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Learning to Teach

Language Arts, Mathematics,
Science, and Social Studies
Through Research and Practice

Editors in Chief
Jenny Denyer, Ph.D.
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A publication of the Department of Teacher Education
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Section on Language Arts

Focus on Learning to Read

Focus on Second Language Learning

Section on Mathematics

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Section on Social Studies

Language Arts

Teaching Classic Literature in Culturally Relevant Ways

Janey Allen Dunford

Abstract: Teaching classic literature comes with many challenges. Students today have a difficult time relating to century old texts that mostly reflect white male Euro-centric heteronormative values, yet English language arts teachers are required to teach classic literature at every grade level for high school students. This paper demonstrates how teachers can use culturally relevant teaching practices, including restory and critical literacy, to help students, particularly students of color and minorities, to engage with and create meaning from classic literature.

Introduction

Teaching classic literature has been happening across high schools for decades, if not centuries, and is a required staple in the English Language Arts (ELA) classroom. Imagine that you are introducing your freshman English class to a new unit on Shakespeare's Romeo and Juliet. You introduce this by sharing with students a famous line from the play, "O, Romeo, Romeo! wherefore art thou Romeo?" (Shakespeare, 1879, p. 60). Loud moans and groans ensue and one student shouts out, "Man, who talks like that," while another answers, "For real! What does that even mean?". Before you even have a chance to speak, another student says, "I know what that's from. It's a stupid story about some white kids that fall in love and kill themselves. This has NOTHING to do with us. You seriously gonna make us read this?". This scenario is not far removed from what high school ELA teachers across the nation hear from their students when it comes time to teach classic literature. So, what can we as English Language Arts educators do to teach classic literature in a way that turns moans and groans into engaging discourse and learning experiences for our students?

Freshman students are often required to read Shakespeare's Romeo and Juliet or Homer's The Odyssey. These texts are considered classics; however, they were written centuries ago, and have difficult to decipher old English language. Students are not often naturally drawn to this type of literature. While I enjoy classic literature, I can see how reading it can be difficult for students today. The struggles to connect to the classics can be significant for many students. Classic literature, for the most part, does not include people of color, it can be difficult to understand, and students have a hard time relating to centuries old content. Teachers today must find ways for their students from diverse backgrounds, cultures, and abilities to connect their lives and lived experiences with required content in the English language arts classroom.

Dyches (2017) mentions that classics, and specifically Shakespearean classics, are required reading in the Common Core State Standards (CCSS) at every grade band for high school English (p.302). The challenge for teachers is not what to teach, but rather how to teach the classics. The difficulties involved in teaching classic literature include old English language, relatability for students, and students

not being able to see themselves reflected in the texts. Culturally relevant teaching practices will help ELA educators to teach classic literature in ways that increase student interest and engagement and overcome the challenges inherent in teaching classic literature.

Definitions

Classic literature is often referred to as the "canon" and includes literature typically over a century old. Brooks et al. (2014) suggest that classic literature has longevity and is beneficial across time because of the notable writing and innovation of the writers. While this is a great definition, the authors also note that classics mostly exclude authors of color. This lack of diversity in authorship, as well as content, adds difficulty in teaching the classics, particularly for minority students who do not see themselves reflected in the texts of classic literature. With increasingly diverse student body populations, teaching classic literature in ways that pertain to all students is even more imperative because it is required reading for all high school students.

Culturally relevant teaching (CRT) is best defined by Ladson-Billings, a founding leader and promoter of culturally relevant teaching practices. She states:

> I have defined culturally relevant teaching as a pedagogy of opposition . . . specifically committed to collective, not merely individual empowerment. Culturally relevant pedagogy rests on three criteria or propositions: (a) Students must experience academic success; (b) students must develop and/or maintain cultural competence; and (c) students must develop a critical consciousness through which they challenge the status quo of the current social order. (Ladson-Billings, 1995a p. 160)

CRT allows educators to teach in ways that honor student's background, culture, and lived experiences and sees all of these things not as deficits, but rather as added benefits that can enhance learning. Even the U.S. Department of Education promotes CRT and states, "Teachers who utilize CRT practices value students' cultural and linguistic resources and view this knowledge as capital to build upon rather than as a barrier to learning" (Aceves & Orosco, 2014, p. 7).

Classic Literature

Teaching classic literature is a requirement in secondary education. The importance and emphasis of reading and studying the classics for American high school students is nationwide and upheld by the Common Core State Standards (CCSS). Speaking specifically about Shakespeare, Dyches Bissonnette & Glazier (2016) states, "In fact, the Common Core requires the teaching of Shakespeare at every installment of secondary English" (p. 686). Additionally, the old English language of Shakespeare can seem convoluted and difficult to understand. Even with significant help from the teacher to convey meaning, students may often feel the texts are irrelevant to their lives today; and the reading, study, and exploration of these classic texts are often dreaded by students and teachers alike. The value placed on classic literature is not likely to change, so ELA educators must develop teaching practices that allow their students to relate to the literature.

Benefits of Classic Literature

The classics are required reading for high school students today and while it may be challenging, there are still significant benefits for all students in reading classic literature. Pike (2002) states, "A text's indeterminacy requires a reader to bring personal experiences, cultural background, imagination, predisposition, and even idiosyncratic knowledge with him or her so that a co-construction of meaning with its author is achieved" (p. 358). Pike promotes the idea that because classic literature is more difficult to understand and different from modern texts, it allows students to engage in deeper and more meaningful ways than more traditional literature. The fact that the text is difficult to read or understand allows students to imagine and create as they are reading, so their experience becomes part of the text. Meaning is created by both author and reader.

Classic literature can provide additional benefits to students. "As students move from adolescence into young adulthood, literature gives them a greater sense of history, provides them with increased knowledge of the world, and allows them an opportunity to reflect upon their place within it" (Connor et al., 2009, p. 3). This sense of history and their place within it can provide students with a sense of belonging. Herold (2017) elaborates on this by suggesting that the study of classical literature like Macbeth can be used by teachers to challenge students to examine a form of language different than their own and investigate themes and characters they may be familiar with in a different setting. While classics, such as Shakespeare, are challenging to readers, they also provide them with an opportunity to explore their identities and the communities they live in.

Difficulties with Classic Literature

We know that teaching classic literature can be as challenging for teachers as it is difficult for students to read. As Yousseff (2010) states, "The real challenge, however, comes from bringing a classroom full of 21st century students from diverse backgrounds face to face with texts that are removed from the present and past experiences not just by decade, but by centuries" (p. 28). ELA educators must develop teaching practices that help bridge these gaps from old literature to the modern-day student.

Many experts explain the problematic nature of canonical texts. "Oftentimes, these canonical texts perpetuate ideologies that are also dominant – about Whiteness, masculinity, heterosexuality, Christianity, and physical and mental ability . . ." (Borsheim-Black et al., 2014 p. 123). This can cause minority students to feel marginalized, as they are noticeably excluded from these texts. Problematic or not, classic literature is a powerful currency in society. The prevalence and expectations for using classic literature is embedded in the American framework for literacy education and comes with inherent messages about power and authority. Pike (2002) states, "Canonicity is inextricably bound up with notions of power" (p. 356).

Even though classic literature does create definite challenges for educators, its value outweighs the disadvantages. Chiariello (2017) states:

> Defenders hold that the value of such works – beautiful prose, timeless theses, simpatico characters – is undeniable. . . Specific kinds of knowledge act as

> cultural currency in society, and some educators are concerned that removing classics from the curriculum could further exclude already marginalized student groups. (p. 27)

This currency is something that minority students can use to empower themselves as full participants in society and continuing to teach classic literature benefits students today.

Culturally Relevant Teaching

Teaching classic literature in culturally responsive ways to diverse students today centers around culturally relevant pedagogy. Ladson-Billing (1995b) defines the benefits of using culturally relevant pedagogy. She states, "A next step for positing effective pedagogical practice is a theoretical model that not only addresses student achievement but also helps students to accept and affirm their cultural identity while developing critical perspectives that challenge inequities that schools (and other institutions) perpetuate" (p. 469). Students being given the authority to challenge the classics they are required to read can be incredibly empowering. Dyches (2017) shares this about a teacher's experience using CRT, "Sam's British literature classroom acted as a powerful space in which to disrupt bias and prejudice . . ." (p. 315). CRT further encourages students to engage with a text in a new way, by challenging the content and analyzing the inherent inequities within the text.

Culturally relevant teaching practices focus on the student, believing that all students can succeed, and finding ways to help them make connections or bridges from their culture and prior knowledge to these classics. Integrating culturally responsive teaching may require a change in thinking and practices for most teachers. Educators need to be able to expand their conceptions "regarding self and other, social relations, and knowledge. . . Knowledge is not static; it is shared, recycled, and constructed. Knowledge must be viewed critically. . . Teachers must scaffold or build bridges, to facilitate learning" (Ladson-Billings, 1995b, p. 481). CRT encourages educators to rethink not only their role in the classroom, but student's place in education, not as mere bystanders, but as active participants in their education. Students and teachers together create a warm and inviting learning community within the classroom through CRT. "Culturally responsive teaching reverses these trends by dealing directly with controversy; studying a wide range of ethnic individuals and groups; contextualizing issues within race, class, ethnicity, and gender; and including multiple kinds of knowledge and perspectives" (Gay, 2002, p. 108).

To teach in culturally responsive ways, educators need to be willing to step outside of their comfort zones and examine not only the literature, or the students, but also themselves critically. Gay (2002) establishes that "Teachers need to thoroughly understand existing obstacles to culturally responsive teaching before they can successfully remove them" (p. 108). Part of being able to use culturally responsive teaching is knowing and understanding these obstacles that students face in education, such as poverty, food insecurity, homelessness, family, and cultural differences to name a few. Teachers must know their students, their background and culture. Another essential element in CRT is establishing connections with students. "School literacies flourished when teachers connected students' lives and lived ex-

periences with those offered by classical and canonical texts; teachers were able to make these academic connections by first forging relationships with their students" (Dyches Bissonnette & Glazier, 2016, p. 692). These relationships of trust help students to be willing to wade through the discomfort they may experience while examining classic literature, themselves, and the world around them.

Culturally Responsive Teaching in Action

Culturally responsive teaching can be practiced in a variety of ways. One teaching approach focuses on allowing students to create a new story of their own based on the original classic story. This is often called restory or counterstory. "Counterstories push these canonical boundaries. . . When counterstorytelling as an instructional practice is implemented, secondary literacy practioners create a bridge between canonical texts and their students and provide a meaningful opportunity for students to engage with the texts" (Dyches Bissonnette & Glazier, 2016 p. 688). This allows the students to place themselves within the story and shape it in a new way to reflect their lives, values, and experiences. Dyches (2017) shares some of the benefits of restory by stating, "By granting students multimodal opportunities to restory the required canonical curriculum, Sam afforded them with iterative, discursive opportunities to disrupt textual erasure and instead 'see' themselves in the texts" (p. 314). This practice gives students the power to change the narrative and to counteract the messages within the text.

Another teaching method that aligns with CRT is critical literacy. Critical literacy is a theoretical approach that allows students to critically examine a text, and is often explained as an approach that, "also teaches students to read and write against the texts: to identify and understand that language and texts are not neutral and always ideological" (Borsheim-Black et al., 2014, p. 123). This method enables students and teachers to talk about controversial issues resulting from reading classic literature and provides a means to raise awareness of the problematic nature inherent in some texts. It also allows teachers to incorporate discourse about difficult topics in easy ways. Borsheim-Black et al., (2014) explains how critical literacy works by stating:

> A critical literacy approach to canonical literature interrupts dominant ideologies that are so often taken for granted, promoting inquiry rooted in questions such as: What and whose stories do(n't) these canonized texts tell? What assumptions do these texts . . . make about dominant cultural values and ideologies? (p. 124)

Using critical literacy is a way for teachers to create discourse around the controversial issues surrounding classic literature and work those very things into the curriculum. While these teaching methods may be viewed simply as a best teaching practice, culturally relevant teaching seeks to include students in the discussion. When students are able to engage with an old text in new ways, they become more engaged, and they are able to see why reading classics can be important for their education.

Conclusions

Teaching classic literature is not going away and will be a requirement for ELA teachers for years to come. Dyches Bissonnette & Glazier (2016) states, "Given the curriculum's pervasiveness and obstinacy to reform, teachers must generate new ways to engage their increasingly diverse student bodies with this static curriculum" (p. 686). Using CRT allows students to engage with classic literature in new and meaningful ways. It gives them the power to challenge authority in ways that do not typically happen in school. Even though teaching classic literature comes with a set of challenges, using CRT enables teachers and students to reshape classic literature into something that is both meaningful and reflective of their lives and experiences.

Research shows that using culturally relevant teaching practices can overcome the barriers students face while reading classic literature. Using culturally responsive teaching (CRT) to teach classic literature can increase engagement, help students develop connections to the texts, as well as provide a safe setting to discuss the controversies these texts bring with them, and make links to the social and political injustices students face today.

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Janey Allen Dunford received a Bachelor of Arts in English Literature from Brigham Young University – Hawaii in 1999. Her passion for literature and teaching led her to the University of Toledo where she received her Master of Education in Secondary Education with a focus on English language arts in 2021.

Utilizing Bibliotherapy Within Language Arts Instruction Can Increase and Contribute to Students' Mental Health and Overall Well-Being

Bailie Brock

Abstract: Research has shown that there is a rise in mental health issues amongst young children, causing concern to educators. In order to help students, teachers have engaged in the therapeutic technique, bibliotherapy, which revealed positive effects on overall student mental health. Likewise, the combination of bibliotherapy and Language Arts has not only helped children with mental disorders, but it has also allowed other students to empathize and understand what peers are experiencing. There are several techniques educators can use to incorporate bibliotherapy into the curriculum such as the interactive read-aloud during whole-group instruction. With open communication and collaboration with colleagues, teachers have been able to successfully implement bibliotherapy into Language Arts instruction and significantly support the mental health of students.

Introduction

Imagine the first day of school. Students are running into your classroom, talking and greeting one another. They give you hugs, tell you about themselves and bring you gifts. However, there is one student that avoids walking into the classroom. You notice her eyes are red and her head is hanging low. She does not make eye contact with you and heads straight for her locker. Because it is the beginning of the school year, you decide to give the child time to adjust in a new classroom. As days go by, you notice the student continuously staying isolated, opting out to play at recess, and eating lunch alone. Likewise, the student consistently complains of feeling ill. Due to years of teaching, you realize the child is struggling. You decide to take action and set up a conference with the student's parents.

During this conference, the parents admit that their child was recently diagnosed with an anxiety disorder. They share that their child's behavior began to change a week before school began and each day has been a battle to get the student on the bus. She often has meltdowns about going to school for she worries about her looks and what her classmates will think of her. In addition, the parents share that their child has not been sleeping at night. With hopes of the disorder healing on its own, the parents stated they thought it would be best not to involve the school. However, you inform the parents that you are there to help and reassure them that you will make their child love school and feel as if they belong in the classroom. Immediately, you ask yourself, "How can I make sure this child's mental health is supported within my classroom?" As you begin researching, articles discussing the incorporation of bibliotherapy within language arts instruction have begun to surface. You question, "What is bibliotherapy and how can I utilize it in my own classroom to help out this struggling student?"

As educators, it is our job to ensure that we are supporting the mental health of students within the field of early childhood education. Over the years, mental health has shifted from a topic to avoid to one that is openly discussed. Because of this shift, the prevalence of mental health disorders in younger children has risen. It is evident that almost twenty percent of children will experience a mental health disorder during their first years of schooling (Loades & Mastroyannopoulou, 2010). Likewise, the CDC states that 1 in 6 children meet the qualifications to be diagnosed with a childhood mental illness (Danielson et. al, 2020). This means that there is at least one child in each classroom struggling with a mental illness like the scenario described above. In order to stop the negative consequences of mental health illnesses, researchers have begun to take a closer look into an emerging therapy: bibliotherapy. By utilizing bibliotherapy within Language Arts instruction, teachers can increase and contribute to students' mental health and overall well-being.

What is Bibliotherapy?

Bibliotherapy is defined as "…a projective indirect intervention that uses carefully selected thematic books or reading materials of any kind, such as biographies, novels, poems, short stories, to help children cope with changes, emotional or mental problems" (Lucas, 2003, p.139). The term was first coined in 1916 by Rev. Samuel McChord Crothers, who first saw bibliotherapy as a therapeutic process (Jack & Ronan, 2008). At first, bibliotherapy consisted of adults reading prescribed materials, discussing the content with therapists and understanding the impact of the material on their well-being. As doctors continued prescribing the use of non-fiction, fiction, poetry or self-help manuals, it became evident that there was a positive effect on the mental health of patients. Bibliotherapy quickly transitioned from hospitals to libraries, group settings and classrooms (Jack & Ronan, 2008). The main focus of this paper will be the utilization of bibliotherapy within Language Arts instruction.

Maich (2004) expresses that bibliotherapy is an emerging process within schools that is non-invasive and an alternative way to help children externalize and understand their emotions. The utilization of bibliotherapy consists of students experiencing three crucial stages: identification, catharsis and insight. Identification takes place as students make connections with an identified character to discover that they are not alone. Likewise, researchers state that educators should encourage students to make connections with incidents from their own experiences (Morawski, 1997). Students will then experience the next step: catharsis. This is known as the process of students releasing emotions concurrent of the character within the story. In the last stage, insight, students are able to utilize discussions to expand knowledge about themselves (Friess, n.d). As educators guide students through these stages, students will experience the therapeutic effects bibliotherapy.

The overall goal of bibliotherapy is noted in an article written by researcher Al Khalik. Khalik (2017) informs readers that the aim is to educate children about their psychological problem and deepen their understanding of their feelings (p. 31). Bibliotherapy has the capability of helping children develop social skills and experience validation about themselves. Overall, bibliotherapy is seen as "…a projective indirect tool that employs literature for growth of children that can be used to teach children on life's challenges by encouraging the to connect with book characters…"

(Khalik, 2017, p. 13). When bibliotherapy is utilized within Language Arts instruction, it is evident that there are positive outcomes regarding the social-emotional development of students.

The Benefit of Teachers Utilizing Bibliotherapy in Language Arts Instruction

Students today are facing several mental health issues such as panic attacks, anxiety disorders and depression which can potentially cause both behavioral and learning challenges. According to Yuan et. al (2018), "…depression and anxiety disorders are the two most common psychological disorders in children and adolescents…" (p. 354). It has been found that these disorders can lead to poor academic performance, lack of motivation and difficulties with interpersonal relationships (Yuan et. al., 2018). As these disorders continue to become more prevalent, teachers begin to take on additional roles. One significant role within a teacher's relationship with students is providing a safe and inviting environment where children are provided with engaging materials, positive social interactions and the tools needed to promote well-being (Chappell & Szente, 2019). In order to achieve this role, educators have engaged in the utilization of bibliotherapy within Language Arts instruction.

Heath et. al (2017) discusses a study conducted focusing on the effects of bibliotherapy on a group of students struggling with depression. The immediate results and 6-month follow-up showed that students placed within a bibliotherapy group experienced decreased major depression (p. 552). We also see the use of bibliotherapy having positive effects on aggressive behavior in children with emotional and behavioral disorders (Khalik, 2017). In a study conducted by Kari Newman (2015), results showed a decrease in emotional and behavioral problems for boys aged 9 to 11 when bibliotherapy was intertwined within the Language Arts curriculum. Not only can bibliotherapy within Language Arts instruction help struggling students, but it can also be used as a prevention measure. Catalono (2008) makes it known that teachers can use bibliotherapy to increase awareness as well as initiative critical thinking skills (p. 18). Incorporating bibliotherapy into Language Arts has the capability of allowing students to empathize and understand peers going through childhood trauma (Catalono, 2018). Likewise, Newman's study revealed bibliotherapy was found to be an intervention strategy that participants in the study found to be enjoyable. The teachers within this study also noted the effectiveness of bibliotherapy in supporting reading comprehension, analysis of text, communication skills and listening skills (Newman, 2015). In order to experience these benefits of bibliotherapy, researcher have recommended taking advantage of children's books.

According to the National Association for the Education of Young Children, teachers have found success when utilizing children's books to target current emotions or struggles happening within the classroom (Ho & Funk, 2018). These books allow students to relate to a character's experiences and realize they are not alone in their struggles. Parker (2005) states that "Children's literature provides an effective vehicle for interweaving character education into existing curricula to address problems in everyday life" (p. 3). Researchers share that "Bibliotherapy can be an effective intervention when perhaps no other intervention is available for a child

with a social emotional problem, in or beyond the school environment" (Maich & Kean, 2004, p. 5). As one can see, studies have proven that utilizing bibliotherapy within Language Arts instruction can be beneficial for currently struggling students and a preventative measure for others. After all, "The spoken word (e.g. parables, myths, fables and legends) and the written word have been used and are believed to be two of the most influential tools to heal and change the human condition" (Jack & Ronan, 2008, p. 161).

How to Incorporate Bibliotherapy in Language Arts Instruction

There is strong evidence that factors within a school's environment can significantly play a role in children's mental health (Harding, et. al, 2019). Students spend over six hours a day in school and over half of those hours are spent with a homeroom teacher. This means that educators have the ability to implement strategies such as bibliotherapy into Language Arts instruction to support the mental health of students. However, before incorporating bibliotherapy into the Language Arts curriculum, teachers need to be aware of the processes and steps to take.

According to Catalono (2008), before one begins bibliotherapy instruction, teachers need to ensure there is a sense of trust and good rapport within the classroom. When a child feels safe within the classroom context, they are more likely to experience a sense of calmness and security, which will allow for greater discussion during the bibliotherapeutic process (Chappell & Szente, 2019). Likewise, teachers must focus on one specific problem a student or several students are experiencing. This step is critical, for it drives the selected reading materials. Friess (n.d.) informs educators that they must also take into consideration the child's age. It is crucial that the students will be able to make connections and similarities with the character in the reading. Once materials are chosen, the teacher should generate goals, tasks and activities. After engaging in these steps, an educator will be ready to implement bibliotherapy; however, one must ensure that after instruction is complete, time is taken to assess the effectiveness of bibliotherapy within their Language Arts instruction. After becoming familiar with the steps and stages of implementing bibliotherapy, educators must choose a specific strategy. Three options educators can choose from are an interactive read-aloud, collaborative inquiry and silent independent reading. The strategy most often used in early childhood education is the first strategy, an interactive read-aloud.

An interactive read-aloud is defined as "…a whole-group instructional context in which you read aloud a chosen book to the whole class, occasionally and selectively pausing for conversation" (Fountas & Pinnell, 2021, p. 1). During an interactive read-aloud, students are able to view images and hear stories that are beyond their reading level. However, during this time, students have the ability to make connections between themselves and the story. An interactive read-aloud should be implemented by introducing the text, reading the text and discussing the text. It is important to note that the discussion and reflection process during an interactive read-aloud are critical in order to experience the benefits. Likewise, research indicates that dialogue is crucial characteristic of implementing bibliotherapy, for the reflection process of the reading is considered the backbone of treatment.

Although there are several components to bibliotherapy, it is important to note that the use of theoretical and practical knowledge during the implementation of bibliotherapy is important; therefore, teachers should utilize assistance within the school (Morawski, 1997). For example, teachers can consult librarians or school counselors on the specific reading materials in order to achieve their objectives or intended outcomes. Likewise, teachers should use open communication with parents to identify additional needs their child may have. Bibliotherapy requires a team effort and emphasizes the use of planning. However, when teachers, counselors, and librarians work together, bibliotherapy has the capability of transforming student mental health for the better.

Conclusion

With an increase in mental health, it has become more important for teachers to support the mental health of young children in early childhood education. One method educators can use is bibliotherapy, the process of using books to heal the mind. Research indicates that utilizing bibliotherapy within Language Arts instruction can significantly support the mental health of students. There are several strategies teachers can use to implement bibliotherapy within Language Arts instruction; however, a common strategy used in early childhood settings is an interactive read-aloud. Throughout the utilization of bibliotherapy, it is important to remember to take advantage of additional support systems within the school district. Perhaps with the use of bibliotherapy, there will continue to be a decrease in mental health amongst youth, for "We lose ourselves in books. We find ourselves there too" (Anonymous).

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The Proper Implementation of Technology into the English Language Arts Classroom

Abigail Dewire

Abstract: Prior to 2020, technology was slowly being integrated into the classroom. Technology integration is expensive and because of this, schools with more funding were making the leap at more rapid rates than schools with less funding. In 2020, the Covid-19 pandemic hit and there was a heavy push for schools across the country to get laptops into the hands of every student. This pandemic gave students who previously did not have access to internet the opportunity to learn in a 1:1 laptop setting. With laptops in the hands of every student, kids are spending more time than ever before in front of screens. Now that every student has access to the technology, educators need to explore the dangers associated with its overuse and establish boundaries to create the most optimal learning environment.

Introduction

During the pandemic, Harriet's school was able to make the final push towards technology that they had been planning for years. Harriet lives in a low-income household and would not have been able to have a laptop had her district not provided them. The pandemic is now over, and Harriet is happy to be back in classes, but she feels it is different now.

Harriet goes to school for 7 hours per day. Freshman English is her first class of the day. English used to be her favorite class, but she has been falling behind this year. Before the pandemic, students were given physical copies of each book to write in. Now she is given digital copies and has a hard time focusing when reading on her laptop. She used to take sticky notes in the books she read to help her remember what happened. When she gets behind in reading now, she just reads the Spark Notes instead of the novel.

One of her favorite things about English was doing writing prompts at the beginning of each class. She loved writing in her class journal and doodling during the lessons. Her teacher this year has the class write on a Google Doc at the beginning of class and although she likes practicing her typing, she feels self-conscious because she knows her teacher can see what she is writing while she is writing it.

Something that makes her frustrated is that every class is planned around using her laptop. She spends a lot of time at school on her laptop and then goes home and does homework on it. Before Covid-19, when the class read a book, she would get excited to discuss it with peers. Now they create Google Jam Boards and Power Points about what they read. She liked this at first but now feels drained by all the online work.

With Great Technology Comes Great Responsibility

Benefits of the One-to-One Laptop Implementation

High schools all over America have implemented a one-to-one laptop program to get laptops into the hands of every student. There is no doubt of the numerous benefits that can be observed with the implementation of a one-to-one program. In the English language arts classroom, students can access reading materials wherever they are if they have internet connection. They can type their papers and use the laptop to take notes and find resources. They can also access audiobooks and make the font size bigger if need be. Technology is beneficial to student learning empowerment as it creates a space where students are free to interact away from teachers. The effect this has is that students are more willing to engage with one-another and relate without the fear of being observed. This gives them control over what they are learning by providing a sense of independence. Additionally, technology offers new routes for differentiation in learning with flexible designs of content delivery and assessment of skills (Hanimoglu, 2018, p. 98). In the traditional classroom model, teachers were in control of the learning and there was limited opportunity for self-discovery. With the introduction of technology, students are offered more independence and can work through the learning process on their own. This leads to more student learning innovation (Hanimoglu, 2018, p. 101). The purpose of the one-to-one laptop initiative is to "transform student learning, enhance future job prospects, offer equity opportunities, and improve student academic achievement" (Gatens, 2018, p. 2). Although technology poses all of these benefits in student learning outcomes, there are also many unintended drawbacks that need to be explored further.

Student Learning Outcomes with One-to-One Implementation

Even though a one-to-one laptop initiative increases student learning empowerment and differentiation, it does not coincide with higher test scores or competency. In the English language arts (ELA) classroom, long-form writing is a skill that needs to be mastered. With the integration of laptops, the use of handwriting has gone down significantly. In a study, Professor of Experimental Psychology, Caroline Edmonds, and graduate of psychology, Dr. Simon Horbury (2020), compared 26 ten and eleven-year-old boys on how well they retained information after they hand wrote and typed their notes from a lesson. This study examined the control groups directly after the study and a week later. The study was aimed at analyzing their comprehension of conceptual understanding rather than factual recall. This is important because conceptual understanding requires deeper processing of abstract ideas from students. In this study, they assessed the students in history and biology in the form of a multiple-choice quiz. Upon completion of this study, Edmonds and Horbury (2020) found that there was no difference in conceptual understanding directly after the lesson between students who hand wrote and typed their notes. It did find, however, that a week after the study students who hand wrote their notes retained more information and had a deeper level of understanding of concepts than those who typed. They believe these results were reached because handwriting notes takes

more time and requires students to process the information differently in order to take more effective notes. In shortening the information and consolidating, they are engaging in higher levels of cognition in their interaction with the information (The Guardian, 2014). This is important to the ELA classroom as a great deal of skills learned involve deeper level processing and thinking. If students are using laptops to do research, take notes, and write papers, it is likely that lower levels of cognition are taking place than if they were handwriting everything. As a solution to this, ELA teachers need to utilize handwriting rather than typing notes as often as they can.

In another study (Gatens, 2018) completed in a New Jersey high school, researchers found that one-to-one laptop initiatives had no impact on student success in standardized tests in the English language arts section. Of the many controls used including age, gender, socioeconomic status, race, etc., there was no difference between those who learned with the one-to-one laptop initiative and those who did not. However, in the math section of the New Jersey Assessment of Skills and Knowledge (NJASK) standardized test, there was a negative correlation between students who had access to laptops and their test scores. Students who used laptops had lower scores when compared to those who did not (Gatens, 2018, p. 85). When studying the impact of one-to-one implementation on the PSAT, researchers found that there was no difference in performance and scores between students who did have laptops and students that did not (Gatens, 2018, p. 88). This is to say that laptops do not necessarily correlate with greater student learning outcomes. In the same study, they collected data on whether or not the laptop initiative impacted grade point average and found that it had a negative impact on student academic performance in terms of grade point average (GPA). Students who used laptops had lower GPAs than students who did not. Additionally, one-to-one laptop initiatives had no impact on students' attendance (Gatens, 2018, p. 88). With these outcomes in mind, it is important to consider the goal of a one-to-one implementation program and why the implementation is not leading to greater student success rates. With this information, ELA teachers need to structure lessons around student interaction and use technology strictly as a tool when it is necessary.

Challenges in the Online Model

Just as cars are a tool that make travel easier and more rapid, technology is the same in education. Ironically, if one is not properly trained to use it, it can have adverse effects. In the ELA classroom, discussion and debate are some of the most important skills a student can develop. Teachers facilitate class discussion and create an environment for sense-making to take place among peers. In a literature review, Borup (2016) compiled surveys that explored the teachers' perceptions of learner-learner engagement at cyber high schools. One survey discovered that of the 127 cyber school principals who participated, 21% of those felt their courses offered collaborative learning that involved two or more students. Additionally, 60% reported that their schools primarily used "individualized, student-driven independent study" (Borup, 2016, p. 232). This is worrisome as students learn best when making sense of content with peers. When reading a book, it is the combination of multiple perspectives that can lead to sense-making and self-discovery. The individualized approach can be a good thing, but it can also hinder the learning process and provide

lower quality education. "Interaction between similarly able peers can also result in learning environments where meaning is constructed and shared. Social presence and personal connections that are established through meaningful interactions can also be a prerequisite to more cognitive outcomes" (Borup, 2016, p. 232). In this way, when students engage in learner-learner interactions, their creativity and other important skills are fostered while students who learn online are likely to experience feelings of isolation and lack of motivation to learn (Borup, 2016). With the integration of laptops, students often look at screens rather than each other. This is not the fault of the technology, but rather, the person facilitating the learning. Moving forward, ELA teachers need to have student-interaction at the center of each lesson plan.

Another problem faced in many districts is a lack of competency in instructors to teach with this tool. Many ELA instructors are sticking to the traditional model and using technology as a tool because they are not taught about how to effectively integrate technology in the ELA classroom (McGrail, 2007, p. 80). In this way, teachers are struggling to create meaningful interactions and collaboration using technology in their classrooms. They have effectively mastered the traditional model of fostering collaboration between students in their learning process, but they struggle when introducing technology due to lack of training and the one-to-one model. Additionally, technology makes cheating and online distractions more common, and teachers are not properly trained in how to deal with this problem. Drawbacks observed in the integration of technology include "technology-supported cheating, communications-related distractions, computer games, web-surfing, and other personal projects." (Nworie & Haughton, 2008, p. 54). Distractions are one of the unintended results of having technology in the classroom. With their laptops, students have been observed instant messaging friends, communicating with email, shopping online, playing computer games etc. This problem is difficult to solve as many students can override website blocks with virtual private networks (VPNs). Additionally, teachers cannot observe what students are doing online while they teach (Nworie & Haughton, 2008). This can be a challenge to any classroom, but especially the ELA classroom because technology offers opportunities for students to conduct research online and type papers. Like in many things, although these problems exist and create challenges to instruction, there are solutions that are accessible to teachers to mitigate and turn technology into the tool it was meant to be.

