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Section on Language Arts

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Language Arts

Linear Thinking in Nonlinear Environments: How to Prepare Students to Read Hypertext

Stephen Bartholomew

Abstract: Adolescent young adult students are faced with developing complex reading comprehension strategies to negotiate a variety of print and digital texts. Typically, print based texts are associated with linear reading. The author determines the sequence of thought and the reader follows from page to page. Internet texts, however, lend themselves to nonlinear reading. The reader determines the sequence of thought by navigating hyperlinks. Oftentimes, prior knowledge is necessary to understand and navigate Internet content. Additionally, the seemingly limitless amount of information available online can be overwhelming. This can lead to reading comprehension problems. Students must learn appropriate Internet navigation strategies as well as how to develop their own internal narrative structures to be successful readers within nonlinear, online environments.

Defining Differences

Technology has reached a point of sophistication where information is shared and communication occurs instantaneously across a network of digital environments. Understanding how to navigate and interpret information contained within these digital environments is a critical component to any future pedagogy. These digital environments present information in a nonlinear format and adolescents spend the majority of their time navigating these spaces (Rideout, Foehr, & Roberts, 2010). The differences between linear and nonlinear text impact readers' ability to comprehend text. In the English language arts content area specifically, the differences between linear and nonlinear reading comprehension are worth exploring because technology is reshaping the definition of literacy.

Print Based Text

Reading comprehension is generally understood as a linear process, specifically in traditional print based texts. Authors intend their texts to be read in a linear fashion. Narrative and rhetorical structures are built in to printed texts and support reader comprehension. Authors of print have a purpose in mind while writing and make assumptions about their audience as they construct a text. These assumptions give way to vocabulary choice, depth of knowledge presented and use of language structures. Print based texts are thereby structured in a sequence, which is intended to begin at the beginning and end at the ending (McNabb, 2005).

Research suggests however, that not all readers engage in linear reading strategies. Readers tend to skip sections of a text they believe to be irrelevant in favor of sections that apply most to their reading goal. They return to sections they missed or reread parts they failed to fully understand (Duke & Pearson, 2002). This suggests that nonlinear reading strategies are effective when approaching print based linear text. Can it be assumed then that these same nonlinear reading strategies would be appropriate for nonlinear hypertexts? Or conversely, should readers of nonlinear hypertext adopt linear reading strategies?

Hypertext

Hypertext encourages a nonlinear approach to reading. The very nature of hypertext, with chunks of information that are linked together non-sequentially, allows the reader to make choices while navigating digital environments. Hypertext is multimodal, which means that along with printed words, hypertext includes audio, video, pictorial and kinetic texts (McNabb, 2005). Although traditional reading comprehension strategies may apply to an individual page of hypertext, significant differences between traditional text and hypertext occur when a reader moves beyond the initial page of a hypertext (McNabb, 2005). A reader of hypertext must actively make choices between which links to click on. Additionally, because hypertext is multimodal, readers must be multi-literate, meaning they must be able to read video, audio or photographs just as critically as they read text.

Hypertext Pitfalls

Too Much Information

Students rarely read or write today in an isolated environment, free from the distractions of cell phones, music, television or the Internet (Walsh, 2008). According to Walsh (2008), students are in fact more likely to access digital

rather than print based text for their interests. In this technology driven world we are bombarded with information. From books to billboards, from television to cell phones, the very nature of everyday life is saturated with information. Alexander and Jetton (2001) argue that this may cause students to become desensitized to information. If information becomes overwhelming because there is too much of it, then a natural reaction would be to shut down.

When the amount of relevant information hinders rather than helps a reader, information overload occurs (Bawden & Robinson, 2009). Information overload is a condition of being stimulated by too much information. It can cause attention deficit and anxiety. Our senses are capable of managing a large amount of input, specifically visual input, but when that amount is too large, stress causes our mental faculties to turn off. Interestingly, this is not a new phenomenon. Bawden and Robinson's (2009) research noted that an 1852 annual report of the Secretary of the Smithsonian in Washington pointed out that:

> About twenty thousand volumes...purporting to be additions to the sum of human knowledge, are published annually; and unless this mass be properly arranged, and the means furnished by which its contents may be ascertained, literature and science will be overwhelmed by their own unwieldy bulk (p. 183).

What is new is that with the advent of the Internet, anyone can contribute to the unwieldy bulk of information. There is also a greater opportunity for sources to remain anonymous, to present a false identity or to publish false information. Furthermore, because of the multimodality of the Internet, text can be passively consumed rather than actively understood. This contributes to misinterpretations and misunderstandings. When information is passively consumed, the chances for gaps in understanding increase (Bawden & Robinson, 2009). Students must be prepared with the proper reading comprehension skills in order to evaluate, authenticate and understand the overwhelming amount of information that is instantly available.

Absent Narrator

The process of comprehending hypertext is much more complex than traditional text. Hypertext requires students to build on the skills of traditional literacy practices, while developing multimodal comprehension skills. Hypertext challenges readers to understand multiple perspectives within a variety of contexts, evaluate bias, determine sources' credibility and make sense of fragmented associations that result from disjointed hyperlinks (Lawless, Shrader & Mayall, 2007). The burden of constructing a coherent narrative is thus placed on the reader, which is one of the central problems of reading hypertext.

In print, a narrator guides and explains information to readers in a predetermined sequence. To a large extent, Internet text lacks this narrative feature. Readers must develop their own narrative sequence as they navigate between hyperlinks (McNabb, 2005). The more hyperlinks a reader encounters, the more difficult it becomes to construct a coherent narrative, which increases cognitive load. Research shows that the lack of a narrator within nonlinear text structures found on the Internet lead to an increase in cognitive load and a decrease in knowledge acquisition (Zumbach & Mohraz, 2008). If students were to learn to set a purpose and identify reading goals prior to reading online text, they would be better able to construct their own narrative while navigating these nonlinear spaces.

Prior Knowledge

The most common characteristic of readers that navigate hypertext well is a high level of prior knowledge (Coiro & Dobler, 2007). Prior knowledge in this case refers to knowledge about any given topic a reader has previously acquired. Readers that possess a high level of prior knowledge about a topic exhibit elaborate and effective online navigational processes. Readers with low prior knowledge explore topics superficially (Amadieu, Tricot, & Marine, 2010). Readers with low prior knowledge carry a heavier cognitive load because they must use more of their working memory to store information received across a platform of hypertexts. This leads to disorientation as the reader attempts to organize a coherent narrative from information received in a dissociative, nonlinear manner. A reader that possesses a higher level of prior knowledge, on the other hand, is capable of setting appropriate reading goals and understanding how information about a topic is linked together (Amadieu, Tricot, & Marine, 2010). The more a reader knows about a topic, the better they will be at setting a purpose for reading and navigating nonlinear environments.

Future Pedagogy

While several studies indicate the necessity of prior knowledge to efficiently navigate nonlinear environments of hypertext, the same studies show that linear narrative text support knowledge acquisition (Zumbach & Mohraz, 2007). Readers with low levels of prior knowledge experience disorientation and difficulty comprehending nonlinear text. Yet, when text is structured linearly or hierarchically, readers with low levels of prior knowledge are more capable of comprehending a text and less likely to experience disorientation. Readers who posses high levels of prior knowledge, on the other hand, appear to be able to comprehend both linear and nonlinear text with an equal amount of success (Amadieu, Tricot & Marine, 2010). Therefore, nonlinear text is neither bad nor good. It is just different from linear text.

Depending on how it is approached, the nonlinear structure of Internet text can be a boon or a barrier to struggling readers. From one point of view, the Internet allows access to definitions of unfamiliar terms, provides links and search tools to access relevant information in order to build background knowledge and provides the freedom to explore, which motivates personal inquiry. From another point of view, developing multimodal literacy required by nonlinear text structures is not automatic. Instructors must encourage multi-literacy skills that will support learning within online environments (Biancarosa, 2012). Navigating the Internet demands a higher level of engagement than print based text. Higher levels of engagement are associated with gains in reading achievement (McNabb, 2005). This means that reading Internet text is potentially beneficial if readers are equipped with the necessary reading comprehension skills to critically analyze text and can avoid becoming overwhelmed by information overload.

When discussing future literacy pedagogy, the differences between linear and nonlinear text must be considered. Future literacy pedagogy needs to account for the disadvantages students with low levels of prior knowledge face when interacting with nonlinear text. The simple solution would be for educators to provide students with appropriate prior knowledge, but this solution fails to consider the complex implications of such a task. Although it is the responsibility of any school system to provide an education that encourages students to build a solid foundation of knowledge, the vastness of the Internet renders the task of preparing students with the appropriate prior knowledge to effectively navigate a myriad of online spaces impossible.

A more practical approach to help low level readers navigate online texts would be to teach search strategies so that students select the most appropriate information to read within an online environment. Search strategies may include ways to construct key phrases for search engines, identifying credible and trustworthy websites, checking a website's references and knowing where to start and when to stop reading. For students to be prepared with effective search strategies, it would limit the possibility of information overload. Students must also confront the problem of an absent narrator when reading online text. Teaching students to identify their purpose for reading hypertext would present the opportunity for students to determine reading goals. When reading goals are in place and a direction for reading is set, students can actively establish a narrative structure to better comprehend a text.

Conclusion

Technology is rapidly changing everything. It is difficult to say what implications this will have for future learners, especially when *current* research can only be current for so long. In whatever way technology advances, the pedagogy of not only English language arts, but also all content areas must keep pace. Students are learning differently and thinking in new ways. The pedagogy that guides these students must adapt in order to encourage the development of the skills necessary to excel within this ever-changing world. Research suggests that the cognitive demands of hypertext can cause readers to become disoriented and experience cognitive overload. Readers must be able to avoid the pitfalls of hypertext by developing appropriate navigational skills and setting reading goals that encourage the creation of internal narrative structures. By integrating linear and nonlinear reading strategies to cope with the demands of navigating online environments, students will become more successful readers.

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Biography

Stephen Bartholomew has a Bachelors Degree in Journalism from Northern Illinois University and a Masters Degree in Education with a focus on secondary English from the University of Toledo.

Effective Use of Personal Connections in a Language Arts Classroom

Megan Moore

Abstract: This article explores the effective use of personal connections (personal interest, experience, and cultural background) in a language arts classroom, focusing on literature and writing, as well as what kind of learning environment is most conducive for meaningful connections in learning to be made. Suggestions include providing more culturally relevant literature for students of diverse backgrounds and providing opportunities for students to make more complex and analytical connections in their writing by incorporating personal connections. The aim of this paper is not only to argue the benefits in accommodating student interests and experiences, but also to suggest effective ways to incorporate students' personal connections to the content, thus making them more effective and critical readers and writers.

The Problem

It is not a new theory in educational psychology that suggests students are more fully engaged in meaningful learning when they can make connections between new information and a previous knowledge base or prior personal experiences (Ormrod, 2006). Even though this theory is generally accepted for all content areas, the tasks of reading and writing often rely on personal connections as a start to engaging students in the learning that takes place in a language arts classroom. While there is the critical viewpoint that the language arts engage students too much in their own personal experiences or interests, limiting actual "learning", a student's ability to relate to the new content heavily impacts their engagement and provides a good starting point for students to learn the new content. Although it is an accepted theory that students more successfully transfer new information into long-term memory by making meaningful connections to what they already know or may have experienced, the question becomes "what are the most effective ways to help students make these connections within a language arts classroom?"

Discussion

Literature

One of the biggest questions when considering literature as a crucial element of the English language arts is, "If all these books are just made up fiction, then why do we have to read or study them?". Our job as English language arts educators becomes not only to teach the content to our students, but it seems to also include the constant justification of the content's relevance in an academic setting and in our students' lives. While instructing students on how to find out what is important in a literary text, we also need to make sure they understand why the texts we are having them read matter. One of the most important ways to justify a text's relevance is to make meaningful connections from the content of the text to what students may already know about the world from their own experiences.

New information is not only stored more successfully in long term memory when a meaningful connection is made, but students are also provided a context in which to make sense of seemingly outdated or out of reach ideas. For example, when a class of students in an urban setting is asked to understand and comprehend *Romeo and Juliet*, students may have a difficult time relating to a play that was written over 400 years ago. However, if we as educators focus on some of the major ideas and themes of a text rather than specific details in a plot line, the transfer of that new information will be much more successful when connections can be made to something more relevant to a student's life. A modernized story of two rival gangs may be more relatable to the students than a family feud between the Capulets and the Montagues.

An important factor to consider when trying to find ways to help students make meaningful connections among seemingly out-dated texts is the consideration of universal themes throughout literature. What keeps us studying texts such as Shakespeare or Chaucer's work (that are hundreds of years old) when there is an abundance of more recent texts available to study? Part of what allows these texts to maintain their relevance in an English language arts classroom is that many of their themes and ideas are both timeless and universal across cultures. Finding meaningful ways to help students connect these old texts to their lives or the contemporary world would help them to better understand and appreciate the relevance of continuing to study them.

While student engagement with literature is largely dependent on interest in the text and whether or not students can relate to it, state standards for the English language arts are impeding the ability for all students to be able to relate to texts in the classroom (Ormrod, 2006). A common battle in most language arts classrooms, with

canonized texts such as Shakespeare, is that students often find it very difficult to relate to a plot, characters, and social/political issues of over 400 years ago. However, the age of a t ext is not the only obstacle preventing all students to be able to connect with a text. In a society where cultural diversity is an ever-changing dynamic, often the diverse cultural mix of a classroom is not accommodated for with the westernized literature that is so often taught in classrooms. Jackson's (2009) research about how to implement culturally diverse literature into a curriculum provides some important implications for language arts classrooms. According to Jackson:

> "Language arts instruction in schools is guided by state standards rigidly categorized around monocultural notions of reading, writing, speaking, and listening. Often, such narrowed notions of language arts do not allow children of color to read a wide range of texts to build an understanding of themselves" (Jackson, 2009, p. 312).

When one of the benefits of reading literature, especially fiction, is to gain insight to the human condition, our view is often so focused on white-western culture, that we are not only leaving different cultures of students without texts to relate to, but we are also not broadening our own world views. In order for students from different cultural backgrounds to be accommodated for when making personal connections with literature, Jackson suggests that "it is imperative for teacher educators to prepare culturally responsive language arts teachers" (2009, p. 312).

