology in their inverted instruction project.

Teachers must also have the correct mindset for integrating technology. There is a learning curve involved in implementing any new approach, especially one involving new technologies, and teachers need to be ready for things to go wrong in order to be able to come up with solutions

on the spot (Alvermann & Harrison, 2016; Hughes, 2009; Zawilinski et al., 2015). The ISTE Standards for Educators (2016) state, "Educators continually improve their practice by learning from and with others and exploring proven and promising practices that leverage technology to improve student learning" (standard 1). Teachers are continuously learning, but it is an increased demand when integrating technology, especially when it is technology with which teachers are not already familiar.

An area that the research does not yet sufficiently cover is the effect of professional development on technology integration. Educators believe that more specific training and professional development is necessary to learn how to effectively manage technology integration; however, there is not sufficient research quantifying the positive or negative effects of additional training on the integration of technology and, further, on the learning of students.

Students

Just as the teacher buy-in is an important aspect of technology integration, student buy-in is equally important. While technology may be pervasive in teenagers' lives (Grisham & Wolsey, 2006; Shaffer, 2015; Tarasiuk, 2010), one cannot assume that students are automatically going to buy-in to technology for the simple fact that it is technology (Kolb, 2017; Grisham & Wolsey, 2006; Jacobs, 2013; Shaffer, 2015). Today, students are inundated with media and are growing up with technology surrounding them (Hughes, 2009; Tarasiuk, 2010); however, that does not automatically mean that they understand how to use it instructionally or want to do so. The focus of technology integration is often an increase in student engagement with learning, but it is important to note that students can not immediately be considered fully engaged in their learning simply because they are utilizing technology (Kolb, 2017). Technology does not always warrant intrinsic motivation, as students may not immediately want to use technology for various reasons,

including a lack of keyboarding and other technical skills that educators tend to assume students have (Grisham & Wolsey, 2006; Jacobs, 2013). Considering that intrinsic motivation is better and lasts longer than extrinsic motivation, which is based on rewards and fades when the rewards are no longer present or enticing enough, Jacobs (2013) believes that we need to consider how technology can be used to create a culture of participation and learning that will create the intrinsic motivation that makes students want to utilize the technology in the classroom and is necessary for deeper learning.

21st century skills are essential for students in today's technological society, and so literacy is becoming less individualized and more participatory and collaborative (Curwood & Colwell, 2011). The ISTE Standards for Students have an entire strand dedicated to the ways in which students need to become global collaborators (2016). While Alvermann & Harrison (2016) believe that "[t]he online learner will suffer from the lack of group interaction and learning with and from peers" (p. 223), many others believe that technology can be used to create a community among students within a class (Grisham & Wolsey, 2006; Kolb, 2017; Tarasiuk, 2010; Zawilinski et al., 2015). Students are more likely to be motivated to become deeply engaged with the learning when they are part of an online community. Students interact more deeply with and put more effort into the assignments when they know they have audience of their peers, not just their teacher (Grisham & Wolsey, 2006; Tarasiuk, 2010; Zawilinski, 2015).

Furman (2017) discusses the idea of social currency in which students feel relevant when participating as a necessary part of a group and therefore perform better. Grisham & Wolsey (2006) noted that students felt a responsibility to their classmates resulting in "a form of positive peer pressure to keep up with reading" (p. 659), which means that teachers are not spending as much time managing students who have not completed the reading and can redirect that time and effort

to more fruitful endeavors. Even more noteworthy was their assertion that the online community created in their ELAR classroom resulted in a sense of home for students, adding, "the social setting offered students comfort and context for their learning, the opportunity to demonstrate competence, and the chance to contribute to the learning of the group members" (Grisham & Wolsey, 2006, p. 659), all of which are key to creating the intrinsic motivation that Jacobs (2013) discussed.

Technology can also be used to remove barriers between students and learning. Alvermann & Harrison (2016) may have stated that online learning can remove the sense of interaction with peers, however, they also noted that online learning eliminates the humiliation sometimes associated with reading or answering questions in front of those peers. Additionally, numerous technologies exist to make learning more accessible to all students, such as the DyslexBrowser tool that can allow students to set their font type, size, and color, making it easier for students to view information, as well as various online resources that provide leveled texts for students to read and learn at their own level (Alvermann & Harrison, 2016). Shapley (2011) also found that technology immersion lowered the number of disciplinary actions, meaning that students are more engaged with the material instead of causing disruptions. Teachers then have more time to focus on instruction instead of behavioral interventions.