The Problem is the Solution

As is the result in many cases, the problem is the solution. Because one-to-one laptop classrooms are new to teachers, they struggle to find meaningful ways to maximize its capacity of helping. Across the literature, many researchers had similar propositions to help integrate technology into the classroom. Similar to how people need to take drivers education and learn the dangers of driving in order to get their license, students need education to understand the benefits and drawbacks of using a screen to learn. Not only do students need this, but teachers do too. To fight these drawbacks, solutions posed in the research include adequate training in the integration of technology and the hiring of full-time technology directors to ease the transition. Manimoglu (2018) concluded that although technology does not influence at-

tendance and performance in students, it does positively impact their acquisition of skills relevant to technology (p. 104). Upon compiling and organizing the data from these studies, Gatens (2018) recommends that school leaders and teachers "increase their understanding of the impact and efficiency of introducing one-to-one laptop programs." (Gatens, 2018, p. 94). He suggests that when weighing whether or not districts should invest in one-to-one laptop implementation, they should consider what their goals of implementation are. Technology should be viewed as a tool for the learner. There is more that can be learned in the classroom than passing standardized tests scores and getting a good GPA, so these studies need to be taken into account when observing the data (Gatens, 2018). Similarly, a solution offered by McGrail (2007) is to have teachers and administrators adopt a different mindset in terms of technology. They need to explore what the goal of one-to-one implementation is and put more emphasis on pedagogy than technology. If they explore the goals of using technology and create a plan that will foster student development using technology, classrooms and teaching would become more efficient to the student (McGrail, 2007, p. 81). Just as teachers can observe drawbacks, they have also discovered solutions on their own as well.

To aid in the fight against distraction introduced by technology, many teachers have found that deadlines are one of their greatest tools. With the online portal for assignment submission, students are more likely to complete work with a sense of urgency if there is a deadline attached to the assignment. Teachers have also found that giving students a greater sense of control promotes healthy online habits. For example, letting them listen to music as they work gives them a feeling of control and autonomy over their own learning process (Tagsold, 2013, p. 131). Additionally, technology can be a great tool in fighting distraction if teachers chunk their lessons appropriately. Students respond positively to a change of stimuli. Technology makes this more achievable as teachers are able to plan a lesson using technology when it benefits the content most. This helps break up the perceived monotony and keep students engaged (Tagsold, 2013, p. 132). Tagsold (2013) has three suggestions for minimizing distractions in the classroom. The first is to create projects that students will enjoy and allow the student to choose their own form of assessment. This will encourage learning empowerment and discipline. (p. 135). Another suggestion is to create meaningful assignments that are also challenging to students. When students are engaging in higher level thinking, they are more focused (Tagsold, 2013, p. 136). The final suggestion offered is to inform students of the benefits and drawbacks of multi-tasking. Although multi-tasking can be effective in allowing students to complete multiple assignments at once, it can also decrease their efficiency due to the demand in cognitive processing. If students are allowed to self-regulate upon being informed of the drawbacks of technology, this is ultimately a better outcome as it will allow students more autonomy and self-accountability in their education (Tagsold, 2013, p. 137). With the input of students and teachers in solving this problem, technology can become the tool it was meant to be.

Conclusion

Having one-to-one laptop implementation was inevitable in the face of the Covid-19 pandemic. Now that students and teachers have access to the online learn-

ing environment, it is time to find meaningful solutions to the challenges teachers now face. There need to be boundaries in the use of technology and it needs to be used when it serves the ELA classroom best. In this way, ELA teachers need to be educated on the benefits and drawbacks in the use of technology as explored in this paper. Teachers need to promote meaningful interaction between students as often as possible in the learning process. These are among the many solutions that need to be explored in this next chapter of education.

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Developing Socially Productive Communication Within the Secondary ELA Classroom
Methods and Principles for Encouraging Student Voice

April Schultz

Abstract: Facilitating the development of socially relevant communicative skills in the secondary English language arts (ELA) classroom helps to guide the coursework towards personal relevance and usefulness for the students. It also encourages participation and engagement for students who might not find value in ELA content matter. This approach allows students to develop skills that are useful to them outside of the classroom: in their social lives, family relations and career navigations. Guiding their own personal voice through expressive writing and effectively sharing their ideas with others (through discussion formats and the instructor's openness to student input) are the key components of this approach. This article expands upon the principles and methods an instructor can use to engage students and provide them with personal value in the ELA content matter.

Introduction

In 2014, a struggling high school in the lowest-performing school district in Rochester, New York was preparing for a forced closure. That year, the graduation rate was 33 percent. There were 2,400 suspensions. Average daily attendance was 77 percent. In lieu of closure, the school chose to take part in a five-year reform option offered by the state.

Five years later, this high school was on their way towards their highest-ever count of graduating seniors. How did they do it? This shift took place because the school began to incorporate student voice into all of its proceedings. East High School formed systems from the classroom up to administration that allowed students to feel comfortable sharing their thoughts, be acknowledged, and create change in the way their education was run (Marsh, 2020).

Giving students a voice in their school proceedings is incredibly important not only for their success in school, but for their development into adulthood. If a student knows that their opinions and personal expressions are, in fact, valued by the systems they depend on, this creates a secure, confident, well-functioning human being. East High School's success is not only in improving the performance and engagement of their students, but in teaching them to develop as participatory members of society.

Developing Participatory Communication

In its most basic sense, the ELA subject matter is rooted in education around methods of communication. The guiding principle is that students should develop to use their voice and receive others effectively. The ELA instructor's role is to facilitate

this growth and provide the means to develop socially relevant forms of personal communication. Encouraging personal expression through reflective writing, interpersonal skills through collaborative discussions, and student input in classroom procedures are all ways to facilitate the growth of socially productive communicative skills.

Encouraging Student Voice

ELA instructors and school culture should work to encourage student expression at every opportunity. This is especially effective in a writing classroom. Students should be given opportunities to create and express themselves in a wide variety of mediums, and that work given recognition and celebration.

Writing is often beneficial to the writer on a personal level. In expressive writing, the author shares their thoughts, feelings and experiences with the reader. It becomes an outlet for the writer's unique voice. Reflective writing goes one step further to offer new insights, doing the "work" of processing emotions and transforming them into a clear message (Gallagher, 2011). For adolescents, in a time of self-discovery, in marking the difference between 'I' and 'You,' expressive and reflective activities are invaluable. They help form the values of the adult that the young person will grow into. Some of the more disadvantaged students are the ones who will most benefit from an expressive outlet. Dealing with not only developing into personhood, but family challenges, the toll of poverty and inherited struggles can leave a person with a lot to process and sort through. Additionally, modern cultural influences; the constantly available input of social media, internet surfing, television and film streaming, these all pull individuals away from the time and space needed for these reflective processes (Gallagher, 2011). It is more important now than ever before to encourage this expressive and reflective writing.

Everyday writing can easily be socially and culturally relevant to students. Consider adapting any short bellringer writing prompt to a Twitter post or short Facebook post. Bellringers are fantastic opportunities to draw a little bit of the student's personal selves into the classroom. A short reflective writing assignment: what do you feel the most gratitude for today? Or: if you won the Ohio "Vax-a-Million" drawing, what would you do with your winnings? They can put themselves in the shoes of a main character facing a dilemma in a current reading and create a video blog to portray the character talking through the process. Think about the ways students communicate in their own lives and bring the ELA content to them. It is already a part of their lives - using what they know makes the content that much more accessible.

Of course, there is nothing wrong with stretching into writing a good poem - but since this can be intimidating, some "warm-ups" are helpful. Students can write a copy change poem, as mentioned above. They can analyze their favorite song lyrics, and then write their own - perhaps one verse at a time. They can use a reflective bellringer to write a short story - or build on classic myth with their own personal re-telling (perhaps one recently adapted into a new film or series). They can write in private journals regularly for a participation grade. They can write letters to each other, to parents, administrators, or even political officials and other figures. The more often a student writes, the more their communication style improves. Expres-

sive and reflective writing allows for the emergence of the student's personal voice. Once it emerges fully, it can be adapted and colorfully flexed into any medium, over time. Yes, even a research paper! These writings become that much more fun to write, and enjoyable to read.

Celebration and recognition are large motivators for student success, as seen in the previous story about the young poet. Several universities have found it greatly benefits first-year students, who most often "fall off the books," to have an installation that celebrates the work they did in their first year. This can also easily be incorporated at the high school level. The "Celebration of Student Writing" is formed and expressly designed by the students themselves (Carter, 2017). Students that are unsure of their abilities, don't yet know their own talent or where they "fit" can find a lot of personal meaning in these installations. Possibilities to consider are e-zines and publications, or an artistic showcase like a "writing fair." This can be incorporated near the end of the year and promoted throughout. Its great advantage is giving students recognition for their hard work, but also being a student-driven project.

Growing Interpersonal Skills

Many schools and individual classrooms have problem-solving or analytical discussions at the center of their coursework. This can be engaging and fun for the students, build connections between them, and build confidence in public speaking. It's no secret that group discussions are productive in any subject area but especially in a subject area surrounding communication. There are some obstacles to this, especially in the secondary classroom. The instructor might feel they can't force students to talk, and it never really seems to go anywhere. Or, certain students always seem to carry the weight of the discussion, while others rarely participate.

Previous paradigms for grading discussion activities are typically based upon volume of input into the discussion ("contribute something meaningful three times for an A"). This individual method of grading might work, to some degree, but there is an even better way: a method that works to invite cross-categorical thinking and develop social-emotional skills.

Consider assessing the quality of the overall discussion, not the individual. What would be assessed is the how effective the collaboration is within the discussion and if the discussion was effective (Wiggins, 2020). This is what ELA instructor Alexis Wiggins does in her secondary classroom using group-graded discussion. The whole class gets one grade. Their reward depends upon the success of their collaboration. She reports the result was an immediate shift in the quality of discussions. The overall atmosphere was warmer and included the whole of the group rather than producing the cold environment that often comes with competition with each other for talk-time within the discussion, (Wiggins, 2020). Not only did it result in much better discussions, but the students were building skills that she indicates employers often desire and require from new hires. Wiggins (2020) suggests that a group grade for discussion allows for the development of things like strong people management, coordinating with others, and emotional intelligence. As any new teacher will notice, feeling comfortable enough to share personal thoughts and feelings is no easy task for a teenager. Through peer support--working together to achieve the highest grade--the students themselves create a safe, comfortable

space for sharing ideas and building upon them. This, in turn, deepens connections between them and builds social awareness. Wiggins (2020) shares some formats she has created through her classroom experience and research for group-graded discussion, such as the spider web, and these can be explored in her article listed under References.

It is also important to consider the classroom environment from day one: the ways in which an instructor can create the space for students to feel comfortable expressing their feelings and opinions with one another and their instructor. "Ice-breaking" activities, and the quality of the activity, should be considered in every instructor's planning. Food Science Professor Shelley J. Schmidt (2018) suggests an excellent activity in her article: "Creating a Classroom Culture Built on Community." Schmidt places students into groups of four or five and challenges them to find four things they each have in common with one another (Schmidt, 2018). This is very effective, because not only does it encourage connectedness but forces discussion about a wide variety of topics to land upon the four similarities. Then, the groups find something that is particularly unique about each individual. A spokesperson will share each of these things with the rest of the class at the end of the period (Schmidt, 2018). These types of activities help the instructor get to know the students, the students get to know one another, and build a sense of comfort. It sends a message to the students that the instructor cares and wants to get to know them. Most instructors strive to have a rapport with their students, but it should be stressed that this is highly important if the goal is to encourage communication and interacting with one another on some probing, reflective questions surrounding ELA content matter.

Student Input

Regarding student comfort, engagement, and participation, it is important to note that a student will feel most comfortable and accepted in a classroom when they know that their individual input is desired and encouraged.

Returning to East High School in the introduction, the administration understandably faced challenges implementing their reform of incorporating student voice into their policies. One of the very first policies to be implemented after this shift was a uniform dress code. This move was widely opposed by the students. Unsurprisingly, the 400 students in the auditorium at the time of the announcement booed. The Assistant Principal Shalonda Garfield thought there was going to be a riot. The principal just stood there and listened allowing for the student reaction and then the students and administrators talked about it (Marsh, 2020). Students continued to advocate for themselves through the new avenues the school offered them: meetings with the principal, participation in the school's governing council, town hall meetings, and even protesting by showing up in personal clothes. A year later, the policy was reversed (Marsh, 2020).

Notice how the principal addressed the negative feedback she received from the students. She listened, and then continued the conversation through several avenues. This school learned from their past failures (2,600 suspensions in one year!) and did not seek to impose an external will upon the students. Instead, they shared that their place was one of facilitation, of leveling and advocacy, not imposition. In

the end, this administration's openness to hearing student opinion and allowing it to make changes in their policies led to their success, not only in keeping their doors open, vastly reducing punitive rates and doubling graduation rates, but in being an advocate for the youth they are placed to serve.

The ELA classroom can take from this example to incorporate student input in many ways: through the choice of texts, unit plans and lessons, assignments and differentiated projects. Small choices implemented throughout the lesson can be used to allow for student participation. Surveys can be implemented to best serve the students. The class can even form classroom rules, procedures and policies together, at the discretion of the instructor. The most important item is the instructor's openness to student input. It is important that any feedback, positive or negative, is received by the instructor, and then steps taken to form an action plan that benefits everyone.

An indispensable tool in any instructor's toolbox needs to be mentioned here. Marshall Rosenberg developed a method called Non-Violent Communication to help facilitate the way people relate to one another. Its effectiveness is in increasing the empathy of both parties involved. Rosenberg says that unmet needs produce responses like criticism, judgment, and anger (Rosenberg, 2015). When an instructor can approach negative feedback from students by seeking out the unmet need, it helps them to stay out of judgment and focus on solutions. Principles of this method can also be brought into lesson plans to help improve student communication. This method incorporates principles similar to the reform of East High School, whose administration and staff might agree with Rosenberg's principle that suggests that blame and punishment rarely produce what is positive and inspirational to others (Rosenberg, 2015). Instead, instructors should be a model for receiving others' expressions empathically, thereby building a balanced and equitable system that incorporates student input. There are workshops and a number of resources online for Nonviolent Communication, including Youtube videos and worksheets, but the best place to start is the book: Nonviolent Communication: A Language of Life (Rosenberg, 2014). The entire process is bound to be one of personal and professional evolution.

Conclusion

The ELA instructor should consider the importance of their subject matter in relation to the lives of their students, and the adults they will grow to be. If the purpose of ELA is to create effective communicators, then the curriculum should be put into the context of the type of communication that is needed to be a successful student, professional, friend, family member, and citizen. Gaining student input into this process is important. What do the students want from the class? How do you know? Having personal input in the procedures of the classroom builds personal investment. This provides a platform for developing needed skills through the student's own agency. Students who don't believe the ELA content is relevant to their lives will find new ways to develop in the classroom and find new value in the instruction. Then, if their achievements and personal expressions are recognized and celebrated, they are certain to thrive.

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Promoting Inclusivity of LGBTQ Students and Classroom Community through English Language Arts

Randi Steiner

Abstract: This article addresses the need for early elementary educators ranging from kindergarten through fifth grade to include English Language Arts lessons that are inclusive of Lesbian, Gay, Bisexual, Transgender, Queer and Questioning (LGBTQ) topics, as well as methods on how to incorporate them. Research has shown that most schools lack curriculum that includes LGBTQ characters or topics. Supporting LGBTQ students has the potential to help their social-emotional well-being, as well as help their peers become more empathetic towards people who are different from them, thus positively impacting the school environment. Elementary educators can help foster inclusivity and encourage acceptance by implementing these lessons. Educators can use children's literature that includes characters and story lines that address LGBTQ topics and themes.

Introduction

It's likely that all educators want to set their students up for success. No one would get into this field to do otherwise. Imagine if a student walked into his or her classroom, though, and didn't feel welcomed? Would that student be able to succeed academically, socially, and emotionally in a classroom where they didn't feel like they belonged?

One student may come to class and realize that, despite the gender assigned to them at birth, in their heart, they feel different about who they really are. Would their peers accept them for who they are? Would the parents of non-questioning students allow their children to play with that child? Would the teacher be able to create an atmosphere that allows all students to feel accepted so that they can learn and bloom?

While statistically there may not be a large number of elementary students that identify as Lesbian, Gay, Bisexual, Transgender, and Queer or Questioning (LGBTQ) at this age, there are still some who do. Because of these differences from their peers, these students may face challenges ahead of them academically and socially. While at school, these students may never read books with characters like them or see teachers who have similar characteristics as their own. They may never read books in which the family's dynamics are similar to theirs at home. They may feel isolated because no one understands what they are going through because all their classmates have one mom and one dad, instead of two moms or two dads.

For students who identify as LGBTQ, or students whose close family members fall into this category, they may not feel like school is a safe, accepting space. Educators can help build a sense of classroom community through English Language Arts lessons that include both characters like them and family situations like their own and encourage acceptance. These students can benefit greatly from the

support of their families, teachers, and peers. As they get older, school could quite possibly become a place that is stressful to them simply because of who they are. Setting these students up for academic success in a caring, welcoming environment will have lasting effects on their educational experience, as well as their emotional wellbeing, and will make it easier for them to learn and thrive. Implementing these practices also may help the peers of LGBTQ students become more understanding, accepting, and empathetic towards students that are different from them, which in turn will positively impact the school climate.

Impact of Negative Environments

As students begin to understand themselves, it is important that they also start to have an understanding and respect for others who are different from them. Elementary teachers can foster this and help students develop empathy for others. Approximately 1 in 8 students do not conform to "traditional" gender roles and face hostile learning environments more often than their peers (GLSEN, 2012). According to Rigby (2003), the stress caused by frequent harassment may affect a student's ability to concentrate and typically results in a high rate of truancy and absenteeism. Students that identify as LGBTQ, as well as their families, can benefit immensely from support in their elementary classrooms. Research has shown that open support for these students using inclusive curriculum and building support with their family and school can help deter bullying and victimization. There is a lack of knowledge about how these supports can be used all together to support this student population and create a more suitable learning climate for all.

Since students spend a large amount of time in school, these students are at high risk for social, emotional, and academic challenges when schools do not create safe, inviting environments for them (Swanson & Gettinger, 2016). It is important that schools work to promote their wellbeing. Feeling unsafe at school has a negative impact on their academic success (Johns et al., 2019). One survey of 5,730 LGBT students in the United States found that supportive educators had the strongest positive influence on the student outcomes regarding self-esteem, victimization, academic achievement, and school attendance (Swanson & Gettinger, 2016).

The consequences of a negative school environment can have an impact on the mental health of LGBTQ students. These issues can include anxiety, sleep or eating disturbances, engaging in high-risk behaviors such as using drugs and inflicting self-harm, emotional issues such as depression, and even suicide. This can also lead to a negative effect on academic outcomes, as these students may have limited access to their education and the unsafe environment at school can interfere with their ability to learn (De Pedro, 2018).

It is imperative that teachers create an inclusive, welcoming environment for these students. Having a positive relationship with their teachers is a strong predictor of school success for LGBTQ students. These students who have a relationship with at least one teacher have fewer difficulties and less depression and anxiety (Swanson, 2016).

Inclusive Curriculum

Results from the GLSEN 2019 National School Climate Survey found that schools in Ohio were not safe for students that identify as LGBTQ. This survey was conducted with LGBTQ youth in secondary schools throughout the U.S. Imagine if their peers were introduced to inclusive curriculum and their schools implemented supportive school policies at an earlier age. Would this help create a better atmosphere for learning? Research has shown that including LGBTQ topics in elementary schools has a positive outcome to the learning environment. In fact, 75.2 percent of LGBTQ students in schools that have inclusive curriculum said their peers were more accepting of LGBTQ people, compared to 39.6 percent of those without inclusive curriculum (Hermann-Wilmarth & Ryan, 2018).

Introducing elementary students to LGBTQ topics does not have to mean talking about sex. Instead, it means addressing the diversity of families and relationships within communities including LGBTQ people (Hermann-Wilmarth & Ryan, 2018). Some elementary teachers were hesitant to introduce inclusive curriculum to their students for fear of backlash from parents and administration. This changed as the age of the students increased, with secondary educators being more likely to participate in inclusive efforts at their schools (Meyer, 2019). This same study argued that because many lessons in Pre-K to grade 2 are structured around family units, then it is completely appropriate to address the diversity that some student families may experience. Not all students have a mother and a father in their family unit. This can be used as a teaching moment to show children that some families have one mother, one father, one grandparent, two grandparents, two mothers, two fathers, etc.

One of the best opportunities for teachers to incorporate inclusive curriculum is through English Language Arts lessons. There is now a plethora of children's literature available that include characters that are LGBTQ through both "mirror books" and "window books." The use of "mirror books" in inclusive classrooms allows students to see characters that are like themselves. These books allow students to see themselves, while "window books" give students insight to someone else's experience (Hermann-Wilmarth & Ryan, 2018). Students should have exposure to both mirror and window books. There are also books that address the topic of gender stereotypes and expectations. Teachers can also read stories that represent diverse gender identities. These topics could also be helpful not just for LGBTQ students, but for those students that just don't follow the norm as there are cisgender boys that like pink and cisgender girls that like dinosaurs and trucks.

It is important, however, that when teachers do utilize inclusive lessons that they are used for relevance and not just to check a box. One study sought to find literature that would provide teachers with support to use LGBTQ-themed children's literature in academics. These findings would be helpful for educators to keep in mind when choosing how, when, and what to introduce to their students. The authors were able to narrow it down to three themes: teachable moments, curriculum relevance, and literary merit (Logan et al., 2016). Teachable moments are meant for times when a student reveals that they have parents of the same sex, someone uses a slur such as "that's so gay" to mean "stupid," or when a child dresses in a way that does not match their biological sex. Teachers must address that situation and not ignore it. Every single child is different, and those differences add richness to our

lives. It is important that we recognize the value and dignity that children have as human beings. Regarding curriculum relevance, educators should ask themselves if the literature will promote inclusiveness in the classroom as well as challenge assumptions and allow children to think critically. It is important that there is a real connection that can be made to the text. Finally, educators should consider the literary merit of LGBTQ-themed literature. They should choose literature that "enhances literacy and the development of language arts and reading skills that strengthen comprehension, fluency, phonological and phonemic awareness, and vocabulary development." (Logan et al., 2016, p. 318). In these moments, literature can be used to not only enrich students' literacy, but also teach them lifelong lessons about others' differences.

Ways To Incorporate LGBTQ in ELA

There are plenty of children's books that would make great anchors for English Language Arts lessons on LGBTQ topics. Several websites have compiled helpful lists of titles, such as the one from Family Equality, which can be narrowed down by age group. Some of the must-read books on this list include: 10,000 Dresses by Marcus Ewert, Adopting My Two Dads by Luca Panzini, Cookies and Cake & The Families We Make by Jennifer L. Egan, This Day in June by Gayle E. Pitman, George by Alex Gino, A Girl Named Adam by Jordan J. Scavone, My Princess Boy by Cheryl Kilodavis, and In Our Mothers' House by Patricia Polacco.

The Human Rights Campaign Foundation's Welcoming Schools website has lesson plans and other resources available. One suggested lesson for early elementary students is to read the book, Red: A Crayon's Story by Michael Hall. After the reading, students then create a paper crayon about themselves that focuses on their inner identities. Then, they use the writing prompt "There's More to Me Than You Can See," which allows them the opportunity to share something about themselves that others may not know by looking at them. This lesson helps build classroom community by showing others that people are different from what you can see on the outside.

Older students in grades third through fifth can read and explore about Harvey Milk, a key activist in LGBTQ history. Students can read or listen to Pride: The Story of Harvey Milk and the Rainbow Flag by Ron Sanders and Flags of the World by Sylvie Bednar. Students can learn about flags as cultural symbols. After, they can discuss the concept of identity as a class. They can then create an identity flag that captures aspects of themselves using colors, symbols, and words. Assessments will look to see if students are showing reading comprehension. Discussion and creation of their flags will show if students understand the concepts of symbols, identity, and pride.

Historical Context and Multicultural Practice

Just as teachers look to inform students and celebrate the people and events of our nation's history during Black History Month or Women's History Month, they can do the same to educate students on the important figures, positive role models, and events in relation to the LGBTQ civil rights movement and during LGBTQ history

month, which is celebrated in October. It should be noted that teachers look to their district or administration for approval of this, as it is not in the Ohio standards and would be considered outside of the curriculum. Welcoming Schools' bias-based bullying prevention program is just one resource that teachers can utilize to create lesson plans, as well as partake in LGBTQ and gender inclusive professional development training.

One rationale for including LGBTQ-themed content in English Language Arts lessons is that it is a part of multicultural practice. Teachers use literature often to explore racial, gender, and ability differences. Another study suggested that it is important for elementary students to understand themselves and others when incorporating "culturally relevant pedagogy and curriculum" in their lessons (Parker 2010, p.65). In order to support diversity, the teachers had students research their cultural identities, create family trees, and then write reflective journal entries. While this study was centered mostly on cultural heritage, it would be possible to incorporate LGBTQ into this type of project as it pertains to students developing their sense of self and others in their community. These types of projects are cross-curricular in that they can be part of social studies lessons.

Pronouns

After checking with their districts or building principals for approval, teachers can make their students feel welcomed in their classroom through the simple use of preferred pronouns. Erin Cross, Director of Penn's Lesbian Gay Bisexual Transgender Center and Amy Hillier, a professor at Penn's School of Social Policy and Practice wrote that educators in PreK to 12 schools can create a dialogue about pronouns and that they are not too young for this conversation: "By asking students their pronouns starting at a young age, educators can make room for students who may be exploring their gender identity and show everyone that gender identity should not be assumed" ("Respecting Pronouns," n.d.). Teachers can also share their own pronoun when introducing themselves at the beginning of the school year and be a model for the class. Teachers can also be conscious when grouping students that they use other methods instead of using gender. For example, teachers may ask that anyone wearing green can line up for lunch instead of asking all the girls to line up. If early elementary students do not understand the idea of pronouns, the use of literature can be helpful. Welcoming Schools has a lesson plan on understanding pronouns using a book titled, They She He Me: Free to Be! by Maya and Matthew Smith-Gonzalez.

Teacher Confidence

Some teachers may feel uncomfortable or unprepared to touch on these topics in their classrooms. Training and professional development are options for teachers to help build their confidence when approaching this subject, which may be touchy for some administrators and parents. Teachers can reframe resistance by educating themselves and addressing the resistance with information (Meyer et al., 2019). Teachers may also use these lessons in a small group setting or present the material individually, as needed, depending on the classroom situation. Numerous websites

and scholarly papers exist that can help identify quality LGBTQ-themed literature, and even complete lesson plans. Even by making small-scale adjustments, such as including a book that has an LGBTQ character in it, teachers can greatly impact the social-emotional outcomes for their students that identify as LGBTQ. Through training, open involvement, and continuing conversations with families and students, teachers can help their schools become more suitable environments for these marginalized students, as well as other affected groups.

Conclusion

Elementary educators have the opportunity to create a classroom community that includes acceptance of all kinds of students. Incorporating English Language Arts lessons that are inclusive of LGBTQ characters and themes, students can learn more about this topic that may affect them or someone close to them in their lives. The benefits of creating an inclusive classroom and empowering children to be accepting of people that are different from them is so important now more than ever. In addition, incorporating LGBTQ-themed literature in classrooms will help these students feel valued and affirmed, and in turn, help them socially, emotionally, and academically.

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Language Arts
Learning to Read

Developing Phonemic Awareness and Phonics Skills to Read and Write

Maggie Andorka

Abstract: Difficulty with fluent word recognition often originates from a weakness in phonological processing. Children should learn English language foundational skills during the beginning stages of learning to read. Phonemic awareness and phonics work together to help students decode and spell accurately. Instruction in phonemic awareness (awareness of the individual speech sounds in spoken syllables and the ability to consciously manipulate those sounds) and phonics (mapping of individual speech sounds to the letters representing them) teach struggling readers the essential elements of language required for reading and writing. This manuscript addresses how to connect phonemic awareness and phonics instruction, strategies on how to identify struggling readers, and best teaching practices to help students struggling with phonemic awareness and phonics.

Introduction

Johnny is a second-grade student who is struggling in reading and writing. He excels in math, has strong social skills, and has a supportive system at home. So, why does Johnny struggle to read and write?

When Johnny is speaking, it is often challenging for him to say sounds correctly. Instead of saying "specific," he says "pacific." Since Johnny struggles with the basic sounds of English, it is difficult for him to map sounds to the correct letters while reading. Therefore, it takes Johnny a long time to read, and he has many errors.

While writing, Johnny struggles with matching the sounds of a word to the correct letters. He frequently skips words and letters while writing and puts spaces between syllables. These writing challenges make it difficult for both Johnny and others to read his work.

Johnny must learn the English language foundations while he is still young. Researchers have studied students like Johnny to discover the best ways to help poor readers learn to read and write. A poor reader is someone who experiences difficulty learning to read (PhonicBooks, 2012). Among all English-speaking poor readers, 70-80% struggle with accurate and fluent word recognition (Moats & Tolman, 2019). This decoding challenge often originates with a weakness in phonological processing. Students who have difficulty with decoding often have difficulty learning sound-symbol correspondences, sounding out words, and spelling. Phonemic awareness and phonics lay at the foundational level of the English language. It is essential to learn these skills in order to read and write. Instruction in phonemic awareness (the awareness of the individual speech sounds in spoken syllables and the ability to consciously manipulate those sounds) and phonics (the mapping of individual speech sounds to the letters representing them) teach struggling readers the essential elements of language required for reading and writing.

Developing Phonemic Awareness and Phonics Skills

Phonemic Awareness

Phonemic awareness is the conscious awareness of the individual phonemes (sounds) in spoken syllables and the ability to consciously manipulate those sounds (Moats & Tolman, 2019). In 2003, The Partnership for Reading defined phonemic awareness as "the ability to notice, think about, and work with the individual sounds in spoken words" (Armbruster, 2001, p. 8). About 17-20% of school-aged children struggle with phonemic awareness (Lyons, 1999). Students need the opportunity to play with all 44 phonemes in English instead of knowing just one sound to represent each of the 26 letters.

Phonemic awareness activities do not involve print; they are speaking and listening activities. Students are not required to look at any letters during phonemic awareness instruction. Activities include blending phonemes to make a word, segmenting a word into phonemes, deleting a sound, sound substitution, and sound reversal (Moats & Tolman, 2019). Phonemes are articulated and spoken sounds. The act of speaking is possible through recalling and sequencing phonemes.

Phonemic awareness plays a vital role in learning to read because it helps children connect spoken language to written language (Birsh & Carreker, 2018). Blending directly correlates to decoding. Segmenting correlates to spelling. Students must learn to connect the spoken sounds of English to the letter(s) representing each individual sound.

Phonics

The study of the relationship between letters and sounds is known as phonics. Phonics requires the mapping of phonemes to their spellings and mapping spellings to their pronunciations (Birsh & Carreker, 2018). Systematic and explicit instruction in phonics has been proven effective for improving children's reading (Adams, 1990; NICHD, 2000; Armbruster, 2001). Phonics is both visual and auditory, and instruction must be focused on both reading and spelling (Moats & Tolman, 2019). Most phonics programs begin instruction with the letter names and letter sounds in kindergarten.

Phonics can be challenging to teach and learn due to the dynamics of English. English has 26 letters, but it has about 44 different phonemes and more than 250 graphemes (letters or letter combinations) to spell them (Birsh & Carreker, 2018). Students cannot learn to read and write in English by only learning one sound for each letter. The different phonics skills include graphemes, digraphs, trigraphs, vowel teams, blends, families, syllables, morphemes, and etymology (Moats & Tolman, 2019). Knowing how sounds connect to letters help students to read and spell words accurately.

Connecting Phonemic Awareness to Phonics

There is a clear distinction between phonemic awareness and phonics. Phonemic awareness studies the individual oral and auditory phonemes in words and begins

before children know their letters. Some of the activities associated with phonemic awareness include phoneme blending, phoneme segmentation, phoneme deletion, substitution, and reversal. It is important to note that blending correlates to decoding (reading) and segmenting correlates to encoding (writing) and the links between speech and print must be mastered to develop fluent readers and accurate spellers. Phonics studies the letters (visual) representing speech sounds (auditory) and instruction begins, generally in kindergarten, with letter names and letter sounds. Some of the activities associated with phonics instruction include teaching the letter or letter combinations that represent the 44 sounds or phonemes in the English language and student reading and spelling phonics patterns. Knowledge of how sounds connect to letters in print is important because it helps students to decode words (read) and encode words (write) accurately (Birsh & Carrker, 2018; Moats & Tolman, 2019).