One of the most basic and perhaps simplest changes that can be made in order to accommodate personal connections for all students is pulling more culturally diverse works into the literary canon. When the current literary canon includes mostly dead white male authors, it becomes difficult for any student to relate or engage to a text, especially students who are not of white European decent. The success of the Integrated Reading Curriculum (IRC) in Jackson's study may imply that culturally relevant literature that meets IRC's guidelines to "excite, motivate, stimulate, arouse, expose, inspire, delight, enchant, and rejuvenate" would be beneficial to use in any language arts classroom (Children's Defense Fund, 2005, p.30). Giving students literature that they can relate to culturally or spark their interests in other cultures, should, in theory, motivate them to engage with the text.

While studying literature may take a back burner to a society and economy powered by math and science, the skills we teach our students when studying literature go far beyond reading and comprehending a work of fiction. As educators of language arts, our focus is not merely finding literature our students like, but using personal connections as a tool to engage students with a text so that they can perform the more complex tasks of analysis and evaluation. If we can teach our students to evaluate, interpret, and explicate fictional and non-fictional literature in the classroom, then we would be teaching them an important skill set that would allow them to evaluate, interpret and explicate the world around them.

Writing

Aside from encouraging engagement with text, use of personal experiences not only motivates students in their personal writing, but can also help them make more meaningful and complex connections in academic writing. It is often said that good writers write what they know. While this is generally accepted when considering a quality piece of fiction, the same can hold true for academic writing. In the article, *Service Learning in a Basic Writing Class: A Best Case Scenario*, Pine (2008) suggests that incorporating personal experiences can be a valuable means to which students can produce critical and in-depth argumentative writing.

Even though the phrase "good writing" may seem subjective, in academia there seem to be some common goals, Arca asks the question, "Isn't true 'authority' -- that sense of potency as a writer who not only has something important to say but also has the skills to say it well -- what we want our basic writers to realize?" (1997, p. 141). Effective academic writing seems to call for both. Pine (2008) defines effective academic writing as having three key characteristics. The first is defining or applying a theory, where the writer is making some sort of claim or argument, usually with a thesis statement or hypothesis. Once the claim has been stated, it is up to the writer to effectively support or disprove a theory with a rich mix of sources--the second characteristic of Pine's definition. The strongest cases are laid out with the evidence or sources supporting a claim that are synthesized and connections are made between them. For example, when making a cl aim about urban education, the most effective use of evidence would be to synthesize findings from statistics, personal experience with education, and secondary sources. The third characteristic of academic writing is effectively using various sources to support a claim.

The most telling factor in Pine's (2008) definition of academic writing is the synthesizing of personal experiences with secondary sources in order to construct an in-depth and complex argument. While personal experience cannot be a s tudents' only source of learning, it does prove valuable for them to elaborate on their personal experiences with new information. Although writing strictly from personal experience may not produce effective academic writing, Spigelman claims that "narratives of personal experience can operate at a sophisticated

level of argument" (2001, p. 71). Personal experiences are effective tools in supporting arguments, although they cannot do so completely on their own. Furthermore, personal experiences are a means to which supporting ideas can be explored more in-depth, and connections between various ideas can be made.

When considering student writing, Pine's (2008) research suggests that by allowing students to choose their own research topics, their sense of personal interest or investment for the task increases. According to Pine,

> "The benefit of...allowing students to choose their own research topics related to the theme of "education" is that (1) students are possible more invested in the topic and, therefore, want to research and write about it, and (2) they can choose a topic they can find sources on in the few weeks they have to complete the assignment" (2008, p. 51).

By assigning a topic that the student has no interest in or no prior knowledge of, makes the task seem more daunting for the student, and the learning process less enjoyable or rewarding. Allowing students to write about what they know or what they want to know, in theory, increases their motivation to complete the assignment, and complete it well.

Pine's (2008) study also suggests that service learning opportunities (a combination of formal instruction and community service based projects) can be an asset in teaching academic writing in a language arts classroom--or in writing in any other class for that matter. Although the study took place in a college composition class, a similar approach can be taken with any grade level. Service learning opportunities implemented in a class allowed students to gain a better understanding of the theories or ideas they were learning about in their formal instruction. The hands-on, first-hand experiences of this information not only allowed for a better understanding, but provided opportunities for the students to be critical or to analyze their experiences more in-depth. Service learning pedagogy also emphasizes the idea that they classroom is not the only place where learning takes place. As educators, our job is to create life-long learners in our students, and by encouraging them to make connections with their personal experiences through both reading and writing, they will continue to develop and grow intellectually throughout their lives.

Learning Environment

When implementing lessons that rely on student-made personal connections, it is important to create a safe and inviting environment for students to not only share those connections, but to feel like their personal experiences are valuable enough to be used in learning. In a study completed in 2003, Furrer and Skinner determined, "feelings of belonging may have an energetic function, awakening enthusiasm, interest, and willingness to participate in academic activities" (p. 158). Therefore, in order for a student to feel motivated to learn and participate, they need to feel like they have a relevant place in the learning environment. Other studies on dropout prevention programs show that, "the 'personalization' of education - striving to understand the nature of academic, social, and personal problems affecting students and tailoring services to address individualization concerns - is an essential component [of dropout prevention programs]" (Hammond, 2007, p. 7). Making a student feel like their interests and ideas matter is an important part of engaging students in their own learning.

Conclusion

While it may seem daunting for any educator to try to accommodate the interests, personal experiences, and cultural background of every single one of their students, there are ways to effectively use personal connections to enhance the learning of all students. Students need to be provided with a safe learning environment where they feel like their personal experiences are valuable, as well as numerous opportunities for connections among new content and past experiences to be made. When selecting literature to engage students, teachers need to accommodate the different cultural backgrounds of their students, so that all students have an opportunity to relate to the text, as well as focusing on universal themes that students may be able to relate to on some level. Students can effectively use personal connections in their academic writing as well, by synthesizing them with secondary academic sources to support or disprove a claim. While the possibilities of student interest and experience seem infinite, the goal of all educators seems to be the same, to engage students in learning and to make students life-long learners by teaching them how to connect new information with what they already know.

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Biography

Megan Moore is graduate student at the University of Toledo pursuing a Master's in Secondary Education. She also completed her undergraduate degree from UT in English Literature.

Assessing Continuous Academic Growth in Literacy to Provide Educator Insight and Opportunities for Optimal Student Learning

Jennifer A. Krueger

Abstract: This article is an introduction to integrating Curriculum Based Measurement Instruction (CBM) in the classroom in conjunction with the state mandates of the Value Added Models. The purpose is to monitor student progress throughout the year and modify instruction to meet the needs of students' strengths and weaknesses. CBM helps students identify their strengths and weaknesses and provides short and systematic assessments for the teacher to evaluate student progress. Further, we are able to measure student growth along a trajectory of individual goals throughout the year rather than exclusively from year to year. This model has the potential to provide concrete evidence of teachers' response to interventions and instruction while maintaining evidence of student learning.

Introduction to Measuring Student Progress in Literacy Using Curriculum Based Measurement Instruction and Value Added Models

As pedagogs, we are nurtured by a world of educational philosophy, psychology, and a content area in literacy. We are mentored and shaped as robust role models representing the knowledge and experiences we bring to and gain from the classroom community. We are governed by the mandate of one year's growth for each individual student that passes through the gateway of our classroom. Theories and strategies represent optimal ways of knowing, but in practice, are we equipped with the basic tools necessary to clearly identify where student growth begins and ends? Student progress monitoring in language arts and other content areas can utilize Curriculum Based Measurements Instruction (CBM) and value-added accountability are tools that will provide more effective teacher evaluations, feedback on individual student growth and assess student mastery.

How Does Student Progress Monitoring Improve Instruction, Measure Growth, and Evaluate Teachers?

Much of our preparation, whether it be preparing as educators or preparing a lesson, begins with the elements that collectively we call standards. Legislatures, administrators, parents, and students hold teachers accountable to the standards, goals, and objectives developed by the teacher for the purpose of student learning. Progress monitoring is essential to the development of the student and provides objective and reliable feedback for the teacher and the teacher evaluation. According to Codding and colleagues, "Instructing teachers to make data-based decisions can be a multi-component process ranging from providing information on appropriate assessment tools to analyzing graphs" (Codding, Skowron, and Pace, 2005, p.165). Using a data based driven model to track student progress, such as CBM, creates an opportunity for teachers to develop an individualized and thorough understanding of students' strengths and weaknesses across content areas. Further, quality feedback provides a clear assessment of how to differentiate instruction, modify objectives, and measure student growth. Once a student reaches mastery understanding of the goals, the student is best informed and prepared to move further along the curriculum map. Successful completion of this year-by-year journey allows administrators, parents, and students to effectively and objectively evaluate both the students' learning experience and the teachers' ability to use the assessment data to modify instruction and provide the necessary tools for student learning. By improving instruction through constant student evaluation and feedback, we are not only able to chart and measure students' growth but provide an objective way to more effectively monitor teacher planned instruction.

The topic of student progress monitoring couples two fundamentally important ideas in education today: teachers' evaluation and student growth. Waiting until the fall to determine where a student 'is' on the growth curve and waiting to assess this growth at the end of the year with results available post-academic year is counter intuitive and impractical. This traditional thinking and practice reduces any opportunity to intervene and enhance student performance. Both the student and the teacher miss collaborating on the specific strengths and weakness that are objectively conveyed in such assessments. By formulating an aggressive systematic assessment practice where the student can exhibit mastery upon mastery attainment, both the teacher and the student succeed. This approach fosters an enriching and nontraditional classroom, clearly written student objectives, and an organized method of collecting and charting individual growth patterns.

If educators are being assessed based on the results of students' test performance and student growth being is assessed using one or a short sampling of standardized tests, the field needs to continue to develop a way to provide objective evidence of student strengths and weaknesses per standard. There is a need for ongoing formal assessments that can capture student performance along a trajectory towards individual goals. If we are able to create a system that could concurrently assess students' literacy acquisition along a normative growth curve over shorter periods of time, this would provide more relevant and valuable lesson specific feedback to both the student and the teacher.The resulting information is useful in providing intervention or enrichment opportunities. Throughout any one lesson, a student may be performing on track in one area while requiring enrichment or intervention resources in another. This approach does not require multiple lesson plans or a complex grading system; rather the system is used to evaluate and inform the teacher and student regularly on the growth of student performance. With this information, teachers are best positioned to provide effective modifications appropriate to the learning opportunities of the student and forward constructive student progress to the student and their family. Further, the documentation can be used to support effective teaching and teaching strategies for collaboration and evaluation.

Examples of Curriculum Based Measurement Instruction in the Classroom

With CBM, long gone would be the practice of simply "moving-on" when a student fails an assessment. Instead, there will be many more opportunities for individual micro-scaled assessments, called probes, which produce feedback to sustain an impetus to student growth. In order to respond to the results of such probes, educators will need to be afforded the space and time to intervene and, possibly, customize a lesson or element specific to a plausible and effective differentiation. For example, imagine that a meticulous lesson has been designed to teach and explore a historical fiction genre. In our initial assessment, we discover several students (group one) show mastery of comprehension in this genre as it pertains to the standards outlined by the state. A second group of students (group two) show awareness but lack mastery of this same skill.The third group (group three) exhibits a lack of any comprehension of a genre let alone historical fiction.It is possible that we could provide an opportunity for enrichment for group one, including and not limited to peer tutoring of groups two and three. Group three would require intervention in order to begin a reasonable amount of learning to grasp the concepts and fill the literacy gap as it pertains to the classification and organization within historical fiction. Of course the grouping may change as new probes are administered and evaluated for existing lessons as well as new lessons along the curriculum map. The classroom environment should be constructed in such a way that students can move fluidly throughout predetermined resource centers. The realization of student mastery along an expected growth curve is mandatory, then, in order to develop the complete academic student.

What if we could provide additional support to the standardized test results that help measure value added and adequate yearly progress (AYP) goals? What if this new system would work in harmonious rhythm with standardizing testing but would provide an educational road map the student traveled up to that point in time as well as a new yearly goal? This approach would reduce problems associated with test anxiety, transient student populations, and provide intervention, based on the individual needs of the student during any particular time in the curriculum. Teachers could utilize technology to record response to intervention (RTI) and map an individual student's pattern towards one year's academic growth. Using the resources available in a responsible and purposeful manner provides for effective instruction with minimal costs.CBM provides empirical data to help quantify and define end of the year proficiency goals by using probes or short on-going assessments that represent:

> Data-based, problem-solving model for indexing students' academic competence andprogress through ongoing assessment. Longitudinal CBM studies have indicated thatincorporating CBM feedback into instructional planning enables general educatorstoprovide more effective instructional programs and thus promotes students' achievements in reading, mathematics, and spelling and written expression (Tsuei, 2007, p. 48).

 The teacher can respond to the results of these assessments to meet the individual needs of the student by customizing an educational map designed to engage the student's learning while cultivating necessary academic growth.

How Can Probes Work in the Classroom and to What Frequency?

Probes are formative and can produce quick results for the teacher and student. According to Fuchs and Fuchs (2005), probes in reading can:

> Score for (reading) accuracy and speed, and student scores are graphed for teachers toconsider when making decisions about the instructional programs and teaching methods for each student in the class. CBM (probes) provide a doable and technically strong approach for quantifying student progress. Using CBM, teachers determine quickly whether an educational intervention is helping a student(p.2).

Administering two or more probes per week over the school year captures the minimal amount of data to produce results conducive to modifying most content instruction. Probes could be used as an activity in the classroom, from the use of clickers to specialized activities, or as a Dynamic Indicator of Basic Early Literacy Skills (DIBELS) test or other third party assessments that can chart the learning of the student. When probes are used in an ongoing manner and developed correctly, probes will accurately represent student progress toward yearly goals.

Using Curriculum Based Measures for Writing and Reading across Grade Levels

Conducting a strong reading program also requires a strong writing curriculum. According to Weissenburger and Espin (2005), CBM provides the teacher an insight to the writing skills of their student:

> Given that two thirds of our nation's students are not able to perform at the proficient level in writing, it is imperative to develop efficient and technically adequate curriculum-based measures of written expression that are useful in assessing the developing writing skills of students at all grade levels (p. 154).

Both reading and writing help to increase literacy skills. The relationship further perpetuates a positive correlation: a good reader becomes a good writer and conversely, a better writer becomes a better reader. Incorporating a strong writing program, therefore, helps to secure strong reading efficacy and literacy skills. CBM in writing is a vital indicator that an elementary and middle school teacher can use to evaluate, provide interventions, adjust lessons, and create student confidence in literacy.