Along the same lines, technology affords traditional classroom settings the ability to become self-paced, allowing students to learn at a pace that best suits them (Alvermann & Harrison, 2016; Zawilinski et al., 2015), a concept that is especially important in the ELAR classroom when students all read and comprehend at different paces. Further relevant research can verify the idea that students, especially in ELAR classrooms, benefit from moving at their own learning speed. Additionally, Zawilinski et al. (2015) mentions the benefits of technology

providing a means of communication between student and teacher. This could be a benefit for struggling students with access to instant help and answers from their teachers; however, it could also be a detriment as it could mean more work and stress on the part of teachers answering student questions after school hours, and it could contribute to students' sense of reliance on the teacher instead of allowing the technology to create student independence. Qualitative research into this area could answer that question.

The Technologies

The use of technology in the classroom allows for deeper levels of engagement, understanding, and thinking (Grisham & Wolsey, 2006; Hughes, 2009; Shaffer, 2016; Zawilinski et al., 2015). The following sections provide an overview of the types of educational technologies currently being used in ELAR classrooms to strengthen student learning.

Multimodal Compositions

Educational technology allows ELAR teachers to take the compositions already being taught and add levels of depth with the addition of moving and still images, sounds, colors, and animations (Curwood & Cowell, 2011; Hughes, 2009). Doing so in their own creations "requires a different kind of authorship and offers insights into how context shapes meaning" (Hughes, 2009, p. 264), which is a higher-order thinking skill. Students can use multimodalities in: poetry creation (Curwood & Cowell, 2011; Hughes, 2009), wikis (Tarasiuk, 2010), sketchpads (Zawilinski, 2015), digital or video book talks (Furman, 2017; Tarasiuk, 2010), comic strips, or presentations (Furman, 2017).

On the other hand, Curwood & Cowell (2011) noted that when using digital tools, students did not meet their expectations of deepening meaning. Students creating an iPoetry project did not

choose visual and audio elements with thoughts toward appealing to their audience, but rather based on the allure of the digital tools. Grisham & Wolsey (2006), however, noted that students' depth of responses to online discussions increased over time as the novelty of responding with emoticons, fun fonts, and colors wore off. Perhaps it is possible that a second or third repetition of the iPoetry assignment would yield better results as students learn the tools and become ready to use them seriously. Further specific research could reveal the efficacy of allowing students time to play with the technology tools first to learn how they work and get the urge to play out of their system before using them instructionally.

Teachers can also use multimodalities to present information to students. TED-Ed lessons (Zawilinski, 2015) include a short video, sometimes animated, paired with multiple choice and discussion questions that allow students to view and listen to information presented and interact with questions. Teachers can also create instructional videos or vodcasts (Shaffer, 2015) to present initial information in a manner different from the traditional lecture format. Additionally, technology allows for better formative assessment and differentiation, which can increase students' depth of understanding. Teachers can use these multimodalities to differentiate material for different types of learners, allowing students to engage more deeply with the material (Shaffer, 2015; Zawilinski, 2015).

The Flipped Classroom

One of the most common uses of technology in the English classroom is to flip, or invert, instruction. The biggest benefit of flipped instruction is time, as passive learning activities are completed at home so that active learning can occur in the classroom with the teacher present (Shaffer, 2015). Generally, in a flipped classroom, students watch videos or read material at home and come to class ready to engage with what they've learned. Assignments that would be

homework in a regular classroom become classwork, so that students are working with the difficult material while in class with the teacher there to provide support and answer questions (Zawilinski et al., 2015). This model of instruction also allows for more collaborative activities as students are not spending their class time reading or listening, but rather interacting. This method can also give teachers the ability to see gaps in knowledge as students are working and correct misconceptions before they become detrimental to students (Shaffer, 2015; Zawilinski et al., 2015).

There are a couple of concepts that teachers must keep in mind when considering a flipped classroom model. The first is that an important step towards flipping instruction is training the students on how to not only use the technology, but, more importantly, how to use it effectively (Shaffer, 2015). Students cannot and will not complete the flipped portions of the work if they do not know how to use the technology effectively. A second concept that is not addressed in this research is student access to technology. A flipped classroom requires students to engage with technology from home; therefore, all students must have access to the required technology in order for it to be successful. Finally, motivation should be addressed again. Educators must have careful classroom management to foster the kind of motivation that will ensure all students complete all aspects of the flipped assignments so that they are prepared to discuss and collaborate when they come to class.