In 2000, the National Reading Panel emphasized that phonemic awareness instruction must be linked to explicit phonics instruction. The phonemic awareness skills of blending, segmenting, and manipulating speech sounds within words or syllables are bridges to associations between letters and sounds (Birsh & Carreker, 2018). While phonemic awareness instruction is essential in learning how to read, educators must also instruct students to map the 44 phonemes to the letters representing them. Systematic and explicit instruction in phonics and the approximate 44 sounds in English has proven effective in improving children's reading (Birsh & Carreker, 2018).

Blending, one of the basic phonemic awareness skills, helps students when sounding out an unknown printed word. When a student blends, he or she takes apart the sounds of a word and blends them together. The student will separate the letters, say each sound, then blend the phonemes together. For example, the phonemes in the word "clap" must be read as /c/ /l/ /a/ /p/ then blended together as "clap."

When a word is segmented, the phonemes can then be directly linked to the letter(s) representing those sounds. For example, the word "map" can be segmented into each phoneme, /m/ /a/ /p/. After the word is segmented, it can then be spelled once the student has phoneme-grapheme knowledge or phonics. Links between speech and print must be mastered to develop fluent readers and accurate spellers.

Spoken phoneme manipulation can help students to read and write words that follow similar phonics patterns. A student could say the word "sun." Then, the student would orally change the /s/ to /b/ to say the word "bun." If a child can orally complete phoneme manipulation, the skill can be applied to graphemes. The student would be able to read and spell "bun," "fun," "run," and "sun." Children can then automatically read whole words by quickly changing a phoneme while reading.

Once the phonemic awareness skills of blending, segmenting, and manipulating phonemes can be done orally, they can be applied to letters. Applying sounds to letters is how phonemic awareness and phonics are connected. When students are reading, they use their letter-sound knowledge to blend and manipulate sounds in words. When a student is writing, he or she hears the word, segments the word, and then matches each sound to the letter(s).

Both phonemic awareness and phonics work together to help students decode and spell words accurately. When reading a printed word, beginning readers need to identify the letters, convert the letters to their corresponding sounds, then blend the sounds together to say the word (Baddeley et al., 1998; NICHD, 2000; Troia, 2014). Phonemic awareness comes first developmentally, but it is foundational to apply sounds to letters. Children need phonemic awareness instruction for phonics instruction to be effective.

Identifying Students Struggling with Phonemic Awareness and Phonics

The identification of a potential reading problem is the key to helping young readers. A child with delays in phonemic awareness will miss much of the reading practice in the primary grades essential to building vocabulary and fluency (Shaywitz, 2005). Children lacking vocabulary and fluency skills will fall further behind in developing their reading comprehension skills. Teachers can observe struggling readers informally in the classroom and formally with the use of assessments.

Kindergarten Students

In kindergarten, phonemic awareness predicts growth in word-reading ability (Torgensen et al., 1994). Understanding phonemic awareness is the single best predictor of later reading and spelling achievement in first and second grade (Catts et al., 2015; de Groot et al., 2015). One of the first signs that young struggling readers may show is difficulty with spoken language (Shaywitz, 2005). Kindergarten poor readers could begin speaking later in childhood (Eide, 2012). Early on, a teacher could listen for sounds that are not pronounced correctly while singing nursery rhymes. Other children could change, leave out, or reverse parts of spoken words. For example, a child could say "aminal" instead of "animal." By the time a typical child reaches five or six, he or she should not struggle to pronounce words correctly (Shaywitz, 2005).

As a child reaches kindergarten, he or she will begin to learn the letter names and sounds they produce. When children hear and produce phonemes incorrectly, it will interfere with their ability to learn letter names and sounds (Shaywitz, 2005). Children may have difficulty learning how to identify the individual phonemes in words (Eide, 2012). Children may also fail to know the letters in their own names (Shaywitz, 2005). These are some clues that could be observed in a kindergarten child struggling with English foundational skills.

Primary Students

In first grade, children may fail to understand that words can come apart into smaller speech sounds. For example, the word "sunshine" can come apart into "sun" and "shine." A child may experience a challenge in recognizing that a word can be broken down into phonemes. A one-syllable word, such as "bat", can be broken down into /b/, /a/, /t/. Such struggles often cause children to complain that reading is too hard (Shaywitz, 2005). Kindergarten and first grade teachers would observe these challenges in students struggling with phonemic awareness and phonics.

Elementary and Adolescent Students

From second grade to adolescence, students struggling with phonemic awareness may display similar challenges. First, a student could indicate problems with speaking. They may also need a longer wait time than typical students to think of an oral response to a question (Shaywitz, 2005). While reading, students might lack strategies to decode unknown words and will make slow progress in reading fluency. Small connecting words, such as that, an, and in, will be difficult for children. Oral reading is often slow, inaccurate, and does not mimic oral language in regard to prosody (stress patterns in speech and the rise and fall of the voice during phrasing).

A student's writing can also be impacted by a struggle with phonemic awareness and phonics. Handwriting could have inaccuracies in spelling (Shaywitz, 2005). Most children struggling with phonemic awareness will also struggle with learning how to read and spell (Eide, 2012). While these are all ways to observe a challenge in phonemic awareness and phonics, some assessments can be used in the classroom.

Assessments

Assessments, such as the Phonological Awareness Screening Test (PAST), can be used to assess the different components of phonological awareness (Kilpatrick, 2015). Structured literacy programs include assessments to measure students' phonics skills, including decoding and encoding. Assessments will help teachers identify struggling students and provide meaningful interventions during the beginning stages of learning to read.

Best Practices

The International Dyslexia Association and the National Reading Panel agree that all children should be taught to read using systematic, explicit, phonics-based reading instruction (IDA, 2016). When choosing books to read, children improve faster by reading controlled readers instead of leveled readers (Cork, 2017). Controlled readers have mostly words that follow the phonics patterns students have learned with common high-frequency words. In contrast, leveled readers will have syllable patterns that have not been learned.

In 2000, the 14 members of the National Reading Panel revealed the best practices in reading instruction based off of analyzed reading research (NICHD, 2000). The panel identified that the five critical components for teaching young children to read were phonemic awareness, phonics, vocabulary, fluency, and comprehension. The science of reading states that teachers must know how to provide instruction in all five essential components of early literacy.

In 2020, Woods and Graham examined if scientific reading instruction (the research that reading experts have conducted on how people learn to read) and structured literacy (explicit, systematic teaching that focuses on phonological awareness, word recognition, phonics and decoding, spelling, and syntax) were the same. Structured literacy, which is used in dyslexia programs, requires explicit, direct instruction. The teacher explains and demonstrates one language and print concept at a time. The teacher models and verbalizes each step, then guides the student to dem-

onstrate and verbalize with immediate feedback (Mather & Wendling, 2012; Slingerland, 2013). Structured literacy includes phonology, sound-symbol association, syllable instruction, morphology, syntax, and semantics (Moats & Tolman, 2019). Students struggling with phonemic awareness, decoding, and encoding respond best to programs with structured literacy components (Woods & Graham, 2020).

Both scientific reading instruction and structured literacy programs have been proven to help students read. Research shows that teachers must provide children with the skills to effectively decode words rather than use context clues and pictures to figure out what word would fit best in a sentence.

A report in 2006 issued by the education ministry in the United Kingdom summarized the issue in this way:

> Attention should be focused on decoding words rather than the use of unreliable strategies such as looking at the illustrations, rereading the sentence, saying the first sound or guessing what might 'fit.' Although these strategies might result in intelligent guesses, none of them is sufficiently reliable and they can hinder the acquisition and application of phonic knowledge and skills, prolonging the word recognition process and lessening children's overall understanding. Children who routinely adopt alternative cues for reading unknown words, instead of learning to decode them, later find themselves stranded when texts become more demanding and meanings less predictable. The best route for children to become fluent and independent readers lies in securing phonics as the prime approach to decoding unfamiliar words. (Primary National Strategy, 2006, p. 9)

For students to be able to decode words accurately, they must have instruction in phonics. For phonics instruction to be effective, students must also have a strong foundation in phonemic awareness. Teachers should encourage students to phonetically decode while reading instead of alternative cues. Connecting phonics and phonemic awareness helps students to develop their decoding skills while reading.

Conclusion

In regard to English-speaking struggling readers, 70-80% struggle with decoding and phonological processing. A challenge with mapping sounds to letters makes it difficult for students to spell accurately. The earlier a struggling child is recognized, the sooner interventions can improve his or her reading ability. Research has provided significant evidence suggesting that the best reading instruction is systematic, phonics-based, and includes phonemic awareness intervention. Students lacking foundational reading skills can learn to read and write; they must be identified and provided with the proper reading intervention. Instruction in phonemic awareness and phonics helps struggling readers learn the essential elements of language required for reading and writing.

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Reading to Children in the Home Environment

Miranda Evans

Abstract: Time spent reading with children is one of the most impactful activities a parent or guardian can be doing. Professionals in the field of education are in the position to guide guardians towards creating a literacy-rich home environment. By doing so, educators are assisting guardians in setting their child up for the most success in life. Educators can host parent/guardian nights, develop classroom libraries, and use additional community resources to support parents or guardians in developing a literacy rich home environment. By building this bridge for parents and guardians, educators are able to ensure all students reach their greatest potential. Reading to children in the home environment can impact students' chances of becoming successful in more ways than one.

Introduction

Partnerships in education between the home and school foster student growth mindset. Within the world of language arts instruction, there have been countless research studies done on effective tools for educators. Each of the tools educators use has been proven as an effective method for student growth. However, not nearly enough information is widely shared on how a student's home life can be used to benefit their growth in life. In 1929, Whitehead stated, "Education is the acquisition of the art of the utilization of knowledge." If the end goal of education is for our students to use the material we are teaching them, then we must begin exposing them to literacy as early as possible. As an educator that has made the jump into parenthood, I have found my toddler to be extremely impressionable. We, as educators, are responsible for encouraging parents to create a literacy rich home environment. There are many ways educators can support parents and guardians with transitioning their home into a literacy-rich playground for their children. In doing so, they are setting up their child to have the highest chances of becoming successful.

When educators show parents and guardians the windows that begin to open with literacy-fluent children, we can begin to build a society of successful citizens who effectively use their knowledge for the betterment of their community. With this being the long-term goal of all educators, it makes the most sense to begin this process with the end in mind. We must jump headfirst into changing the world through standing tall on our platform as educators and show parents and guardians the impact of reading daily with children. By doing this, we are beginning to build each child's foundation of becoming a lifelong learner and successful active citizen in their community.

A Vignette: The Paraprofessional

A few years ago, I worked with a young paraprofessional. She was 19 years old at the time, and she just found out she was with child. Initially she was overwhelmed with joy, fear, happiness, sadness, and confusion about parenting. One day she came to me asking

about how she can give her daughter the best life possible. With such a heavy question being presented, I asked for some time to think about my answer.

The next few days we talked in-depth about education. We unpacked several of the learning standards in the kindergarten curriculum, and in doing so, we came to the final conclusion that preschoolers need to have exposure to literacy before kindergarten to be successful in kindergarten. Over time our discussions turned to how, as a parent, she could set her daughter up for the most success. As our conversations continued, she revealed she and her partner both struggled with reading. The act of reading was not enjoyable for either of them, and it had been years since either had picked up a book to read for leisure. These facts intrigued the educator in me. I remember thinking, "What? Years since reading a book!" The educator in me began explaining nearly every day how important reading was for her to do with her daughter coming into the world. The paraprofessional was intrigued with how reading with a baby, toddler, and preschooler could have such an impact on a child. Throughout the next few years, collaboratively we read, we learned, and we developed supports for the parents and guardians of the children we worked with.

Home Environment and Impact

According to Schellman (2016), parenting over socioeconomic status continues to be the most important factor in early childhood capital formation. Shellman researched for several years the impact of parent involvement across a variety of nations compared to the countries' socioeconomic status. His work has reinforced the commonly accepted notion here in the United States of parental involvement being of the utmost importance in a child's life and development.

A recent study published by The University of Chicago Consortium on Chicago School Research (CCSR) concluded there is a role of noncognitive factors in students' success later in life (Farrington et al., 2012). This study looked at how academic behaviors, academic perseverance, academic mindsets, learning strategies, and social skills affected students later in life. The study revealed how each of these five pillars may give students advantages over others. All five pillars directly relate back to reading in the home environment.

Academic behaviors are modeled and directly taught when parents and guardians read with their child. These behaviors include sustained attention, intrinsic motivation, cooperation, active listening, and countless others. Mastery of academic behaviors leads to increased time available for learning in a formal school setting. Parents and guardians have the ability to teach this simple skill of academic behaviors at home prior to formal schooling by actively reading with their child daily.

Academic perseverance can also be taught and modeled daily by parents and guardians. Children learn directly by watching those in their environment. When parents and guardians are able to model academic perseverance through exposing their child to literacy outlets early on in life, they are building a foundation of academic stamina that will continue to grow over time. Exposing children to books, concepts of print, and read alouds impacts a student's early literacy skills. By engaging in these literacy activities daily with children, parents and guardians are able

to persevere through perhaps challenges they face in the area of literacy. Through modeling parents and guardians are directly teaching children perseverance. For parents and guardians who struggle with reading, instilling in their child academic perseverance may be a critical element they did not receive when they were younger. Children need to see how parents and guardians can have strengths and weaknesses in learning too. I encourage parents and guardians to normalize deficits, learning, growing, and not idolizing perfection. This can be done by reading with children on topics of academic perseverance and can be modeled by persevering themselves. Children all around learn by imitating what they see. Encouraging academic perseverance can be done by reading with children.

Creating a home rich with literacy activities not only creates and models academic behaviors and builds academic perseverance, but it also sets the framework for an academic mindset. This academic mindset might be one of the most important factors in creating a literacy rich home. The development of an inquiring mind begins with this first teaching practice of reading with children. Through reading with children, parents and guardians are able to lay a literacy foundation and the framework for an academic mindset. An academic mindset is established when children begin to connect printed words with meaning and literature with purpose. By beginning this at home with young children, parents and guardians are able to set their children up on a path towards becoming an active, involved, and successful citizen.

Learning strategies are also modeled and taught through the partnership of reading a book with a child. Adults in the home can easily teach a child to listen to a story, engage in a conversation on a topic, retell a story, and discuss feelings of characters all by reading them a book. Teaching by modeling these strategies prior to school will lay the groundwork for the kindergarten student to be successful. The Kindergarten Standard R.L. 2 states: "With prompting and support, retell familiar stories including key details" (Ohio's Learning Standards, 2021). By exposing children to this earlier on than kindergarten, children will not be learning how to retell in kindergarten children will be learning how to retell with detail, with emphasis, voice, and expression. Teaching the simple skill of retelling in advance of formal schooling by reading with a child daily, can encourage and foster an endless love for literacy and learning.

Social skills develop when there is time to discuss a book at length with a fluent reader and modeling further discussion. When engaging in this social instruction, parents and guardians are modeling, teaching, and guiding children how to ask and answer questions. Having an informal guided setting like this teaches children the necessary academic behaviors and strategies to have a social conversation about a topic. Developmentally, it is most appropriate to do this type of informal teaching through a shared learning experience such as reading a book with a child.

In the article The Importance of Storybook Reading to Emergent Literacy: A Review of Research by Rae Lynn McCarthy (1995), she discusses the importance of reading to children at an early age. It is not just reading to children but rather in homes where parents and guardians read to children often, they also have the ability to expose their children to multiple writing and reading outlets. For example, chalkboards, painting, movies, songs, and books all were found for children in these types of homes. Parents and guardians in this environment made literacy exposure

a priority, whether intentionally or not, it became one in their home. Reading to children is important, however, giving them additional outlets to be exposed to literacy is also important for growth and development (McCarthy, 1995). Reading with children and exposing them to literacy in the home environment is of the utmost importance. By doing so parents are providing their child with the highest chances of success. Exposing children to literacy in the home is the non-cognitive factor all parents in the 21-st century should be doing with their children.

Classroom Libraries

For some students, the books they come in contact with during the school day may be the only books they see for the day. Setting up a classroom library for your students to take books home is a must-do in today's world. Educators can create a weekly exchange system or bi-weekly system for the students to select books to be brought home. With Covid-19 restrictions, I have found using disposable books from Reading A-Z to be the best option. A teacher can easily print them off, send them home, and then discard them if needed. Creating a weekly book exchange has been extremely beneficial in increasing students' engagement with text and fluency. Providing students that extra time with books outside of school can help establish the non-cognitive pillars for success.

Dolly Parton's Imagination Library

Dolly Parton has leveled the playing field for countless children who previously might not have access to high-quality literature. Dolly is not just an unbelievable artist, she is a trailblazer in the field of literacy. In 1995, she created the Imagination Library. Her original goal was to "foster a love of reading among her county's preschool children and their families" (The Dollywood Foundation, 2020). Dolly set out on a mission to deliver specially selected books to each child each month. As of March 2021, Dolly's program is distributing books to children nationwide in the United States of America. Currently they are distributing more than 1 million books per month to children in need (The Dollywood Foundation [TDF], 2020). International growth began in 2006 with adding distribution to Canada. Since then, the program has expanded to Australia, The United Kingdom, and the Republic of Ireland. All parents or guardians can receive a free book for their child each month through this program. Parents and guardians can begin to create a literacy rich home environment through programs like this and classroom libraries. Educators must take on the part of responsibility of showing parents and guardians how their home environment can impact their children.

School Wide Book Drives

An additional strategy for educators to support parents and guardians in creating a literacy rich home environment is using book drives. Often towards the end of a school year, educators are clearing out their classroom libraries and discarding countless books. Instead of throwing away these items, educators can develop a book drive collection program. In doing so, educators can advertise free books to

parents and guardians. By providing parents and guardians with multiple means of increasing the text options in their home, educators have begun fostering the relationship between home and school that is necessary for children to succeed. Within the five non-cognitive pillars, opportunities for growth begin with creating a literacy rich home environment. By educators showing parents this window, we are giving them the tools in their home to set their child up for success in their future.

A Vignette: The Paraprofessional

Fortunately for the paraprofessional previously mentioned, working in a school district opened several doors on her journey through parenthood. Fast forward four years, her preschooler is about to enter Kindergarten. Each day, she read with her daughter and talked about how it is okay if something is challenging for her, most importantly to never give up. Her daughter's birthday is coming up this June and all she has asked for is more books.

The impact of reading and overcoming something challenging for this parent has been monumental in her daughter's success thus far. The paraprofessional was able to teach her daughter what academic behaviors are, academic perseverance, academic mindset, learning strategies, and social skills all through reading with her daily. A foundation in all of the five of the pillars has been laid and will be her structural base for all future education to come.

Conclusion

Children who are read to often at home have increased oral skills later in life (Lonigan & Whitehurst, 1998). Exposing children to literacy in the home can increase their skills in all five pillars for success. If the end goal of all education is a more involved, educated, citizen who actively participates in their community, everyone should have a right to the information of the impact of early literacy exposure. This impact should be widely known, not just for those in the field of education. It is so important to teach students how to use the knowledge they have learned, more so than just rote memorization. "There is only one subject matter for education, and that is life in all its manifestations" (Whitehead, 1929, p. 3), for it accurately sums up the entire goal of all education. The goal is not mastery of content but a true understanding of skills with goals and intentions of application in the real world. For our true goal of education being involved citizens, we must begin to expose and educate our youth as soon as possible. All children can learn and succeed with the right foundation. Parent involvement outweighs all socioeconomic levels of children's academic growth. (Schellman, 2016). We as educators truly have a responsibility to our communities to do everything within our power to convince and supply parents and guardians with the necessary tools to equip their children with the foundation needed to build a commitment to lifelong learning.

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Biography

Miranda Evans currently teaches students with moderate to severe disabilities in kindergarten & second grade. She has been working with this population at Perrysburg School district for six years. In 2012, she graduated from Bloomsburg University with a Bachelor of Science in Elementary Education (K-6) and Special Education (K-12).

Supporting Reader and Writer Self-Concept in Early Childhood Education

Myranda Jenkins

Abstract: Research suggests that academic self-concept influences academic gains. This has important implications for literacy acquisition. Facilitating the development of reader and writer self-concept has been found to support literacy gains. For this reason, it is essential that educators actively work to bolster student self-concept. Best practice recommendations for helping students develop positive reader and writer self-concept include helping students establish reader and writer identity, using the classroom environment to empower readers and writers, and developing supportive teacher-child relationships. The author acknowledges that the relationship between academic achievement and self-concept is reciprocal. As such, quality literacy instruction is needed in addition to attending to the affective factor of self-concept in order for students to be successful readers and writers.

Introduction

> *September: "But I can't! I don't know how!" Margo cries, as she buries her face in her hands, pencil and paper untouched in front of her. Mrs. Smith approaches and gently places her hand on Margo's arm and smiles at Margo. "You can do this", she says. "We are brave writers in room six. Let's try writing what we hear." Margo reluctantly emerges from her hiding place and follows Mrs. Smith's prompting to blend the letter sounds "c-a-t" to form the word "cat."*
>
> *December: "Sheep, jeep, they both have eep!" Margo exclaims. "Yes, Margo! You found the rhyming words on this page!" Mrs. Smith replies. She finishes reading Nancy Shaw's "Sheep in a Jeep" aloud to Margo and her peers. When Mrs. Smith is done, she challenges students to write a silly sentence using rhyming words. Margo sits pensively as she tries to come up with words to rhyme with "pig".*

As a kindergarten teacher, Mrs. Smith has worked with many students like Margo. Beginning writers often start the year feeling scared and unsure as they begin to traverse the world of literacy. In early childhood education, much attention is given to literacy instruction. This consideration is very much warranted; the ability to read and write opens many doors of opportunity in a literacy rich world.

While there is an abundant amount of research on best practice available to teachers, affective components of academic achievement have only become of interest to researchers in recent years. One such component, self-concept, has been found to be of particular importance in relation to literacy acquisition. Facilitating the development of reader and writer self-concept supports literacy gains (Guay et al., 2019; Walgermo et al., 2018). For this reason, educators should actively work to bolster student self-concept.

Best practice recommendations for helping students develop positive reader and writer self-concept include helping students establish reader and writer identity, using the classroom environment to empower readers and writers, and develop-

ing supportive teacher-child relationships. While facilitating the development of positive student self-concept is undoubtedly important, early childhood educators should keep in mind that the relationship between academic achievement and academic self-concept is reciprocal. Because of this, teachers must provide quality, research-based literacy instruction in addition to attending to the affective factor of self-concept.

Literacy Achievement and Self-Concept

To understand how self-concept plays a role in literacy development, it is first necessary to determine a working definition of the term. Pajares & Schunk (2001) explain, "Self-concept has typically been defined in terms of the cognitive appraisal one makes of the expectations, descriptions, and prescriptions that one holds about one's self" (p. 239). In terms of literacy, children may hold positive or negative beliefs about themselves as readers and writers. Some students may even fail to see themselves as readers or writers at all.

Research suggests that academic self-concept influences academic gains (Huang, 2011). In the case of early literacy, reader and writer self-concept appears to influence the development of literacy skills (Guay et al., 2019; Walgermo et al., 2018). Even before they can read and write, children with positive self-concept in relation to literacy activities already have an advantage in the development of literacy skills. For example, preschoolers who display confidence working with wordless picture books are better able to actively engage with the characters and create rich dialogue in comparison to their more tentative peers (Lysaker et al., 2016).

This early positive self-concept in relation to literacy paves the way for future academic achievement. Research indicates a positive association between reader self-concept and reading achievement in young readers (Jensen et al., 2019). In other words, the more confident a child feels in their identity as a reader, the more likely the child is to make literacy gains.

Facilitating the Development of Positive Reader and Writer Self-Concept

Because research tells us that student self-concept and academic achievement are intimately connected, it is essential that early childhood educators know how to help develop positive reader and writer self-concept in order to facilitate positive gains in literacy development. For the purpose of this manuscript, we will explore several best practice recommendations for bolstering student self-concept in relation to literacy: helping students establish reader and writer identity, using the classroom environment to empower readers and writers, and developing supportive teacher-child relationships.

Helping Establish the Literate Identity

In order for children to develop positive self-concept in relation to literacy, they must first be able to explore their identities as readers and writers. Authors Seban & Tavşanlı (2017) cite the work of Kauffman (2006), stating, "Children's understand-

ing of the reading and writing process and their perception of themselves as readers and writers reflects their sense of identity as literacy users" (p. 218). Because children's literate identities are constructed based on their literacy experiences, teachers must be sure to provide sufficient opportunity to explore and discuss reading and writing opportunities. Introducing students to a variety of text and giving them the opportunity to interact with said text through literacy activities can help accomplish this. Specifically, working with children in the context of reader and writer workshops can help children build the confidence they need in order to further develop their literacy skills.

Through literacy workshops, students are given the opportunity to "try on" different genres and writing styles. They also gain the experience needed to see themselves as competent readers and writers. Snyders (2014) implemented a literacy workshop in which students studied various established children's authors and then were given the opportunity to experiment with their own writing style. The author found that when students gained confidence in their identities as writers, they began to apply cross-curricular knowledge to their writing. This finding suggests that positive writer self-concept leads to writer growth. In one example, Snyders cites the work of a kindergarten student identified as Daniel. After participating in an author study exploring the works of Mo Williams, Daniel was given the opportunity to create his own book. Both the writing and illustrations Daniel created to tell his story were reflective of Williams' style; he began to add thought bubbles with writing to reflect characters' internal thoughts (p. 408). Seban & Tavşanlı (2017) similarly found that writing workshops contribute to the construction of writer identity.

Using the Classroom Environment to Empower

When carefully arranged, the classroom environment itself can serve as a third teacher (Strong-Wilson & Ellis, 2007). Creating a literacy rich learning environment is one way that educators can help students begin to see themselves as readers and writers. While keeping in mind that literacy identity is in part shaped by literacy use (Kaufmann, 2006), teachers can create opportunities for children to interact with a variety of reading and writing activities.

Providing a wide variety of books that can be easily accessed and read in comfortable spaces is an important way to help children access literacy. Children should have access to books that align with their interests and skill level (O'Donnell, 2018). Teachers can also rotate and display books to maintain student interest. Upcoming holidays, changes in seasons, and new learning units are all opportunities to include books that explore relevant topics in the classroom library. Literacy rich displays, printed directions, and labels can also create opportunities for children to interact with print during daily activities. This allows for discussion about how we interact with print in our daily lives, helping students broaden their definition of what it means to be a reader. Writing can also be seamlessly incorporated into the classroom environment. A writing center stocked with paper, writing tools, journals, cards, and even scrap paper can provide children with the chance to express themselves through words.

Play is also an important entry point into literacy that teachers should carefully consider. According to Ihmeideh (2015), "When children engage in dramatic play

activities, they experience realistic settings and functional reasons for using print" (p. 252). Dramatic play centers can easily be enhanced by providing opportunities for children to read and write during play. For example, at a play kitchen center, a teacher might create menus for children to read and provide notepads for children to write down "orders". Dramatic play opportunities such as this allow educators the chance to help students see themselves as readers and writers in the context of real-world applications.

Developing Supportive Relationships

For children to develop positive academic self-concept, they need to feel safe and supported in the classroom environment. This is where the teacher-child relationship plays an important role. Research indicates that teacher support is correlated with high-academic self-concept in young students (Leflot et al., 2010). When children feel supported in the classroom environment, they begin to see themselves as capable learners.

Literature also supports the importance of supportive teacher-child relationships specifically in relation to literacy. There appears to be a significant direct association between perceived teacher emotional support and reader self-concept (Jensen et al., 2019). Perceived emotional support from teachers has the ability to positively influence student self-concept, which in turn may result in better performance on literacy tasks.

While empirical evidence demonstrating how to best foster positive teacher-child relationships is limited at best, researchers have found common threads in narrative accounts of students describing such relationships. Former students often describe teachers they recall fondly, "…as providing love to their students and showing understanding, support, encouragement or comfort towards them, or teachers were described as acting like parents" (Uitto et al., 2018). Educators can use this knowledge in order to help students feel safe and supported while undertaking literacy tasks. Like Margo, in the vignette, many students are hesitant to undertake beginning literacy tasks because they do not yet feel confident in their abilities. Educators should respond to this push back by demonstrating support and encouragement, as shown by Mrs. Smith gently telling Margo "you can do this" and "we are brave writers in room six." She does not allow Margo to continue in a state of distress, nor does she reprimand Margo for her hesitancy. Rather, Mrs. Smith seizes the opportunity to support Margo through her frustration, strengthening their relationship and encouraging the development of literacy skills simultaneously.

The Reciprocal Nature of Student Self-Concept and Achievement

As previously established, positive reader and writer self-concept is correlated with literacy gains. However, it should be noted that the reverse can also be true. When children struggle with literacy skills, this can lead to the development of negative self-concept. Even at the very start of a student's educational journey, this may pose a problem. Walgermo et al. (2018) found that students with poor emergent literacy skills tend to have a weaker reader self-concept compared to their peers upon enter-

ing school. It appears, then, that students' literacy skills can also impact reader and writer self-concept.

It is important that children first "crack the code" in order to become confident in their identity as readers and writers. Teachers should provide all students with explicit and systematic instruction in phonics, reading strategies, and writing strategies in order to help students learn the building blocks that will help them gain successful entrance into literacy (Mesmer, 2005; Van Keer, H., 2004; Finlayson & McCrudden, 2019). Higgins et. al (2015) found that all students who received literacy intervention consistently rated themselves higher on the self-concept scale. The implication from this finding is that as children perform better on literacy tasks, they develop more positive self-concept as readers and writers.

Because of these findings, it would be beneficial for educators to view student self-concept and academic achievement as having a reciprocal relationship. Just as positive student self-concept may lead to literacy gains, literacy gains may bolster student self-concept. Both feed into one another, at times making causation difficult to determine. For this reason, it is essential for teachers to provide quality literacy instruction as well as attend to affective needs like student self-concept.

Conclusion

> *April: "Mrs. Smith!" Margo shouts. "Look what I made!" Beaming, she produces a book she created at the writing center, entitled, "Green a lish us. It's like the 'Pinkalicious' book, but my favorite color", she explains. "What a creative author and illustrator you are!" Mrs. Smith replies. "Can we sit and read it together?" Margo happily obliges, reading her work with enthusiasm.*

By implementing best practice recommendations for facilitating the development of positive reader and writer self-concept, Mrs. Smith was able to help Margo overcome her initial hesitancy to participate in literacy activities. Early childhood educators are in a unique and valuable position in that they can help shape how students feel about themselves as readers and writers. When teachers use best practice recommendations for facilitating the development of positive reader and writer self-concept, they can in turn help support student literacy gains. Specifically, educators can support the development of positive reader and writer self-concept by helping students establish reader and writer identity, using the classroom environment to empower readers and writers, and developing supportive relationships with students. Because the relationship between student self-concept and academic achievement is reciprocal in nature, early childhood educators should work to bolster student self-concept in addition to providing quality literacy instruction.

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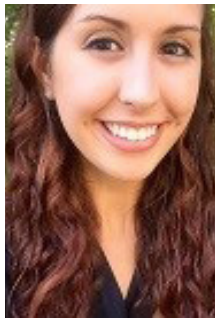

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Language Arts
Learning a Second Language

Increasing Hispanic Heritage Language Learners' Motivation for Learning Spanish in a Foreign Language Classroom by Differentiating the Content and Validating their Identity

Elena Flores-Whitinger

Abstract: As there are an increasing number of Hispanic students entering the U.S. school system, middle and high school Spanish teachers have been presented with the issue of creating curriculums that challenge both Foreign Language Learners (FLLs) and Heritage Language Learners (HLLs). Hispanic students who enroll in FLL Spanish classes are categorized as HLLs and range from novice to native in their proficiency levels. If Spanish teachers are able to differentiate for their students and integrate them into the classroom in a way that is beneficial for both HLLs and FLLs then perhaps the HLLs will begin to see the benefits of maintaining both their Spanish and their English literacy skills.