CBM can be used on a fluency task using probes. To administertests over time, an educator would chart the growth the student achieves based on the results of these probes. The overall goal for the year would be to increase the reading level anddecrease the number of errors. This goal could be determined by both the teacher and student allowing the student to assume responsibility for their learning and ownership of their successes. A trend line could be plotted and the student would have a visual aid to keep track of their progress.The trend line provides the teacher with the necessary support for intervention and instructional modifications when necessary. When the student's score consecutively falls below the goal line, interventions and instruction modifications are required. When the student's scores rise above the goal line, enrichment opportunities and rapid growth can be potentially identified. The end of the year goal and goal line are never modified. Probes throughout CBM, however, can be modified depending on grade level, content, and student experiences.

Curriculum Based Instruction, Value Added Models and AYP

Once CBM is established in the classroom, there are external forces that are quick to calculate yearly student growth patterns. We are most familiar with terms like academic yearly progress (AYP)and the value-added model. CBM measures ongoing growth throughout the student's academic experiences within a year whereas Value-Added measures the effectiveness of student's annual achievement gains.Value-added and AYPmeasures create a wake of anxiety as states and educators race to incorporate accountability from within its school systems. According to Fuchs and Fauchs (2005), CBM provides a classroom support system to monitor student progress:

> CBM can be used to fulfill the AYP evaluation in reading. Schools can assess every student using CBM to identify the number of students who initially meet benchmarks. This number of students represents a school's initial proficiency status.Using CBM for multi-level monitoring can transform AYP from a procedural compliance burden into a useful tool for guiding education reform at the school level, for guiding the instructionaldecisionmaking of individual teachers about their reading programs, and for ensuring that the reading progress of individual students is maximized (p.45).

By the year 2014, Ohio and 13other states will incorporate, or otherwise have incorporated, value-added measures and AYP into the evaluation and accountability of its school systems. California school districts boast

value-added scores that provide incentives and evaluations of their teachers' professional performance. This teacher assessment is linked to the value-added instruction and academic language provided throughout the classroom. There is logic in the theory that when a teacher performs well, students' value-added scores will represent similar correlations. If a goal of education is to balance economic considerations with the enlightenment of the individual, than fighting for a perfect CBM and value-added formula will foster the further development of an effective pedagogy.Value-added and AYP models alone do not adequately rate teachers' work, however.According to Harris, "Value-added should be serving the education system rather than the education system serving Value-Added" and "there is almost no evidence to suggest that any use of Value-Added does or does not improve teaching and learning" (Harris, 2011, p.5). Using CBM to support value-added models and AYP is necessary to ensuring student success and providing teachers the necessary information to produce and support effective instruction. Through this instruction, teachers can rely on appropriate and purposeful evaluations of their work.

Conclusion and Implications of Measuring Student Progress in Literacy Using Curriculum Based Measurement Instruction and Value Added Models

It is imperative that these systems, CBM, value-added, and AYP, should not work separately. To ensure student progress monitoring, all systems need to work in harmony. Value-added and AYP strategies must be supported by effective CBM to help both the student and teacher with academic awareness and necessary interventions. Our future rests with our educators committing resources to the field of education and providing evidence that learning takes place. The implications of using CBM in conjunction with these models can support pedagogical practices with the necessary results to effectively evaluate student progress, provide feedback to the student for continuous academic assessment including mastery level expectations, and afford teachers evaluations that are held to high standards. We need to optimize instruction by producing assessments and results that are meaningful to student achievement. Utilizing probes, whether computerized, third party, or through peer interactions, we can begin to make a fundamental difference in cultivating a unique educational experience for each student that enters our classroom. Finally, if we continue to move towards merit based compensation incentives, do we not owe it to teachers to provide a more objective way of evaluating their instruction? Providing CBM instruction from within our classroom allows for a concrete view of learning for the teacher and student, modifications associated with that learning, and a map identifying the progress of student learning on an ongoing basis. This idea is critical to the success for both teacher and student learning.

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Biography

Jennifer Krueger is a middle school teacher in the fields of language arts and science with an undergraduate degree in business. Her research focuses on how to measure classroom and student progress along a trajectory of yearly goals and modify instruction accordingly to meet the needs of students' strengths and weaknesses.

The Benefits of Teaching Writing as a Process

Douglas DeSloover

Abstract: The notion of teaching writing to students as a process instead of a simply focusing on the product that is turned in has been the predominant theory in writing instruction for at least 30 years. This paper aims to expand what it means to teach writing as a process and offers writing teachers suggestions for successfully teaching writing at all levels. Research and theoretical frameworks are provided so that teachers may choose from a variety of methods and experiment with what works in their own classroom. Ultimately, this paper argues that while teaching writing as a process is largely beneficial to most students, how the teacher defines "process" and the steps that each student takes should be personal and individualized.

Introduction

I walked in to my classroom ready to teach "The Research Paper" for the first time. Most students in the room had no clue that I was just as nervous as they were to be diving headfirst into how to develop their very first persuasive research paper. However, nervous as I was, I remembered the words of all of my writing professors and all of the authors I had read at length: "Students should see writing as a process, not just focus on the product to be turned in." It gave me some confidence and I had planned an extensive list of tasks for each student to complete leading up to the paper. "There's no way they can mess this up," I thought to myself as I explained how each student had to pick a topic, make an outline, find sources, complete notecards, turn in one paragraph to be graded, and so forth. "Follow these steps and your paper will pretty much write itself," I explained to the students and set them on their task of picking their individual topics.

I imagine it is at this point that anyone who has ever taught writing and/or a research paper is chuckling at my naivety, and anyone who has not is thinking to themselves, "sounds like a pretty good plan to me." For readers who fall into the latter category, I will very briefly explain that the research paper unit did not go as smoothly as I had planned. Obviously, some of the lack of success was probably due to the fact that it was most students' first experience with this type of work. Perhaps some of it was a lack of easy-to-use technology in the classroom or a library whose catalog leaves quite a bit to be desired. Those factors certainly contributed to the poor quality writing that I received in most of the papers and the fact that many did not turn one in. However, what I was lacking as a teacher was the knowledge and experience to know that the writing process is, and should be, different for every writer.

Rather than commiserate over my perceived inadequacies as a writing instructor, I decided to delve a little deeper into the history and theory of teaching writing as a process. Some of their words offered wisdom that helped me understand how writing instruction has changed and where it's going in the future. Pulitzer Prize winner Donald M. Murray explained in a paper he presented in 1972 at the convention of the New England Association of Teachers of English that, "No matter how careful our criticisms, they do not help the student since when we teach composition we are not teaching a product, we are teaching a process" (Murray, 2003, p. 3). Murray's words spoke to the predominant way that writing was taught and warned that even the most insightful and thought-provoking educator could not give meaningful and successful feedback if simply addressing the product the student had submitted. Emig (1967) also saw the value of process-driven writing instruction and published works even before Murray that called for attention to the writing process as an entire entity. She called for action amongst her colleagues citing the methods that scientists and mathematicians had long used: "The sciences have long known and taught that getting there, like riding a Greyhound, is at least half the fun" (Emig, 1967, p. 128). Murray and Emig were not alone in this way of thinking and their work and theory has served as some of the groundwork for successful writing instruction today.

Improving the Writing Process

So if we, as educators, know that students benefit from the writing process, but we also know that giving students a list of steps to follow isn't the answer, where does that leave us when trying to effectively improve student writing? I argue that the process starts long before any formal writing of the work itself begins. In fact, I believe it starts on day one with every teacher in every classroom. While it may seem incredibly obvious to say, it is imperative that teachers get to know their students' strengths and weaknesses before ever embarking on a task like teaching a research paper or any other writing project. Without knowledge of the students that are in a classroom, knowledge of what they can do and what they cannot do, and knowledge of their strengths and weaknesses, an effective teacher cannot begin to address the needs of any student. He or she will most likely fail in his or her attempt to foster writing

growth. Along with that knowledge, I am presenting some ideas and research that are aimed to get teachers pointed in the right direction when it comes to writing instruction.

Planning and Revising

Intuitively, one might think that a student knows best what he or she wants to do when writing. As teachers, we would rarely want to tell little Johnny how he is supposed to write if he already has a good idea of what works for him. However, Kieft, Rijlaarsdam, Galbraith, and Van Den Bergh (2007) conducted a study that aimed to establish whether students would benefit from writing instruction that was most congruent with their writing style. Basically, the study aimed to find what strategies each student used when writing and then placed them in an instructional setting that supported that style of writing or supported a completely different style of writing. While it is not prudent to delve deeper into the methodology of the study, what the results concluded can be helpful to writing teachers. According to the researchers, students could most easily be divided into three separate groups: planners, revisers, and those who exhibited a mixture of the two (Kieft, Rijlaarsdam, Galbraith, & Van Den Bergh, 2007). They defined planners as those who "preferred to have their ideas clear before they started to write and did not develop their ideas much during writing," and they defined revisers as those "who could not think without writing and it was only after writing something down that they felt they understood their own argument" (Kieft, Rijlaarsdam, Galbraith, & Van Den Bergh, 2007, p. 566). Intuitively, those who were classified as mixed strategy writers exhibited characteristics of both planners and revisers. If we view students in this same way, and also make the distinction between writers with developed planning and/or revising methods and writers without developed planning and revising methods, then we can put the study's results into practice in the classroom. Kieft and colleagues found that:

> "These results imply that the planning condition is successful for students who tend to good planning and/or revising, while the revision condition gives rise to improved performance for students who tend towards low revising and/or planning. This may suggest that a revision condition could be effective for those with an underdeveloped writing strategy, while a planning condition could be effective for those with a relatively developed writing strategy" (Kieft, Rijlaarsdam, Galbraith, & Van Den Bergh, 2007, p. 575).

Put simply, students with little experience with writing, especially process-driven writing, tend to perform better in writing tasks when the focus in on revision. Conversely, students who already seem to have developed a writing method and/or style that works for them benefit more from instruction that centers around planning.

So let's go back to my "wonderful" lesson plan for teaching a research paper. When I broke it down, I realized that most of the steps in my process would fall under "planning" and very few were focused on revising what students had already done. It is no wonder,that many of my students, who had very little experience with this type of writing before and therefore possessed underdeveloped writing strategies, would not benefit from a process that relied heavily on planning. What I should have been focusing on was having students do as much writing as they possibly could and focusing on the revision process as their papers progressed.

Extending the Writing Process

If we accept the differences among students and their writing styles, it is also important that we accept and embrace new technology and methods and the improvements they can make to the writing process. While it would be impossible to compile a list of every new idea or piece of technology that could benefit writers, it is beneficial to give a discussion of a few and allow teachers to test these new ideas, revise them to suit their own needs, and offer feedback on their effectiveness.

Any student, especially young students with little exposure to writing, can struggle with composing text. Students will therefore see text composure as an "arduous" task. The stress and frustration that comes from that struggle can lead to a final product that is below what many educational standards dictate (Dunn & Finley, 2010). Dunn and Finley (2010) addressed this shortcoming with an art-based strategy they called *Ask, Reflect, Text*, and they put it to use with primary school children to develop case studies that might shed light on how the writing process could involve strategies that were not simply writing. Before students composed a text, they were asked to answer questions about the text itself (in this case, a fictional narrative). This was the equivalent of what many writing instructors call a story planner because it required the children to spell out important details of their story before ever embarking on the drafting of the work. The reflect portion of their process was done using a visual art medium. Students' visual representation of their story ideas took on many forms like play dough sculptures or two dimensional drawings with crayons, but each student developed, in their own way, some way of depicting what they

were going to write about before ever setting a pen to paper. Only after completing the task and reflect portions of the process were students allowed to begin the drafting of their text. It is important to note that some students in the study verbally expressed their story to a teacher. By allowing the verbal storytelling by some students, and the researchers removed the sometimes crippling effects that the actual act of writing can have on specific students. They saw this way of drafting as valuable because it lent itself to modeling of writing by the teacher and eventual revision strategies that could benefit a given student's writing overall.

Dunn and Finley (2010) noted an increased level of participation among the students who were asked to participate. They attributed this to the relative flexibility that the students had when it came to their own personal writing process. Because what each student was creating was essentially completely different than what other students were creating, the process became inherently personal to each student. They asked the question: "Would that interest have sustained if they had not experienced flexibility in their use of writing strategies?" (Dunn & Finley, 2010 p. 41). I would argue that this model is one that most teachers could use in their classroom given its flexibility for each individual writer and its consistency with the ideas and principles of process-driven writing.

We see that the writing process can even go so far as to include art in developing a successful written work. But what can teachers do to effectively engage students in an increasingly technological world? The answer is to try to incorporate "new literacies" into the writing process. Sweeny (2010) defines new literacies as "the skills needed to produce and navigate the text, graphic representations, and other media that fill the digital spaces on the Internet and various technological devices" (p. 121-22). I find this definition useful because it captures the wide scope with which teachers should view technology. Also, it is important to note that any incorporation of technology into the writing process does not need to be a complete overhaul of what students are already doing. Sweeny (2010) suggests, and I would agree, that teachers can take small, incremental steps to incorporate technology and the Internet into their everyday classroom.

Among the recommendations that Sweeny makes for teachers is the idea of using authors as mentors for writing students. Because good reading has been consistently linked to good writing, it may be helpful for students to interact with authors who have extensive knowledge of the writing process (Sweeny, 2010). Either to extend the study and knowledge of a given author's work, or to simply allow students to hear the voice of an accomplished author, the Internet resources now available to teachers provide extensive opportunities to provide stimuli, information, and feedback through a medium that most students are familiar with. There are many websites that now provide short video or audio clips from authors explaining how they go about their own writing process or answering questions that students might have about writing (Sweeny, 2010).

The notion of planning or prewriting can also be addressed through new media. The use of text messages, instant messages, class blogs, or sites like Twitter.com allow students to get immediate feedback in the early stages of a writing assignment. According to Sweeny, "Texting or IM can be used to create a community of writers where their ideas and writing struggles are shared, and the community can provide support to the individual member" (Sweeny, 2010, p.128). It should also be noted that this type of instructional strategy allows students to brainstorm as a group to explore the writing process more fully. It is important to remember that when it comes to integrating new literacies into the classroom, teachers need to keep an open mind and approach each idea as a step in the ever-evolving writing process.

Conclusion

While I cannot begin to describe the myriad of ideas that have been presented to writing teachers in an effort to improve the writing process, it is important for readers of this article to walk away with the understanding of a few key ideas. First, accepting the idea of teaching writing as a process is one that is imperative to student success. Second, teachers must genuinely know and understand students' strengths and weaknesses in order to construct instruction that is useful and meaningful to each individual student. Third, that instruction is going to look different for different students. In short, there is no one-size-fits-all solution to teaching the writing process. Lastly, teachers should not be afraid to implement new or innovative strategies when teaching writing. After all, it is only through this process of figuring out what works for certain students that effective methods can be found and meaningful learning can occur.