Online Collaboration

The benefits of students collaborating online have already been discussed earlier in this literature review. There are numerous methods of achieving that collaboration. The use of threaded, asynchronous discussions gives students the time to truly reflect upon their peers' responses to discussion questions and reply with deeper, more meaningful responses than a faster paced, face-to-face discussion allows (Grisham & Wolsey, 2006). This is especially important in

ELAR classrooms as the overall quality of reading discussions benefits from students having the time to refer back to the reading and pull relevant passages to reference. Grisham & Wolsey (2006) further note that this depth of communication that combines interactivity of discussions with the thoughtfulness of written communication would be impossible without the Internet. Online threaded discussions also give all students equal opportunity to respond as opposed to a classroom face-to-face discussion where only more vocal and outspoken students' voices tend to be heard.

Additionally, online collaboration can come in the form of sharing of work and conducting peer reviews. Students can use the Internet to share their work with each other and provide feedback for improvement (Hughes, 2009). Hughes (2009) also discussed students helping each other in class to take pictures or use each other as participants in their digital poems. In this case, collaboration even extended beyond the classroom and students often included their family in their projects. This directly answers the ISTE Standards for Students (2016), which state that students should "use collaborative technologies to work with others, including peers, experts or community members" (standard 7). Online collaboration can even be used for activities such as online book clubs that encourage struggling readers to get excited about books (Furman, 2017). As already mentioned, the students need to understand the technology before they can utilize it instructionally. Students working collaboratively within the classroom often end up learning about the technology from each other (Hughes, 2009). Moreover, the collaboration leads to in-depth discussions of the assignment so that students are often learning the content from each other as well as how to use the technology (Tarasiuk, 2010). The product that students create together is likely going to be different, if not better, than any product they create alone (Hutchison & Colwell, 2014).

Publication

Finally, a commonality across most of the research is the idea that offering students the opportunity to publish their creations is not only empowering, but ensures that they are engaging with the material authentically in order to create the best possible product to share digitally (Grisham & Wolsey, 2006; Hughes, 2009; Hutchison & Colwell, 2014; Tarasiuk, 2010; Zawilinski et al., 2016). Kolb (2017) argues that authenticity is a key factor in utilizing technology effectively, and lessons should create a bridge between students' real life and classroom experiences. Publishing their work online puts a real-world aspect into the work they are already doing in class.

Summation

In an ever-evolving world, English teachers play an important educational role when it comes to 21st century literacy education. Teachers of English must understand the implications of utilizing technology in the ELAR classroom. In addition to the reasoning behind implementing educational technology, teachers need to understand the best practices for doing so and be willing to invest the time to ensure its effectiveness. Implementing technology in the ELAR classroom requires a growth mindset from the teacher.

Students are the center of everything educators do in the classroom. Therefore, student motivation must be carefully cultivated to ensure that students are intrinsically motivated to utilize the technology in order to learn better. A collaborative community online and a sense of responsibility to peers can be effective instruments to that end.

Numerous types of technology can be implemented in the ELAR classroom to develop higher level thinking and learning. Multimodal technologies add new aspects to traditional print compositions and help students envision their ideas in new and creative ways, as well as helping them consider their audience. A flipped classroom can provide invaluable amounts of time for

teachers to work with students on higher level thinking skills while in the classroom, as students will be completing the passive learning activities outside of class. Threaded discussions allow students to take in-class discussions a step further by giving them the time to read and think through their responses. Technology also allows collaboration to happen outside of the classroom with students' peers, families, and outside experts. This kind of collaboration can also help students to understand the technology and the material at a higher level. Finally, publishing their creations online can create authenticity for students and encourage them to create products worthy of being shared.

Implications for Future Research

While much is covered in the current research available, there are still many unanswered questions. There are many beliefs that educators hold that have not been validated by quantitative research. There are also areas in which qualitative research could reveal the best practices.

It is a common belief among educators that focused professional development is necessary in order to train teachers on effective use of technology, particularly new technology tools. There are many types of educational hardware and software available that teachers may not understand how to integrate into their own classrooms. However, many teachers also believe that professional development can take important time away from instruction or other professional duties. A balance must be found where teachers can gain the necessary skills and knowledge for implementing educational technology without sacrificing even more of their time. Research into the most effective professional development practices would help answer that question. Additionally, research into the effect of professional development on teachers' ability to integrate technology could reveal exactly how much training teachers truly need.

We already know that students learn in different ways, just as we know that teachers teach in different ways. English teachers tend to believe that because students are often at different reading levels, self-paced learning is an effective way to allow each learner the time he or she needs to master a certain skill. Qualitative research could reveal the truth to that statement. Research can also determine if giving students time to "play" with the instructional technology before using it to complete educational tasks may be beneficial. Different researchers noted that students got caught up in playing with the different options available without putting meaning behind them, but as time went on and students became accustomed to the new technologies, they used those same tools with more purpose. It may be beneficial to explore the effect that allowing "playtime" for students to become accustomed to the technology has on students' end learning.