Introduction

Imagine there are two Hispanic students in Mrs. Rosa's first year high school foreign language classroom who have both learned Spanish in their home. Lucia speaks Spanish fluently because it is her native language. She has two Hispanic parents who speak Spanish to her in the home. They both speak English, but her grandparents only speak Spanish. She speaks around 75% Spanish and 25% English when she is home. Mrs. Rosa looks to her as an expert in Spanish and asks her to help the students who are learning Spanish as a second language in group activities. Lucia often feels bored and disengaged during the lessons because she does not feel as if she is learning any new information or practicing any new skills. Consequently, Lucia does not feel motivated to continue studying Spanish in the classroom environment and does not plan to continue to study Spanish after her senior year. Camila, on the other hand, speaks English natively but since one of her parents is Hispanic and speaks Spanish natively, Camila learned to understand Spanish at a young age. She speaks 25% Spanish and 75% English in the home. All of her grandparents speak English, and she rarely communicates with them in Spanish. However, Camila feels a strong connection to her identity as a Hispanic person and takes pride in her ability to speak Spanish. She is able to quickly pick up new concepts and celebrates the Hispanic culture of the country her parent is from, but her proficiency level is at an intermediate low level. Mrs. Rosa often forgets to ask Camila to help the other students during group activities because her proficiency level is not as high as the Lucia's level. She also does not look to Camila as an expert in the language. Due to this, Camila feels like her identity is not being validated and she becomes more and more unmotivated as the year goes on. She wants to continue to study Spanish, but she feels like she is not a "good enough" Hispanic and does not want to embarrass herself by continuing to identify as a Hispanic student without being able to fluently speak Spanish. In order to assist both Lucia and Camila in feeling engaged and

motivated, could Mrs. Rosa differentiate her lesson based on proficiency level and learn to implement strategies that validate her Hispanic students' identities?

Spanish teachers need to prepare for the possibility that they will be expected to create lessons that will engage both Heritage Language Learners (HLLs) and Foreign Language Learners (FLLs). FLL students are students who are learning the target language as a second language. Throughout this paper I plan to point out the issues that lie behind teaching mixed HLL-FLL classrooms instead of classrooms that are focused on only one type of learner. I also plan to lay out feasible tactics that Spanish teachers can implement in their classrooms in order to achieve the goal of challenging and engaging their HLLs. If Spanish teachers are able to differentiate for their students and integrate them into the classroom in a way that is beneficial for both HLLs and FLLs, then perhaps the HLLs will begin to see the benefits of maintaining both their Spanish and their English literacy skills.

About Heritage Language Learners

Hispanic students may believe that foreign language Spanish classes will be easier for them to pass because their proficiency level in Spanish is often higher than their peers' proficiency levels or they have been exposed to the language before. When they enter school, many of them are required to take at least one foreign language class. Often, U.S. public schools will only offer a few foreign language options with Spanish being the most common class offered. Walls (2018) states that he has noticed an increase of HLLs enrolling in language classrooms and that mixed HLL-FLL classrooms are common in the U.S. Hispanic students who enroll in foreign language Spanish classes are categorized as Heritage Language Learners (HLL). Heritage Language Learners belong to a diverse category of language learners that range from basic to advanced proficiency levels in their heritage language and also include learners who are connected to or perceive a connection to the Hispanic community due to their heritage (Russel & Kuriscak, 2015). Currently about one quarter of all children in the United States are Hispanic and 89% of them are considered to be HLLs (Russell & Kuriscak, 2015).

The first and second generation HLLs often lack the motivation for learning the target language when they are placed in mixed classrooms. This lack of motivation can be due to a multitude of factors such as (1) unreasonable expectations of their knowledge of the target language and their involvement in classroom interaction; (2) believing that they are already perfectly fluent in the target language when they are not; (3) feeling disrespected by their teachers and peers when they make language mistakes and are publicly corrected; and (4) feeling like their identity is being challenged when they are told to speak in a dialect that is not their own (Lacorte & Canbal, 2003). Dialects are the local version of a language. In each Spanish dialect, the accent, grammatical structures, and jargon used will vary slightly from other regional dialects. HLLs may also feel isolated from the rest of the class due to the fact that they tend to sound more native-like than their FLL peers (Russell & Kuriscak, 2015). Second and third generation HLLs who have a low-proficiency level in their heritage language may feel a lack of motivation due to their inability to meet teacher expectations of an HLL.

Differentiation

Due to this increase of HLL enrollment in FLL classes in the U.S., teachers are presented with a new challenge. Just as some Hispanic HLLs are often not prepared to put in much work for their Spanish class because they believe that they will easily achieve high grades in the class, Spanish teachers are not always well equipped to differentiate their classroom material for their Hispanic students. Teachers of beginner Spanish classes are often unsure of how to create activities that will cater to both Hispanic HLLs who have an intermediate or advanced proficiency level (at least in terms of oral proficiency) and second language learners (L2), who often have a novice proficiency level or HLLs with little exposure to the target language. Due to the differences in linguistic abilities between fluent HLLs and non-fluent students and the delicate relationship between the two groups, "it is crucial to create a differentiated classroom and a flexible curriculum that takes into account where each student's strengths and needs lie" (Mrak , 2020, p. 86). Without differentiation, teachers will act on the tendency to teach to the lowest proficiency level which in turn leads to a surplus of Hispanic students who are not challenged to better their literacy skills in Spanish but are required to engage in conversations that are well below their proficiency level. There are many forms of differentiation that teachers can use. One form that will be discussed in this paper is collaborative writing between HLL-HLL groups and HLL-FLL groups. Another form of differentiation that will be discussed is scaffolding by using corrective feedback that is appropriate to the learner. Scaffolding is providing a tool, structure, or extra resource that students can use to complete an activity that would have otherwise been too difficult for them to complete on their own. Both of these techniques help to validate the identity of the HLL student because the teacher is respectful of their past experiences by differentiating and scaffolding to their proficiency level.

Collaborative Writing

One way to engage fluent Spanish HLLs in a mixed language classroom is to teach them how to improve their literacy skills in aspects of their academic literacy that they do not practice in their home life, such as reading and writing. Many Hispanic HLLs do not write in Spanish at home, or if they do it is very informally, and therefore they are lacking formal written literacy skills. Students often need to be able to speak and write in a formal version of Spanish when they apply for jobs that require them to be bilingual and therefore it is beneficial for them to develop these skills in a mixed classroom. Although they will develop their written literacy skills faster than the FLLs, they will still need assistance in developing their writing style. Loureiro-Rodríguez (2013) found that writing activities can help them to focus on their language identity. Walls (2018) performed a study in a community college in southern California with 16 students from beginner and intermediate Spanish classes, half of whom were HLLs and half of whom were FLLs. Although Walls (2018) found the matched pairs of students with similar proficiency levels learned stronger literacy skills when working together when instructors used differentiated instruction to push them to perform at higher levels, she also noticed that HLLs and FLLs could also benefit from working together. When she grouped HLLs and

FLLs, she noticed that the FLLs exposed HLLs to the metalanguage that they were familiar with and HLLs exposed FLLs to their knowledge of grammar and vocabulary. Walls (2018) studied the dynamics of interactions between matched groups and mixed groups during collaborative writing tasks in mixed HLL-FLL introductory Spanish classrooms. Fernández-Dobao (2020) also concluded that the matched pairs worked more collaboratively to formulate language while mixed pairs assigned themselves roles in which the HLL was the expert in language production and the FLL helped to create the narrative in English. However, as stated earlier, there were benefits to both types of groups. It seems that, when paired together and given the correct scaffolding, FLLs are more accurate at written tasks and HLL perform better with oral tasks (Lynch, 2008). This symbiotic relationship between HLLs and FLLs is due to the fact that although HLLs have a stronger implicit grammatical knowledge, FLLs often have a stronger explicit grammar knowledge and may even display higher written literacy skills in areas such as spelling and metalinguistics.

As Lynch (2008), Fernández-Dobao (2020), and Walls (2018) concluded, it can be beneficial for HLLs and FLLs to be placed in mixed groups during collaborative learning assignments as long as the tasks do not only serve as language practice. Valentini-Rivera (2016) found that when the students share a measurable communitive goal, that goal can "facilitate more frequent instances of negotiation, particularly with respect to vocabulary development" (p. 631) which can expose HLLs to vocabulary that they would not learn in their home contexts. However, Valentini-Rivera (2016) sets limitations to the functionality of this method. Both she and Fenández-Dobao (2020) conclude that grammar used in classroom activities should challenge both groups of students in order for them to both benefit from the activity. One way to scaffold writing activities to make them fair for both groups is to give them each a few vocabulary words that they need to make sure are used in their writing activity. This type of activity fosters communication (Walls, 2018) and collaboration. In Fernández-Dobao's (2020) study on collaborative writing in mixed classes, she studied how students' perceptions and attitudes of working in mixed groups affected their cooperation in the groups. She took a survey of the students' perceptions on collaborative writing in a mixed language classroom both before and after the activity took place. She noticed that once students observed an improvement in their own writing due to working in mixed groups, their perceptions of working together with the other group became more positive. Fernández-Dobao (2020) emphasized in her study that FLLs may not understand "what a valuable resource they can be for their [HLL] peers" (p. 65) and they often expect that they will learn more from their partner, the expert, than their partner will learn from them. However, with the help of their teachers, students can become "aware of their own and their peers' strengths and weaknesses and understand the potential benefits of their mutual collaboration" (Fernández-Dobao, 2020, p. 65) and engage in true collaboration which has the potential to make them feel more accountable for their learning and prepare them with the skills they need to complete their personal and professional goals (Valentini-Rivera, 2016).

Scaffolding

When used correctly, Corrective Feedback (CF) can be used as a type of scaffolding. Valentini-Rivera (2016) specifically realized that indirect CF both motivates learners to negotiate meaning which allows students to co-construct and transfer their knowledge, encourages deeper engagement in the task, and assists learners in overcoming contradictions that the learners face when working together in groups. Using CF to make students aware of how to overcome contradictions in their group can help them to "better cope with linguistic and external issues (e.g., technology and time)" (Valentini-Rivera, 2016 p. 631). Scaffolding is important for the teacher to provide to both HLLs and FLLs because it pushes students to both complete their task and learn to self-regulate their learning (Valentini-Rivera, 2016). This process allows students to internalize the knowledge they are learning in the group activity and helps them to "establish an indirect, or mediated, relationship between [themselves] and the world" (Lantolf, 2000, p. 1). Using CF as a scaffolding technique during both mixed and matched group writing activities promotes cooperative learning between FLLs and HLLs.

Conclusion

In conclusion, it is important to differentiate for HLLs so that they feel that their identity and background knowledge is being validated in the FLL classroom. Teachers should create differentiated tasks that are not isolating but allow for the HLLs and the FLLs to work together to co-construct knowledge. Also, HLLs and FLLs work together well on collaborative writing activities when their proficiency level is similar. However, when they are in a beginner level class and the proficiency levels are completely different, the mixed group members struggle to split the work equally and the HLLs becomes the experts that do the majority of the work when it comes to language production. In order to challenge those roles, teachers can differentiate the content to be challenging for both groups and use corrective feedback that helps them to co-construct knowledge. HLLs and FLLs in a mixed classroom should also be taught to understand their strengths and weaknesses so that they can confidently work on improving their language skills together.

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Bridging the Gap
Teaching Language Arts Concepts to English Language Learners

Brittany Oswald

Abstract: The number of English Language Learners continues to grow steadily each year. It is important that Language Arts concepts and strategies be implemented in the classroom to help these students increase their language development skills. This article explores why the understanding of Language Arts concepts are so critical to English Language Learners success in the classroom and provides some examples of strategies that can be utilized to strengthen their Language Arts skills. Overall, English Language Learners that have a strong understanding of Language Arts concepts are more likely to have success in a variety of learning content areas such as: mathematics, science, and social studies.

Bridging the Gap: Teaching Language Art Concepts to English Language Learners

It is important to understand what the educational gap for English language learners in US schools is and why it is an important one.

> There are 5 million English Language Learners (ELLs) in the public schools in the USA, many of them have no or limited access to quality educational programs. The lack of access to an optimal education, which includes quality English language teaching, is mirrored by the achievement gap between ELLs and native speakers of English. (Szecsi, 2017, p. 19)

As the number of ELLs entering the U.S. educational system continues to grow, educators are faced with considerable challenges to ensure that they do not fall behind their English-speaking peers. The limited English proficiency in an English-language school setting contributes to wide and persistent achievement gaps between the English learners and English-speaking peers (Park, 2014). Emerging early in life and persisting throughout the school years, these gaps have serious consequences for ELLs and for society. Educators should have plans and strategies in place to assist these students to help them be successful academically. Teachers need to be knowledgeable of language development to be wise in choosing appropriate classroom strategies. Provided with strategies and training, educators will give ELLs the tools they need to succeed throughout their education. A lack of quality educational programs is in most cases due to lack of teacher training and resources. Another issue is that "the rapid increase of immigrants has not been matched by sufficient growth of instructors' understanding and preparedness in how best to plan and carry out good instruction" (Samson & Collins, 2012, p. 2).

"While the number of English learners has increased substantially in the United States, few teachers have articulated a sense of confidence in their ability to plan instruction for ELL students" (Islam, 2015, p. 43). Even though teachers need to

be able to provide resources to help their students be successful in the classroom, at times it may be difficult to gain access to this information through training and research-based data because what is known about language and literacy development among ELLs is so sparse (National Education Organization, 2015).

Why are Language Arts Concepts Critical to ELLs?

According to Olsen (2019) increasing English proficiency helps prevent an achievement gap, but research shows that ELLs need proficiency in both their home language and English at kindergarten entry for overall academic success in a second language. Ensuring development of the home language helps the development of English language skills. Language arts concepts consist of reading, writing, speaking, viewing, thinking, and listening. The understanding of these concepts is critical to the academic success of ELLs because without them students cannot begin to develop the skills they need to be successful in other content areas. Due to this fact, preschool-age ELLs may have special challenges in early language learning and development. They are faced with the task of translating from one language to another. As preschoolers, they are asked to develop language and literacy skills in English even as they are still developing those skills in their home language. For example, many teachers expect students to have prior knowledge of literary genres. However, because of culture differences educators need to teach these concepts to ELLs. Simply knowing the vocabulary will not solve the problem, ELLs may be able to read the words, but it does not mean they will understand the text. They are not aware of information that the author left unsaid; the information that "everyone knows." It is vital that while educators build ELLs prior knowledge, they also encourage them to speak in their home language as well (Haynes, 2021). Language researchers consider second language acquisition to be an additive process, that is, a child need not lose his home language (L1) to learn a second language (L2). Rather, a child will add the second language to his or her repertoire. Research has shown that young children use the same skills to learn L1 as L2. (Huennekens, 2010). Providing effective strategies, teachers can help ELLs improve their language and literacy skills.

Strategies for Classroom Implementation

Islam (2015) states, "obstacles to comprehension for ELLs are decreased when teachers use purposeful tasks that use language productively and meaningfully and identify cultural links to texts" (p.40). Implementing strategies to assist ELLs can be a challenging task. To improve the language skills, literacy, and academic achievement of ELLs, many studies have examined effective instructional strategies. One helpful strategy when working with ELLs is to include words and phrases from their home language throughout the classroom. In my classroom, I have utilized the labeling of materials to help children develop literacy and language skills. When literature and learning resources were limited, I have created my own. As pictured in Figure 1, I have labeled a variety of materials and objects throughout my classroom in Somali using Google Translate. When using this multilingual translation service developed by Google, you can translate up to 109 different languages. By utilizing this resource, I can create labels that list the English word first and then the child's

home language underneath in blue. I have also made books using Google Translate to create literature in my students' home language. My ELLs have been extremely interested in looking at the books I have created. While looking at a book together, one of my students recognized a few letters in a word that was written in his home language. Prior to looking at the book he had not identified any letters when prompted. When teachers create their own literature in their students' home language, they can adapt and change the materials to correspond with their lesson plans and teaching curriculum. Family members of ELLs also find these resources helpful when working with their children on homework or communicating with the teacher.

Figure 1
Labeled items in the classroom

Note. This is a sample of labeling for ELLs.

Emotional Scaffolding

Another effective strategy for early childhood teachers to use while working with ELLs is to create positive emotional experiences in the classroom. Park (2014) states that positive emotional experiences that enhance learning can be called "emotional scaffolding," a term that derived from Vygotsky's concept of scaffolding (as noted in Park, 2014, p. 21). Emotional scaffolding can be defined as "temporary but reliable teacher-initiated interactions that support students' positive emotional experiences to achieve a variety of classroom goals" (Park, 2014, p. 22). Teachers who engage in this type of scaffolding have clear academic goals. A list of goals is created and might include: Sustaining students' understanding of concepts, students' involvement and persistence, students' demonstration of their abilities and independence, and students' emotional or personal experiences (Park, 2014, p. 22). It is important to recognize that children express their emotions through a variety of ways. Although children can use language to express their emotions, they can also

use facial expressions, tones in vocal intonations, gestures, eye contact, and body language. Unfortunately, little information is available about emotional scaffolding with ELLs. Teachers can engage in emotional scaffolding by integrating culturally tailored activities that are more familiar to ELLs. For example, when discussing a word problem, the teacher can use vocabulary and materials that are tailored toward the students' traditions and customs. Translating these lessons into the ELLs' home language can also be helpful when using emotional scaffolding. By labeling items with the student's home language as well as English, educators implement two-way translation in the classroom.

According to Rowe (2018) classroom activities should support students' use of two-way translation as a strategy for making meaning. Students should be encouraged to use their translation skills as a resource as they read and discuss challenging texts. Teachers must provide students with authentic opportunities to use both of their languages in meaningful ways that relate to their lives and interests. This means connecting curriculum to students' lives, providing engaging activities and opportunities for student choice, and creating activities with tangible outcomes. When students engage in authentic activities that involve talking with bilingual speakers or audiences in their heritage languages, they are likely to use their translanguaging skills as they normally would in their everyday lives. Because interactions between English speaking and non-English speaking peers can be difficult, it is important that teachers offer support to students during these interactions. Teachers also need to be trained on how to facilitate play and how to help ELLs interact with English speaking peers. The most successful interactions between ELLs and peers are those in which a teacher facilitated play. With support the ELLs displayed several social abilities that were not apparent when they were on their own. "When prompted by a teacher, they used nonverbal and verbal methods to initiate social interaction. These interactions included using peers' names and tapping them on the shoulder" (Dominguez, 2018, p. 578).

Another way to ensure that educators are providing a developmentally appropriate environment for their English language learning students is to create a check list of the strategies that can be utilized in the classroom. By using this checklist weekly, teachers can ensure that they are implementing best practices regarding their ELLs. A sample checklist I created can be seen in Table 1.

Table 1
ELLs Language and Literacy Development Checklist

Strategies	Yes	No	Comments/Concerns
Explicit, systematic instruction in vocabulary provided			
Bilingual environmental print is present throughout classroom			
Picture schedules or other visuals present			
Adult support is provided during peer interactions			
Students' home language is incorporated through songs, videos etc.			

Note. This chart is a sample teacher checklist for monitoring provided practices for ELLs.

This checklist can be used in the classroom to ensure that appropriate accommodations are being made for ELLs. I have provided a space to answer yes or no if the strategy is being used and a section for comments or concerns where educators can write their thoughts, ideas, or questions. The key strategies I have chosen for my checklist are explicit, systematic instruction in vocabulary, presence of environmental print, picture schedules or other visuals. For example, a social story could be an example of using environmental print in the classroom. In the social story you may discuss how the child can perform self-help skills. In our classroom, a social story about a child washing his hands and drying them is a visual cue that the child can utilize when communication through language is not effective. Picture schedules have also been successful in our classroom when helping ELLs transition between activities. Adult support is also being provided during peer interactions as well as having the students home language incorporated through songs, videos etc. The Language and Literacy Development Checklist can help educators ensure that their classrooms are utilizing the appropriate resources to provide a quality education for ELLs. Once teachers have begun the process of modifying their classroom and curriculum to better suit ELL's, educators should also become an advocate for their students by helping to raise awareness of the absence of quality education as well as other difficulties ELLs and their families may encounter.

Advocating for Awareness

Due to the increasing number of ELLs entering educators' classrooms each year, it is imperative that teachers advocate for awareness of the challenges in providing quality developmentally appropriate education for ELLs. Educators can also support students and families by helping them to voice their thoughts, needs and opinions.

According to the National Education Association (2015) the five steps to ELL advocacy are as follows:

1. Isolate the issue.
2. Identify your allies.
3. Be clear on the rights of ELL students.
4. Organize and educate others.
5. Identify your outlets for change.

One helpful advocating strategy is to make connections by collaborating and engaging with fellow educators to share information. Another helpful strategy is to share information you may know about your student's cultural background with co-workers or others who are working with that student. Also, express the need to hire and train teachers and educate support professionals to help provide quality education for ELLs (National Education Organization, 2015, p. 20). To ensure that ELLs have access to developmentally appropriate education teachers should ask themselves the following questions:

- What can I do in my classroom?
- What can I do in my school?
- What can I do in my district?
- What can I do in my community?
- How can I collaborate with other non-school-based communities? (NEA, 2015, p. 15)

Educators also need to keep in mind that federal law requires student access to the curriculum and criteria for ELL programs. A good resource to utilize is The Office for Civil Rights (OCR) at the U.S. Department of Education. The website offers guidelines for ELL program evaluation and development. It also provides a list of laws that protect students against discrimination as well as how to file a complaint if discrimination is seen or experienced. Many of the documents are translated in multiple languages which can be used as a resource for ELLs families.

Conclusion

For educators to support ELLs in their classroom, they need to be well versed in the concepts of language development and instructional support. This can be accomplished through support and training provided by employers, as well as universities. "While the number of English learners has increased substantially in the United States, few teachers have articulated a sense of confidence in their ability to plan instruction for ELL students" (Islam, 2015, p. 43).

> Teacher education programs in North America have yet to provide preservice teachers (PSTs) with necessary skills that are desperately needed for the academic advancement of ELLs who must tackle the language as well as social barriers of content area classes. Consequently, many PSTs feel inadequately prepared to attend to the needs of diverse learner. (Toronyi, 2020, p. 41)

Educators should have plans and strategies in place to assist these students to help them be successful academically. Teachers need to be knowledgeable about language development concepts so they can choose appropriate classroom strategies. According to Pappamihiel (2016) "in many ways, the simple fact that mainstream teachers now understand the need for any accommodations is a success story, but we must continue to strive to fine tune our implementation of such accommodations" (p. 11). Providing English Language Learners with accommodations in the classroom setting is critical. When provided with strategies and training, educators can give ELLs the tools they need to succeed throughout their education and ensure that they will be successful in the classroom as well as in their English-speaking communities.

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Benefits of Immersive Instruction Practices and Virtual Reality Technologies for EFL and ESL Instruction

Jonathon Townsend

Abstract: EFL (English as a Foreign Language) courses sometimes struggle to bring the authenticity of language to their students. Similar circumstances can occur in situations with ESL (English as a Second Language) students that return to a home that does not speak English. Some countries attempt to remedy this by bringing in native English speakers to co-teach EFL classes. Immersive education functions at its best when students are able to interact with their peers in a low-stakes environment. At the University of Toledo, there is a program in place where Japanese exchange students can interact with native English speaking students during a lunch period. Virtual reality headsets could be used to recreate this program without having to travel overseas.

Introduction

EFL/ESL students today walk into their foreign language classrooms, crack open old textbooks that are barely holding themselves together and repeat words or phrases with their teachers. EFL students are completely isolated from natural English sources, having to rely on audio files or teachers to provide authenticity. Some teachers incorporate a little more life into the classroom, speaking in a target language to the young, eager learners. Others bring in gifts, trinkets, and other various objects to let students see, touch, and taste aspects of a foreign culture. Or, perhaps, a teacher might display pictures, slideshows, or videos for their students to see and hear the people using language in a natural environment. These teachers are desperately trying to bring immersion to the classroom, trying to get their students to form mental connections and boost their learning.

But what if teachers were able to bring the people, culture, and language to the students in a much more interactive way? One day, students might walk into the classroom and be greeted with a very different setup. They might walk to their designated space, strap a virtual reality headset to their face, pull it tight, and stumble around reaching for their controllers. Once they have everything together, the student presses a single button and suddenly they are transported to England, where research traces the origins of the English language. The students are standing in the streets, looking around, watching as virtual people go about their daily lives and listening to their small talk.

Suddenly, the teacher transports their class to a small room. The young, smiling learners begin to notice that there are more people than just their classmates in the room. All of the students get jittery with excitement and eventually the teacher introduces the class to the main activity for the day: speaking, interacting, and playing with students through virtual reality from a school in England.

Many teachers recognize the importance of immersion when learning a new language, some might even recommend moving to countries that use the target language on a daily basis. Immersion is supposed to keep the brain constantly thinking about the language that it is attempting to learn. If someone moves to a country that speaks Spanish as the primary language, then they will be consistently experiencing the language visually, auditorily, and conversationally. The problem is that some EFL (English as a Foreign Language) and ESL (English as a Second Language) students are not able to benefit from immersion. ESL students might go back to a home where English is not spoken at all, and they are left with the challenge of learning a language that is only used at school. EFL students have an even more difficult time because they live somewhere that does not use English as its dominant language.

By learning to use virtual reality technologies in the classroom, other languages, peers and perhaps even some culture can be brought to students in a much more controlled, cheaper, and convenient manner. Using virtual reality headsets will allow the students who have been deprived of language immersion to begin having those experiences without the inconvenience of traveling. Virtual reality is becoming more and more accessible as time progresses, with one model reaching as low as $300 per unit, including both the controllers and the headset. This is competitive to the Chromebooks that almost every student received during the COVID-19 pandemic, which sell for around 250-300 dollars as well.

What Is Virtual Reality?

Before explaining the opportunities presented with virtual reality, what virtual reality is will be established so that ESL and EFL educators have a basic understanding. Virtual reality headsets are basically small screens that are worn on the head. The headset could be thought of as a tiny computer screen strapped to the face. The 'screen' is actually a pair of lenses, much like goggles or glasses, that the user looks through. By using these lenses, headsets are able to give the impression that someone is visually present in a virtual space. Beyond just being able to look around, the user can also walk around in virtual reality. This allows them to walk through a virtual town or walk around a room, giving the illusion that the user is actually maneuvering the virtual world. The last important piece of virtual reality is the controllers. While wearing a headset, the user can utilize controllers to grab objects or interact with things as if they were hands. The controllers also have a thumb stick that can be used to move your avatar around in the virtual space or you could physically walk around, but you generally do not have a lot of space, that is why thumb sticks are preferred for movement. So, in short, all of these things combined let the user walk around, look around, and manipulate objects in a computer-generated world.

Virtual reality headsets do not stop at just visual and physical elements. The majority of headsets include built in microphones and either speakers or earbuds. Speakers and earbuds allow users to hear whatever virtual environment they are connected to. Microphones are used to speak to other users over the internet. When using a program that supports communication, users can speak while wearing a headset and the built-in microphone will pick up their voice. It will then be played back to every other user connected to the virtual space, much like a group phone call or virtual meeting. If a headset has speakers, the voices of other users will play

through the speakers. Otherwise, the user may need to plug in earbuds to the designated headphones jack to be able to hear the virtual environment and the users connected to it.

The Benefits of Immersive Instruction

When teaching English to any student, there are three general areas that they need to become proficient in: Reading, writing, and speaking. Traditional forms of teaching focus primarily on the reading and writing aspects, often because the students who are being taught have the opportunity to communicate in English on a daily basis. But for students who are ESL or EFL learners, sometimes the opportunity to speak does not exist outside of school. For students in those situations, they can become less and less confident in their English skills. This is due to the fact that they do not have immersion, like native English speakers, to take advantage of. Virtual reality headsets are technological devices that entirely focus on boosting immersion, which makes them a strong candidate for remedying this deficit.

A study performed by Aaron Jones (2018) studying the impact of immersion on Korean Individualized Education Plan (IEP) students found "that students who have graduated from the IEP program were more likely to have a boosted level of self-confidence in speaking English" (p. 669). Motivation and levels of engagement have direct impacts on the learning outcomes of students. Having students transition from having little or no confidence to being able to comfortably hold conversations with their peers will have a tremendous impact on their overall English ability, primarily in spoken English. Jones (2018) goes on to state that "evidence suggests that by the time students come out of the IEP program, they are much more willing to engage others in English and social interaction" (p. 669). This program took students who initially felt like they were incapable or low performing to being comfortable enough to initiate conversation. When the students were questioned about what factors led to this change, the results were substantially in favor of immersion strategies over engagement strategies. The statements on the questionnaire both current and post IEP students agreed most strongly with concerned speaking with native English speakers, living with Americans, interacting outside of school with native speakers, and interacting with American culture outside of school (Jones, 2018, pp. 670-671). Students had to select how strongly they agreed with the statement's impact on their learning.

While the study did not span into determining how much immersion strategies made it easier to study English, the motivation, whether intrinsic or extrinsic, derived from immersive education practices led to significant improvements. The author states, "Students may not have found it any easier to study English in immersion settings, as the research did not explore the ease of study, but students most certainly had a motivation for using English in immersive settings and found that it increased their efficacy to do so" (Jones, 2018, p. 672). So even if being immersed does not directly improve learning, it does indirectly boost the motivation of the learner, and motivation has a direct connection with the efficiency of learning English.

The part where virtual reality connects with the goals of immersive education is bringing students in contact with their peers. Jones (2018) states, "participants

noted that partaking in the weekly Conversation Partners program, where Americans come every Friday to the IEP program and spend an hour talking about any subject with international students, helped them to utilize their English-speaking skills" (p. 672). This is where virtual reality can truly shine. By bringing students, in areas where it is normally not possible, in direct contact with native English speakers in a low-stakes environment. Students are given an activity where they can practice using their English in a realistic situation, one where the activity is not being graded or scrutinized by educators. Having this chance to converse freely is something that can be accomplished through virtual reality. Students from a school learning English can directly connect with an American, Australian, Canadian, or any other native English-speaking country and obtain the benefits of immersive education.

Virtual Reality and its Benefits

All of the functions and capabilities of virtual reality headsets could be applied to a small group conversation program that brings students together for interaction in a casual setting. Such a program could be scaled up internationally in classrooms with virtual reality headsets to connect people anywhere. In a study determining the usefulness of augmented reality and virtual reality, Nesenbergs et al. (2020) found that "in all interventions where engagement was measured, the engagement increased [which leads them to] speculate that novelty of technology usage has a direct positive impact on engagement" (p. 8). They admit that they are unsure whether the usage of virtual reality improved engagement solely because of it being a novelty or if the usage boosts engagement via other methods. These are strong initial signs for the application of virtual reality in an educational environment. If the boost in engagement is solely because of novelty though, then the applications of virtual reality may be limited in scope. Longitudinal studies will have to be performed to determine if it is due to it being perceived as a novelty.

Additionally, the researchers believe that "These technologies might improve social contact, which in turn improves overall outcomes" (Nesenbergs et al., 2020, p. 8). A major function of any language is to enable social contact. More studies will need to be performed to verify this claim, but these beliefs align with immersive education. The study also found that "in every study that showed increase of performance or engagement, the course was well-designed and teachers had good qualification to use benefits of AR/VR for learning purposes" (Nesenbergs et al., 2020, p. 8). This shows that, with proper training, virtual reality can be a powerful tool in the arsenal of an educator. But, teachers should make sure that they are actually being trained before using such technologies to avoid hindering the learning process instead. To support adoption of virtual reality headsets there will need to be support systems and training programs put into place for those who are unfamiliar with the technology.

Another article by Matt Bower and Morris Siu-Yung Jong (2020) states, "IVR using HMDs were found to have a greater impact on K-12 learners" (p. 1981). The terms IVR and HMD stand for Immersive Virtual Reality and Head Mounted Displays. Head Mounted Displays are the form of virtual reality headsets that are being referred to in this manuscript. Bower and Jong (2020) go on saying that this impact comes when "offering simulation or virtual world representations and when

compared to lectures or real-world practices." (p. 1981). These findings demonstrate the primary strength of virtual reality headsets: bringing realistic and interactable environments to the learner. Most schools would have to bring the students on a field trip in order to acquire a truly authentic experience. Virtual reality instead brings the experience to the classroom. For English educators, this means that instead of talking about a skit or a play, the students could actually live in the described moments. In EFL and ESL classrooms, students can take field trips to America and experience the culture more directly. These activities could be used to boost both authenticity and engagement at the same time.

Conclusion

For English educators, especially in ESL or EFL, virtual reality can be a powerful tool to support immersive classroom environments. Studies and educators agree that "enjoyment was seen as potentially improving student engagement knowledge retention" (Bower et al., 2020, p. 2227). Engagement and enjoyment are known factors when it comes to retention, a student who wants to learn and enjoys the process will obtain better growth rates than an unwilling student who hates the process. Besides using enjoyment for retention, virtual reality also benefits users by "offering unique opportunities for experiential and situated learning" (Natale et al., 2020, p. 2024). These benefits can be used in typical English classrooms and EFL/ESL classrooms to various degrees. For example, a teacher in a typical English classroom could have students research the author of a book. Part of that process might involve the students virtually visiting the place where the author grew up. More studies need to be done, but the initial findings have been incredibly positive for this emerging technology.