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Biography

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Stop Ignoring What Technology Has to Offer

David T. McGookey

Abstract: This article highlights the importance of technological integration into the language arts classroom with an emphasis on the *affordance*, or the ways that learning is connected to students selves, that technology provides. It argues that technology should not be viewed as separate from the language arts content, but rather it is a new aspect to explore in teaching the process of evaluation, comprehension and analysis of the world at hand. Furthermore, denying students the ability to explore alternative forms of text and media in the classroom setting is equally detrimental to their understanding of what needs to be evaluated, as it is to their understanding of how to evaluate information.

The Problem

In language arts classes across the country, teachers run into reluctant readers and writers and struggle to engage recalcitrant students in the day-to-day learning activities within the classroom no matter how engaging or entertaining the lessons are crafted to be. However, while these students are resisting traditional forms of reading, writing, and classroom participation, they are expressing their thoughts and ideas through technologies such as texting, email, blogs, Twitter and other forms of social networking at an astounding rate. In fact, a study performed by the Kaiser Family Foundation in January of 2010 showed that students are as connected to the world as they have ever been (Rideout, Foehr, & Roberts, 2010). The study found that children between the ages of 8 and 18 spend over 7.5 hours a day utilizing some type of media (Rideout, Foehr, & Roberts, 2010). This shows that there is a wealth of information being processed daily. However, the study also showed that of the average 458 minutes a day only 38 minutes, or 12 percent, of their daily media exposure was spent reading print text (Rideout, Foehr, & Roberts, 2010). Because so much emphasis is placed on students' success within traditional, print-text forms of reading and writing the advantages that these digital technologies provide are often minimized or ignored completely in favor of the tried and true teaching techniques that have been implemented in classrooms for years. We are spending the majority of our time teaching students information through a medium that that they will be likely to use in less than 12 percent of their media intake. As a teacher this should be a scary thought.

Technology is Here to Stay

Exasperating this situation even more is the fact that the usage of alternative, technology-based media is only increasing and the use of print text is in rapid decline. Everyday communication skews further and further away from the traditional mediums and towards technological alternatives. When is the last time that you received a handwritten letter in the mail? When was the last time that you received an email? Yet as educators we still focus on teaching the modes of the past and hope that students will be able to assimilate that knowledge into their everyday communication. How can we begin to shape the presentation of class material and the assessment of that material in a way that is more beneficial for student learning?

The fundamental ability to be able to read and comprehend text and express thoughts through writing will always be essential in the classroom, and these abilities do translate to later real world applications. However, teachers are confronted with a dilemma when addressing the need for print textbooks and handwritten responses and the level these particular methods should be utilized in the classroom. Especially when research, such as that conducted by Landow in 1992, showed us that reading in mediums such as hypertext, or texts that are multilinear may require a slightly different skill set than reading physical texts, which are unilinear as they do not require us to make sequential decisions as we read (McNabb, 2005, p.114). You would not teach your student to do laundry by taking him or her to the river and giving him or her a bar of soap, because technology has rendered that method obsolete. Yet we still approach technologies that are capable of replacing print text with hesitancy despite the changing demands of a changing world.

The Purpose of Language Arts

Language arts is a subject that consists of more than reading canonized literature and teaching students how to write a formulaic five-paragraph essay so that they can excel on standardized tests. The purpose of educating students in the language arts is to provide them with the tools necessary to critically analyze the world. This is because literacy is not contained within a classroom, instead we rely on our literacy skills to interpret the world around us (Woodcock, 2009, p. 98). Everyday students are inundated with information, whether it comes from their peers,

parents, traditional news sources, television, social media, or from the Internet. Students need to be capable of processing and truly understanding the vast quantity of information at their disposal in order to make well informed life decisions both for their own benefit and for the benefit of society as a whole. A truly effective language arts class cannot simply be content driven because content is stagnant. Yes, we can constantly re-explore and reexamine content to create a relationship with the text in new and interesting ways, but the important part is the process of learning how to explore the information the content provides. The processes of analysis and comprehension are far more important than the meaning that is derived as long as the student can create well founded arguments to support his or her interpretation.

The Benefits

Critical Literacy

One suggestion that Christine Woodcock makes in her 2009 article, *Fight the Dragons: Using Online Discussion to Promote Critical Literacy in Teacher Education*, is that one of the keys to helping students prepare to effectively process the world around them is to take time to teach students that critical analysis exists across multiple modes of text. In accordance with this concept, teachers should take an educational approach that requires students to work across multiple mediums and focuses on teaching learning as a process instead of presenting it as an end result that has been achieved (Woodcock, 2009). In addition to providing students with an exposure to multiple types of literacy, of which they could potentially gain an affinity for one or more and further increase engagement in the classroom, this teaches students to critically analyze materials in a way that extends beyond the classroom.

When you teach a student to read and analyze a textbook or novel you are teaching them the basic skills that they need. However, teachers must take this concept one step further. Through integrating technology into the classroom, teachers are able to start guiding students to the realization that the literacy strategies they are learning and using every day within the education system can, and will, translate to aspects of their lives that extend beyond the classroom and into their everyday course of action. One example is through the collaborative building of a classroom wiki. Not only do students have a new medium in which to share their ideas and learn from their peers, but also they learn to analyze the information put onto the Internet for validity. With the understanding that their classmates may post incorrect information on the Internet, this can teach students about the reliability of Internet sources in general.

Student Engagement

With the growing importance of technology in communication is it not pertinent that we teach students ways to use these new modes of communication appropriately while they are in school? An individual can respond to literature equally effectively through an online blog or Facebook post as they can in a classroom journal. However, the interactive, web-based technologies allow students to feel like they really have a voice (Witte, 2007, p.95).

This idea brings out another crucial element of technology; students find technology to be interesting and engaging. In his 2006 research, Faryadi stated:

> "The promise of multimedia is simple; learners enjoy learning by using computer assisted multimedia instructions. Multimedia instruction assists students to learn more deeply and above all to enjoy such a learning environment. Students learn because the instruction is presented to them in a meaningful way using sounds, pictures and animations. Undoubtedly, these little animations and pictures foster deep learning" (p.1).

This is especially enticing when it seems like nothing we say, do, or choose for students to read can engage students at an intellectual level. In fact, classrooms that have integrated technology through one-to-one Tablet programs were capable of shifting students' attitudes towards learning and increasing schools attendance (Oliver & Corn, 2008). The incorporation of technology in the classroom leads to more than simply an increase of student attendance but also an increase in student learning. With technology driven literacy students stop asking the question, "When am I ever going to use this?" and begin to see the real world applications of their knowledge. At the end of the day students may feel like they have learned more when they utilize technology in the classroom then when they have not.

Affordance

The theory of affordance, conceptualized by Gibson in 1979, states that "the way humans perceive objects are context or environment laden, and that the affordance of an environment depends not only on the environment per se, but also the possible interaction between humans and the environment" (Li & Pow, 2011, p. 320). This particular theory is crucial when considering integrating technology within the curriculum because it helps us understand two key elements. First, connecting the home and school learning environments is vital. The closer a student's formal learning environment is to his or her informal learning environment, the more likely the student is to learn and retain knowledge (Sanden & Darrugh, 2011). Sanden and Darrugh's research brought this concept to an even greater level of importance when they found that a person is more likely to learn when the learning is conducted through activities that truly align with who they are as individuals (Sanden & Darrugh, 2011). This indicates that students are more likely to learn through technology than print mediums because they interact more comfortably with digital media.

While this concept is important it is not the most important element we should take out of the Gibson's theory. What is most vital is that the context of the environment is crucial to the learning process. In teaching students they should critically analyze print text, we teach them the association between print and critical literacy. In failing to teach technology in a critical fashion we are failing to impart the message that the critical analysis required of print text is required of every mode of information that students come across in their lives.

As language arts teachers, our goal is to prepare students to be able to analyze and interpret the vast amount of information they will come across in their lifetimes. Is it not a disservice to students to ignore the ability to comprehend these alternative modes of text and information that they will be exposed to throughout the rest of their lives? Woodcock (2009) illuminates the idea that while students are constantly exposed to information via technology that does not mean that they know how to process the information at hand in order to make value judgments on things such as reliability and bias. In presenting materials through multiple mediums and asking students to make evaluations we are teaching students that all things must be evaluated and this concept is just as vital to students as the learning of content material (Woodcock, 2009) . Without ever learning the need to evaluate the world around them, what is the purpose of teaching students these critical thinking skills in the first place? It is vital that we teach students not only how to evaluate but also that we impart the message that everything needs to be evaluated, not just textbooks and print text.

Cognitive Companionship

Teachers frequently express concern that students have become overly reliant on technology. In some cases we have constructed the perception that technology is a crutch that makes learning easier for students but does not enhance it in anyway. It is easy to blame poor spelling on Microsoft Word's autocorrect feature or television for ruining students' minds. I am not saying that digital technology is the sole tool that should be used in educating students in the language arts. Rather, I believe that teachers should try to teach students to seamlessly integrate technology into their own learning because when this happens there should be an increase in students "cognitive activities such as searching for information, reading information, organizing information, analyzing data, writing, peer tutoring, sharing learning resources and online discussion" (Li & Pow, 2011, p. 322). So while in some instances students do use technology as a crutch, heightened learning does occur by creating a seamless learning experience that allows the technology to "seemingly become students' cognitive companions" (Li & Pow, 2011, p. 322). This concept of developing a cognitive companionship is vital and should be the ultimate goal of technology integration in the classroom. This allows students to reach out, gather the information available, and, if appropriately taught, use that information to create meaningful analysis.

Why Aren't We Doing It?

It can seem like an unnecessary luxury to add the newest technology to the classroom when the general outlook is that technology is an excellent resource for students to have, albeit one that is not integral to their education. The truth of the matter is that schools and communities as a whole are doing the students a disservice in considering technology a second-class citizen in the realm of academic funding. As we see so often today student's daily lives are abundantly connected to the technologies surrounding them. The use of technology to connect who students are with how they learn is imperative for teachers to implement in order to increase learning. In addition, ignoring the possibilities that technology offers is counterproductive to student learning because teachers are therefore ignoring a vital part of what makes students who they are. It is vital to remember that providing students with access to technology is not simply giving them a word processor that they are capable of using on their own time. Rather, students are provided access to a multi-faceted tool that they can use in order to communicate with their peers and

teachers, find information on the Internet and potentially have access to other experts around the world. The key to this multi-faceted tool is that someone must take time to show students how to use it, and that it can be used, in order to create greater learning both in the classroom and for the rest of students lives.

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Biography

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Mathematics

The Use of Problem Solving Methods and Tools in the Classroom: Challenging Our Advanced Learners

Jeffrey M. Niedermier

Abstract: Instructors have been implementing problem solving strategies in their classroom to help struggling learners achieve math competency. These methods of differentiating lessons have been proven to be efficient in improving mathematical skills with struggling learners. This raises the question of whether these same strategies will also be beneficial for advanced mathematical ideas and advanced learners. Would we see a larger increase in mathematical understanding with the use of these strategies for advanced learners as compared to struggling learners? We will find that all types of manipulatives will be useful when having accelerated students explore abstract math concepts. The more time instructors put into preparing and using these strategies for their advanced and lower level learners the closer their students will be toward understanding abstract concepts.

Problem Solving in the Classroom

For many years now it has been common practice to use methods of problem solving when teaching mathematics. The National Council of Teachers of Mathematics (NCTM) defines problem solving as: "Engaging in a task for which the solution method is not known in advance" (National Council of Teachers of Mathematics, 2000, p. 52). By engaging our students in these types of activities we allow them to work on a set of skills that will carry over into all five main contents of mathematics (number, measurement, geometry, algebra, and data analysis/probability). NCTM offers educators and curriculum planners this thought "Problem solving is an integral part of all mathematics learning, and so it should not be an isolated part of math learning", (NCTM, 2000, p. 52). In this sense, we can help our students better achieve the mathematical goals presented by the state standards by using problem solving strategies in all areas of mathematics.

Manipulatives and a host of other strategies have been used as applications of problem solving when attempting to further students' understanding of mathematical concepts. These tools have the ability to make abstract concepts concrete in a student's mind, and provide them with a better means of explaining what they have done to arrive at a solution to a given problem. Many studies have been conducted on the use of manipulatives in classroom to support and increase the learning and comprehension of low attaining students. These applications are being used to differentiate instruction of mathematical ideas, and studies are showing that the learning and comprehension of the lesson's ideas are being increased for the lower level learner. However, we must look to use these promising teaching strategies for our advanced or accelerated learners, and not reserve them solely for the struggling math students.

Problem Solving Studies

Many studies that have been conducted focus on using manipulatives, modeling, and other problem solving strategies to differentiate the learning of lower level learners and further their learning of mathematics. Most of these studies have the same results. The control group stays about the same and the group of students with the differentiated instruction appears to be improving at a much faster rate.

One such study, conducted by Watson and Geest (2005), explored how changing the methods of teaching in the classroom affected already low attaining students. The two worked with instructors to have them begin changing their lessons by incorporating problem solving strategies, and to focus more on thinking and understanding what the problem asked, rather than focusing on the end result (Watson & Geest, 2005). Their results showed that students who had been labeled as failing became more willing to participate in classroom activities and work. This, like many studies conducted by researchers, validates the fact that these strategies work to improve mathematical understanding for students that are struggling to grasp ideas.

More of a Benefit for Advanced Learners

Another study, conducted by Meijer and Riemersma (2002), looked at the effect of optional assistance provided by instructors while students performed problem solving activities. Like most studies of this nature, the researchers were attempting to validate the idea that improved mathematics comes with the use of problem solving activities. In the end, it had appeared the researchers had succeeded and the students who had the problem solving instruction performed better than the students with regular instruction. However, a closer inspection of the results showed that

students with an already high ability to learn benefited most from this instruction. According to Meijer and Riemersa, "This implies that the more resourceful a person already is, the more he or she will benefit from extra resources, such as carefully designed instruction and optionally available assistance during testing" (2002, p. 210). In short, students that are already performing at a higher level will benefit more from these types of instructional change.

This accidental finding affirms the idea that the strategies traditionally reserved for the struggling learner can be successfully transferred to use in advanced math courses and for accelerated learners. We can also take from the study that by providing students with these types of activities they are able to advance further in their already-strong mathematical knowledge base. They will be able to think differently about problems and explore the concepts instead of being drilled on ideas with constant practice.