One of the primary uses of technology in everyday life is communication. Many forms of educational technology allow for direct communication between students and teachers, whether it is teachers sending notifications to students or students sending questions to teachers. However, it remains to be seen how much of a benefit or detriment this could be for student learning. On one side, the ability of students to send questions to teachers as they are working on homework assignments could definitely be beneficial to their ability to complete the assignment, and therefore, learn. On the other hand, teachers are already stretched thin with lesson planning, grading, and paperwork, and expecting teachers to answer student questions from home could be detrimental overall. Additionally, giving students the ability to ask teachers for help from outside of class could also contribute to a sense of learned helplessness and prevent technology from teaching students to be independent. These questions cannot be answered until research is conducted to analyze the effects of such conveniences.

Furthermore, there is a significant gap when it comes to research into specific educational technologies. New tools and resources are available every day. Research into these new resources would be beneficial for teachers deciding which options to utilize in the classroom. This research would essentially never be complete as new technologies are developed and old technologies are changed and improved.

One final area that this literature review was unable to cover is the students' access to technology at home. Certain applications of educational technology, such as a flipped classroom, are difficult, if not impossible, to implement if all students do not have access to technology or the Internet. Teachers need to be aware of the technology available within their school as well as what the students have available outside of school before deciding on a course of action for integrating technology into instruction. Research into this area would be most beneficial for teachers if it is localized to the region in which the teacher lives.

References

Alvermann, D. E., & Harrison, C. (2016). Are computers, smartphones, and the internet a boon or a barrier for the weaker reader?. *Journal of adolescent & adult literacy*, *60*(2), 221-225.

Curwood, J. S., & Cowell, L. H. (2011). iPoetry: Creating space for new literacies in the English curriculum. *Journal of adolescent & adult literacy*, *55*(2), 110-120.

Furman, L. R. (2015). *Technology, reading & digital literacy: strategies to engage the reluctant reader*. Eugene, OR: International society for technology in education.

Grisham, D. L., & Wolsey, T. D. (2006). Recentering the middle school classroom as a vibrant learning community: students, literacy, and technology intersect. *Journal of adolescent & adult literacy*, *49*(8), 648-660.

Haiken, M. (2017). *Gamify literacy: boost comprehension, collaboration and learning*. Portland, OR: International society for technology in education.

Hughes, J. (2009). New media, new literacies and the adolescent learner. *E-Learning*, *6*(3), 259-271.

Hutchison, A. C., & Colwell, J. (2014). The potential of digital technologies to support literacy instruction relevant to the common core state standards. *Journal of adolescent & adult literacy*, *58*(2), 147-156.

International Society for Technology in Education. (2016). *ISTE standards for educators*. Retrieved from http://iste.org/standards

International Society for Technology in Education. (2016). *ISTE standards for students*. Retrieved from http://iste.org/standards

Jacobs, G. E. (2013). Rethinking common assumptions about adolescents' motivation to use technology in and out of school. *Journal of adolescent & adult literacy*, *56*(4), 271-274.

Kolb, L. (2017). *Learning first, technology second: the educators guide to designing authentic lessons*. Portland, OR: International Society for Technology in Education.

National Council of Teachers of English. (2013). *NCTE framework for 21st century curriculum and assessment*. Retrieved from http://www2.ncte.org/sttement/21stcentframework/

Shapley, K., Sheehan, D., Maloney, C., & Caranikas-Walker, F. (2011). Effects of technology immersion on middle school students' learning opportunities and achievement. *Journal of educational research*, *104*(5), 299-315.

Shaffer, S. (2016). One high school English teacher: on his way to a flipped classroom. *Journal of adolescent & adult literacy*, *59*(5), 563-573.

Tarasiuk, T. J. (2010). Combining traditional and contemporary texts: moving my English class to the computer lab. *Journal of adolescent & adult literacy*, *53*(7), 543-552.

Texas Education Agency. (2008). *Texas essential knowledge and skills for English language arts and reading* (Subchapter C. High School). Retrieved from http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110c.html

Texas Education Agency. (2017). *Texas essential knowledge and skills for English language arts and reading* (Subchapter B. Middle School). Retrieved from http://ritter.tea.state.tx.us/rules/tac/chapter110/ch110b.html

Zawilinski L, Richard K, Henry L. Inverting instruction in literacy methods courses: making learning more active and personalized. *Journal of adolescent & adult literacy* [serial online]. May 1, 2016;59(6):695-708. Available from: ERIC, Ipswich, MA. Accessed November 4, 2017.