Of course, virtual reality headsets have a long way to go as well in terms of development. But as time progresses, headsets are becoming more affordable and practical in nature. If given another 5-10 years, virtual reality headsets could become a widely adopted tool. Should an English educator wish to employ this exciting tool in their own classroom, be sure to seek out proper training to avoid detrimental effects. Like any piece of technology, the user must know how to use the device correctly to obtain any value out of it. However, just because a tool requires training to use, that does not mean educators should be afraid to adopt it. One day students and educators might have a much more global presence than they currently enjoy.

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Mathematics

On the Appropriateness and Necessity of Proofs and Proving in Middle School Mathematics Classrooms

Kevin Blair

Abstract: Proofs are central to mathematics as a discipline, yet outside of high school geometry classes proofs and proving are often absent from school mathematics classes. The absence of proofs is detrimental to later student success in mathematics. Research indicates that proofs and proving, especially informal proofs, are appropriate for middle grades students and improve student understanding and confidence in their knowledge. This article discusses the research and calls for the inclusion of proofs and proving as a primary component of middle grades mathematics instruction.

Introduction

How do we know what we know is true? For many students, school mathematics consists largely of memorizing procedures and learning when to apply those procedures to word problems to get the correct answer. But how do we know that the standard algorithm for addition or subtraction or multiplication or division is valid? How do we know that we can "invert and multiply" when dividing fractions? How do we know that the Pythagorean Theorem is valid for all right triangles and not just the examples we have seen? For many students, and many adults, the answer is that it was in the textbook, and it has worked so far without fail when executed correctly. But this does not represent genuine belief or understanding, and it does not represent how the field of mathematics approaches knowledge or knowing.

Mathematics as a discipline is built on series of proofs and logical arguments that establish knowledge and understanding of quantity, space, change and motion. All conjectures and arguments are subject to rigorous proof. The National Council of Teachers of Mathematics includes "Reasoning and Proof" as one of the five major processes of math education. However, proofs and proving are often markedly absent in school mathematics outside of high school geometry courses. When proofs or proving do appear in school mathematics, they are often proofs by multiple examples or other methods that do not stand up to mathematical methods or logical scrutiny.

Informal proofs, especially operative proofs, are not uncommon in the early grades when students are learning the four operations with whole numbers. And students are often taught to solve problems in ways that include an informal proof, by performing multiplication with arrays or adding and subtracting along a number line, for example. These are not general proofs, which would not be developmentally appropriate, but include the proof for the specific answer to the problem in the procedure.

With the introduction of operations with fractions in the middle grades, and especially the introduction of multiplication and division of fractions, the subject

matter of mathematics becomes more abstract. These operations with fractions are introduced just as students are rapidly improving their capacity for abstraction. Yet proofs, operative or otherwise, are often absent from the middle grades' curriculum. Proofs, both formal and informal, would not be inaccessible to most students especially when demonstrated on number lines or two-dimensional geometric representations. At the very moment that teachers should be able to start to teach more advanced methods of proving, such as generalized proofs of theorems, procedures, and methods, they often resort to teaching rote memorization of procedure.

The absence of proofs and proving in school mathematics leads to many problems. First, it creates a disconnect between mathematics as taught in school and mathematics as performed by mathematicians. Students who go on to pursue higher level study of mathematics, or any field that relies heavily on mathematics such as engineering, astronomy, etc., will encounter challenges when confronted with the need to include proofs and proving into their mathematical practice. Perhaps the most significant problem is that it makes mathematical knowledge and procedure into something that is simply delivered from a teacher directly to a student. Because proofs and proving are central to constructing new mathematical knowledge, students are unable to construct new mathematical knowledge or ideas without actively involving themselves in tasks that lead to proofs. When students question the validity of procedures, especially in the middle grades, teachers are often ill-prepared to discuss proof of procedures, beyond just showing more examples.

Proofs and Proving in Mathematics

Proofs play a central role in mathematics as a discipline. The forms of proof may vary between times and cultures but are always present. The ancient Greek mathematicians produced rigorous deductive proofs starting from explicitly stated axioms based on observation of geometrical shapes, however this form of proof was limiting. As mathematics advanced, algebraic analysis became an important method of proving. Because most mathematics problems prior to the 19th century related to physical objects, the correctness of a solution or method was often proven by how well it reflected reality. In the 19th and 20th centuries, the axiomatic method of proving re-emerged, leading to many discoveries including non-Euclidean geometry. Computers introduced new ideas about proof, as mathematicians could use brute computing power to solve complex problems. This led to the emergence of reliable "probabilistic" proofs, as computers could work out far more complex probability models to a far greater degree of certainty. This has raised questions about the fallibility of proofs and changed the ways mathematicians engage with different types of proofs (Kleiner, 1991).

In an influential paper in *Philosophica Mathematica*, Yehuda Rav (1999) argues that proofs are the "bearers of mathematical knowledge" and the theorems, procedures, rules, etc., are mere summaries. If educators aim to prepare students to engage with mathematics as a discipline, it is necessary to prepare them to engage with the primary means of transmitting this knowledge, or proofs, just as educators teach historiography, literary analysis and scientific experimentation in social studies, language arts and science classes.

Proofs and Proving in Middle School Mathematics

The National Council of Teachers of Mathematics (2021), in addition to calling for "reasoning and proof" also stress the need for "communication" to be a major component of mathematics education for all grade levels. If proofs are, as Rav (1999) argues, the "primary bearers of mathematical knowledge," then proofs and proving activity satisfy both components.

Many schools have traditionally only focused on proofs and proving in Euclidean geometry courses, usually taught at the high school level. However, many curricular standards recommend teaching proof in all areas of mathematics and at all levels. (Stylianides, 2007a) This raises questions both about what proofs look like at various grade levels and whether students are developmentally ready to engage with proofs and proving.

Theorists and researchers have identified and classified many forms of informal proof in mathematics classroom. Enactive or operative proofs involve a physical action or manipulation of physical objects to prove a mathematical idea and are regularly used in early primary grades. For example, using counters arranged in columns to prove whether a number is odd or even, and to eventually generalize student understanding of even and odd numbers (Whitman, 2009). Visual and graphic proofs involve the drawing of diagrams and figures to visualize mathematical statements. Examples include many proofs of the Pythagorean theorem and multiplication using arrays. Arithmetic and algebraic proofs consist of proof by calculations for both specific and general statements (Tall, 1998).

Can Middle Grade Students do Proofs?

Many mathematics teachers express difficulty in teaching students' proofs. They offer many reasons, including the lack of logical maturity or the student's unawareness of the necessity of proof. (Balecheff, 2017) However, there is extensive research to suggest that not only are students as young as third grade capable of engaging with mathematical proofs, the act of proof and proving is well suited to their mode of thought and to the social construction of knowledge.

A five-year case study (Maher & Martino, 1996) of a single student assigned a combinatorics problem as a first grader was able to progressively improve her arguments over the years. By the fourth grade she was able to verbally explain how she knew she had discovered every possible combination. By fifth grade she was able to produce a written proof of the same. Other studies suggest that young students are capable of more general proving activities.

During an observation of a third-grade mathematics class conducted by Stylianides(2007a), students were asked to prove the conjecture that the addition of two odd numbers would also produce an even sum. Some students asserted that this was true because they tried "18 examples" and all of them conformed to the conjecture. Other students disagreed because there are infinitely many odd numbers so they could never test them all. She presented an example using 7+7 by drawing 2 sets of seven hashmarks and circling pairs. She showed that the single leftover hashmark from each set would combine to make two, an even number. The proof continued that since every odd number consists of a number of pairs plus

one remaining hashmark, there would always be some number of pairs plus one extra hashmark each, therefore the sum of any two odd numbers would be even. Some students objected that it only proved that 7+7 was even. But other students responded that her explanation proved that any sum of odd numbers would be even. Not only does this show third graders engaging in rigorous proving activity, but several of them also even understood that empirical proof was insufficient and insisted upon general proof.

Implementing Proofs and Proving in a Middle Grades Classroom

The challenges to making proofs and proving a central part of middle grades mathematics are myriad. Many teachers have a limited view of proofs, associating them only with formal deductive proofs. Many textbooks and curriculum guides either ignore proofs and proving or engage in poor practices such as empirical proofs that do not lead to strong understanding or genuine belief in students.

The largest obstacle in middle grades, however, is that most students have little experience with proofs and proving when they arrive in a teacher's classroom. This is a challenge but is not an insurmountable obstacle. It does, however, require the educator to be very intentional about including some form of proof in the introduction of any new concept or procedure, as well as for isolated questions or problems.

Some students only provisionally accept mathematical knowledge without proof. Other students prefer to simply learn a rote procedure. But the role of mathematical educators is to engage students with the discipline of mathematics, not to merely teach students to perform calculations that they do not genuinely understand.

Why Proofs and Proving are Important for Student Knowledge and Future Learning

As some educators argue that proofs and proving are too difficult for middle grades students, others claim they are not necessary for students to achieve conceptual and procedural fluency. But extensive research suggests otherwise. One study found that students between 11- and 16-years old hold genuine beliefs about mathematical statements they have proven, but only provisionally accept empirical evidence as general proof (Porteous, 1990).

Some theorists of mathematics education caution against an emphasis on purely empirical means of explaining material, claiming it leads to a "prototype" model of understanding general mathematical concepts (Balecheff, 2017), or student acceptance of mathematical statements based in incomplete information, as opposed to a rigorous proof or argument.

Conclusion

Educators within any content area seek to engage students with their discipline in ways that are consistent with the norms of that discipline. Science classes focus on the scientific process and scientific method. From the early grades students are taught to design experiments, carry them out and report their results. That is, they

are taught to do science. ELA classes from the early middle grades engage in interpretation and criticism of literature. Social studies classes teach historiography and teach students how to engage with and evaluate primary and secondary sources.

Mathematics should strive for the same high standards, which means teaching students to engage with proofs and proving activities, because that is the work of mathematicians. There are those in society who argue that elementary and middle grades mathematics education should be purely applied and practical to everyday use and reject the idea that students in those grades need to learn to think like mathematicians. Not only does that argument degrade the discipline of mathematics to lesser than the other school disciplines, but such an approach deprives students of genuine knowledge and understanding. And a mathematics education that prepares students to engage in rigorous proof not only prepares them to engage with practical everyday problems but also prepares them to engage with novel problems whose solutions might benefit from a mathematical approach.

Proofs and proving have additional benefits for students in mathematics classes. Rigorous proof, especially when conducted by students themselves leads to both stronger understanding and confidence in their understanding (Porteous, 1990). It leads to less confusion when students advance to more complex mathematical ideas as they can build on existing knowledge in which they are confident. The process of proving is also a rigorous exercise in argumentation, which is a key element of every academic discipline, thus proofs and proving contributes to student's argumentation skills in other disciplines.

Proofs and proving activities should be included throughout middle grade math education, and all grades for that matter. No new concept or procedure should be introduced without some student engagement with proof of that concept or procedure. It leads to better understanding and teaches students to engage with mathematics as a discipline that seeks to understand the world, not merely as a tool for performing calculations.

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Mathematical Experiences for Children Built Upon Play and Relationships

Melanie Miller

Abstract: By observing preschoolers, we can better understand that mathematics is already a part of their surroundings. Research supports that children have an innate sense of pre-mathematical skills that are observed during play. Early Childhood Educators are the bridge between children's pre-mathematical understanding into informative primary mathematical concepts. Mathematical experiences for children should be built upon play and natural relationships in daily activities. Teachers should design their environments then lesson plan by individualizing math activities and materials in interest areas for open-ended exploration. When educators understand math concepts, they are better able to observe, analyze and evaluate children's learning and development, and then plan specific individualized activities to foster children's mathematical progressions.

Introduction

Play is serious learning for children. The idea of "play" is acting upon the direct object and child, and less about academics. It is an activity child engage in for enjoyment and recreation. Play is a useful strategy and a necessary tool in early childhood education. Children who are engaged in play pursue their purpose and problem solve challenges which are within their capabilities. When teachers introduce a "problem," children should be able to approach it in many ways. When several children confront the same situation, they will engage in problem solving producing different solutions and learn from each other through playing. Furthermore, play promotes thinking and learning skills along with other learning areas. Mathematical learning is related to the effective use of play within children's natural relationships with children and adults.

Mathematical Framework and Objectives

Children can acquire basic mathematics concepts to use in daily life and enhance their thinking and problem-solving skills when they are introduced to mathematics in early childhood education. To support this theory, Dr. Benjamin Bloom led a group of experts in educational evaluation promoting higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles rather than just remembering facts (rote learning). Bloom developed a taxonomy or classification system of educational objectives which are a clear description of the teacher's educational intentions for students (Bloom, 1956). Bloom's taxonomy engendered a way to align educational goals, curricula, and assessments that are used in schools, structured the depth of the instructional activities and curriculum that teachers provide for students, and helped teachers understand how to enhance and improve instructional delivery by aligning learning objectives with student assessments.

Bloom's objectives are divided into three domains: cognitive (knowledge), affective (growth in feelings or emotional areas), and psychomotor (physical skills assessed with a checklist). For example, most 3-year-olds are primarily concrete thinkers. This means that their speech and thinking are quite literal, often focusing on what is physically in front of them. Some 3-year-olds might not be able to answer complicated questions that older children can. For example, a 3-year-old may begin recognizing shapes, and sort objects by color, shape, size, or purpose. Around the age of 4, more advanced concepts of thinking occur such as comparing/ contrasting of items using classifications like height, width, and size and understanding that numerals stand for number names (5 stands for five).

When applying Bloom's levels of questioning, many 4-year-olds and some 3-year-olds will understand the abstract concepts comprising the higher levels of questioning, such as analyzing, evaluating, and creating. Not all preschoolers will understand these concepts, but teachers can still use Bloom's Taxonomy to ask preschoolers higher-level questions. Through ongoing observation and assessment, teachers keep track of their students' activities and skills, and plan their questions to match a child's current level to encourage progress. Bloom (1956) explains there are six basic objectives listed in the original Taxonomy of the thinking and cognitive domain:

Remembering (Knowledge): Recognizing something with or without understanding it.

Understanding (Comprehension): Grasping material without relating it to anything.

Applying: Using a general concept to solve a particular problem.

Analyzing: Breaking something down into its parts.

Evaluating: Judging the value of methods or materials as they might be applied in a particular situation.

Synthesis: Creating something new by combining different ideas (Bloom, 1956, pp. 201-207).

Developmental Stages and Mathematic Outcomes of Play

Children demonstrate an interest in math well before they enter school. They notice basic geometric shapes, construct, extend simple patterns, and learn to count. Play-based programs such as Head Start emphasizes that mathematics is broader and deeper than just practicing counting and adding. Allowing children to engage in the practice of play invites them to experiment with mathematics without the worry of making a mistake. This is beneficial for learning because play builds a strong sense of self confidence. Listening, negotiating, and compromising are challenging for 4- and 5-year-olds. As explained by Piaget & Elkind (1968), during the sensory and pre-operational stages from age two to seven years, children do not have the mental maturity to group mathematical concepts presented by words and symbols alone.

Children need experiences with tangible items and drawings to represent their ideas, which will eventually transform and evolve into potential projects (Piaget & Elkind, 1968). Children will build upon play-based behaviors such as patience and perseverance which in turn will help them gain a deeper appreciation and understanding in their mathematical skill set.

Children in a classroom go on shape hunts, compare sizes of colored counting bears, and count out objects by their teacher's instructional practices. How often do they do that through play? What does it mean for a child's development? Children should have regular and meaningful opportunities to learn, discuss, and use math throughout the school day. Early math instruction should build on children's current understanding and lay the foundation for the formal systems of math that will be taught later in school. It is important to point out that within the essential skills of problem solving, reasoning, communicating, making connections, and representing, children learn mathematics content (Copley et. al., 2010). When children are engaged in free play, four areas of mathematical outcomes emerge: Counting/Cardinality, Operations and Algebraic Thinking, Measurement and Geometry, and Spatial Sense and within those areas, six areas of mathematical content emerge:

Classifying: A child takes out all the counter bears from the container and sorts them by size and color.

Exploring magnitude (describing and comparing the size of objects): Children line their shoes up in a row and sort the largest size shoe to the smallest sized shoe.

Enumerating (saying number words, counting, instantly recognizing several objects, or reading or writing numbers): Children count the number of chicken nuggets they placed on their plates at lunch. The teacher constructed a graph with corresponding number words.

Investigating dynamics (putting things together, taking them apart, or exploring motions such as flipping): During a science activity related to motion, children took turns racing cars down a ramp to see whose car traveled further.

Studying pattern and shape (identifying or creating patterns or shapes or exploring geometric properties): At the light table, two children build a five-sided house connecting magna tiles (which are geometric shaped).

Exploring spatial relations: During gross motor play, the children each have a bean bag and while listening to the song they place the bean bag where directed (on head, under shoe, on the table, in the bucket) (Copley, et al., 2010, pp.741-772).

The content indicates the cognition of mathematical development and the four areas of mathematical outcomes as described by Copley (2010). When educators strategize utilizing this tool along with play and daily activities to promote mathematical development, evidence of success overlaps in numerous domains and dimensions.

Developmentally Appropriate Instruction and Experiences Fostered by Research

Copley et al.'s (2010) model is predicated upon many years of developmental theory and research, which suggests that the quality of teacher-student interactions serve as the primary mechanism for student learning (Pianta et al. 2008). This research has depicted a connection between free play, early math skills, and later school reading and math retainment. An analysis of six longitudinal studies showed that early math skills have the greatest predictive power, followed by reading and then attention skills (Duncan et. al., 2007). Number and operations, geometry and spatial sense, measurement, patterns (algebra), and data analysis are standards described in Principles and Standards for School Mathematics, NCTM (2006) and were used to organize discussions of mathematics in The Creative Curriculum for Preschool (Dodge, et al., 2016). The National Council of Teachers of Mathematics (NCTM) publication Curriculum Focal Points (2006) confirms that number and operations, geometry, and measurement are the areas that should receive the most emphasis in preschool.

Understanding the concept of number and operations helps create the foundation of young children's math understanding. Because there is much more to early math than understanding number and operations, educators should offer young children experiences in other content areas. This concept helps prepare them for the different math subjects they will eventually encounter in school, such as algebra and statistics, and help children view and understand their world mathematically.

With a clear understanding of the components of mathematics, teachers will be able to observe children, analyze and evaluate their mathematics learning and development, and plan instruction to help each child progress (NCTM, 2006). These assessments can help both students and teachers improve the work the students are doing in mathematics. Students need to learn to monitor and evaluate their progress. When students are encouraged to assess their own learning, they become more aware of what they know, how they learn, and what resources they are using when they do mathematics. When resources are available to children, they become better equipped to engage in self-monitoring and self-regulation, which are important characteristics of promoting ownership of learning and independence of thought.

Free Play

Free play offers a rich foundation on which to build interesting everyday mathematical experiences. During group time it is important to emphasize activities that allow children to analyze, synthesize, and evaluate. This higher-level thinking expands children's cognitive knowledge. The teacher must plan a fertile environment that is conducive to mathematical explorations which scaffolds with the curriculum. For example, the classroom environment should include unit blocks, a dramatic play area (ex: grocery store), and manipulatives. Children's play with such objects forms much of the pre-mathematical conceptual foundations that children need. To help children build on these foundations for developing mathematical knowledge, teachers must observe children and offer encouragement when necessary.

Math can be individualized on lesson plans then observed through children's ongoing play and assessments. This individualization must include a teacher who is intentional and understands the curriculum, environment, and children's backgrounds along with providing families with guidance to assist with mathematical exploration within the home. When these teaching practices are fostered with play, children can be creative and expand their imagination, build a strong and healthy sense of cognition, interact with the world around them, develop social skills in learning to share and resolve conflicts, practice decision making skills, and finally build confidence within themselves.

Curriculum Implementation

A strong curriculum brings clarity to a school's endeavor; it has practical, intellectual, and philosophical benefits and leaves teachers' room for professional judgment and creativity. The curriculum chosen for many Head Start organizations is The Creative Curriculum for Preschool (Dodge et al., 2016). When teachers consciously set up a successful environment it helps children make choices, encourages them to use materials well, and teaches them to take increasing responsibility for maintaining the classroom. But when is intervention necessary? A useful strategy is to ask whether mathematical thinking is developing or whether it is stalled (Clements & Sarama, 2014). If it is developing, the teacher might observe and take notes, leave the children alone, and talk about the experience later with the children or the whole class to explicate the mathematics. If it is stalled, has the teacher observed the children using the manipulatives or are they bored and not challenged by the classroom materials? For example, when a teacher has observed children not fully utilizing the block area, the teacher may add additional sets of blocks, pictures, graphing paper, along with measurement and writing tools. When the teacher observes children comparing structure height, he/she may ask children what they can use to measure their buildings.

When mathematical thinking is stalled, the teacher should intervene, discussing and clarifying the ideas. Children may have a back-and-forth discussion of whose is the tallest, sturdiest, or better building. The teacher might overhear one child talking about how high their building is while the other intently states theirs is longer (wider). The teacher can intervene and join in on the discussion by asking probing questions such as "how do you know how tall your tower is?" or "that is a really wide structure. Let us measure how wide it is!" At that point, the teacher could engage in "investigative conversation" and ask the children what they see, measure each of the structures with string, cubes or a ruler, document measurements and observations on paper and later discuss the issue with the class as an interesting event. Teachers may also want to work with their students to develop their curiosities and evidence into a full investigative study.

Mathematical Progressions of Learning and Development

Another way to increase mathematical knowledge is to scaffold children's learning from their previous knowledge. Educators should intentionally plan for children's learning and individualize specific math activities based on the child's progressions

of development and learning. Children grasp pre-mathematical knowledge within their first few months of life. Infants verbalize or signal when they want "more" food. They know familiar and unfamiliar adults (sorting and classifying). Patterning is when parents use words or phrases from familiar songs that use repetition. This parent/child relationship sets the stage for infants to use their everyday experiences for math connections within their environment.

Research has made a clear link between early math skills and later school reading and math achievement (Duncan et. al., 2007, p. 43). They also conducted an analysis of six longitudinal studies which showed that "early math skills have the greatest predictive power, followed by reading and then attention skills" and continues by mentioning that children's knowledge at kindergarten entry is considered predictive of future mathematics success throughout their years in school. Evidence collected shows that high-quality early childhood education programs can make a difference in children's mathematical learning. In addition, the teacher must observe evidence of children's mathematical skill set as they interact with children around the instructional tasks and thus alter their own knowledge of children and future instructional strategies and paths (Clements & Sarama, 2014).

Overcoming Barriers with Adult Supports

Most children can develop a math skill base despite their family's income level, ethnicity, poverty level, or differing ability. The way we communicate with children and families to present the lesson also plays a significant role for a child learning mathematics. A child with a differing ability will need adaptive materials as well as a specially designed environment, adjusted routines, and modifications/individualization to scheduled activities. This is when lesson plan individualizing is critical.

Adults (whether educators or family members) are an integral part of children's success or failure in mathematical learning. Early childhood educators layer children's formal understanding of math with individualized school-based activities. Teaching teams design the learning environment guided by their curriculum and place math materials in interest areas for child-initiated explorations. Teachers along with support staff later observe and listen to key interactions between children. Teachers ask questions as children investigate, and these specific children may need support in finding out answers. Keeping family members informed of their child's strengths and areas of growth helps to support both the child and the family for the transition into the next school year.

Conclusion

The incorporation of play scaffolded with mathematical skills helps children process the experiences of life. Continued research is important because students from preschool to grade 12 will use these skills in all school subjects, as well as in their personal lives. In the emerging view of mathematics education, students make their own mathematics learning individually meaningful. Important mathematics is not limited to specific facts and skills students can be trained to remember but rather involves the intellectual structures and processes students develop as they engage in activities they have endowed with meaning. When students learn through these ex-

periences, they habituate to confront problems. They reason, communicate, represent ideas, and connect their learning to mathematical content and real life. In short, implementing play to strategize mathematical concepts and operations as described by Piaget and Elkind (1968) is a transition of physical, tangible, and a perceptual database to conceptual, abstract, and hypothetical thinking. Early childhood learning experiences have a powerful impact on children's later life outcomes and are more likely if curriculum is delivered with an age-appropriate playful pedagogy. Learning through play offers opportunities to deliver rich mathematics learning through child-directed, adult-supported play activities. Given the importance of early mathematical development, it is imperative we figure out how best to foster the concepts of play and mathematical learning for all young children.

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Strengthening Special Education Students Skills Through Project-based Learning in Mathematics

Cara Wasserman-Johnson

Abstract: The purpose of this manuscript is to inform and explain the effectiveness of Project-Based Learning (PBL) in mathematics. It particularly focuses on the importance of PBL for students with learning disabilities. The manuscript will explore the advantages of both cognitive and social skill building that PBL offers. Project-based learning should be utilized regularly in the classroom with special education students to help develop critical skills. This approach to mathematics is beneficial to students who may struggle to see the big picture or the relevance of mathematical concepts. Project-based learning is a way to engage the learner, drive student inquiry, and present real-world applications. Research implies that mathematical reasoning is in fact taking place through project-based learning tasks.

Introduction

Project-based learning (PBL) should be utilized regularly in the classroom with special education students to help develop both cognitive and social skills. This approach to mathematics is beneficial to students who may struggle to see the big picture or the relevance of mathematical concepts. Picture a seventh-grade classroom where students are gathered around tables in small groups: students are up and out of their seats and you hear the sound of thinking take place! You can see the students' minds working like gears on a clock and hear mathematical words being spoken usefully and naturally. Imagine the movement of the whole classroom and the sight of all students getting involved in active learning!

> *A teacher proposes a new end of the year project to her class: this an inclusive classroom that has both general education students as well as special education students. A few students in the group begin to discuss the given project. Alex says to Jake, "This courtyard renovation project is going to be fun! I love working outside!" Jake replies, "I'm just glad we don't have to do math work!" Both students listened intently to the teacher giving a few directions and going over safety procedures, then left the rest up to the students' imagination.*
>
> *Alex is a very hyperactive student who thrives when he is able to move about and talk to his peers, and Jake is an anxious student that needs more time to complete tasks and likes to work at his own speed by doing things his own way. The boys converse with the rest of the group to plan which roles they would like to have and how to get started. Alex says to the group, "I know we will need a lot of mulch and stones to fill those spotty areas over by the trees." "Yay, and maybe we can build a few birdhouses too!" says Jake. "How much do we have to spend on this project?" asked another group member. "Looks like we will be needing to keep track of how much we are spending, and how much everything is going to cost." said Jake. "Like a budget! I'd be good at that. I love doing spreadsheets and am pretty good with money! I saved up all of my earnings from mowing the lawn this year just to buy a brand-new bike." said another student.*

Now picture those students who struggle with comprehension of mathematical concepts and students who struggle to explain their reasoning in written form. Most students with special needs rely on step-by-step instruction to solve math problems. The problem is, when students go to recall these steps, they often store it in short-term memory for the time being and then forget it, unless it is not regularly used. With PBL, those students who have trouble recalling procedural concepts are given the ability to verbally explain their reasoning and physically show you their thought processes to prove, link, and apply mathematical concepts. PBL helps tap into the depths of knowledge and utilize the application of these concepts that can be stored in long-term memory and used in future problem solving. PBL lives in the world of applied learning, real-world problems, and public presentations of understanding. It also alleviates the pressure and stress of an incorrect answer. When students are actively learning, they are more apt to fix their mistakes and confidently move on, whereas other students tend to accept the "failure" and feel as if they are just not good at it. In this case, it helps students to start to internalize steps to solving problems.

Advantages of Cognitive and Social Skill Building

Social skill building is very important to incorporate into the curriculum for students with special needs. Many students struggle with social skills, and PBL allows opportunities for social interactions to happen naturally which is important specifically in mathematics. Group projects allow the student to approach new ideas and concepts in a creative, open context with minimal pressure. They allow students to open up and jump into an idea naturally where the pressure of making a mistake is lifted. Students will likely embrace mistakes and use them as a part of the learning process. Students of various learning abilities are able to work together and converse with peers at their own pace and comfort level.

Recent research has affirmed what many educators have known for ages: social-emotional learning, or SEL, is a critical component of effective education. Melville (2020) indicated that students see academic progress that is long-lasting when they experience activities in the classroom that include collaboration, empathy, and problem-solving.

When special needs students work with peers of all ability levels and learning styles as is an essential aspect of PBL, they can work cooperatively, present different ideas and new ways of thinking. In 2019, Ohio adopted Social and Emotional Learning Standards for grades k-12. The goal of these standards is to achieve is to prepare students for postsecondary life through social-emotional learning. Social-emotional skills have been shown to positively impact long-term success by increasing academic achievement and economic mobility.

The openness of PBL builds confidence in students with learning disabilities which in turn builds cognitive strength. Mathematics requires the use of cognitive skills such as working memory, visual-spatial processing, and visualization. PBL opens opportunities for students to utilize all of the cognitive skills mentioned. "Project-based learning requires that students solve difficult problems, which may ultimately help them become effective problem solvers and lead to a broader and more complex understanding of the subject matter" (Wurdinger et. al., 2016. p. 19).

Building problem solvers is, in fact, sharpening cognitive skills. Students begin to gain an understanding of the world around them which makes the mathematical connections into working memory. Students with special needs thrive when they are able to make sense of the content or make real connections to their learning. Research has shown that PBL does just that with a movement away from teacher focused and directed instruction toward a more student focused, independent, knowledge-building instructional design (Scardamalia & Bereiter, 1991).

Effectiveness of PBL in Mathematics for Special Education Students

PBL presents itself as a real-world math problem and makes it applicable to students' daily lives or situations. Larina (2016) suggests that "Real world math problems are designed to make students apply concepts and procedures that they have learned from the school course" (p. 4). She also reveals that using everyday language should be considered as well as symbols and events that students come across in their everyday lives. Using math terms in everyday language provides an opportunity for mathematical reasoning to take place. "Reasoning is the process of manipulating and analyzing objects, representations, diagrams, symbols, or statements to draw conclusions based on evidence or assumptions" (Battista, 2010, p. 1).

Mathematical literacy also allows students to reason, problem solve, and analyze mathematical information all of which exist in real-world mathematical applications. Our mathematics classroom should reveal to students the opportunities to apply math within the world around them. Laycock (1970) stated that the teaching of math should include a connection to real life in the presentation of ideas, concepts and systems; students should be challenge to explore and be creative.

At times, students with learning disabilities may show reluctance to investigate and ask questions on how to go about solving problems or finding answers. Students usually wait for teacher prompting or direction to get them through, whereas PBL pushes students to work together with their peers and solve problems by asking questions. This not only brings upon social interactions with peers, but also allows students to make mistakes by trial and error and learn from them. From here the sense of accomplishment from perseverance builds up their confidence as well. Perseverance and confidence are much needed skills in the real-world; when these students are working at a job, they must show confidence and be able to solve any problems that may arise. These skills are important not only in the workplace but within the community as well. Development of these useful life skills ensures that students with special needs can live as independently as possible.

Effectiveness in Mathematics

Most school mathematical practices suggest that students are to be told what to do and how to do it. Idris (2006) suggests that in "most classrooms, math is taught to students as if it is a complete and unchangeable body of knowledge, with all rules and procedures. Mathematics is actually a changing and growing body of knowledge" (p. 109). When there is creativity in the teaching and learning of math, it

brings out a sense of meaning for the physical world for our students. Students learn to reason, connect ideas, and think logically. Real-word mathematical tasks and project-based learning encompasses all of those things. But research has shown that less emphasis is placed on creative ways of expressing ideas and instead focuses on simply displaying mathematical solutions.

The mathematics curricula in many schools do not address the day-to-day needs of students whether these students are college bound, career bound, or neither. Everyday math skills are needed for every functioning citizen in society. To some degree, mathematics proficiency is needed for most jobs. Some occupations may revolve around mathematical practices and live within the mathematics community, while others rely on the use of functional mathematics.

PBL and real-world problems have significant similarities as both focus on allowing students to persevere with real-world situations by creating mathematical projects. Projects should be focused on real world topics to increase student engagement.

> We must create a more expansive definition of student success. Project-based learning doesn't exist in the vacuum of bubble answer sheets. Project-based learning lives in the world of applied learning, real world problems and public presentations of understanding. We must be willing to use multiple measures to understand students' growth and success (Berkeley, 2017, p. 1).