A Look at Manipulatives

Many tools and learning aids are available to foster mathematical learning in students, and to help them to represent and explain what they have done. Some of these tools are old tools of mathematics, such as a compass and straight edge. Others are current machines, such as computer programs and calculators. The idea that physical objects might play an important role in the learning process of students is a relatively new concept in education (Resnick, et al. 1998). Pestalozzi asserted that students need to learn through their senses and through physical activity arguing for "things before words, concrete before abstract" (Resnick, et al. 1998).

These concrete objects are more commonly referred to today as manipulatives. Manipulatives have been described as concrete objects that allow students to explore mathematical concepts in an active, hands-on way. Burns (2001a) offers a list of five positive characteristics of using manipulatives in an article titled *A letter to Parents*:

1. Manipulative help make abstract ideas concrete.
2. Manipulatives lift math off textbook pages.
3. Manipulatives build students' confidence by giving them a way to test and confirm their reasoning.
4. Manipulatives are useful tools for solving problems.
5. Manipulatives make learning math interesting and enjoyable.

All of these reasons will have a positive effect on students learning, and provide them with concrete objects to represent abstract ideas.

Manipulatives Available for Use in the Classroom

Incorporating manipulatives within a math classroom has traditionally had to do with ideas of using manufactured or handmade items that allows students to physically manipulate these objects to gain a better understanding of a mathematical concept. Many of these tools include items, such as, Cuisenaire rods, fraction tiles, color tiles, Unifix cubes, pattern blocks, colored craft sticks, and objects that can be created by the teacher out of common office supplies (Brown & Crawford, 2003). The use of these tools are commonly accepted by math teachers as a way to achieve student understanding of a concept. They have been primarily used in the elementary grade levels to foster understanding of number sense, fractions, and many other basic mathematical concepts. However, with our ever-changing advances in technology, educators need to begin exploring and using the digital manipulatives. Many internet and computer-based programs are being produced that allow students to look at problems and manipulate them to explore results. These programs let students to dive deeper into the understanding of mathematical problems and help them to view problems in a way never seen before.

Use of Manipulatives for Advanced Math Concepts

A computer-based program, GeoGebra, has features that allow students to explore theorems within many areas of geometry and algebra. An example in which instructors can utilize such a manipulative-type program for an advanced mathematical idea was to have students use a program such as GeoGebra to figure out what the Pythagorean Theorem means and prove why it works. I had eighth grade students in a pre-algebra class explore this idea in a computer lab. To help students get started I posed the question: What does it mean to square something? Once we talked about this we were able to formulate the idea that when we find the square of any number we have actually found the area of a square with the length of that number. I then asked the students: "What does the Pythagorean Theorem mean in regards to a right triangle?" I then asked them to support their argument for the answer to this posed question by using GeoGebra.

As I walked around the computer lab I saw that most of the students had formulated the general idea for what was happening. They found that when we find the area of two squares with the lengths of the side being equal to the lengths of the two legs of the triangle, and sum them together, it will equal the area of the square formed by using the length of the hypotenuse. Students were then able to walk me though their explanations using figures they had drawn on GeoGebra and showing me the values found for the squares.

It was evident that this task furthered the students' mathematical understanding of a concept that would have normally been presented and then put into practice with no understanding of why it works. Most of us can probably remember sitting in a classroom and being introduced to the Pythagorean Theorem. My experience with the introduction of this idea was followed by twenty problems to drill the method into my brain with no explanation of why or how it worked. I received the "accept it to be true and move on" type of instruction. The way in which I had presented the information on this topic allowed students to think about what they were doing, and also provided them with a concrete experience they could later draw on. The more often instructors can provide this type of learning, the deeper the students' understanding will be.

Guidelines for Use of Manipulatives

Most of the mathematics field would agree that the use of manipulatives within the learning environment comes with specific procedural tasks (Brown & Crawford, 2003). As instructors, we do not want to have students use manipulatives for the sake of using them. The integration of these manipulatives into the lessons needs to be purposeful. "Our primary goal is not to help users accomplish some task faster or more effectively, but rather to engage them in new ways of thinking. In short, we are interested in "Things That Think" only if they also serve as "Things To Think With" (Resnich et al., 1998). According to Burns (2001b), when teachers do decide to use manipulatives within their instruction, there are some factors to keep in mind, which are otherwise known as "musts:"

1. Talk with students about how manipulatives help them to understand the math.
2. Set rules for using the material. Let the students know that there is a difference between toys and these manipulatives, but try to encourage their progress to make discoveries.
3. Do not let students interfere with each other.
4. Set up a clear way of storing materials that makes them easily accessible to students.
5. Allow time for free exploration when introducing new material.
6. List what manipulatives are for a student's reference so that they can easily communicate what they are using.
7. Use them for writing assignments. They are easy for students to look at and describe what they see.
8. Allow parents to handle the manipulatives and relate to what their children are doing in the classroom.

By following these "musts", instructors will create a successful environment in which students can use manipulatives to solve problems and gain understanding of abstract mathematical concepts. Instructors also provide an experience that students will be able to draw on every time there is a need for them to use that mathematical idea.

Looking Forward

All instructors should begin incorporating these types of activities in the classroom. Too many instructors do not put the time and effort in to advance the accelerated learners further into mathematical comprehension. They instead focus on trying to bring the struggling learner up to an acceptable level of comprehension. If instructors take the time and tailor similar problem solving strategies used in differentiating lessons for lower level learners, we will find that our advanced students are thinking in ways never seen before and gaining a deeper understanding of the mathematical ideas presented.

With an increase of instructors trying new methods of problems solving, we will see an improvement of old methods used and a host of new methods to try. These methods will be important when trying to incorporate the changing societal views of education into our classrooms. We cannot, however, completely abandon traditional methods of teaching. Basic skills should be taught before students are sent off to use the strategies of problem solving. Once the basic skills of the concepts have been learned, the tools of problem solving can be used to further explore concepts, and gain a deeper understanding of the ideas. For example, students must know how to multiply and distribute before they can explore how to factor.

More studies need to be conducted with a focus on advanced students and their level of improved mathematical comprehension when problem solving strategies are employed in classroom instruction. We will find that the improvement of advanced students understanding will overshadow the gains made by struggling students.

This does not mean that we should no longer use such strategies with the lower level learner because they are working to further their understanding. However, I wish to convey the thought that the use of these techniques will accelerate the advanced students' mathematical knowledge.

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Biography

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Science

Exploring the Value of the United States' Science Ranking on the Programme for International Student Assessment

David A. Shumaker

Abstract: International standardized tests are becoming heavily weighted in the discussion of policy and curricula change in the United States. Since the U.S. is not scoring near the top on PISA, the most prominently used international standardized science test, its results may have significant implications for the future of our educational system. However, this paper finds validity issues in PISA results, including inconsistent assessment objectives, inappropriate items, and sampling biases. Additionally, there is no causation found, only correlation, between a country's scores on PISA and economic strength. It was found that the results of PISA have little quantitative value and should be thoroughly scrutinized before considering them for policy or curricula change.

Introduction

The United States is currently struggling to recover from an economic recession and effective unemployment rates are still near record highs. In spite of this, in a recent State of the Union Address, President Barack Obama (2012) remarked that high-tech industries are complaining that there are not enough properly educated American workers to fill the available positions. This may demonstrate a significant flaw in the U.S. education system that is only reinforced by the current international test scores. The later part of the 20th century saw great attention being paid to student performance on standardized tests at the local and state level. More recently, the same can be said regarding the national and international level. In the most prominent international standardized science tests, U.S. students are underperforming in the high-tech subjects of math and science. In fact, the average scores for U.S. high school students fall short of the top when compared to other industrialized nations.

Less than ideal test results often elicit emotional responses from citizens and policy makers, alike. Vast plans are considered to reform the "failing" education system based on the data. Many questions are brought to attention, including: Should all U.S. States be mandated to participate in international standardized tests? Should the current system of state and locally-driven curricula be replaced by a national or international curriculum? Should international test score rankings even have an influence on the reformation of education policies? In order to answer these questions, the value of the United States' rankings on international standardized science assessments must be determined. First, the scope and objectives of the Programme [sic] for International Student Assessment (PISA) were examined, along with the United States' rankings compared to other participating nations. Second, the validity and reliability of PISA was thoroughly explored. Finally, from the lens of human capitalism, the relationship between test score rankings and a country's economic strength was investigated. As this article will describe, significant flaws and minimal value were found in PISA scores. Its results should be carefully scrutinized and should not be the driving factor for policy changes.

U.S. Performance on PISA

The Programme for International Student Assessment is the primary source of data for comparative international educational assessments (McGrath, 2008). The test is sponsored by the Organization for Economic Cooperation and Development (OECD), a coalition founded to promote international economic progress, world trade, and democracy. Members of this organization include the most industrialized, wealthy nations of the world (Provasnik, Gonzales & Miller, 2009). The test was first administered in 2000, and is repeated every three years with a rotating focus subject area each year. The test assesses 15 year-olds, which is the final age of most compulsory education programs, in reading, mathematical, and scientific literacy. In 2006, the latest year focused on scientific literacy, 30 OECD member countries and an additional 27 partner countries and regions were sampled for the assessment. This group accounts for over 90% of the world's economy.

The purpose of PISA is to measure the "yield" of international schools (OECD, 2007b). Rather than just focus on knowledge, it assesses the skills students have acquired through their schooling and their ability to apply them to real-world situations. The concept of scientific literacy puts a greater emphasis on "mastery of processes, understanding of concepts, and application of knowledge in various situations with subject matter domains" (McGrath, 2008). These domains are assessed using primarily constructed-response and open-ended items with a lesser number of multiple-choice questions. PISA scales each student's raw score to an average score of 500. A

unique characteristic of PISA is the test's diagnostic proficiency levels (OECD, 2007a). Both student scores and item difficulty are ranked on a scale of one (lower-level) to six (higher-level). Level-one corresponds to a minimum score of 334.9 and 94.8% of students can answer questions at this level or higher. Conversely, level-six corresponds to a minimum score of 707.9 and only 1.3% of students can answer questions at this level. Student scores are related to competency based on their proficient level. For example, a student with a score of 570 is at proficiency level-four and should be able to answer questions rated with a difficulty of 570.

For the 2006 PISA, the United States scored a 489, a below average score (OECD, 2007a). This ranked 21st out of the 57 total countries sampled and 17th out of the 30 OECD member countries. The U.S. had a large amount of students scoring at the very top and bottom of the proficiency levels. One in four students (24%) were at level-one or below, while 9% were at level-five or higher. 66.5% of U.S. students had "average" scores (level-two to level-four). Finland and Hong Kong, respectively, ranked the highest on average.

Validity of PISA

Validity Defined
In order to determine the value of any results, the test must first be proven to be a valid assessment. In this context, it is vital to have a thorough understanding of validity. Validity is defined by the sound interpretations and uses of student assessment data (Nitko & Brookhart, 2012). In order for a test to be valid, the assessment tasks must align with the learning targets set forth in the curriculum and instruction of each educational system. The desired cognitive and content domains must be accurately assessed. The items of the assessment must be found to be appropriate to assess these domains. Additionally, the methods of gathering data must be free of bias. Finally, once data is collected, it must be presented in an accurate and appropriate manner.

Comparing Assessment Results of Different Countries with Different Curricula
An important qualification for determining the validity of an assessment is the alignment of what is being assessed with the learning targets of an educational system (Nitko & Brookhart, 2012). The learning targets of one country may not align well with the learning targets of another country. Yet if these countries participate in the same international standardized test, no matter how well the assessment tasks are prepared they will not match the learning targets of at least one of the countries. This invalidates the data for the mismatched country and, if the results are normalized, it also invalidates the data for all other the countries whose learning objectives were well-aligned.

Appropriateness of Assessing Scientific Literacy by PISA
Scientific literacy, as described by PISA, aims to assess "the capacity of students to extrapolate from what they have learned and to analyse [sic] and reason as they pose, solve and interpret problems in a variety of situations" (OECD, 2007a). Traditionally, proficiency in scientific literacy encompassed knowledge of scientific concepts and their applications in real-life contexts; the scientific inquiry processes; an understanding of the nature of science; and an understanding of the relationships between science, technology, and society (Lau, 2009). More modern views of scientific literacy focus on individual enlightenment and progression. Student development outside of the classroom also has a significant influence on scientific literacy (McGrath, 2008). Scientific literacy entails much more application and knowledge *about* science, such as higher-level thinking and reasoning. The multidimensional nature of scientific literacy makes it inherently difficult to quantify. PISA struggles with this difficulty to quantify and assess scientific literacy in the construct of a massive standardized test (Lau, 2009). Often, instead of assessing student knowledge *about* science, PISA is found assessing student knowledge *of* science, such as lower-level recognition. Additionally, as described in the previous paragraph, students' development of scientific literacy is greatly influenced by life outside the classroom. This inherently means that PISA is assessing and ranking school systems based on data that is not completely relevant to the learning domain. These discrepancies indicate that assessing scientific literacy is not an appropriate objective for PISA.

Item Appropriateness
Any standardized test must take care to create and implement fair, reliable, practical and appropriate assessment items (Nitko & Brookhart, 2012). PISA, as an international standardized test, has an even greater challenge and more obstacles to overcome to successfully implement assessment items. Perhaps the most obvious obstacle to overcome when writing an international standardized test is the overcoming of language barriers. For example, there may be no direct translation of a word in another language. The meaning or clarity of the item may be

changed when the word is translated (Bracey, 2008). PISA starts with authentic text items, items that have been published in the language of one of the many OECD or partner countries. However, the text is only authentic in its language of origin. It loses authenticity as soon as it is translated. Additionally, translation of items can make them longer in another language, possibly putting a test-taker at a disadvantage if it takes a significantly longer time to read the question.

Other common criticisms of PISA are similar to the issues found with standardized tests in general. No paper or computerized test will truly be able to assess the everyday interactions with teachers and peers that students have experienced since beginning school (Bracey, 2008). Also, because PISA contains constructed response items, the grading reliability is lessened when compared to multiple-choice items (Nitko & Brookhart, 2012). It is much more difficult to grade constructed response items consistently due to human error. One the other hand, the tests having constructed response items allow for the assessment of higher-level learning tasks and can actually be advantageous. Additionally, PISA insists on keeping most of their test questions secret besides the few released each assessment year in reports (Bracey, 2008). This prevents most educators or other third party evaluators from assessing and providing feedback to the test-makers.