A study that was conducted by Boaler (1998) provided an opportunity for students to get creative as well as use mathematical reasoning to explain their project and how it is being applied in the real-world. According to Boaler (1998), PBL helped students become more flexible and able to develop knowledge that was useful and applicable in many areas. Lesh et al. (1979) makes a claim in his book that, "In group problem solving settings, a variety of complex processes related to proof, and the use of mathematical language and symbolism become specializations of communication skills which are familiar (in other contexts) and meaningful to average ability students" (p. 2). Not all of the students who participated in this study had an interest in architecture or construction, however, it revealed relevance for geometry in multiple careers. Students are then able to gain knowledge and possible interest in certain careers because of the exposure and opportunity of project-based learning. Working in a group on a project does just that: provides mathematical argumentation to take place as well as discourse, which implies that real-world math and project-based learning indeed encompasses these constructs.

What about those students with learning disabilities who may not further their education to the collegiate level and depend on the skills and knowledge they have acquired through their primary and secondary schooling? Patton et al.'s (1997) study used various mathematical related life skills from the National Longitudinal Transition Study with students with learning disabilities. The researchers wanted to know the types of math skills that would be encountered in adulthood, and which of those were of importance to teach within the curriculum. The study showed how a life skills approach to mathematics has an effect on students with disabilities preparing for adulthood and indicated that for these students, the curriculum should emphasize math skills with practical uses at home, at work and in the community.

Conclusion

Students with special needs rely on exploration and using a variety of learning styles. These are provided for in the use of PBL. Mathematics is a significant part of all of our lives, whether our knowledge of math is extensive or not. Most individuals are able to generalize the math they were taught and find it applicable in everyday life. Teachers can teach and promote mathematical thinking and reasoning within our schooling, careers, and everyday lives through PBL. Teachers are also able to find methods of teaching these concepts to all types of learners, especially those who are curious about how these concepts are applied and show importance to real life.

It is clear from the research that many schools use different approaches when it comes to instructing and assessing mathematical ideas. Most of the research implies mathematical reasoning is in fact taking place through project-based learning tasks as well as real-world math problems. PBL also furthers the thinking of mathematical concepts that will benefit students not only after high school graduation but leading up to it as well. It is important that teachers understand the impact of PBL and bringing in real-world mathematics to all students at all ability levels. Most teachers get caught up with only teaching procedural knowledge in math, rather than the applied math. In the early grades, research shows that it is more suitable to incorporate these types of teaching styles and problems, but a continued focus like this is not beneficial through all grade levels. It can be argued that most real-world math problems are more applicable to older students who have prior knowledge of real-world situations or experiences to help make connections. For students with specific learning disabilities, most applied math or functional math is taught in the transitional courses rather than in the general curriculum where this focus would help to develop the math skills and knowledge of these students. More classrooms need to incorporate PLB in their curriculum whether the classrooms are resource rooms, inclusive classrooms, or general education classrooms.

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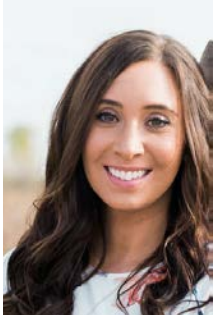

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Fostering Mathematical Creativity

Julie Young

Abstract: The world needs creative problem solvers, perhaps now more than ever. The mathematics classroom is the perfect place to cultivate such creative thinkers. Mathematics is often considered a rule-based subject that has little room for creativity. This manuscript aims to show that creativity has a place in the mathematics classroom. Teacher choices have a significant impact on whether creativity is fostered or suppressed in the math classroom. Through critical reflection of current teaching methods, teachers can create a classroom environment where creativity flourishes. Methods for doing so are discussed, including teaching for understanding, choosing and creating rich tasks that have a "lower floor and higher ceiling," (Boaler, 2016) allowing ample time for thinking, and telling students to be creative.

Fostering Mathematical Creativity

The unprecedented challenges we face today highlight the need for innovative and imaginative thinkers. In this rapidly changing world, the future is uncertain. The World Economic Forum reported in 2016 that by 2020, creativity would be one of the top three skills needed by workers. Creativity ranked 10th in the 2015 version of the same list (Gray, 2016). This leap is likely due to rapid advancements in technology that require creative thinkers to make the most use of those technologies. At the same time, creative thinking scores, as evaluated by the Torrance Tests of Creativity, have declined (Kim, 2011). Methods of math teaching that encourage rote learning and procedural knowledge no longer have the clear value they once had, as suggested in the National Research Council's Adding It Up: Helping Children Learn Mathematics (NRC, 2001). Yet these methods are still used, stifling creativity.

Effective mathematics instruction can help to improve the creative thinking skills necessary to improve society. Choices made by math teachers have a significant impact on whether creativity is fostered or suppressed. These include choices about what types of problems to present, how to present them, and how to respond to alternative ideas and solutions given by learners. Through reflection and critical evaluation of current teaching methods, math teachers can make adjustments that allow for a classroom where creativity flourishes.

Definitions and Conceptions of Creativity

In order to explore mathematical creativity, it is helpful to first consider both historical definitions as well as general conceptions of creativity. Although no universally accepted definition of creativity seems to exist, common elements can be found which help to shed light on the essence of creativity.

Definitions

In The Standard Definition of Creativity, Runco (2012) draws parallels between different historical definitions of creativity. He points out that the use of the word

itself has a relatively short history within the research, and that the standard definition involves two main elements: originality and effectiveness (Runco & Jaeger, 2012). Original ideas are not considered creative unless they have some purpose or utility. He points to Royce's (1898) use of the term "valuable inventiveness" and Hutchinson's (1931) description of creativity that includes elements of practicality. Runco also gives credit to Barron (1955) and Stein (1953) for their work on defining creative behavior, both whose definitions contain elements of originality or inventiveness along with elements of practicality or usefulness.

Vygotsky (2004) states that "any human act that gives rise to something new is a creative act, regardless of whether what is created is a physical object or some mental or emotional construct that lives within the person who created it and is known only to him" (p.7). Creative behavior combines past experiences and reworks or adapts that knowledge in order to create something new. This activity is what Vygotsky (2004) identifies as the driving force that makes a human being "oriented toward the future, creating the future, and thus altering his own present" (p. 9). Imagination is defined as the basis of all creative activity, being a component of all types of creation and having importance in all aspects of cultural life.

Csikszentmihaliyi (1997) claims that creativity results from the interaction of a system composed of three elements: "a culture that contains symbolic rules, a person who brings novelty into the symbolic domain, and a field of experts who recognize and validate the innovation" (p. 6). In this view, creativity is not an individual phenomenon that occurs inside a person's head. Creativity takes place through the interaction between a person's thoughts and a sociocultural context.

Guilford (1967) suggests that the creative process is based on a combination of convergent and divergent thinking. Convergent thinking involves aiming for a single, correct solution to a problem. Divergent thinking involves generation of multiple answers to a problem.

Torrance (1974) defines creativity as being comprised of four components: fluency, flexibility, originality, and elaboration. Fluency refers to the "continuity of ideas, flow of associations, and use of basic and universal knowledge" (Leikin, 2013, p. 386). Flexibility involves being able to look at a problem from a variety of perspectives, change approaches, and produce a variety of solutions. Originality, often considered the main component of creativity, refers to the ability to generate novel ideas and products. Elaboration encompasses the ability to "describe, illuminate, and generalize" strategies and ideas (Leiken, 2013).

Conceptions

Robinson discusses the misconception that creativity is only about "special people" and is a fixed trait that you either have or you don't (Azzam, 2009). Vygotsky similarly discusses the "everyday understanding" of creativity, belonging to a few selected extraordinary or gifted individuals. This differs from the scientific definition of creativity, which is present whenever a person "imagines, combines, alters, and creates something new" no matter the scope of the result (p. 10).

Creativity is often misconceived as being relative to only the arts and not to science or mathematics. Yet mathematics was created by human beings. Some of the most famous theorems and elegant proofs were creative in nature. Robinson's

claim that, "creativity is really a function of everything we do," validates the role of creativity in all subjects (Azzam, 2009, p. 23).

Another commonly held misconception of creativity is that it is free and unstructured. Creativity, however, cannot occur without an individual taking part in some activity of which they understand the structure and "rules" that already exist. While requiring imagination and inspiration, creativity is a "disciplined process that requires skill, knowledge, and control" (Azzam, 2009, p. 23).

Mathematical Creativity

Like general creativity, no standard definition of mathematical creativity exists. Aldous (2005) identifies three elements of creative problem solving in order to construct a conceptual framework for mathematical creativity. Creativity in solving a challenging problem involves interaction between areas of the brain involved in visual-spatial and linguistic activity, the first element of the framework. The second element involves the interplay between rational conscious activity and experiential, non-conscious activity. She describes the way feeling and intuition lead problem solvers to alternate between conscious and non-conscious activity in order to "evaluate, monitor, and filter a particular solution path" (Aldous, 2005, p. 53). According to Aldous (2005), the role of intuition and feeling in problem solving is backed by findings in neuroscience.

Sriraman (2004) also explored the nature of mathematical creativity by studying professional mathematicians as they solved a problem. He was interested in the Gestalt model of mathematical creativity, the characteristics of the creative process, and the implications for the classroom. The Gestalt model of the creative process involves four stages: preparation, incubation, illumination, and verification (Wallas, 1926, p. 10). In general, Sriraman found that the thinking process of the mathematicians interviewed followed this model. The accounts given described a lengthy amount of time in which the participants spent researching the problem and its context (the preparation phase.) They described social aspects of this phase which involved discussing the problem at hand with other experts. Most mentioned working on more than one problem at a time, using a back-and-forth kind of approach, as well as the types of imagery used when investigating an idea. Participants touched on the incubation/illumination phase in which an idea is left to sit for a time before which some type of "aha" moment occurs, similar to the role of intuition described by Aldous (2005). As a final stage, some sort of formal proof was developed (Sririman, 2004).

Boaler (2016) points out a component of mathematical creativity that is strongly linked to the concept of fluency previously described. She discusses compression and the importance of making connections among ideas:

> When you learn a new area of mathematics that you know nothing about, it takes up a large space in your brain, as you need to think hard about how it works and how the ideas relate to other ideas. But the mathematics you have learned before and know well, such as addition, takes up a small, compact space in your brain. You can use it easily without thinking about it (Boaler, 2016).

Fostering Creativity in the Mathematics Classroom

The definitions of creativity and mathematical creativity have several implications for the ways in which teachers can foster creative thinking in the math classroom. These include teaching conceptually, choosing rich tasks, being thoughtful about the presentation of tasks, and creating an environment in which alternative ideas and solutions are accepted and encouraged.

Teach for Understanding

Mathematics is often viewed, and taught, as a structured, rule-oriented discipline. There are rules to be learned and practiced, with little connection to real life. In this commonly held view, there is no room for creativity. According to Boaler (2016), "when students see math as a series of short questions, they cannot see the role for their own inner growth and learning" (p. 34). Instead, learners should be led to see mathematics as a set of ideas and relationships that make sense and are connected. A radical change in the concepts taught is not necessary, but rather a change in the way those concepts are taught. Learners still need to learn and practice fundamental concepts, but "practice" should be revisiting ideas in different ways. This can help increase the components of fluency and flexibility needed for creative thinking. Students should be asked to convince, reason, and be skeptical, allowing students to make connections between concepts and understand the mathematics involved.

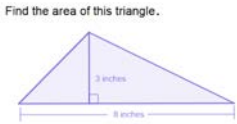
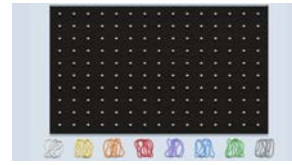
Choose and Create Rich Tasks

Along with teaching for understanding, creativity and specifically, mathematical creativity can be encouraged by implementing create rich tasks in the lessons design. These tasks include the transformation of traditional problems and the approaches to finding solutions, allowing ample time for creativity to develop, valuing and validating alternative and creative solutions, and asking students to be creative.

Transform Traditional Problems

Boaler (2016) makes several recommendations for the design of tasks that provide opportunities for mathematical creativity for all students. One suggestion is to open up the task so that there are multiple methods or pathways and representations. This can be accomplished by transforming a standard task into an inquiry task, shifting the role of the student from reproducer of a method to an originator of ideas. Many textbook authors in the United States isolate methods in mathematics and reduce them to their simplest form in order to practice. This can lead to boredom in students, corroborating the view of math as a set of disconnected ideas (Boaler, 2016). Teachers can significantly increase the opportunity for creativity with minimal adjustments to "undo" the simplification of traditional problems. Table 1 suggests ways in which problems can be transformed.

Table 1
Transformations of Traditional Problems

Traditional Problem	Alternative
Solve this system of equations: 3x+2y = 6 5x-3y=18	Write a system of equations that has the solution (4, -3). Can you come up with more than one? Can you include a nonlinear equation? OR Here is a system of equations: 3x+2y = 6 5x-3y=18 Can you write a story problem that this system would solve?
Find the area of this triangle: 	Create as many triangles as you can that have an area of 12 units2 on the interactive geoboard. 
Simplify the radical expression: √(112x^5 y^6 z)	Here is a simplified radical expression: 4x^2 y^3 √7xz What might have been the original expression? Can you create more than one?

Pose the Problem First

Instead of introducing a method or algorithm first and then showing where it can be used, pose the problem first (Boaler, 2016). Allow students to grapple with a problem, encouraging creative methods and thinking, and then introduce the method. This gives students a reason to want to learn the formal algorithm. The following table gives some examples of what this might look like in an Algebra 1 classroom.

Table 2
Introducing the Problem First

Problem (introduced first)	Method or Algorithm (taught after students grapple with the problem)
The marketing team for the Toledo Walleye needs your help! They want to know whether to focus their advertising on children or adults. Tickets for children cost $15 and tickets for adults cost $32.00. They know that for the last game, 6,000 people were in attendance and that the total gate revenue was $137,600. How can you use this information to help decide whether more children or adults were in attendance?	Solve a system of linear equations using graphing, substitution, or elimination.

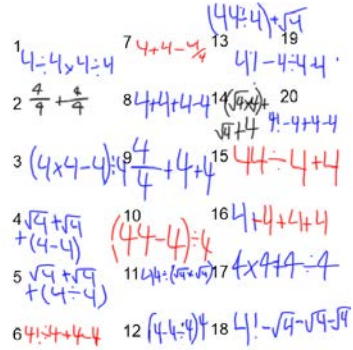
Problem (introduced first)	Method or Algorithm (taught after students grapple with the problem)
A tennis ball is thrown straight up, from 3 m above the ground, with a velocity of 14 m/s. The height of the ball is given by the equation h=3+14t-5t^2 where h = the height of the ball in meters and t = time in seconds. When will the ball hit the ground? Guess and check!	Factoring quadratic equations

Lower Floor, Higher Ceiling

Another suggestion made by Boaler (2016) is to make the task have a "lower floor and higher ceiling" (pp.84-85). The floor describes the entry point to a problem; a lower floor means that the task is accessible to and easily started by all students. The ceiling refers to the task's potential to grow, with a high ceiling indicating that a task increases in complexity, allowing higher achievers to explore the problem in depth without becoming bored (Boaler, 2016, pp. 84, 85).

The "Four 4s" task is an excellent example of a lower floor, higher ceiling task. The problem asks students to make all numbers within a certain range by using only four 4s and any mathematical operation (Figure 1). All students have an entry point to the task, and students often start with four 4s and see what numbers they come up with. The task increases in complexity as certain numbers are more difficult to make than others, leading to solutions involving advanced operations.

Figure 1
Some Solutions to the Four 4s Task.



Allow Ample Time

A theme that emerges in the research about creativity, both general and mathematical, is that learners need ample time to fully think through and understand concepts. Hawkins (1974) points to the crucial importance of the "Messing About" phase where students are given ample time to explore and play with a problem. Similarly, Su (2017) discusses the importance of mathematical play. Teachers frequently refer to a lack of time, pointing to pressures of testing and the need to cover all of the

standards. Allowing plenty of time for "Messing About" with ideas can lead to greater and deeper understanding of a concept. This cannot be replaced by merely telling or showing the answer. Slowing down and letting students come to their own understanding is a worthwhile endeavor.

Value Alternative and Creative Solutions

For students to think creatively, they must be assured that the environment is one in which they can try out different ideas and offer creative solutions without a fear of being corrected or shut down. Imagine the effects the teacher's behavior has in the following vignette:

"Who can find the area of this parallelogram? Henry?"

"Well, I just thought that I could cut the triangle off one end and slide it down to the other end and then it is a rectangle that is 8 units by 5 units, so the area is 40 units squared."

"Okay, but we don't need to do any "moving" of pieces since we have the formula, area equals base times height. Isn't that a much easier way of finding it?" The rest of the class nods in agreement.

This brief interaction has the potential to crush Henry's feelings of self-efficacy and self-worth. Consider the alternative scenario:

Who can find the area of this parallelogram? the teacher asks. "Henry?"

"Well, I just thought that I could cut the triangle off one end and slide it down to the other end and then it is a rectangle that is 8 units by 5 units, so the area is 40 units squared."

"Class, what do you think about Henry's idea? Will this always work? How do you know?"

Students conclude that the method will always work.

"Let's call this 'Henry's method.'

In a subsequent class the students are asked to find the area of an isosceles trapezoid. Livia gives a correct answer of 100 square units.

"How did you get your answer?"

"I used Henry's method and moved the triangle on the end down to the other end to create a rectangle!"

For students to think creatively, the classroom should be a place where students feel comfortable trying new ideas and methods, even when they don't work. The reactions and responses of the teacher are crucial in that they can influence a student's willingness to try creative approaches. Mistakes should be valued and used as a means to further discuss the concepts involved along with the validity of a particular strategy.

Tell Students to Be Creative

Sometimes creativity can be encouraged by just telling students to be creative. O'Neal and Runco (2016) described a study in which two groups were asked to devise solutions to a real-world problem. The first group was told to give solutions that were creative, and that no one else would come up with. The second group was simply asked to generate solutions. The first group developed solutions that were significantly more original and creative (Runco, 2016).

Conclusion

In a talk given upon his departure as President of the Mathematical Association of America, Francis Su posed the question: Why do mathematics? He stated that the question was simple yet worthwhile, because how you answer will strongly determine who you think should be doing mathematics, and how you will teach it (Su, 2017). Su's answer is that mathematics is for human flourishing, and includes notions of play, beauty, truth, justice, and love (Su, 2017). Mathematics helps us to make sense of the world around us. It is more than just a set of unconnected rules and procedures. As teachers, we have the ability to influence our students to see mathematics in this light, to encourage creative thinking, and to help transform our students into the innovators of the future.

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Science

Utilizing Case Studies to Increase Engagement and Better Learning Outcomes in Secondary Science Education

Nicholas Amos

Abstract: A significant portion of secondary school students lack engagement in science classrooms, and a possible solution could be to listen to how they prefer to learn. A popular answer students suggest for learning information is through real world applications. The use of case studies is a promising answer that implements real world applications in science education and accompanies important scientific explanations to life outside of the classroom. Case-based learning can positively affect important factors of engagement and is an effective approach when compared to traditional teaching methods. Due to an increase in engagement, students may also benefit from case studies by improving their learning outcomes. With the evidence provided, case studies are worthwhile to implement in secondary science classrooms.

Introduction

A problem with our current science education system is that, on average, the current science classroom is not a space that utilizes the most effective practices in engaging students. A 2013 Gallup poll of 500,000 students showed that only four in 10 high school students were attentive, inquisitive, and generally optimistic about school (Jason, 2017). A meta-analysis by Tze et al. (2015) also concluded that if students experience boredom in class, there are negative impacts on student academic outcomes. Students in a traditional science classroom are required to process and memorize a significant amount of information. This approach creates an environment where students are not motivated to learn past rote memorization and do not attempt to conceptualize the different processes and the larger picture of the content presented in class (Olgun & Adali, 2008). If students are experiencing boredom and are not engaged with material, they may not want to go out of their way to learn more about the topics being covered in the science classroom.

The AMGEN Foundation (2016) had students rank what they thought would make science classes most interesting. The results showed projects that relate to the use of science in real life, also known as real world applications, was one way that students prefer to learn information in a science classroom. A pedagogical strategy that can be used to incorporate real-world applications into the science classroom includes case studies (InTeGrate, 2021). Real world applications contribute to a fundamental goal in science education by pairing with scientific explanations to help explain the natural world. In its original form, case studies were used for law and business students to analyze realistic stories as examples of good and bad practice (Herreid, 2005). This strategy has now slowly expanded beyond the walls of the ivy-league schools that it originated in. Although case studies have a relatively long history in law and business colleges throughout the country, it is important to note that

case-based learning has rarely been used in secondary science teaching (Yalcinkaya, et al., 2012). Today, case studies in education can take many forms including lecture method, whole class discussion, small groups, individual case instruction, and mixed method. Of the different strategies, small group cases are the most popular in the classroom. Small groups allow for cooperative learning among the students and appear to be the easiest to teach for educators that are used to applying the lecture method in the classroom (Herreid, 2005).

Defining Case-Based Learning

Cased-based learning typically consists of two main parts: the case situation and the questions related to the case situation. The purpose of the questions is to gauge understanding of the material presented (Yalcinkaya et al., 2012). An example of a systematic approach for case studies according to Boston University (Boston University Centers for Teaching & Learning) include:

- What is the issue?
- What is the goal of the analysis?
- What is the context of the problem?
- What key facts should be considered?
- What alternatives are available to the decision-maker?
- What would you recommend - and why?

The calculated process of a case study allows students to engage in the curiosity of decision-making, problem solving, and discussions (Chammas, 2017). Since this method requires students to analyze, evaluate, and apply information, students also facilitate development of higher levels of Bloom's taxonomy of cognitive learning (Bonney, 2015).

Using Case Studies in the Science Classroom

How case studies can be implemented in the science classroom is nearly endless due to the limitless creativity and autonomy an educator has when introducing them in a lesson. For example, in a biology classroom that is learning about the central dogma of molecular biology, a case study that revolves around a relevant topic that has affected us all would be the Pfizer-BioNTech and Moderna mRNA vaccines. During a lecture, students would be taught that deoxyribonucleic acid (DNA) is transcribed into messenger ribonucleic acids (mRNA) within the nucleus of the cell. The mRNA is then translated outside of the nucleus, where ribosomes will help read the "message" and produce an amino acid chain that will fold into a protein. After the lecture, having students work together in small groups, a case study would be implemented to apply the information that was taught. In the case study scenario, the issue would be the COVID-19 pandemic that is currently devastating the United States and the rest of the world. The goal, through the use of vaccines,

is to control the spread of COVID-19 and prevent deaths due to the virus. The context is that a newly implemented vaccine, with the help of mRNA biotechnology, has shown success during clinical trials in preventing the spread of the virus. After implemented, the vaccine will create protein spikes identical to that of the virus. If the Pfizer-BioNTech and Moderna vaccines use this type of mRNA biotechnology, what is the process a cell goes through to initiate an immune response and create antibodies with the mRNA the vaccine provides? This process requires each group to follow the central dogma of molecular biology to find the answer and can create a discussion about the efficacy of the vaccine. A common misunderstanding with mRNA vaccines is that it can influence or alter DNA. Could this be true? After students work to find the answer, they will understand the mRNA is translated outside of the nucleus, thus not interfering with DNA at all. Although extremely simplified, a case study like this can apply biological concepts, as well as learn new information that directly relates to them in the real world.

Case Studies, Engagement, and Learning Outcomes

Engagement in education includes how involved students are within their learning environment and can positively influence motivation and achievement (Fredricks et. al, 2004). Motivation is defined as the "process whereby goal-directed activity is instigated and sustained" (Pintrich & Schunk, 2002, p. 5.). Understanding motivation in education is why it is vital to consider students' perspectives about how they want to learn. How a student engages in material results from intrinsic interest or enjoyment and task value or utility. If students are intrinsically motivated when presented with material, they will work harder to overcome possible difficulties of the work presented (Yalçinkaya et al., 2012). The purpose, through increasing engagement, is not only to help motivate students in the classroom, but also to help increase learning outcomes. Learning outcomes include the knowledge, skills, and abilities that a student can apply after a learning experience about specific concepts (Stanford, 2017). Since case-based instructional strategies can increase students' understanding of how relevant science is in their lives, applying this approach also shows promising results for increasing learning outcomes (Fisher et al., 2019).

Case Studies and Engagement

To understand the effectiveness of implementing different case studies into the science curriculum, how does it compare to traditional teaching methods when it comes to engagement? A study by Bonney (2015) looked at the effectiveness of case studies for topics most often covered in a general biology course: chemical bonds, osmosis and diffusion, mitosis and meiosis, and DNA structure and replication. The control variable, or traditional teaching methods, included instruction delivered using minimal slide-based lectures, textbook reading assignments, and group discussions. The experimental group was taught using case studies from the National Center for Case Study Teaching in Science (NCCSTS) along with original case studies created specifically for the class. After the general biology course was finished, an evaluation tool was used to compare student perception of learning gains. Nearly 60% of students answered that case studies helped perception of learning gains a

"great" amount, compared to class participation and textbook reading within the 20-30% range. The results represent a statistically significant difference in learning perception gains for students taught through case-based learning.

A study presented by Olgun and Adali (2008) involved comparing the attitudes of fifth grade science students learning about viruses, bacteria, fungi, and protista. The students were divided into two separate groups: one involved with learning through case studies and the other relying on a reading and lecture method approach. Before arriving for class, students in the case study group were asked to read the material revolving around the case they would go over. Once in class, students read out loud their specific case for the day. After the case was read, students worked in small groups to discuss the questions for the first part of class. Each group worked to find answers and combined their conclusions into a report for each of the case studies provided. The classroom climate was significantly more positive when involving a case study approach in the classroom. The case-based group learned by doing, analyzing, and researching whereas the comparison group passively worked to find answers within the textbook. Students reflected that case-based learning was "fun." They also felt that they were "very active in the classroom" and they "learned a lot" in the process. The frustrations with working only with a textbook and through lectures were notable as well. Students stated that "listening to the teacher without doing anything was very boring" and that the "lessons were monotonous." This evidence suggests that the improved attitudes toward science when utilizing case-based instruction were motivational factors that increased engagement.

Lastly, Yalçinkaya et al. (2012) investigated how effective incorporating case studies were on 10th grade students' perceived motivation about chemistry. For a period of 12 weeks, students were presented with cases in a small group format. The role of the groups was to work toward finding the answers to 15 separate case studies. After the 12 weeks, implementing case studies positively affected students' extrinsic goal orientation, task value, control of learning beliefs, and self-efficacy for learning and performance. In addition, students taught through case studies experienced an increase in self-efficacy due to this strategy's ability to increase motivation.

Case Studies and Learning Outcomes

The study previously mentioned by Bonney (2015) also compared assessment scores between case study and control groups. By comparing the results of each assessment, there was a significant difference in examination scores between each group. For example, students taught with case studies averaged an 18% higher score among each of the four assessments given compared to the control group. The most impressive difference recorded between each group was a 25% higher average assessment score experienced by the experimental group under the osmosis and diffusion section. It is also important to note that the average increase in examination scores was nearly two letter grades higher across the board. This is enough to boost student course grades from an unsatisfactory or failing range to a grade that would be considered passing. This is positive evidence to indicate that case-based teaching methods may be more effective for students to learn concepts than more commonly used methods in the classroom.

The Olgun and Adali (2008) study that compared attitudes of fifth grade science students also reviewed pre and post assessment results of case study groups compared to traditional teaching methods. To compare the difference in learning between the experimental and comparison group, a performance-based assessment listed as a Science Achievement Test (SAT) used strictly multiple-choice questions. The 25-question SAT resulted in a score that was roughly 16% higher in the group that was taught through case studies.

Review of the Data

Among the research provided, each study reached similar conclusions. Through increases in important factors such as self-efficacy, motivation, and improved attitudes there is convincing evidence that implementing case studies into science education curriculum could increase engagement within the classroom. Olgun and Adali (2008) imply that the success is in how the case study strategy is designed. Since students are engaged with the material, they are convinced that doing research and thinking critically is more effective than simply remembering facts. Yalçinkaya et al. (2012) even recommends that teachers implement case-based instruction in the classroom due to the influence of motivational beliefs on students' achievement.

Based on the comparison between case-based learning and traditional teaching methods, the evidence is clear that approaching education through traditional methods is not the most effective approach to better learning outcomes. This is where a case-based approach would be effective due to its ability to have students discuss, analyze, and find solutions for problems presented in each case. Bonney (2015) even goes out of his way to suggest that case study teaching should be used to promote learning and performance on class assessments.

There is also a positive correlation between student engagement and learning outcomes. The research reviewed by Bonney (2015) showed an average of 18% higher examination scores using cased based instruction when compared to a lecture method approach. Not only did students do well on their exams, but they also felt that they were learning effectively in the process. The results provide that learning gains are a strong motivating factor for engagement in the classroom which then led to better assessment scores. Olgun and Adali's (2008) research also show that an increase in engagement through case-based instructional strategies resulted in assessment scores roughly 16% higher than a traditional approach.

Conclusion

There is clear evidence as presented here that an increase in engagement will result in better learning outcomes for students in secondary science education. The proof of positive evidence presented through the implementation of case studies is certainly promising and deserves to be investigated more for United Stated secondary science education classrooms.

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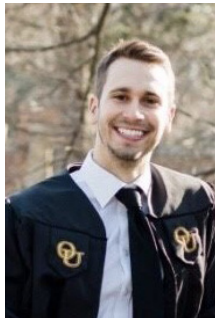

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Green Minds: An Introspective Look at Gardening Curriculum for Science Skills in Preschoolers

Dana Greathouse

Abstract: Gardening with preschool children is often limited to basic gardening activities. Digging holes, planting seeds, watering growing vegetables, and observation of plants are common activities for teachers to use when implementing gardening curriculum. While this approach to gardening is effective for science learning, there are other innovative educational gardening experiences that teachers can curate. This paper examines indoor, formal, and digital gardening curriculum which can help preschool teachers foster sound science skills for students. Research from studies on these experiences provide evidence for helping these children learn sound scientific concepts. Potential barriers to these creative curricular activities are investigated. These gardening curricular activities can help change the current landscape of helping children learn science from nature's soil.

Introduction

Within education there are old adages often used to describe the impact teachers have on children's development. Common sayings such as, "Teachers' plant seeds that grow forever" or "It's not what's poured into the student that counts, but what is planted". These adages are usually seen in picture frames hanging in classrooms or as personal desk fixtures for a teacher to remind themselves of the impact they have on their students learning. The sayings continually symbolize the educational relationship between teacher and student, but what role does meaningful garden curriculum play in children's education?

The implementation of gardening curriculum in schools has a powerful educational impact for the children of today. Specifically, those benefitting from this innovative curriculum are the young and malleable minds of preschoolers. The focus of this curriculum has been from a nutritional standpoint to increase healthier eating habits and decrease childhood obesity, but a focus on science skills has recently emerged for these young learners. The science skills learned within this curriculum are important in helping preschoolers with their development of science standards set by state departments of education.

In Ohio, the Department of Education created the Birth Through Kindergarten Entry Learning and Development Standards. According to Ohio's Department of Education (ODE), a science standard that students should meet can be defined as, "Describe, compare, sort, classify and order" (p. 43). Let us think about how this standard could be acquired for preschool students. Two students, Johnny and Eli, tend to their classroom garden. The teacher asks them to pick out two types of vegetables: carrots and tomatoes. As Johnny and Eli pick out the carrots and tomatoes, they can be heard saying, "Let's put the orange carrots on this big rock and put the red tomatoes on the table" The two boys have already acquired and conquered this

standard by sorting and classifying the vegetables into two separate categories. They also describe the differences of the vegetables via the attribute of colors, which further demonstrates their knowledge of this standard.

In this paper, I seek to introduce innovative gardening curriculum that preschool teachers can implement to help foster and strengthen science skills for their students while also addressing the science standards. I will examine different gardening curriculum that teachers can utilize to help their students learn specific science skills. Gardening is often thought of as a leisurely activity, but powerful education lies within the damp soil of the earth. Teachers can dig up this knowledge and pass it onto their students to help them strengthen and acquire sound science education.

Formal Gardening Curriculum: Thermometers & Composting Bins

The first gardening curriculum that preschool teachers could implement are formal gardening activities. Gardening curriculum is often presented as an informal learning experience, but there are many innovative formal gardening curricula that can help foster preschool children's science skills. According to Sawitri (2017), a formal learning environment is described as an, "Environment where information is often delivered orally, or using letters and numbers that need to be decoded, this approach is more exciting to follow" (p. 2). An example of a formal activity would be the creation of a classroom thermometers to help children learn about weather systems. According to Ashbrook (2016) preschool children need to learn about weather systems as stated in the early childhood standards of learning. Ashbrook (2016) cites, "Preschool learning standards also ask children to observe weather and the needs of living organisms" (NAEYC 2016)" (p. 16).