Sampling Bias

Possibly the most discussed cause of invalidity for international standardized tests is from some variation of sampling bias (Wuttke, 2008). Low participation rates are one cause of sampling bias. Some countries, Mexico and Turkey, among others, have less than 60% of their 15 year-olds in school. The PISA data from these countries would not be a fair representation of the student population as a whole. Another source of sampling bias in PISA is the exclusion bias that is created when countries do not have a standard amount of excluded students (Wuttke, 2008). Within a sample school, PISA guidelines limit exclusions of only 5% of the target population, usually for students with various learning disabilities. The decision on exclusions is left to the discretion of school administrators or other qualified educators. Despite the guideline, the actual exclusion rates of schools vary from 0.7% to 7.3%. Many schools exceed the 5% limit, including the United States, and are still included in the data and rankings. A large exclusion rate tends to significantly increase a country's mean score. Additionally, countries that track students also tend to have increased mean scores (OECD, 2011). This can be explained because the higher-achieving tracked schools tend to participate fully with the tests and schools with lower-level students tend to be excluded from the data pool more often.

The Relationship between Test Score Rankings and a Country's Economic Strength

Human capital theory is the predominant philosophy of education being implemented in most of the world today, especially in highly industrialized countries (Cheung & Chan, 2008). It is based on the fundamental principle that the higher ability and higher achieving a person becomes, the more employment opportunities and income he or she will obtain. Spence (2011) supports this by demonstrating that with the current U.S. economy highly educated workers have more opportunity for work and higher wages while workers with less education are facing declining employment prospects and stagnant incomes.

International research currently supports this theory. Cheung and Chan (2008) cross-referenced data from the 2006 PISA science test with data from the *United Nations Human Development Report*. They identified a positive relationship between countries with high scores on the PISA science test and employment rates for both men and women in the industrial sector of their respective country. Also, in general, the results of the study show that all PISA scores are significantly related to employment in various job markets. However, it should be noted that this study did not show if current or past PISA scores actually caused future economic growth. It could only conclude that there is a correlation, not necessarily causation.

Conclusion

U.S. students rank about average on international standardized science tests. However, there is no need for alarm or drastic policy changes. It was observed that scores on PISA have a correlation, but not causation for future economic growth (Cheung & Chan, 2008). Current research encompassing many aspects of PISA suggests that there are multiple contributions to the invalidity of the test scores and rankings (Bracey, 2008; Lau, 2009; McGrath, 2008; Wuttke, 2008). The most prominent shortcomings are misguided objectives of PISA (Bracey, 2008; Lau, 2009; McGrath, 2008), sampling biases (Wuttke, 2008), and international language barriers (Bracey, 2008). These reasons threaten validity, yet, there is reason to not dismiss the data as a whole. We can still observe the scores and rankings and learn from them. There are many improvements that can be made to improve the validity of the tests.

The objectives of the international assessments can be modified to better align with the countries and populations that are being tested. International cooperation on curricula and assessment planning can be developed. Sample biases can be minimized by better oversight and self-regulation.

The value of international standardized tests is that they are an attempt at quantifying intangible characteristics of international education systems. They should be valued as just that: an attempt; a practice. They are tools to inform us of the possible best-practices being employed in education around the world. However, with that said, they should not have any significant influence on policy decisions. In the modern world the need to quantify education is not going to disappear. The standardized tests we have need to be improved, and they likely will be. In the meantime, we can use their data to determine the best ways to improve international education, but not for compulsory or high-stakes reformations. If any policies are going to be implemented based on the data from PISA, they should have the goal to close the socioeconomic status achievement gap on local, state, national and international levels. International tests like PISA should not be used by all states until their validity is improved. International education systems are too different and unique in their learning objectives to be universally assessed. As an alternative, other means of evaluation can be taken into account along with the scores. Thorough research of the highest scoring countries' policies, curriculum and instructional strategies should be conducted. For the United States, a more nationally-based curriculum could be suggested to integrate similar, "best-practice" policies into our current education system.

It is vital that our education system prepares our students to succeed and become productive citizens. In science, specifically, it must prepare our students to compete in the current high-tech, global job market. This entails improving our students' knowledge and understanding of science, inquiry, and scientific literacy. We do not need to reinvent the wheel in coming up with a plan. Instead, we can examine international standardized tests for what science education instructional strategies and policies are being employed by the top-scoring international school systems. We can compare and contrast those strategies to those being used in the United States to improve our current system and practices.

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Biography

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Improving Scientific Literacy Through Enhanced Teacher Preparation: Looking to Finland for Inspiration

Hanna Below

Abstract: The fastest growing job market today includes careers that apply science, technology, engineering, and mathematics (STEM). These jobs require employees to have scientific literacy. According to a recent international assessment, the Programme for International Student Assessment (PISA), American students performed near the international average in scientific literacy. This indicates that our education system is not providing students with satisfactory scientific literacy skills they need to be competitive in the changing marketplace. The leading nation in scientific literacy, Finland, differs from America in the way that future science teachers are prepared, specifically requiring teachers to hold degrees in both their content and education. This difference will be explored in this manuscript to propose ways to improve our students' scientific literacy skills.

Introduction

Recently, the state of science education in the United States has been in the spotlight of the media. According to recent international assessments such as the Programme for International Student Assessment, PISA, science proficiency in the United States has fallen behind many other developed and undeveloped nations. Our nation is one that prides itself as the leader in many fields, including the STEM fields (science, technology, engineering, and mathematics) but the effectiveness of our science education does not support this claim. The goal of this manuscript is to find a logical link between science teacher preparation and students' capacity for scientific literacy. In order to accomplish this goal, this paper will examine how teachers are prepared in the leading nations and how teacher understanding can influence their teaching practice and student comprehension.

After examining the results of a particular assessment, PISA, the system for teacher preparation in the leading nation, Finland, will be investigated in order to shed some light on the ranking. This will be compared and contrasted to the measures taken to prepare science teachers in the United States. Research regarding the links between teacher content knowledge and student will be discussed to support the claim that science teachers should be better prepared both in their specific scientific field and as educators. This will also provide some suggestions for altering science teacher preparation in order to enhance student comprehension.

Importance of Science Education

It is the duty of science educators to provide students with the skills they will need to function as responsible and productive citizens. Productive citizens use scientific understanding in their everyday lives. Comprehension of science is also important in order for citizens to participate in the democratic processes of our nation. In the economic arena, careers that require scientific understanding, problem solving and reasoning skills will show the biggest gains in the near future according the Bureau of Labor Statistics (2012). The following section will outline the means by which science education prepares students for society and explain why scientific comprehension is vital for the economic strength of our nation, which can be measured most successfully by international science proficiency rankings.

As stated by Gregory and Miller (1998), "the public must understand science if they are to be useful citizens, capable of functioning correctly as workers and voters in a technological age" (p. 1). This is the concept of scientific literacy, which has several facets. Those literate in science are able to use scientific principles and reasoning to interact with the rest of the world. Literacy also helps us to distinguish between fact and fiction. Armed with a strong understanding of science, our future citizens will be able to understand the bewildering media blitz concerning health, science, and environment news. It is understood that there is a clear difference between creating knowledgeable citizens and preparing scientists but all students should learn how to deliberate, witness public discourse and blend scientific arguments with their personal and political viewpoints according to Ramaley, Olds, and Earle (2005).

Education in the areas of science, technology, engineering and mathematics, also referred to as the acronym STEM, has been the main focus of policy makers and the public over the last several decades. The importance of these specific content fields has never before been more vital to the success of our nation than it is now. In order to stay competitive our education system must adapt to push our students and support their prospective success in the

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STEM fields. Without proper experience with science, our students will not be successful in the career arena with the highest current demand. The Education Commission of the States (2011) recognizes this importance and claims that the labor force needs a steady supply of workers that are well educated in science and math in order to remain strong and adaptable. These fields are showing the largest growth in the near future. These numbers are staggering, yet we are not preparing students to be successful in these career paths because they are leaving secondary education without the skills required by scientific literacy. This is one of the largest dilemmas our nation has faced in recent history regarding education. We are sending students out in to the real world without the skills they need to be successful in the changing job landscape.

PISA: Scientific Literacy Assessment

In order to study the effect of teacher preparation on scientific literacy, the assessment used to assign the rankings must first be inspected. For the purposes of this document, the major assessment examined was the Programme for International Student Assessment, PISA. This assessment, unlike others used student skills in scientific literacy, rather than content knowledge, to assign international rankings. The number one country that participated in this international study shows significantly different results when compared to the performance of United States' students. The United States and the leading nation, Finland, also show many differences in their education systems, particularly the ways in which science teachers are prepared and how they are viewed by their respective societies.

The Programme for International Student Assessment, or PISA, was administered in 2009, 2006, 2003, and 2000. This assessment was not grade specific and did not assess specific curricula. Currently it is the best measure we have to assess scientific literacy. It was administered to fifteen-year-old students and evaluated the skills and competencies that students should have gained and their ability to apply them to real world scenarios (National Center for Education Statistics, 2010). The assessment is a measurement of the yield of education systems. The assessment combines science content from the classroom with the knowledge and skills students at this age should have attained from their interactions with the outside world. Therefore PISA was the main source for justifying the comparison of the effects of teacher preparation on scientific literacy.

PISA Question Format

According to PISA there are six levels of proficiency in scientific literacy. At the highest proficiency, level six (708 points), students are expected to express a vast amount of knowledge about the role science plays in our world and how it can be interpreted. Questions with lower assigned levels required lower level thinking. Level six questions required higher order thinking, a facet of scientific literacy. The questions included on PISA covered a wide variety of topics in the form of multiple-choice, true/false, or constructed response formats. According to a r eport comparing the international assessments, forty-six percent of science items on PISA could not be placed under any specific objective or subtopic (National Center for Education Statistics, 2007). This was done intentionally because the purpose of PISA was to measure scientific literacy, not content knowledge.

Results of PISA

The results of PISA use the mean scores to rank participant nations. These results are representative of each nation's success in scientific literacy. The mean score set for comparison on the 2009 PISA was 501, with the United States performing just above that with a score of 502 (Organisation for Economic Co-operation and Development, 2010). Of all the nations included in PISA, the United States received an upper ranking of 19. Among the developed OECD member nations, Finland was the top to performer with a score of 554. Although there has been much speculation about the reasons behind the stellar performance of Finnish students this paper focuses solely on the role of science teachers and does not address these issues.

Teaching in Finland

It was not until the twenty-first century that Finland began to receive international recognition for its education system. In the 1980s, Finland was considered mediocre at best. This was until major educational reforms were enacted. One of the main differences between the approach to education in the United States and Finland is the way that teachers are prepared. Preservice teachers in the states typically earn an undergraduate degree in education in order to be certified in his or her particular state. Preservice science teachers take basic content courses. In general, a graduate degree in education, or an undergraduate degree, is not required in American schools. Finland requires that all teachers at the primary and secondary levels must hold an undergraduate degree in at least one content area they teach and a master's in the area of education, at minimum. According to Sahlberg (2011), the master of education degree takes two years to complete and focuses on research and scientific understanding of education. Teacher

preparation programs are comparable to the medical and law programs in regards to competitiveness and prestige. Finnish teachers represent the best of both worlds; they have broad comprehension of their respective contents and understand the fundamentals of student learning and educational practice.

Standardized Testing in Finland

All educators in Finland are well respected for their classroom decisions. They enjoy autonomy, a rare commodity in the American education system. The Finnish ideal of teacher autonomy excludes standardized testing. Instead, teachers are the main assessors of students' progress. Sahlberg (2011) points out that assessment is emphasized in the national policy but is not delegated by national or local standardized assessments. Appraisal of student performance and comprehension are embedded into the classroom. Students are measured against their own standards not external facts and figures. Although the school systems in Finland recognize that there may be shortcomings that come along with the perceived lack of accountability, Finnish education officials believe that these flaws outweigh the massive issues surrounding outside standardized testing. With the Finnish "laissez faire" approach to assessment, teachers and students do not have to face the daunting baggage that comes with a standardized approach. These issues include a "shallow and narrow" curriculum, harmful competition, teaching to the test, and cheating problems that are often associated with standardized testing (Sahlberg, 2011). This allows teachers to put their efficient education to use in designing lessons, reflecting on data, and implementing changes in their instruction, thus supporting scientific literacy.

Science Teacher Preparation and Student Knowledge

Science is arguably the most broad and specific of the major content areas. Unlike the other subjects, science can be split into various sub-contents from biology to chemistry, and physics to anatomy. The conventional preparation for science teachers does not allow future educators to gain significant mastery in one or all of these areas. Teachers that are not masters in their content are not beneficial to students and could pose a threat to their success. Teachers play the biggest role in the success of the students. Therefore it is essential that future science educators be well versed in the content as well as educational practices. Well-prepared and knowledgeable educators can meet the goal improving students' scientific literacy.

There have been several studies showing how teacher knowledge can affect student comprehension. A study performed by Magnusson (1992) showed how teacher knowledge and misunderstanding affected their students' comprehension of heat and temperature. Teachers with incorrect knowledge about the subject transferred their misconceptions to their students. This resulted in the students performing poorly on post-tests. These students showed a decrease in knowledge from the beginning to the end of the school year because of their teachers' alternative concepts. This can also be thought of in the opposite way. Teachers with correct knowledge about science can better help students understand the concepts. Knowledgeable teachers may also provide more opportunities for critical thinking and higher order questioning, required for a strong grasp on scientific literacy.

According to Herman, Osmundson, Dai, Ringstaff and Timms (2011) poorly prepared science teachers do not have enough content knowledge to properly assess students and their progress in order to make changes in instruction. Because of their own inadequacies in science, these teachers are not capable of planning strong assessments or analyzing students' responses. This is where science teachers lose their autonomy and become subject to outside accountability standards. Finnish science educators do not face this issue because they receive sufficient educations in their content to best analyze student understanding. This also allows them to implement their own assessment to drive the course of learning.

Conclusion

The scope and subject of this review could have taken many different approaches to find reasoning behind international differences in scientific literacy achievement. If these approaches were taken, the arguments have had the potential to become very intricate. These issues are very broad and do not serve much value when searching for advice on improving scientific literacy for American students. This paper presents one aspect that could conceivable be changed in the American education system. Advancing our students' scientific proficiency would improve more than just international rankings and bragging rights.

If the United States' education system could alter the requirements and training of science teachers our students' scientific literacy would benefit greatly. Advancing our students' scientific proficiency would improve more than just international rankings and bragging rights. The implications of improving scientific literacy would have profound and far-reaching consequences. Students that receive a sound and purposeful education emerge

ready for a future in a career field of choice. Improving the work prospective for our citizens would boost individual quality of life and lift our STEM-based economy.

Educators, administrators and policy makers interested in bettering American scientific literacy should consider the information presented in this paper in order to base opinions concerning possible changes to the profession of science education. An alteration in the way science teachers are prepared, modeled after Finland, would be one step in the direction of improving our scientific literacy in America. Well-prepared teachers that are versed in quality instruction and assessment could eliminate the need for external standardized testing and the associated issues. Whether it is a change in the amount of content hours or making alternative licensing programs more accessible for those already in the science fields, something must be done to ensure competent and passionate professionals are teaching our students.

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Biography

Hanna Below is a r ecent graduate of The University of Toledo, Judith Herb College of Education's LAMP program as a Noyce Scholarship recipient. Her concentration is in secondary life science, which she aims to find employment as a teacher in the Cincinnati, Ohio area.

Making Abstract Chemistry Concepts More Accessible to Students

Jenna Scheub

Abstract: This paper explores the abstract nature of chemistry concepts and the methods to make those concepts more accessible to students. Traditionally, chemistry instruction is math-based, relying heavily on problem sets and algebraic formulas to convey concepts. Teachers often rely on textbooks for content knowledge and as a material resource, which unfortunately does not assuage the abstract nature of chemistry concepts. Constructivist theory, when combined with conceptual based learning, shows increased accessibility to chemistry concepts. Addressing conceptual understanding increases students' ability to access concepts in chemistry, giving them a solid foundation from which calculations may be made.

What Allows Abstract Concepts to Become Accessible?

The concept of molarity, the structure of the atom and molecules, and types of bonding are just a few examples of the types of concepts that I struggled with as a student and have seen students struggle with as a teacher. After interacting with students in the classroom, I would find myself surprised at some of their poor test scores, which led me to wonder if math ability is linked with students' chemistry achievement. Rather than focusing on math operations, I find that chemistry is made more accessible to students by other means. Invisible or abstract concepts in chemistry become more accessible to chemistry students through the application of constructivist theory and conceptual based learning. This paper will explore chemistry instruction and what actually leads to conceptual understanding, which is much more valuable than being able to solve algebraic problems.

Macroscopic-symbolic

The primary problem of accessibility seems to be attributed to the trend of constantly shifting from the macroscopic to the submicroscopic viewpoint (Gopal, Kleinsmidt, & Case, 2004; Taber & Garcia-Franco, 2010). The macroscopic viewpoint includes everything that can be observed without any visual aid. The microscopic, submicroscopic, or particulate viewpoint would require some level of visual enhancement, or an abstraction, in order to view it. The symbolic viewpoint is used to represent the submicroscopic viewpoint, often in the form of formulas. Heyworth (1999) noted that student experts, identified through pretesting, could easily move from macroscopic to microscopic and symbolic whereas novice students could not. The difficulty of teaching chemistry lies in forming bridges between interactions at the macroscopic level and the interactions that occur at the particulate or *quanticle* level as defined by Taber & Garcia-Franco (2010).

Traditional Teaching Methods and Materials

Several authors suggest traditional teaching methods, textbooks, and teacher pedagogical content knowledge may hinder students' accessibility to chemistry concepts (Gillespie, 1997; Hurst, 2002; Khan, 2007; Levy-Nahum, Mamlok-Naaman, & Hofstein, 2007; Levy-Nahum, Mamlok-Naaman, Hofstein, & Taber, 2010). Pedagogical content knowledge (PCK) as outlined by Schulman (1986), states that teachers' knowledge about a subject area is influenced by their pedagogy. The research points to several trends that should be addressed by chemistry instructors in order to make chemistry more accessible. First, as educators, we must look critically at the resources used in chemistry instruction, most notably the textbooks. The second trend focuses on teacher pedagogical content knowledge. The last consideration that chemistry teachers should consider is the accuracy and presentation of concepts in chemistry textbooks. In order to exemplify the problems above, I will explore how chemical bonding is taught, teacher PCK on bonding, and textbook presentations of bonding concepts.

Chemical bonding is one of the great ideas of chemistry and yet is a difficult topic in chemistry. The concept of chemical bonding can be difficult because bonds may be classified into different types such as ionic, covalent, or metallic, yet the definitions for these classifications may vary. In fact, one might argue that metallic bonding and ionic bonding may be viewed as an extension of covalent bonding (Burgmayer, 2011). Rather than using a dichotomous classification, bond types should be explained in terms of average electronegativity and electronegativity difference in order to maximize student understanding (Hurst, 2002).

Textbooks

With regards to the material resources, the traditional approach in many textbooks leads to over-generalizations as well as a lack of scientific tools to promote students' understanding (Levy-Nahum et al, 2007). In a survey of ten textbooks, Hurst (2002) found that college students were given multiple theories to describe bonds and bond types, which leads to confusion. Concepts were not presented in a unified manner, with bonding concepts commonly divided across two or more chapters. For example, students are often first taught about bond types as separate, or dichotomous entities and then polarity is introduced as a type of covalent bond later in the course (Hurst, 2002; Levy-Nahum et al, 2010). As a result, students tend to equate the strength and properties of covalent bonds with intermolecular forces (Nakhleh, 1992). This problem is not limited to bonding concepts, alone. Hurst references three different models to explain how molecules are put together: Lewis dot and valence shell electron pair repulsion (VSEPR), valence bond theory, and molecular orbital theory, which were divided across several chapters. Hurst also discussed the increasingly historical nature of textbooks, with new information or theories simply added on to the old ones. Finally, the content in chemistry textbooks was not consistently aligned with accepted scientific concepts. In the ten texts that Hurst reviewed, only one presented the modern definition of electronegativity.

Traditional Instruction Approaches

The traditional approach to chemistry instruction provides content and problem scenarios, models how to solve a problem, and then asks students to use the same or similar heuristics to solve similar problems (Khan, 2007). Inquiry is often reserved for laboratory section, however in Kahn's research, students cited laboratory as the least effective modes of instruction in a survey of how teaching methods contributed to student learning. Unfortunately, this type of instruction does not support conceptual understanding of chemistry concepts and also limits accessibility.

Teacher PCK

Levy-Nahum and colleagues (2007) facilitated a dialogue between experts and lead chemistry teachers to document pedagogical content knowledge with respect to teaching bonding. Their findings showed that the scientists focused on a very limited number of physical principles that they suggested be used in order to explain all chemical bonds whereas the teachers focused on four structures that can be explained by four bonding types. Teachers recognized the difficulty in teaching the "gray" zone of chemistry and tend to resort to "black and white" models to simplify instruction (Levy-Nahum et al, 2007).

In sum, there is something of a circular problem with teaching materials and pedagogical content knowledge. Many teachers rely on textbooks for content knowledge, yet as discussed above, the textbooks often do not align with scientifically accepted definitions. The instruction then becomes overly simplistic and does not allow students to access chemistry concepts in a meaningful way. Next, I will explore various models that have been employed and researched to make chemistry more accessible to students.

Models for Accessing Chemistry Concepts

Certain concepts such as the mole concept, gas laws, mass-volume relationships, electrolysis, redox reactions, acid-base reactions, rate of chemical reactions and others tend to be math-based. Students' ability to understand the mole concept at the introductory college level may not be associated with their math ability but rather their ability to think and reason abstractly (Friedel & Moloney, 1992). In their research, Case & Fraser (1999) found that an overtly conceptual approach, with an emphasis on physical referents, is likely to be more successful in promoting conceptual change towards more sophisticated and scientifically correct understandings. In order to explore teaching the concept of the mole in a conceptual manner, the researchers first interviewed 15 volunteer students, who were part of the 81 first-year chemical engineering students involved in the study. Student interviews were recorded and transcribed in order to find misconceptions. Students were given a conceptual multiple choice question test with test items deliberately designed so that students would not need any calculations to solve the problems. However, they found that students filled the pages with formulas and calculations (Case & Fraser 1999). This indicates that students are heavily reliant on formulas, although they are not clear on how the formulas connect to chemistry concepts.

Heyworth (1999) also used tangible examples to increase student comprehension and promote conceptual understanding for concentration and the particulate nature of matter. For example, conceptual understanding was promoted by adding one spoonful of potassium dichromate to a unit volume of water and then adding two spoonfuls to another beaker with the same unit volume of water. Students were then able to observe the different orange color intensity and relate it to the concept of how the amount of solute affects concentration. Heyworth, points out that the tangible examples help students relate conceptually how concentration is affected by volume. This then enables students to segue into the more abstract chemical terms of molarity, for concentration, and moles, for amount

(Heyworth, 1999). The research discussed above suggests that explicit conceptual change instruction, especially with tangible examples, has a positive effect on student comprehension of chemistry concepts.

Conceptual change may also be brought about through inquiry. Inquiry in the form of hypothesis generation and argumentation built on data are effective at the college level, which should transfer to science education at the middle grades and high school grades as well. Kahn (2007) cites that asking students to explain relationships appeared to further increase students' reasoning about what was happening at the molecular level as well as increase the use of analogies. The argumentation process was a main feature in Walker, Sampson, Grooms, Anderson, and Zimmerman's (2012) research, as well. In their research, students *produce a tentative argument* after completing a lab, which makes their ideas, evidence, and reasoning visible to each other. Then students continue to the *argumentation session* that helps them determine which claim is most valid and acceptable through peer review.

An example of a high school teacher who uses interdisciplinary methods to teach the abstract concept of bonding can be found in Burgmayer's (2011) creative writing assignment. In this assignment, students explain bonding on the molecular level as well as the everyday level to encourage bridging particulate versus macroscopic viewpoints. In his words, "This assignment attempts to concretize bonding by having students create their own world- one that they can more closely identify with and use to demonstrate their chemical understanding" (Burgmayer, 2011, p 57). The assignment entails students writing from the perspective of four different electrons involved in four different types of bonds. Students incorporate 14 bonding concepts and 35 of 44 bonding vocabulary words into their short stories. This assignment requires students to apply their understanding of the concepts and terms into their writing, with a final prompt on analyzing the bond types, discussing whether metallic bonding and ionic bonding can be viewed as an extension of covalent bonding or a different and unique type of bonding (Burgmayer, 2011). This higher level thinking assignment follows the constructivist approach to get students to incorporate scientific ideas into their mental models and also uses evidence-based reasoning to explain and support their ideas in the story.

Conclusion

Throughout the course of my research, the term *accessibility* came to represent a student's ability to align their mental models with scientifically accepted models. As with all instruction, there must be some level of simplification from the expert, scientist viewpoint such that adolescents, or even younger learners, can make sense of the concepts. However, as Levy-Nahum and colleagues (2007) point out, there is a fundamental difference between developmentally simplified instruction and an overly simplistic approach that hides the uncertainties and arguments and never revisits the simplistic models. Therefore, the first key to making chemistry more accessible is to focus on the ideas and how to simplify them, yet still include an appropriate level of scientific knowledge for learners.

The next idea that developed out of the literature addresses student mental models of chemistry concepts. These were generally termed 'misconceptions' for the purposes of this paper, which refers to ideas or concepts that differ from the scientific understanding of the term (Nakhleh, 1992). An important theme in this research is centered in constructivist theory. Students' knowledge is built on their experiences, which is valid, although it may not align with scientifically accepted models. Conceptual change recognizes the mental models that students create and attempts to move them closer to scientifically accepted models (Case & Fraser, 1999; Kahn, 2007; Nakhleh, 1992). As illustrated in Kahn's research (2007), the goal is not to inform students that they are wrong but rather provide questions to help them confront their mental models and align them more closely with accepted scientific models.

In order to make chemistry concepts more accessible to students, instruction should be focused in two ways. First, prior knowledge should be assessed in some manner, whether it is a pretest, interview or discussion. The instructor is then able to use that information to develop the instruction to coordinate with students' mental models. Second, instructional methods may vary considerably, using labs and inquiry (Case & Fraser 1999; Walker et al 2012), they may be more conceptually based (Heyworth, 1999; Kahn, 2007; Levy-Nahum, 2007, 2010; Uce, 2009), or involve interdisciplinary modes (Burgmayer, 2011; Dorion, 2009). The common theme is that students are actively making their ideas public and refining their mental models.

In the end, the answer that developed out of the research is based in constructivist theory. Making abstract ideas in chemistry more accessible does not involve making chemistry more math-based (Case & Fraser, 1999; Uce, 2009), but rather more conceptual. Tangible objects or data provide valuable means to making abstract concepts more accessible (Case & Fraser, 1999; Heyworth, 1999; Kahn, 2007). I think this would translate to younger learners in science, as well, since the constructivist theory applies to all learners and all disciplines. Finally, I would like to share an idea that Taber & Garcia-Franco (2010) presented about the nature of teaching chemistry, "Chemistry as a science, then, is concerned with complex systems, where the level of behavior to be explained (the macroscopic) emerges from interactions at a very different level (quanticle models)" (p. 104). Chemistry concepts

become accessible when students can conceptually understand why things happen in the macroscopic world because of trends at the *quanticle* level.

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Biography

Jenna Scheub has been interested in teaching chemistry since teaching at an independent high school in rural southeast Ohio. Her first-year teaching there inspired a desire to learn to teach in a meaningful way. Jenna sought out opportunities and decided to pursue a graduate degree at the University of Toledo in the LAMP program to reach those goals.

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Social Studies

Investigating the Death of King Tut: Utilizing Primary Source Analysis and Forged Letters to Engage Diverse Learners in Critical, Historical Thinking

Joe Boggs

Abstract: Social studies subjects and teachers have long been derided for failing to captivate and activate students' critical minds. Primary source analysis, as demonstrated by numerous scholars, is perhaps the prime academic tool to remedy such a troubling distinction and predicament. This work suggests that two more benefits—if implemented correctly—can be derived from primary source analysis. Few social studies educators have emphasized how a variety of students, especially students with special needs, can become better engaged and prompted to think more critically from visual primary sources. Moreover, the utilization of forged documents within a primary source analysis compels students to construct their understanding of history in a more authentic fashion.

The Social Studies Dilemma

For decades, social studies teachers have borne the brunt of ridicule pointed directly at their inability to engage students. A book meant to promote educational change in the 19th century specifically noted that history and social studies teachers "on the whole, taught so poorly, [they were] almost sure to create a distaste for historical study" (Hall, 1883, p. vii). The author further noted that the value of social studies education is far too great to "merely hear recitations…and only ask the questions conveniently printed for them in the margin or the back of the book" (Hall, 1883, p. vii). Similarly, in 2004, a book entitled *Teaching History for the Common Good* detailed the more recent, pervasive problems with social studies pedagogy. The authors, in summary, stated that social studies teachers have not undergone the necessary "widespread or systematic changes in teaching" to spur engagement in the classroom (Barton, 2004, p.244).