Another formal curriculum experience that would strengthen preschool students' science skills would be the implementation of a composting activity. Composting is often thought of as an "easy" and "simple" activity for children. However, there are powerful formal science skills hidden within the decomposition of discarded food and waste. Ashbrook (2016) defines composting as "a way to purposefully use the process of decay to break down organic materials in a location where the resulting mixture can be harvested for enriching garden soil" (p. 22). A composting activity that teachers could implement would be creating a classroom compositing bin with food waste and other recyclable materials (paper plates, towels, etc.).

Teachers would need a clear plastic bin with soil to start and would ask their students to discard any waste from their lunch and snacks into the bin. Throughout the days of the week, children would be able to see the decay process of their waste. It would also be beneficial for teachers to create a classroom chart for children to document their findings on what is happening to the materials within the bin (See Table 1).

Table 1
Composting Chart Day 4

Composting Materials	What Do the Materials Look Like?
Apple	"The apple looks smaller"
Banana Peel	"The peel looks darker and is brown"
Pear Half	"The pear lost all the green"
Paper Towels	"The paper towels look the same"
Paper Plate	"The paper plate looks squishy"
Styrofoam Cup	"The cup is still dirty"

Note: This sample chart shows student-generated data for the composting decay process.

Implementing a chart where children are describing what is happening to these materials helps these young learners meet one of Ohio Department of Education's (ODE, 2020) early learning science standards: "Record observations using words, pictures, charts, graphs, etc." (p. 44). This activity is extremely useful for children because the formality of the activity imparts valuable and specific scientific skills in the areas of documentation and observation in the decomposition process.

Indoor Gardening Curriculum: Botanical Sorting & Vivariums for Gardening Animals

In addition to the formal gardening experiences, indoor gardening curriculum is another fantastic approach to help preschool students acquire sound science concepts. Weather and climate do not often allow for year-long tending to gardens, thus hindering the child's ability to learn science through gardening activities. However, curating indoor gardening curriculum can help teachers provide consistent use of gardening materials for children. A study conducted by preschool teachers detailed this approach by creating an indoor flower activity with preschoolers. The study demonstrated the scientific concept of identifying similarities and differences of living things, specifically, different species of flowers (marigolds, pansies, and coleus). Children were tasked with identifying the similarities and differences in stems, petals, shapes, and coloring of these flowers. The students then charted their findings onto a data chart, which allowed them to extract their findings formally (Trundle et al., 2013).

Along with identifying different types of plants and flowers as an indoor gardening activity, curating indoor curriculum with the use of animals is another great opportunity for teachers to help preschool students strengthen their science skills. Watching and documenting plant and flower growth is often the "go-to" for many gardening experiences in preschool. However, the use of animals can help preschool children attain specific science standards. For instance, a science standard crafted by the ODE learning standards detail preschool children's interaction with animals. The ODE (2020) states, "With modeling and support, identify physical characteristics and simple behaviors of living things" (p. 54). Utilizing and creating gardening curriculum with insects or other living organisms would meet this standard expertly.

One way teachers could introduce animals in an indoor garden could be crafting a lesson on the creation of a vivarium habitat within the classroom. According to Hachey & Butler (2012) vivariums are distinguished as, "Indoor enclosures that stimulate the natural environments of small animals." (p. 40). Teachers could bring in snails, worms, and even ants to create a natural habitat for children to observe. Children would be able to identify different characteristics of these animals, such as coloring/marking of the animal, the number of legs/arms of the animal, and how the animal moves within the vivarium. This would meet the previously mentioned standard in nuanced and effective ways.

Digital Tools for Gardening Curriculum: Digital Garden Wonders

The third and final gardening curriculum that would benefit and foster science skills for preschoolers would be the implementation of digital tools to create gardening curriculum. Digital tools in gardening are somewhat new to the field, but it utilizes innovative technology to help these students learn science skills in an engaging way. Gardening curriculum often encompasses time and patience because the duration of growing plants is a tedious process. Presser et al. (2017) emphasize this by stating, "Many plants take a long time to grow, it is often hard to facilitate engagement in some practices" (p. 42). The use of digital tools come into play to help provide meaningful and consistent engagement in gardening curricular activities while taking the focus off the long growing process.

A study conducted by Presser et al. (2017) utilized a digital journal application and demonstrated the concept of how effective digital tools are for the acquisition of science skills. The digital journal app was used to help students study bean growth by utilizing the digital journal's camera. With modeling and support, teachers helped the students take pictures of the beans to document daily observable growth in the bean. The pictures were then kept within the journal for students to compare and describe the differences or similarities in the bean's growth. With teacher guidance, students were able to accurately describe and identify characteristics of the bean's growth. This activity helped students meet numerous next generation science standards (NGSS) such as, description, documentation, observation, and data collection. It is clear, this digital tool could be used alongside other growing experiments to help teachers increase their students' interaction and focus. It should also come as no surprise that young children have a hard time focusing on a subject for long periods of time. The use of this digital journal can help minimize distraction by putting the focus on the details of the growth of various seeds and plants.

Moreover, another great digital tool that teachers could incorporate in creating engaging gardening curriculum would be creating virtual avatars to help students learn different science skills. This technological tool is very new and exciting. Lochner et al. (2019) explains the use of virtual avatar in relation to students taking care of a plant. They explain how the virtual avatar, "displays the attitude/mood of the plant through facial expressions and text bubbles. If the child clicks on the avatar, he will be asked to input certain data related to the physical conditions of the plant" (p. 184).

While this study applied to primary and secondary students, preschool teachers would be able to utilize their own personal avatars to coincide with a gardening

activity. For instance, teachers could create a "virtual" avatar and classroom that simulates a learning environment for preschool students. Teachers would create an avatar based on their looks and then create a classroom that is representative of their own. Next, teachers would utilize this avatar with hands-on gardening curriculum within the real classroom. For instance, teachers could update charts, "water plants", and "measure" growth of plants within the virtual avatar and classroom. Instead of solely relying on the classroom, they could keep all data collection within this virtual environment. This would help keep active and long-term engagement with preschool children. Technology fascinates children and the digital tools examined can help their ability to learn sound science skills.

Below is an original example of a virtual avatar of myself in a classroom created with the software applications, Google Slides and Bitmoji (Figure 1). I would utilize my avatar and classroom to coincide with an in-class lesson plan that is currently taking place. In this case, my students and I would be continuing our observations and data collection of growing classroom flowers. We would likely utilize this curriculum for a month, as this will allow for optimal time and opportunity for many species of plants and flowers to grow within the classroom.

Figure 1
My Virtual Avatar

Note: This is a sample of the type of virtual avatar that can be created.

Gardening Curriculum: Some Potential Barriers

While the gardening curriculum discussed meets various ODE science standards, it is important to discuss if it is worth implementing. This curriculum is far from perfect and there are potential barriers to the implementation of this type of science education that preschool teachers may encounter.

One barrier to this type of curriculum is the lack of research focused on the benefits of gardening curriculum in preschools. Vandermaas-Peeler & McClain (2015) make this clear by stating, "The majority of research on school gardening has

been conducted in elementary school settings, and less is known about preschoolers' interactions in this context" (p. 10). The lack of research in gardening curriculum for preschools could be a potential barrier in helping teachers get "on board" with implementing this education with their students. Teachers might navigate to other research-based science curriculum that is proven and studied thoroughly. However, it should be noted that the lack of research is not solely due to a lack of garden curriculum, there is a significant amount of research on gardening and the nutritional benefits for young children.

Another barrier to the implementation of this curriculum would be teachers experience and willingness to implement this education. A study conducted with Head Start teachers discovered that teachers were least confident in implementing garden-based education because of their lack of experience in teaching it (Fraizer et al., 2019). Teacher perception of gardening curriculum is a significant factor in children's ability to learn educational concepts. If teachers are not prepared to execute meaningful gardening curriculum, students will not be able to gain science skills from it. It is possible that this hesitation in teachers could be helped by administering gardening education for teachers to learn.

If teachers were able to access some engaging gardening education, they could feel confident in disseminating it effectively to their students. However, it should be noted that Fraizer et al.'s (2019) study was focused only on outdoor gardening curricular experiences for preschool students. There was not a substantial amount of information on the specific curricular gardening experiences in the study that were explained within this paper. While these barriers can be mitigated with more educational research and hands-on education for teachers, it is important to acknowledge the potential roadblocks to this curriculum.

Conclusion

In summary, there are a variety of gardening curricular experiences that can help preschool students gain science skills. Teachers can curate and implement formal gardening curriculum that helps students meet specific science standards. The thermometer and the composting lessons are great examples of formal activities that can help children acquire science skills. Furthermore, indoor gardening curriculum can help combat the barrier of access to a garden when plants are in hibernation or when gardening space is not available. This sub-set of gardening curriculum will allow teachers to bring a "garden" into the classroom with engaging activities. Incorporating gardening insects and a flower identification activity are just a sample of indoor activities' teachers can implement to strengthen their student's science skills.

Lastly, digital tools in the formulation of gardening curriculum melds the concepts of technology and science together. Digital journals with cameras can help young learners with documentation and observation standards. This is a great way to help children accurately discern similarities and differences in plant growth. Moreover, the use of virtual avatars and classrooms is great way to "digitize" the classroom environment for children. While, face-to-face learning is fun, children would be in awe to be welcomed by their virtual avatar "teacher". Utilizing this avatar to coincide with gardening curriculum will be useful in helping children learn sound science skills that they will take with them throughout their schooling.

While this curriculum can be ground-breaking for preschool teachers, potential barriers can exist. However, as previously explained these barriers can be mitigated with the proper supports and will not diminish the objective of these gardening educational experiences. Gardening and interacting with Earth's materials is a pure form of connecting to mother nature. Children deserve to have the opportunity learn from this planet and can gain valuable science knowledge from it. These beings should not only have "green thumbs" in caring for our planet, but they should have "green minds" by being able to learn science skills from talented teachers who plant thoughtful gardening curriculum.

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Enhancing Science Curriculum with Cognitive Development Through the Arts in Eighth Grade Science

Amber Hunter

Abstract: Middle school children are at a crucial turning point in their lives because they are becoming adolescents. Their brain is rapidly changing and pruning away unused connections. Because the brain loses neurons during adolescence, enhancing science curriculum through the arts is particularly important for cognitive development. The arts exercise certain areas of the brain that are used for learning. Research shows that children learn thinking skills through the arts that help them to be successful in eighth grade science. The arts enhance science curriculum through creative activities that promote thinking skills such as focusing, organizing, analyzing, interpreting, evaluating and reasoning. These skills help children develop higher levels of thinking and they help children to learn and understand eighth grade science.

Introduction

Integrating the arts into eighth grade science for reasons that support cognitive development is fitting for this age group. The inclusion of the arts incorporates music, dance, drama and art into the curriculum and involves activities that are creative. When looking at cognitive development as it concerns thinking skills, the arts and eighth grade science are very much intertwined with one another. The arts encourage students to think critically and creatively (Eutsler, 2017). The famous artist, Picasso, attributed his paintings to research and experiment. He used his critical thinking skills to skillfully paint portraits. He referred to his paintings as a process of analysis and experimentation of many different innovative and creative ways to produce a desired combination of effects. He did not see them as works of art (Karakas, 2010). The scientific method, for example, is mimicked by critical thinking skills. The disciplines of science are used in critical thinking (Karakas, 2010). Statistical evidence proves that the arts influence cognitive development and intelligence (Baker, 2013). Middle school students benefit from the inclusion of the arts because they not only gain knowledge of science, but they also gain experience in thinking skills which refines cognitive operations for learning.

Cognitive abilities such as spatial and quantitative understanding, vocabulary growth, and cognitive and intellectual growth are all benefits of visual arts projects and integrating the arts into eighth grade science (Raiyn, 2016). Cognitive factors that are influenced by art are planning, visual-spatial, verbal reasoning, vocabulary, nonverbal reasoning, memory and retrieval, and patterns and relationships (Baker, 2013). By focusing on cognitive development, teachers ultimately support academic achievement and higher levels of thinking.

The learning standards for eighth grade science are based on the students' ability to understand scientific concepts, language, theories, and application (Ohio Department of Education, 2019). They are strongly related to, if not the same, as

the thinking skills students develop as a result of incorporating the arts into eighth grade science. One standard for eighth grade science is being able to use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. A second standard is to use precise language and domain-specific vocabulary to inform about or explain the topic (Ohio Department of Education, 2020). Research shows that cognitive development through the arts promotes thinking skills that help us learn, solve problems, make conclusions, use reasoning, compare and interpret information, evaluate, and reflect on information in a meaningful way (Eutsler, 2017). Cognitive development is important for children during the middle school years because they are starting to become intellectual thinkers (Ormrod, 2014). They are starting to engage and reflect on subject matter in strategic and formative ways.

Cognitive Development

Cognitive development is how the brain develops and the processes people use to learn. The brain functions by releasing neurons through our axons that are protected by the myelin sheath. The myelin sheath of the axon is made thick through repetition which allows the brain to send electrical impulses at a faster rate. This thickening process through repetition is called myelination (Ormrod, 2014). If the myelin sheath of an axon is not there, the transfer of neurons is slow and the function declines. That is why it is important we focus on cognitive development. At this critical age, we can make a difference in growth of the myelin sheath. Repeated engagement of cognitive skills will thicken the myelin sheath which quickens electrical impulses. This increases the fluidity of thinking. By not using certain areas of the brain, it could lead to the death of certain neurons and synapses that help children learn (University of Illinois at Urbana-Champaign, 2007). Many theorists in the past have established well known theories of cognitive development. Piaget and Vygotsky are two prominent theorists known for their theories on cognitive development. Their theories are based on cognitive processes and abilities. They focus on the way our brain remembers, processes concepts and stores information.

Cognitive Development and Thinking Skills in Eighth Grade Science

Thinking skills that are influenced through the arts concern flexible thinking, reasoning, self-control, and self-regulation (Peng & Kievit, 2020). According to Piaget, at this stage (11 to 12 years), children should be able to use logical reasoning, proportional reasoning, idealism, and formulation. A child's academic level of achievement is based on their level of cognitive development and how well they can learn and execute certain tasks (Peng & Kievit, 2020). To encourage learning and success in eighth grade science, the arts can be used to promote thinking skills in a creative way. The arts have positive correlations with eighth grade science and thinking skills that are related to the subject. They develop the cognitive qualities Piaget and Vygotsky set forth in the stages of cognitive development, such as conceptual development, inductive logic and reasoning and abstract thinking. Based on ideas about thinking skills described by various researchers (Eutsler, 2017; Karakas, 2010; Baker, 2013;

Ormrod, 2014; Kievit, 2020), Table 1 outlines the thinking skills related to cognitive development that are promoted through the arts and in eighth grade science.

Table 1
Thinking Skills

Thinking Skills	Definition
Focusing	To focus one's attention over a long period of time. Paying attention to chosen pieces of information while ignoring other stimuli. Staying on task. Focusing attention on the teacher. Teacher instruction influences higher psychological functions.
Organizing	Arranging information so that it can be learned or understood more easily. Organizational skills include but are not limited to grouping information together, creating graphs or tables, putting information in order of importance or significance and understanding concepts, theories, and formulas, like the scientific concept. Creating memorization mnemonics to remember information is an organizational skill, as well.
Analyzing	Includes ordering, comparing and contrasting information. To break down information into different components. Understand the structure, meaning, and relevancy of information and its relation to the subject.
Evaluating	To measure the value and importance of information. To measure the reasonableness and overall quality of information. To give an assessment of performance.
Interpreting	How one interprets information. Having the knowledge in subject areas. Combining ideas and making inferences.
Reflecting	Retrieving information and reflecting on what one remembers. Remembering information that is stored in long term memory or working memory.
Reasoning	Connecting previously learned information with new knowledge and making conclusions and finding solutions to problems. Finding a general pattern of connections that follows or covers an array of meanings and definitions.

Cognitive Development and The Arts in Eighth Grade Science

Cognitive development through the arts correlates with instructional based practices that influence cognitive development and higher levels of thinking. Children that are involved in the arts have the ability to reason, organize, focus, evaluate and reflect in core subjects (Baker, 2013). More importantly, during middle school years children are transitioning into adolescence. Teacher instruction is important and shown to influence students' levels of thinking. When introducing concepts and theories, children learn to reason, reflect and interpret information (Ormrod, 2014). They use analytical skills to make connections in their readings. They use their organizational skills to organize information, graphs, and tables. And they use their evaluating skills to problem solve and measure value.

Music. There are an array of music activities that can be done in the classroom to incorporate music into eighth grade science. For example, singing a song to remember a scientific theory is an activity that enhances one's ability to use their organizational skills, interpretation skills, focus and evaluation skills (Hayes, 2009). The child may even display reasoning skills because the song can incorporate a general pattern of memorization mnemonics that cover an array of definitions. Teachers can find songs that pertain to eighth grade science on the website, Songs for Teach-

ing (n.d.). Three songs that relate to science are the Solar System, Conservation Nation and The Elements Song. The first song relates to science concepts that are about the solar system, the second song talks about the concept of conservation and preserving and protecting the Earth, and the last song is about the elements on the periodic table. You can read about these songs through the website, and you can play them in your classroom for learning.

The cognitive benefits of learning through music include attention, memory, and expanding the working memory. Going further, Hayes (2009) gives us information about a scientist that theorized "heightened attention and novelty in musical stimuli contribute to improved recall of text and information"(p. 9). The improvement of recall of text and information through music, was proven to influence and enhance reflecting, organizing, and reasoning skills. Studies show that students perform well in their academics when they learn memorization skills through music and song. Creating music is also known to enhance spatial temporal reasoning (Baker, 2013). Spatial temporal reasoning is understanding patterns over a period of time to make conclusions about ideas and theories (Hetland, 2000). Music enhances spatial temporal reasoning because children are able to visualize the patterns in a song and use them to remember information, put things together step-by-step and stimulate them to create different patterns.

Dance. The activation of certain areas in the brain as a result of being involved in dance, are the same areas of the brain that are stimulated as a result of being involved in core subjects. Dance also helps with physical mastery, motivation and social intelligence. Students can use dance to learn about vocabulary, concepts, famous theorists, and so much more. For example, an activity that uses dance as a way to learn science concepts would be to create a dance routine about vocabulary words. Students can spell out each vocabulary word by performing a dance for each letter. In this way, they can use dance movements they are familiar with to remember the vocabulary words and concepts. A recent study based on the observations of Dr. Calvo-Merino's and colleagues at University College London, concluded that, "dancers perceive the world differently because they have a special capacity to simulate what they observe" (Grafton, 2009, p. 4), The study showed the connection between dance and learning capabilities. The brain responded better and was more active in the motor areas when the dancer was familiar with the patterns and movement of a dance being observed, suggesting that prior knowledge and familiarity amplifies the ability to simulate others' actions (Grafton, 2009). Dance has a positive impact on science curriculum by activating the areas in the brain used for observing and doing.

Drama. Project and thematic-based learning require cognitive operations such as planning, researching, and imagination. One of the direct connections to using drama in science is the use of analytical skills. When children participate in visual arts projects or thematic objectives (Baker, 2013), they use analytical skills that involve ordering, comparing and contrasting information to select the best fit response (Raiyn, 2016). Drama related activities in eighth grade science enhance thinking skills such as reflecting, self-regulation, reasoning, and interpreting. For example, students can learn about science through thematic objectives and drama related activities that explore the realities of the universe or nature. Students might

perform a routine where they explain about the different elements on Earth, such as gases, liquids and solids. They can dress up in material that represents each element. In their performance, one student may embody the element gas as being slow and sluggish and they can perform slowly and talk slowly to their classmates, and another student can embody the element liquid by moving their arms in a wave-like motion to show water and so on. Drama brings education to life for children (Moore, 2004) and therefore yields learning advances in science and other core subjects.

Visual Arts. Visual arts projects are a popular way for eighth grade teachers to introduce the arts into eighth grade science curriculum. The student's project may be to present the life of a star on a three-fold poster board. The poster board may consist of pictures and artistic features that are eye-catching to the audience. Through the presentation, the student uses their thinking skills to evaluate and interpret information. The student shows thinking skills, such as reasoning and organizing by presenting the information in a logical way. The student shows reflection skills by creating a poster board presentation and the student shows focusing skills by staying engaged in the activity and creating a project that envelops all the criteria needed for a completed assignment.

Learning the concept Punnett Squares and creating a visual arts project that represents the Punnett Squares is another example of a visual arts project that can be used in eighth grade science. The first part of the activity is to complete a series of Punnett Squares. A Punnett Square represents the probability of a specific trait occurring during reproduction. For example, if a female has the recessive trait for blue eyes and a male has the dominant trait for brown eyes, what is the likelihood their offspring will have brown eyes and so on. The purpose of the activity is to use the Punnett Squares to reflect on the genetic makeup of a human. The learning objective suggested for this activity is to accurately use the information and knowledge learned in the chapter to complete the Punnett Squares and then create a visual arts project that represents the Punnett Squares. Table 2 below, outlines and explains the thinking skills a student used when working on this particular activity. It explains in detail each skill observed during the activity and its importance and relevancy to eighth grade science. All of the thinking skills listed are important for cognitive development and eighth grade science.

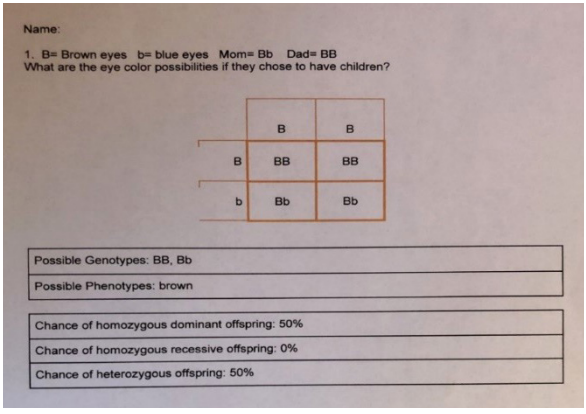
Table 2
Observation of Thinking Skills

Thinking Skill Displayed	Visual Arts Project	How This Leads to Success in Eighth Grade Science
Focusing	Draw a figure based on your Punnett squares.	The student is focused and engaged in the activity. The student is focused on the activity because she likes art. The student creates a visual arts project that is complete.
Organizing	Draw a figure based on your Punnett Squares.	The student organizes Punnett Squares and organizes information on a table to represent the information provided in the Punnett Squares.
Evaluating	Draw a figure based on your Punnett Squares.	The student evaluates the probability or likelihood certain traits will be dominant or recessive.

Thinking Skill Displayed	Visual Arts Project	How This Leads to Success in Eighth Grade Science
Interpreting	Draw a figure based on your Punnett Squares.	The student interprets what she has learned about genetics and Punnett Squares. She also interprets what to draw by looking at the Punnett Squares and tables.
Reflecting	Draw a figure based on your Punnett Squares. Create a visual arts project that represents the Punnett Squares.	The student reflects on what she has learned in class and she reflects on the information she has collected, and organized. The student reflects on the information in the Punnett Square and uses that to draw a human. The student creates a visual arts project that is complete.
Reasoning	Draw a figure based on your Punnett Squares.	The student generalizes observations and draws a descriptive picture that applies to all of the observations.
Analyzing	Draw a figure based on your Punnett Squares.	The student analyzes the probability of certain traits happening, then creates a Punnett Square based on the analyzation of probability of certain traits being present.

The example in Figure 1 is an example of a Punnett Square. As you can see, students are given the genotype of both parents and they are told what each genotype means. In this example, the mother has the recessive trait for blue eyes and the father has the dominant trait for brown eyes. The capital letters represent the dominant trait, and the lower-case letters represent the recessive trait. Homozygous means two letters are the same, and heterozygous means the two letters are different.

Figure 1
Punnett Square



The second part of the assignment is to create a visual arts project that represents the information provided in the Punnett Squares. The picture in Figure 2, is the example for the student's finished project. This example and the project in its entirety show how cognitive development, through the arts, promotes thinking skills and a higher level of understanding of the knowledge being learned. The student used her thinking skills to complete the project. She used her organizational skills to complete Punnett Squares and tables. She used her analytical skills to analyze

her tables and charts and the probability of certain traits being dominant or recessive. She used her interpretation skills to interpret the information presented on the squares and tables in order to draw a figure. She then used her reasoning skills to generalize her observations into one single representation of all the observations presented in her squares and tables. By evaluating and reflecting on the information she learned, she was able to create a visual arts project that was thoughtful and complete. She was focused and engaged in the activity and spent time on the drawing. In this picture, the student interpreted her child to have curly hair, brown skin, a square face, brown eyes, a small nose and a small smile.

Figure 2
Student's Artwork for the Visual Arts Project

Science Curriculum and The Arts

The positive correlations between the arts and the sciences are encouraging to see and because there are many similarities and congruencies in their teachings (Karakas, 2010), there is a sufficient amount of research that talks about the inclusion of the arts and science and its impact in education. Cognitive development is an important area of study and with the research there is, it can be concluded that cognitive development through the arts promotes thinking skills that help students to be successful in eighth grade science. This is important for brain development and academic achievement. Not only do the arts enhance cognitive abilities but they also encourage learning in eighth grade science.

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Incorporating Project-based Learning into K-12 Science Classrooms in Public Schools

Victoria Pope

Abstract: In the U.S., majority of public schools follow scripted curriculum and teacher-directed teaching. Although Project Based Learning is apparent in a few schools throughout the U.S, most schools, specifically lower income and urban schools do not have Project Based Learning in their science classrooms. Therefore, students may not have the ability to explore learning content through hands-on experiences and through relatable interest. Yet, according to research, Project Based Learning can improve the skills and learning of students in the classroom and increase test scores. Thus, based on research, this manuscript will discuss information on Project Based Learning and support the claim that Project Based Learning should become the main pedagogy in science classes in K-12 public schools.

Introduction

Imagine a study done between two second grade science classrooms learning about animal habitats. One classroom (Group A) uses solely scripted curriculum and teacher-directed methods. The other classroom (Group B) uses Project Based Learning (PBL) methods. Both lessons incorporate state standards and criteria for testing. The animals that were chosen for the project were based on a survey given to group B's entailing which animals and their habitats they would like to learn about.

Group A's teacher introduces the topic of lesson through a PowerPoint presentation. The teacher tells the students that they are going to learn about different animal habitats, and at the end of the lesson, they should be able to identify the animals and their habitats. The students watch the PowerPoint slides on the carpet. The teacher asks very few observational questions and only checks for understanding when students engage in a recall session. The PowerPoint slides include labels and pictures that the students can observe. The five animals included are: monkeys, birds, lions, iguana, and hippos. After the presentation is completed, students go back to their desk and begin to work on their packets. Each animal has three pages: a picture of the animal with its name, a picture of the habitat with its name, and a page with three questions to check for understanding. The three questions are: What animals live in (blank) habitat; Where can you find this habitat; and what is the habitat made of? On the first page, students are instructed to color the picture and trace the name of the animal. On the second page, the students are instructed to label the picture as best as they can from what they learned, and color the picture. Afterwards, the teacher asks for the students to come to the carpet for the final summative assessment. The teacher calls on two to three students to share their coloring and their answers. Finally, the teacher collects their packets and repeats the process for the next four days. These students do not engage further in their exploration, and afterwards they move on to the next topic.

Group B's teacher uses a zoo website with interactive videos and sounds. The stu-

dents explore the same five animals as Group A, though they spend one extra day on each animal. The teacher plays the videos, which are about five to eight minutes long. Throughout the videos, the teacher stops the videos and asks students predictive thinking questions; "what do you think the iguana's habitat is made of?", observations questions; "what differences do you notice between the monkey's habitat versus the bird's habitat?", and formative questions; "where did the zoologist say the monkey's habitat is located?". Following the video, the teacher instructs students to create, color, and label a picture of the habitats based on what they learned. After, the teacher tells the students that they are going to make their own habitats for the animals tomorrow. Additionally, the students are asked to leave their pictures at their table and do a gallery walk. (A gallery walk is where students walk around the classroom and look at their fellow classmates' work). The students are told to observe their classmates' work to see the similarities and differences in their work. After this lesson, the teacher includes a stuffed animal in the classroom to represent the animal they are learning about at that time. During play and exploration time, the teacher encourages the students to engage in imaginary play with the stuffed animals. The next day the teacher reads a book with more facts about the habitats and the animals. They foster questions about the information, as well as have students engage in small group discussions about what they have observed or learned a few times throughout the book. For the remainder of the 40 minutes, students are put into groups of three or four and told to create a 3D habitat together. There are manipulatives and arts and crafts materials ready for the students. The teacher is there for guided support. Afterwards, the students present their projects at day two of writing time because the teacher incorporated a writing piece that required the student to explain individually what they learned about each animal's habitat. At the end of this unit, the students went on a field trip to the zoo as a class to see the animals and explore the habitats in person.

Based on this information, as the reader, think about who obtained and retained the most information and applied their knowledge to the test better.

The Issue of Exploring PBL in Science Classrooms

In the current light of our education system, many public schools use scripted curriculums and a teacher-directed approach to learning. The rationale behind these teaching models often used for students is the achievement of higher scores on state standardized testing. The teaching methods often embody the criteria and information needed for standardized testing. Standardized testing scores can determine the renewal of teacher contracts, government funding, school accreditation, adequate yearly progress report, graduation and more. Although these teaching methods have been used for many years within education, these methods are not solely the most effective and beneficial methods for students' skill building and learning. Therefore, I believe public schools should incorporate an alternative teaching method, Project Based Learning (PBL), as its main pedagogy in science classrooms to promote growth, independence, long-term memory of information, and equitable opportunities for success.

The Rationale and Background Information for Exploring PBL

Project Based Learning is a teaching method used in order for students to learn while actively engaging in real world and personally meaningful projects and lessons (PBLWorks, 2021). Through PBL, students will work on projects and lessons for an extended period of time. This process involves solving real-world problems, inquiries, and answering complex questions that demonstrate their knowledge and skills by presenting their knowledge verbally and non-verbally, which fosters higher levels of language. Therefore, the goal of PBL is to "increase students' knowledge as well as critical thinking, collaboration, creativity and communication skills" (PBLWorks, 2021a, para. 2). From the example above, students in group B's science class had an opportunity to collaborate and communicate with peers, as well as critically think about how to make a 3D habitat without direct instruction which exemplifies the main goal of PBL.

On the contrary, especially in lower income or urban school districts, teachers are expected to rely on scripted curriculum materials instead of their students' interests and their own professional judgment due to government funding through standardized testing. Scripted curriculum was designed to give teachers tools to use to foster the learning of students for tested material and state standards (Milner, 2014). As a result, students do not have a lot of opportunities to foster critical thinking skills, engage in higher levels of language, and have hands-on experiences within their learning. Information is given to the students through worksheets, packets, lectures, and repetition games.

Recommendations and Lessons for Educators

For PBL to be implemented in science classrooms, teachers should be equipped with the knowledge to discuss a variety of topics and implement state standards and criteria into large units or projects, as well as equip them with the resources to expand on students' explorations. Educators should attend professional developments or take a class on PBL to equip themselves with the skills and tools needed to implement PBL into the classrooms. Furthermore, they should apply their knowledge and begin to integrate required topics into units of studies, while also leaving room for students to share their own thoughts and opinions.

Assessing the Ideas and Viewpoints from Both Sides

The Side for Project Based Learning

Regarding the change in pedagogy, those for PBL in science classrooms would argue that making PBL the main pedagogy in the classrooms would help put an end to the achievement gap for lower income and urban schools' districts. Also, they would argue that PBL could enhance learning skills such as effective levels of communication and collaboration that students need for future education and life. According to PBLWorks (2021b)

PBL can be transformative for students, especially those furthest from educa-

> tional opportunity. Now more than ever, we need young people who are ready, willing, and able to tackle the challenges of their lives and the world they will inherit - and nothing prepares them better than Project Based Learning (para. 1).

Also, those for including PBL in science classrooms may agree that incorporating students' interest into the classroom may increase student engagement and exposure which could potentially lead to higher test scores, better student behavior, and better student outcomes.

Those for PBL may argue that the current stakeholders of the issue are school boards, administration, and educators, and they should implement this teaching method into science classrooms. These individuals all play a part in the discussion and decision to make PBL the main pedagogy in science classrooms. With the inclusion of PBL comes the conversations surrounding equity, cultural capital, student interest, retention and testing, closing the "gap", and better opportunities for lower income and urban school districts. Therefore, each member and school will be affected by the inclusion of PBL. According to Giesige's (2017) research:

> Out of five studies that compared project-based learning to didactic teacher-centered learning, three studies showed better results for those using project-based learning and the remaining two showed no statistical difference between the control and treatment groups. No group showed worse academic outcomes for the students engaged in project-based. (p. 65)

This shows that there is a higher probability of success with using PBL, rather than using solely scripted curriculum and teacher-directed learning.

The Side Opposed to Project Based Learning

Regarding those who are opposed to changing the curriculum to PBL in science classroom, this side would argue that having hands-on experiences and longer units of study would hinder the growth of students and efficiency of teachers because the projects take too much time. According to Ribeiro (2011):

> It should be also remarked that not only did PBL consume more of the teacher's total time, but it also raised, however moderately, the time load in a uniform manner throughout the semester and restrained his autonomy to manage his time. This continual increase was due to the fact that PBL made it difficult to produce a thoroughly anticipated syllabus plan. (p. 10)

Based on this information, they would argue that the students could become behind in learning. And because of that, the school would receive lower test scores and federal money. Lower scores would affect the schools' accreditation, enrollment, and resources. Therefore, teachers should stick to the curriculum given to help students learn what is on the test and move quickly through the standards and information.

Also, people against PBL would agree, or partially agree, with the Pedagogy of Poverty ideas from Haberman (1991) found through Giesige's (2017) research:

Four assumptions describe the Pedagogy of Poverty:

- Teaching is what teachers do, learning is what students do. Therefore, students and teachers are engaged in different activities.

- Teachers are in charge and responsible. Students are those who still need to develop appropriate behavior.
- Students represent a wide range of individual differences... therefore ranking of some sort is inevitable.
- Basic skills are a prerequisite for learning and living and students are not necessarily interested in these basic skills. Therefore, directive pedagogy must be used. (p. 83)

These ideas align with teacher-directed teaching methods which a lot of students, especially students in lower income and urban school districts, are exposed to. Thus, these assumptions would allow teachers to teach what the school or they themselves see as vital information, as well control the amount of time given to each topic. Nonetheless, some people on this side may argue that it is okay to deviate from the scripted curriculum a little if the teacher has a concrete purpose, the students will learn the needed information, and the teacher can execute the lesson well.

The Stance of the Manuscript for PBL

After analyzing this research and other research on Project Based Learning, the stakeholders may conclude that making PBL the main pedagogy in public schools can be beneficial for students' success. It is important for students to develop good critical thinking, communication, independence, higher levels of language, collaboration and creativity skills through the exploration of group work, hands-on activities, and projects that can be implemented in the classroom. Also, it is very important that students receive equity within their education because the one size fits all curriculum has not proven to be exceptional for all students. Creating environments where students are heard, attentive, and learning are essential to the growth of the students, but also the success of the school and its community.

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Social Studies

Incorporating Media and Technological Literacy in the Social Studies Classroom

Nicolas Ciotola

Abstract: So much has changed about the way we partake and receive our information over the last few decades. Seemingly everyone gets their information from the internet or television. Unfortunately, the internet allows for unchecked information to be taken as fact which leads to an incorrect interpretation of fact and fiction. There is arguably no greater target audience for the sort of misinformation found on the internet and social media than our youth due to how impressionable their minds are. Because of this, I am interested in discussing what can be done as social studies educators to prevent our students from falling prey to the plethora of misinformation that exists in our current technological and media world.

Introduction

> *Imagine that you are teaching your class of eighth grade social studies students about the Civil War. You educate your students on the various battles and reasons for the war and describe to them how it was one of the darkest times in American history. As you discuss with them how Abraham Lincoln intended on freeing the slaves, one student raises his hand and asks, "Are you sure? I thought that it was the South that did not want to enforce slavery. That is what I heard." You know that this is preposterous, so you ask them where they heard such a thing.*
>
> *"Well, I read it on a website!" the student exclaims assuredly. When the student replies, you see that multiple other students are nodding their heads in agreement as they believe this to be true as well. You now realize that this is a much bigger issue than you could have imagined. The internet and various other outlets are readily available for students to gather information from, whether it be fact or fiction. You realize something has to be done to aid students in keeping them from falling victim to this sort of misinformation.*

In a social studies classroom, teachers are not only teaching subject-matter, but they are also mentors to their students, or often play the role of counselor. There is an abundance of challenges that teachers must balance as well. Some of these challenges include understanding and relating to your students, differentiating instruction, eliminating barriers for their students when it comes to their ability to succeed in the classroom, and many more. This can be said for any teacher of any subject. However, with the emergence of technology, the internet, social media, and popular news sources, the role of the social studies educator has become far more challenging than it once was. While all subjects must deal with providing their students the pathway for deciphering fact from fiction, there is arguably no subject that deals with this more than the social studies classroom, given that social studies deals with current events, politics, and history on a daily basis. In this sense, incorporating media and technological literacy, meaning educating students on how to analyze information through various sources and to decipher fact from fiction from these

outlets, in the social studies curriculum is critical to student growth in their education, as well as in becoming informed citizens in their communities.

Support for Media and Technological Literacy in Social Studies

There is vast support for the implementation of media and technological literacy in the social studies curriculum. While the methods and means of which the implementation of this can occur varies, the overwhelming research supports the integration of these practices into the curriculum. According to Dr. David Consadine, "media literacy is a logical, even necessary match for social studies standards that address global connections, individual development, and mass identity…mass media must surely be considered major agents of socialization and therefore worthy of study" (Consadine, 2002, p. 32). These thoughts resemble the majority of research found that are in agreement that media literacy is a critical skill for students to develop, especially in a social studies classroom. In some instances, these practices are being implemented; however, as Consadine (2002) notes, "while it is true that media literacy is beginning to show up in state standards, that innovation should not be equated with classroom implementation or practice" (p. 33). This is an important distinction because as noted, while the standards may demonstrate that media literacy should be presented, it does not always work that way in the classroom.

Many teachers agree and believe that media literacy should be implemented in their social studies classrooms, but the unfortunate issue is they do not know how. Educators must be provided with the appropriate tools and resources to aid themselves in their media and technological literacy growth. Further, in order for media literacy training to be effective, it needs to reflect the expectation that is to be treated with the utmost importance. As Rogow (2009) claims, "the vast majority of educators genuinely want their students to thrive, and that is a good thing because media literacy is completely reliant on the abilities of highly skilled teachers" (p. 73).

Role of the Educator

Social studies educators play a large role in their students lives outside of simply teaching them on a certain subject-matter. A goal for social studies educators is to better prepare their students for the real world. Further, social studies educators aim to make their students functioning members of society and to perform their civic duty of being informed citizens. While it is important to decipher fact from fiction inside the classroom, it is equally important to do so outside of the classroom. It is important that social studies educators play a key role in the integration of media and technological literacy in their classroom in an effort to make their students more well-rounded students. As Johnson (2018) says, "Teaching media literacy is how we can fight off 'fake news'" (p. 36). At a time in our nation where misinformation runs rampant both online and in our news media, there has arguably never been a more critical time that educators provide their students the foundation to make informed decisions when determining what is fact and what is fiction.

As noted above, there are a vast number of social studies educators that have been surveyed that believe that integrating media and technological literacy is important and critical to student growth in their education and in their citizenship. As

Stein & Prewett (2009) note, "Although media literacy education may have come late to the social studies, many social studies teachers perceive a need for media literacy in their classroom" (p. 132). With this perceived need comes responsibility for educators to implement these practices. Further, when integrating media and technological literacy into the social studies curriculum, it is important that social studies educators understand that it can be a long, difficult process in doing so. One thing that must be taught to students in the social studies classroom is that misinformation is not entirely the fault of the consumer, but it is equally the fault of the provider of the misinformation. Educating students on the harm of misinformation and providing them the framework for understanding fact from fiction is important, but it is equally important that students know that it is not entirely their fault if they fall victim to misinformation. As Faix (2018) states that "…acknowledging that (misinformation) is unlikely to change can help underline for students the importance of source evaluation as a lifelong information literacy skill…) (p. 49). As educators, it is crucial to explain to students that as long as the internet and other forms of media exist, there will be misinformation. The role of the educator in this sense is to explain to their students that it is not their fault that misinformation exists and to provide them the necessary resources to avoid falling victim to said misinformation.

Strategies to Implement Media and Technological Literacy in Social Studies

Social studies educators who intend to implement these specific literacies into their classrooms must have strategies in order to do so. Manfra & Holmes (2020) demonstrate a five- step strategy plan for implementing media literacy into the social studies classroom. The five steps are as follows:

1. Connecting media literacy with the purposes of social studies education
2. Explore the history of misinformation in United States history
3. Trace the history of the field of journalism and journalistic ethics
4. Analyze contemporary examples of misinformation
5. Develop efficacy working with tools and heuristics for detecting misinformation

Each of these steps is a great examples of how media literacy can be incorporated into the social studies classroom. First, it is important to connect media literacy to social studies and explain to students why they are important together and how they are connected. Second, it is equally important to explain to students how misinformation in United States history has existed for a very long time, and how they can determine what is not factual about history. Educators should also teach their students the role of journalism in history and providing information. Further, an extension of this can be educating students on the facts that history is typically written by the "winners," meaning those in power. History typically has also been written from a white male perspective, often leaving other perspectives behind. Educating students on these facts can help them have a greater understanding of

the type of information they may encounter on their own, and what to make of it. Educators then can begin to analyze information from news media and social media platforms and students can begin to develop an understanding of how to make the determination of what information is deemed to be accurate and inaccurate. Finally, students should be able to use the tools and resources given to them to detect misinformation more regularly.

Understanding Potential Challenges

Implementing these literacies into social studies classrooms does not come without challenges. However, understanding how to confront these challenges can best aid social studies educators in working through them to help educate their students on the best practices at hand to identify misinformation in the various forms of media. In a survey conducted by Gretter & Yadav (2018) out of Michigan State University, educators were asked about potential disadvantages or challenges that they would face in implementing media literacy into their teaching. The vast majority of surveyed educators, 67% in fact, say that parents might disagree with teaching their children these practices (Gretter and Yadav, 2018, p. 113). There could be a variety of reasons for parents disapproving of these teachings which could include parents being against the use of social media by the children, or perhaps they do not agree with educating their children on how to properly evaluate sources because they may feel that it targets their thoughts and beliefs. This is a very real challenge that all educators face on a daily basis and especially social studies educators. If parents object to the teaching of media literacy in the classroom, the educator must work with the parents so that they may understand the importance of including this in the curriculum. Keeping an open line of communication with parents is a critical aspect of teaching, but it is especially true when it comes to specific curriculum and teaching for their children. Being open and honest about the education of their child is of the utmost importance. It is the job of the educator to teach their students, and that takes precedence.

Conclusion

First and foremost, teaching students about media literacy can help provide students the necessary skills and resources to be more informed citizens outside of skill, as well as being better decision makers due to the fact that they have the tools to make more informed decisions. Second, much research shows that media literacy in a social studies classroom is critical and necessary due to the content nature in the social studies classroom. With as much media as students take in on a daily basis, it is important they understand what to make of all of it, and how to determine fake from real. Students in today's society are also more well-versed in technology than any other generation. This is more of a reason to work to improve the literacy in these aspects. Research also shows that the vast majority of social studies educators have a strong desire to incorporate media literacy into their curriculum. This is a positive because in order to best educate students in these literacies, educators must be willing to educate their students on these practices, and they must develop an understanding of the best ways to do so.

While there are challenges and perceived negatives for implementing media and technological literacy into the social studies curriculum, the positives far outweigh the negatives. Providing students with the resources and skillset to appropriately identify misinformation and decipher fact from fiction is of great importance for the growth of students in their education, but perhaps more importantly, as members of their community. Incorporating these practices into the curriculum aligns with the standards of teaching social studies in that social studies focuses on history and civic participation in much of the curriculum. Educating students on how to best identify misinformation makes them better educated on history, as well as better participants in their civic duty.

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The Positive Effect of Debate Inside the Social Studies Classroom

John Poddany

Abstract: For far too long social studies classrooms having been missing a key aspect to bring classroom participation into instruction. The social studies classroom has been teacher-centered with an abundance of text to read and comprehend with little focus on bringing the students experiences and thoughts into the discussion. The social studies classroom is one that needs to prepare students for their civic duties outside of the classroom. This process begins with the students being able to form thoughts and opinions about topics to communicate to others. The strategy of using discussion questions that can lead to debate will also lead students to have a higher level of participation leading to better comprehension.

Introduction

What we as professional educators know about the classroom learning experience is that students actively participating in the content has the possibility to lead to better comprehension of the material. This possibility rings true in the social studies classroom as well. The beauty of the social studies classroom is that educators can allow students to bring their societal influences into the lesson to get them a deeper understanding of the material. More so than any other content area, the social studies content area brings in subject matter that can have a different meaning based on a student's race, sexual orientation, religion, and/or nationality. Allowing students to lead the discussion surrounding a subject at hand can open the door to others having a better understanding of how the topics are portrayed by others. All of this leads to the possibility of students having a deeper understanding of the material.

Why has debate around the content not being been more widely used throughout the social studies classroom though? As Zorwick & Wade (2016) mentioned, "different positions are identified, and a clash of ideas is encouraged, thereby inviting a closer examination of the arguments and reasoning presented" (p. 436). Students having these different positions, viewpoints, and understanding of topics can lead to a deeper examination of the topic. This is exactly what social studies educators should be striving for, a classroom with debate using facts and concepts while drawing from the students' backgrounds. Social studies educators are also trying to prepare students for their civic duties outside of the classroom. By having a classroom with debate using facts and concepts can ultimately begin preparing students for these duties outside of the classroom.

Increasing Comprehension and Active Participation Through Debate

Imagine students being presented the topic of the Bill of Rights and being asked to create a debate around the topic using only the facts and concepts found in the course textbook and what the teacher communicated in his lecture. The way the

material is presented in the textbook or lecture may cause some students to struggle with an understanding of the topic. Student learning style may also limit the understanding of some students. Other students may struggle to see how this is beneficial to them outside of the classroom. Now imagine a classroom where the students are invited to debate the same topic, but they are allowed to go beyond the textbook to include insights and information from their background and prior knowledge to formulate their debate about the topic. Understanding how, for example, the fourth amendment can help a student if they are pulled over driving down the road or if a police officer comes to their home to search their house. Using real-life scenarios and students' societal influences to help paint the picture of the content within argumentation and debate has the possibilities of increased student participation and better comprehension. In my limited classroom experience in an urban education school, I used this technique to increase student's participation and it resulted in better comprehension of the content during formative assessment. Students had an increased understanding by drawing from real-life experiences and applying them to the content that was being covered. The arguments, discussion, and debate would sometimes become heated or off topic by using societal backgrounds, but as a teacher my job was to steer the discussion back in the correct direction. This form of instruction showed signs of increased student participation and comprehension. The research shows the same benefits as what I found implementing this form of instruction in my classroom.

Student involvement can play a large role in how students comprehend and participate with the content. Including the students in debate can lead to an actively engaged classroom which has the possibility to lead to higher-levels of critical thinking. Zorwick & Wade (2016) stated in their study on civic education using debate, "a teacher can create a dynamic exchange that promotes critical thinking for its participants, both as speakers and as listeners" (p. 436). Using debate and argumentation in the social studies classroom allows students to choose a side, defend it and as a result, come to a better understanding of the material being presented.

Activating Higher-Level Thinking with Debate

In the field of social studies education, the National Council for the Social Studies has a lot to say as to how an effective classroom is developed. Leslie Duhaylongsod (2017) of Salem State University states that "the National Council for the Social Studies (NCSS) supports the use of debate in both middle and high school classrooms" (p. 100). The NCSS is backing the use of debate due to research and studies to show the effectiveness of the activity. The NCSS states "students learn from value-based reasoning when addressing problems and issues" (Duhaylongsod, 2017, p. 100). Duhaylongsod (2017) used debates in the classroom for her research using the "Catalyzing Comprehension Through Discussion and Debate Research Project" as a benchmark to show the possible benefits of debate and discussion in the Social Studies classroom (p. 102). She presented multiple activities over four sessions to present facts about Ancient Egypt and on the fifth day had the students debate using the facts and concepts learned throughout the unit. Through her research she found that middle school students "are capable of academic argumentation in classroom debates on topics in social studies" (Duhaylongsod, 2017, p. 113). Her

findings also showed that students were able to support their claims with evidence, thus leading the students to a higher-level thinking about the topics being debated (Duhaylongsod, 2017 p. 108).

Using Student's Background in Debate

Using debate as a part of the social studies classroom can also allow students to bring their ideas and background into the lesson. This also is a reason as to why some teachers are reluctant to use debate in their classroom. According to Stephen J. Thornton (1994) of Columbia University, allowing backgrounds to come into the student's discussion and debate will begin "connecting students' experience and the curriculum, providing at least some opportunity for students to construct meanings for themselves, allowing for possibility, even the likelihood, that different students will take away different understandings from a lesson, and questioning students' taken-for-granted views of the world" (p. 23). By doing this it provides the opportunity to enhance student learning experiences. Sullivan et al. (2015) stated that "when students were engaged in learning and saw clear connections between the history content and their own interests, they wanted to participate in class discussions" (p. 38). Giving students a voice within the instruction of social studies and allowing them to tie their experiences back to the material has the potential to enhance engagement and comprehension.

Allowing students to use their experiences in the discussion can also help explain the material within multiple perspectives. As Bruce Larson (1999) discussed in his finding on discussion in a diverse classroom, he mentioned that "teachers consider student diversity – in areas such as cultural background, ethnicity, gender, race, learning styles, and ability – both positively and negatively" (p. 176). There are some teachers that may be hesitant to use discussion and debate in the classroom due to opposing views based on background within the classroom. Teachers need to have control over the classroom to ensure the discussion or debate stays on topic and that students are using facts and concepts within the lesson to form the arguments being presented. When this is done properly and effectively, diversity and background can bring other perspectives into the discussion. Within Larson's (1999) research, multiple teachers mentioned that "a diverse classroom could be the only place students will hear perspectives and opinions that differ from their own point of view" (p. 176). One of the main objectives as a social studies educator is to prepare students to be active participants within their civic duties, so by hearing multiple perspectives the teacher will be preparing them for this participation outside of the classroom. Learning from multiple perspectives helps students see the whole picture of the content being taught to the class.

Beginning Debate Early

Engaging critical thinking and higher-level thinking needs to begin at a young age within the social studies classroom. Ochoa-Becker et al. (2001) performed a study that looked at critical thinking and decision making with young children to see the benefits that they have in our democracy. The observations occurred within the classroom while covering controversial topics within the social studies content area

such as slavery and the Civil War. A fifth-grade teacher split students up between the north and south when discussing the Civil War to try and compromise to avoid conflict (Ochoa-Becker et al., 2001, pp. 267-268). They found that by doing this and creating debate between the two groups "the children responded vigorously, and a strong discussion followed that included higher-level thinking on the part of the children" (Ochoa-Becker et al., 2001, p. 268). The conclusion of their studies of different teaching practices and strategies showed that "critical thinking was encouraged on an on-going basis by debates, dilemmas, open-ended children's stories and questions-asking activities" (Ochoa-Becker et al., 2001, p. 282).

Early childhood students were able to activate critical thinking during debate with one another, which helps show the benefits of using discussion and debates to encourage comprehension. Starting this form of instruction at a young age will also "build a foundation for critical thinking and decision making that can be developed further in later grades" (Ochoa-Becker et al., 2001, p. 285). Creating a classroom environment that encourages student-student interaction at an early age creates the foundation for this form of engagement throughout the school experience. Teachers implementing debate early on will also set the foundation for students to continue with active participation to lead to better comprehension of content as they continue to higher grades in school.

Debate Leads to Higher-Level Thinking

Ultimately, educators strive to challenge students to think outside of the box and to apply the facts and concepts that are being covered. The research shows that debate has the potential to enhance students critical and higher-level thinking when discussing the content. Challenging students to apply the concepts and create an argument is a valuable tool to increase active participation within the classroom. This form of learning is backed by Bloom's Taxonomy, which consists of the lowest level of learning as remembering, understanding, applying, analyzing, evaluating, up to the highest level creating (Bloom, 1956). Jaggers (2013) used Bloom's Taxonomy to research the effectiveness of debate in the classroom. In her research debate is looked at as "a powerful learning tool for promoting classroom interaction and the developments of skills such as communication, argument-construction, discussion, and critical analysis" (Jaggers, 2013, p. 39). As student's progress upward on Bloom's hierarchy, the cognitive and affective domains begin to overlap (Jaggers, 2013, p. 39), showing the benefits of incorporating debate in the classroom.

Debate in the classroom has a lot of benefits for the students, including having the "potential to enhance critical and creative thinking as well as reasoning, communication skills and problem-solving skills" (Zare & Othman, 2013, p. 1507). Being able to form arguments to be used in the classroom debate by including students' prior knowledge is beneficial. Students need to look back on the facts and concepts that were presented about a topic to form the ideas used in debate. "Analysis of the data shows that classroom debates helped the learners get involved in the intellectual practices which illustrate critical thinking skills" (Zare & Othman, 2013, p. 1508). By observing the student's involvement and participation in the debates, teachers can have an idea of how well students are comprehending the material be-

ing covered in the given unit. If students are arguing without facts and concepts, the teacher will know that more information needs to be covered and discussed.

Conclusion

Debate can lead to a student better understanding the material being covered. Within the social studies content area far too often students aren't actively participating, so implementing debate as a form of instruction allows students to have a larger role in the classroom. All of the research presented shows that this has a positive effect on the student's comprehension of the materials. It also gives students the ability to bring their background into the conversation to help them apply the concepts. All of these aspects of debate show that it is an effective form of instruction within the social studies classroom to draw out the different meaning and understanding of students of different races, sexual orientation, religion, or nationality.

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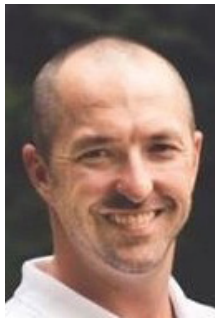

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Importance of Using Film in Social Studies Education

Susan Wagner

Abstract: The COVID-19 pandemic forced educators to rework their entire delivery method for instruction to students. It has allowed technology and media, such as film, to take a forefront. Film is a key component to the successful delivery of social studies content to students. Utilizing film to deliver content in social studies provides many different benefits for students. This article explores several ideas including the importance of utilizing film to teach content within social studies, the types of film to use, different concepts to be taught using film as well as the cautions of using film.

Introduction

Imagine being a student in a history class where the teacher talks for 60 minutes every day, five days a week. There are a few slides in a presentation with notes to be written about the topic at hand. The class follows the same routine every single day. There are only notes with lectures, quizzes, and tests. Nothing exciting or engaging is ever occurring. Next, imagine being the educator in that room. Lecturing for 60 minutes while most students sleep through the information. Quizzes and tests over said information result in many students failing.

Some social studies classrooms are stuck in a pattern of disengagement like the one described above. Virtual learning due to the COVID-19 pandemic has taught educators and students alike that utilizing technology and media in education is no longer avoidable. Many students today are tech savvy in ways that could never be thought possible. In this sense, the field of education has to be adaptable too. Teachers have had to adapt their teaching styles to compensate for the ever-changing world around them. The way educators teach students has to be consistent with the way students comprehend information best. "The importance of the use of visual technology in education is more noticeable, especially considering that the new generation spends most of their time in front of audio and video communication devices such as computers, internet and television" (Icen & Tuncel, 2019, p. 231). The days of paper and pencil notes are becoming less frequent. One of the ways that educators can adapt to this need is by the use of films in social studies classrooms. The utilization of film is a key component to the successful delivery of social studies content to students.

Importance of Instruction by Film

Films are the most influential of visual materials (Icen & Tuncel, 2019, p. 231). Films provide viewers with images, motion, and sounds that immerse them into a storyline. This storyline is able to "transfer more information to individuals in a simpler and more comprehensible manner than written texts" (Icen & Tuncel, 2019, p. 231). The utilization of written texts is important, so students are able to build

written comprehension skills. However, if this is the only mode of delivery, students may easily become bored. The incorporation of films into lessons help to decrease the monotony of lectures and help to stimulate interest of the students (D'sa, 2005, p. 10). Films are a modern luxury that students are easily able to relate too. By using these methods to deliver content, students tend to enjoy the class as well as increase the comprehensibility of the content being taught more than traditional lecture methods (D'sa, 2005, p. 10).

Films are also able to convey social aspects and emotions of events more than any written text could (Icen & Tuncel, 2019, p. 231) more accurately. There is research to support the importance of using students' emotions when learning. According to D'sa (2005), "neuroscientists have established that the storage and strength of memories can be increased if learning is done both at the emotional and at the cognitive level (LeDoux, 1997, as quoted in D'Sa, 2005, p. 10). Films, with the visual and emotional immersions they provide, can lead to an increase in retention and comprehension of content within the students (Icen & Tuncel, 2019, p. 231; D'sa, 2005, p. 10). By tapping into the emotions of the students, educators can activate retention and comprehension within the student which will lead to an increased storage time for the memories created during the lesson.

It is clear that films increase the comprehension of content. However, films also help students to build key skills while comprehending the material. Films to teach social studies content can also aid students in the building of primary and secondary sources skills. Films used as primary sources are analyzed as an information source regarding the time of the film's creation (Gunn, 2010, p. 647). The utilization of films as a primary source allows students to form generalizations about the subject matter within the film when comparing multiple sources including written text (Gunn, 2010, p. 648). For example, the film, Bonnie and Clyde, is a primary source for studying the 1960s, not the 1930s (Gunn, 2010, p. 647). Students will use the film to study the time that the film was created the 1960s, not when the time of the setting, the 1930s. Students can use this information about the 1960s to form generalizations about that time in history. Students can compare the generalizations formed from watching the film to those read about in their history text books. This comparison is a critical skill that students must possess. Another key component to using film as primary sources is the development of historical film literacy. Historical film literacy are the skills that allow students to view and critically analyze movies, set in the past, as historical documents (Gunn, 2010, pp. 647-648). The utilization of film is one way that allows students to develop higher level thinking skills beyond analysis. They could begin to develop synthesis and evaluation skills as well (Icen & Tuncel, 2019, p. 231). The development of these skills ultimately leads to the promotion of students' interpretive competency, autonomy, and engagement with social studies content (Gunn, 2010, p. 648). Students are provided the opportunity to go beyond just memorization of dates and key historical figures. They are expanding higher order thinking skills that are useful later in life. Films as primary sources provide many benefits, but films can also be used as secondary sources.

Most of the time films are used as secondary sources of information when used in a social studies classroom. As a secondary source, films are used as sources regarding the time period they depict (Gunn, 2010, p. 647). Films used as secondary sources provide details of the time the setting is taking place. For example, the

film The Alamo can be used as a secondary source to discuss Westward expansion (Gunn, 2010, p. 647). Films as secondary sources are more effective when students are provided the opportunity to "reflect on or become aware of their nature as interpretations" (Gunn, 2010, p. 648). Students, given various interpretations of the events, can result in cognitive dissonance which motivates students to use higher-order interpretation skills to form their own interpretation of the event (Gunn, 2010, pp. 648-649). In the example of The Alamo, students are able to discuss Westward expansion and when given the opportunity to reflect on interpretations, they are able to use higher order thinking skills to create their own interpretations.

Concepts to be Taught Using Film

The social studies discipline is an extremely large content area that contains many different subsets. The use of film in this area can encompass any of the areas within social studies. The different types of film can also help to teach different concepts in social studies. The main area discussed in this manuscript is history and how film can assist in teaching different concepts within history.

Gender equity is at the constant forefront of discussions across the globe. In history class, much of the focus ignores the female perspective (Schiener-Fisher & Russell, 2012, p. 221). This may be because social studies standards do not demand inclusion for the female perspective or even multiple perspectives (Schiener-Fisher & Russell, 2012, p. 221). For example, The National Council for the Social Studies only contains one standard that mentions gender and each state's standards are also similar in nature (Schiener-Fisher & Russell, 2012, p. 221). With this lack of representation, films can be used to provide gender equity and historical education through the use of multiple perspectives. For example, the film, The Diary of Anne Frank, can be used to in a unit centered around World War II (Schiener-Fisher & Russell, 2012, p. 224). Anne Frank can be inserted into this conversation as well as the conversation of religious intolerance when discussing World War II (Schiener-Fisher & Russell, 2012, p. 224). Another film that can be used to present content while providing gender equity would be Their Eyes Were Watching God (Schiener-Fisher & Russell, 2012, p. 224). This film can be used in a unit centered around the 1920s. Many history curricula already include units on the roaring 20s. However, this film can provide a differing view on American culture during that time (Schiener-Fisher & Russell, 2012, p. 224). It shows the American culture in the south, specifically Florida (Schiener-Fisher & Russell, 2012, p. 224). This film also would provide information on what it was like to be African American during this time in American history and could provide students with valuable information (Schiener-Fisher & Russell, 2012, 224).

Racism is a major controversial theme that is woven into the history of the world. Many educators shy away from this as it could be considered too controversial (Buchanan, 2016, p. 139). Film could provide a way for educators to explore this theme in a safer format. As mentioned previously, films are a great way to provide multiple perspectives on the same topics. When discussing racism with students, teachers can provide multiple perspectives which can lead to a democratic conversation space within the classroom (Buchanan, 2016, p. 139). Educators could show films that provide more context on the U.S. Civil Rights Movement and by showing

these films, students are able to use higher order thinking skills to interpret the film (Buchanan, 2016, p. 139). While film should not replace having a conversation, as there are limitations, it can be a conversation starter into those difficult conversations with students. It can allow students to have discussion points without being too controversial.

History education contains many different topics and can lead to interesting discussions. The previously mentioned topics are just two examples of historical content that can be taught using film. Many other historical events and time periods can be taught with the utilization of film.

Types of Films to be Utilized

There are many different types of films available to educators. However, there are a few types of films that can provide maximum benefits for students in the social studies content area. Documentaries, docudramas, and historical fiction are the three most common types of film for this purpose.

Documentaries are films that represent a real-world with performances by social actors rather than professional actors (D'sa, 2005, p. 9). Documentaries can be found on many different topics including national tragedies. Bowling for Columbine is an example of a documentary based on the Columbine shooting (D'sa, 2005, p. 9). Documentaries are readily available on many streaming services that teachers more than likely already subscribe to, including Netflix and Hulu.

Docudramas are a type of crossover film. This type is a hybrid between a documentary and a dramatic film (D'sa, 2005, p. 9). These types of films are designed to persuade the viewer to accept a specific interpretation of historical events that actually occurred (D'sa, 2005, p. 9).

Docudramas are generally based on truth but have a strong influence by the writers to help pull in the viewers (D'sa, 2005, p. 9). One very popular example of a docudrama used in history classes is Schindler's List (D'sa, 2005, p. 9). Docudramas are also readily available on many streaming services.

The third type of film that is most common for educators to use are historical fiction films. These types of films are based on fictional plots that are set in historical contexts (D'sa, 2005, p. 9). The characters are entirely fictional or loosely based on a real person from history (D'sa, 2005, p. 9). Historical fiction films have many examples. One older example is Gone with the Wind (D'sa, 2005, p. 9). A more contemporary example would be the musical Hamilton by Lin Manuel-Miranda. Historical fiction films can be used to help students understand how history could have developed (D'sa, 2005, p. 9). Many historical fiction films are readily available very similarly to the other types of films most commonly used. Each type of film presents it strengths and weaknesses when presenting content information to students. However, they can be mixed and matched to provide the best learning experiences to the students depending on the type of content being taught.

Cautions in Using Film

Film in a social studies classroom provides many benefits to students. However, there are also cautions to be considered. The first caution is the amount of time

that showing whole films takes from other instruction time. This can be solved by showing clips of movies. Another caution is dramatic license. Dramatic license is used to create drama in the story line of docudramas and historical fictions. The added drama can create dialogues, meetings of people as well as distort the amount of time that specific events take place (D'sa, 2005, p. 10). Another caution is that the audience, the students, may not be able to determine what is fact and what is fiction or speculation (D'sa, 2005, p. 10). A final caution of using film to teach social studies is that the films can lean toward simplifying complex historical material into a short film (D'sa, 2005, p. 10). When events are turned into film, they lose historical thoroughness and accuracy (D'sa, 2005, p. 10). These cautions are all to be considered when deciding to utilize film as a means to teach social studies content to students.

Conclusion

When it comes to the idea of using film to teach social studies content, the research suggests this is a best practice for the students. The research also indicates that there are many benefits to the students for proceeding with this style of education including development of higher order thinking skills such as analysis, synthesis and evaluation as well as increasing comprehension and retention of content. Film can be used to explore many different areas of social studies including history. The research suggests that film provides a way for educators to explore controversial topics with students that allows students to be informed and make their own interpretations. While there are cautions to consider, there are many benefits to students. All in all, it can be said that utilizing film for social studies education can create a better classroom environment for both educators and students alike.

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Learning to Teach

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