Unfortunately, these enduring ideas about social studies education and educators are somewhat accurate. Indeed, some may recall the football coach who assigned the questions at the end the chapter or the economics course in which the instructor was more engaged with the newspaper on his desk than the twenty students in his classroom. Despite these atrocious examples of pedagogy from the past, these instances are not the norm for most social studies teachers today. In accordance with recent research, social studies teachers, especially history instructors, have infused primary source analysis into their lesson planning. Doing so has improved engagement in social studies content and enabled critical thinking skills.

Primary Sources: Proven Classroom Commodities

One prominent history educator recently declared that history is "a vast and constantly expanding storehouse of information about people and events in the past" (Bain, 2005, p. 180). Within this quote is perhaps the key to engaging students in social studies. Quite simply, social studies disciplines are not stagnant archives of information. Rather, social studies are dynamic, predicated on information that is not only constantly changing, but can be interpreted in various fashions by those analyzing firsthand evidence of the past. Firsthand evidence of the past— commonly called primary sources—include historical documents, photographs, artifacts, and anything else that provides original insight into history. Many educators have boasted the benefits of analyzing primary sources. Primary source analysis, as Levy (2004) has cogently noted, is the gateway to "active learning…compel[ling] students to interrogate the past and to begin to form their own interpretations and narratives rather than memorize facts and dates and/or digest interpretations written by others" (p.9).

Many social studies educators share Levy's (2004) sentiments regarding the benefits of primary source analysis. As Dutt-Doner, Cook-Cottone, and Allen (2007) contend, primary sources combat the "student paradigm that 'social studies is boring'… offer[ing] students an opportunity to connect to history in a more personal, human, and active manner" (p. 3). Primary sources, as many other scholars assert, can provide ideal student engagement in history topics while also compelling students to think like historians (Cantu & Warren, 2003; Morris, 2002; Brophy, 1992). However, few social studies educators have noted how the analysis of primary sources in a given classroom can help students of varying abilities develop critical thinking skills (Franquiz & Salinas, 2011). I firmly support, in addition, the implementation of falsified documents in the social studies classroom, a practice that may seem averse

to students' self-construction of truthful historical events. The confrontation of forged letters within the context of a primary source analysis, as my lesson demonstrates, forces students to strip down conclusions based on fabricated evidence and reconfigure their hypotheses to accurately describe the historical event being examined. Such a process closely mirrors the methodologies many scholars undergo when researching distinct topics in history.

Primary Sources for Diverse Learners

To introduce my students to the subject of Egyptology and Ancient Egypt, I decided to create and implement what is commonly called a "Historical Scene Investigation" around the mysterious death of King Tutankhamun. Aware that many of my students had some background knowledge in relation to King Tut, and that leading scholars have long disputed what caused the death of the Boy King, I determined that this topic would make an interesting primary source investigation. With the aid of my methods course professor and input of fellow classmates, I selected distinct primary sources for examination, intriguing questions for the students to consider, and other materials that facilitated students' critical thinking and self-construction of historical knowledge regarding the topic. Among those other materials, three forged primary source letters, written by myself, were added to the investigation packet that every student received.

After watching a short video clip about Howard Carter, I read aloud the introduction of the packet, which noted that despite the abounding artifacts uncovered by Carter's find, scholars have been debating what caused Tutankhamun's death. I then emphasized to the students the aim of the historical scene investigation: using the contents of the packet and the assistance of fellow group members, compose a theory explaining the death of King Tut. Previous to the lesson, I preselected "investigation teams" in a manner that evenly distributed higher achieving students and students with special needs.

Once students settled in their groups, I began to take notes of my observations and the discussions that were taking place within each investigation team. The first endeavor performed by each team was the analysis and discussion of primary sources. One observation that I made with practically every group was that students with individual education plans (IEPs) were thoroughly involved in the discussion of the primary source artifacts in the packet. Presented as images in the packet, the fact that these students became thoroughly engaged is somewhat in alignment with contemporary research. In making use of the photographs as primary sources in a college classroom, Hildebrand (2011) taught her students about African American life during the early 20th century through historical photographs. Students were spurred to analyze the images and come to accurate conclusions. The success of the lesson, as the author insightfully recorded, was due to the fact that visuals, more so than ever, prompt stimulation. According to Hildebrand, "Our students belong increasingly to a visual world; they spend much of their time glued to computers and handheld electronic devices" (2011, p. 511).

However, as a college professor, Hildebrand (2011) was not considering how visual examination of primary source images and artifacts could assist special needs students. At one point, an investigation team that I closely observed was embroiled in a discussion about chariots. The students were analyzing the images of the four primary source artifacts, and one of the students asked, "What exactly is a chariot?" The first classmate to respond to the inquiry was none other than a student with a traumatic brain injury who struggled tremendously with most academic efforts throughout the year. Prompted by the visual, the student lucidly explained the function of a chariot and stated how they are rarely in use today. Likewise, another student with attention deficit hyperactivity disorder on a different team was able to focus and accurately deduce, after examining the images of artifacts, that Tutankhamun probably enjoyed hunting. Trying to make his point, the student enthusiastically claimed, "Look at the shield, it shows him killing a lion. And hunters back then used chariots."

Moreover, as students moved on to the portion in the investigation packet that revealed the CT scan results of King Tut's body in photographs, almost all students remained engaged. A vast majority of students, regardless of whether they had IEPs or not, were actively involved in discussions about what may have killed the "Boy King" in accordance with the visual evidence made available by recent technology. Despite the fact that active participation waned for students with special needs when teams began to analyze primary source letters, these students did, however, listen intently while other students in their teams read the passages aloud. In fact, I made note that I only had to address one student for off-task behavior during the entire investigation.

Overall, in thinking about the widespread student engagement and insightful analysis of primary sources, much of it was due to the presence of primary sources in visual forms. As noted by Prensky (2001), students in this current generation, largely because of their constant exposure to technology, have increasingly demonstrated advanced thinking skills that are visually-oriented. In addition, several studies have shown that students with disabilities learn significantly more when visualization strategies and graphics are supplemented into coursework (Ellis & Lenz, 1996; Bergerud, Lovitt, and Horton, 1988; Horton, Lovitt, and Bergerud, 1990; Koran & Koran, 1980). Keeping these ideas in mind and considering the fact that primary sources can be presented in a visual

manner, social studies educators must implement multimodal primary source analysis in their classroom. Not only does primary source analysis prompt critical thinking skills and engagement for pupils, but it also conforms to the diverse learning styles of the students in a given classroom, including students with disabilities.

Forged Letters for Authentic Historical Learning

As noted previously, among the primary source materials in the investigation packet were three forged letters. All three falsified writings were said to be written by individuals who knew Tutankhamun, while each letter had content related to the death of the pharaoh. For instance, one of the letters was supposedly written by the commander of the Egyptian army to the Grand Vizier, Aye, who in fact did take the throne after the death of Tutankhamun. All teams, on the first day of the investigation, took these letters seriously and, consequently, every team came up with theories about the death of King Tut that relied heavily on the evidence presented in these forged primary sources. For example, one investigation team hypothesized that the Grand Vizier murdered the pharaoh since a female servant in a forged letter claimed that an angry Aye visited Tutankhamun's bed chamber last.

Though forged writings may seem out of place in a primary source analysis that aims to have students construct accurate accounts of what truly occurred in the past, I strongly argue that the implementation of falsified documents or primary sources is seminal to facilitating authentic and critical, historical thinking. With forged letters at their disposal, students get the feeling of what it is like to be a researcher who has to confront bogus primary source materials and the specious claims that result from them. To prove this point, take into consideration two history-changing events that occurred in the past five years. In late January of 2011, the National Archives in Washington D.C. uncovered one of the most peculiar hoaxes ever committed by a historian. Thomas Lowry, commonly known as one of the leading Abraham Lincoln scholars, allegedly stumbled upon a pardon letter written by Lincoln on the day of his assassination, April 14, 1865. Over a decade later, archivists determined that Lowry had changed the year on the letter from 1864 to 1865. In the meantime, numerous historians had used this letter to erroneously prove that Lincoln was compassionate and kind to the day of his death (Holzer, 2011). In a similar case, British historian Martin Allen was found to have likely forged 29 letters pertaining to controversial English involvement in World War II (Lewis, 2008).

On the second day of the investigation, I decided to disclose to the students that three of the letters were forged. However, before I did, I asked the teams to evaluate which primary sources were the most important to their conclusions about the death of the "Boy King". Responding earnestly, three out of the five teams cited one of the three forged letters as the most significant primary source. In turn, when I announced the fact that I forged three of the writings, the students were completely stunned. One of the students pondered aloud, "Why would you ever do that, Mr. Boggs?" After sharing the two stories about the doctored Abraham Lincoln and World War II letters, students came to understand the important message I wanted to convey. As a social studies scholar has similarly expressed, "Using primary sources allows students to see history as an ongoing process of constructing the past, rather than a fixed body of knowledge" (Meo, 2000, p. 335). Like actual historians, exposing students to falsified primary sources compels students to understand that history is heavily influenced by the types of sources available. Moreover, in the event that distinct sources are skewed or entirely fabricated, the histories dependent on these sources need to be drastically reconfigured.

Realizing the need to considerably modify their hypotheses regarding the death of King Tut, students immediately began to confer about the changes they needed to make. Once again, I took notes of each of the investigation teams at work. I observed—at this point in the collaborative activity—students discussing the inaccurate information that should be taken out of their conclusions, re-analyzing primary sources they previously overlooked, and formulating new conclusions based on veritable evidence. Although none of the teams were able to come up with the exact theory proposed by top Egyptologists today, some of the components of their conclusions did match up with portions of the accepted theory of how King Tut died. More importantly, however, students not only learned the analytical skills historians use to construct history, but they also came to recognize the problems that falsified primary sources present to scholars looking to enhance our understanding of past events.

Conclusion

In almost complete unison, social studies scholars today promote the widespread use of primary sources. From spurring cross-curricular engagement, to assisting English Language Learners in the development of content knowledge and language development, or provoking students to make educated predictions, primary sources are multifaceted tools that convince students to engage in social studies content (Olcott, 1984; Franquiz & Salinas, 2011; O'Brien, Kohlmeier, & Guilfoyle, 2003). Furthermore, primary sources certainly compel students to utilize critical thinking when analyzing primary sources. As emphasized by Korbrin (1996), with the aid of primary

sources, students can actually *do* history. Primary sources motivate students to create their own understanding of history, rather than simply memorize names and dates.

The distinct composition of this investigation activity, nonetheless, offers new insight into how primary source analyses may provide additional benefits unforeseen by most social studies educators. As demonstrated by their profound engagement and enhanced ability to think critically, a wide variety of students—especially students with disabilities—are naturally compelled to learn when primary source visuals are presented for analysis. Moreover, when students must confront the issue of forged primary sources in the classroom, they authentically learn how historians often have to reconfigure their conclusions to truly represent the accurate evidence of the past. Social studies teachers, as indicated earlier, had been comprehensively ridiculed for prompting student boredom and/or mindless, rote learning for much of the past century. The extensive implementation of primary source analysis, however, with the unlimited potential for authentic, critical learning in the classroom, may prove to be a turning point in social studies pedagogy.

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Biography

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Providing an Engaging Social Studies Education in Career and Technical Education High Schools: Are You Up to the Challenge?

John P. Hargen Amaral

Abstract: Providing an engaging social studies education in career and technical education (CTE) high schools is important so that students attending these schools develop skills for participating in our democracy as well as skills that will help them be successful in the worlds of postsecondary education and employment. However, CTE students can be difficult to engage because they can share a high sense of academic futility and often perceive social studies as irrelevant given the career and technical focus of their education. Social studies teachers can overcome this challenge by connecting their curriculum to the interest CTE students have in the career and technical aspect of their education.

The Challenge of Providing an Engaging Social Studies Education in CTE High Schools

The LA Daily News has reported a recent boom in students choosing to enroll in career and technical education (CTE) courses (as cited in Techniques, 2007). Due to the sharp increase in students currently choosing to enroll in CTE courses, a prospective social studies teacher may very well find him or herself teaching in a CTE high school. This past year was my first year as a social studies teacher and I found myself teaching in this type of school.

In a CTE high school, students learn the skills of a trade while also taking core academic courses to earn their high school diploma. Even with just one year of teaching social studies in a CTE high school under my belt, I have heard students ask, "Why do we have to learn this?" more times than I can remember. Questions like these are typical of high school students regardless of the type of school they attend. It is a teacher's duty to find ways to get students engaged in learning. However, in the case of a social studies teacher working in a CTE high school, doing this presents a unique challenge.

Van Houtte and Stevens (2010) have shown that students attending CTE high schools can share a high sense of academic futility. Such cultures of futility are due in large part to the perception that students who choose to enroll in CTE high schools do so because they have less possibility of functioning adequately in traditional academic high schools. According to Van Houtte and Stevens (2010), students who are convinced of the futility of their schoolwork in making any difference in their lives will not be motivated to learn. Furthermore, my personal experience has shown me that many CTE students perceive learning about social studies to be irrelevant given the career and technical focus of their education.

Given these unfortunate perceptions, a prospective social studies teacher might believe that in CTE high schools it is enough to teach social studies at a low level. The truth, however, is that providing an engaging social studies education in CTE high schools is more important than ever .

Why is Providing an Engaging Social Studies Education in CTE High Schools so Important?

There are several reasons why providing an engaging social studies education in CTE high schools is so important today. First, it is important that young people develop the skills for participating in our democracy regardless of the type of education they have chosen to pursue. Second, yet no less important, is the fact that the social and economic realities of the 21st century have increased CTE students' need for the academic skills developed in social studies courses.

Citizenship Skills

A decline in youth participation in our democratic system currently threatens its legitimacy (Print, 2007). Print (2007) argues that citizen participation in democracy is necessary to help avoid weakening the legitimacy of our elected governments as they struggle with falling election turnouts as well as to counter the rise of undemocratic political forces and the growth of quiet authoritarianism. In light of these statements, teaching the increasing amount of young people choosing CTE the skills to participate in our democracy is crucial for ensuring its ongoing health.

Social studies are the means through which we teach our young people the skills to participate in our democracy. The National Council for the Social Studies (2008) states, "The primary purpose of social studies is to

help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world" (p. 211). However, CTE students are not likely to gain this ability if they are disengaged in their social studies courses. If social studies teachers working in CTE high schools fail to provide their students with an engaging social studies education, they are complicit in propagating the decline of youth participation in and weakening of our democracy. Social studies teachers working in CTE high schools therefore have a great responsibility in not allowing this to happen.

Postsecondary Education and Employment Skills

Krueger (2004) states, "The economic and social realities of the 21st century necessitate that nearly every American has access to some form of postsecondary education" (as cited in Fletcher, 2006, p. 163). In addition, DeWitt (2012) has stated that in today's world, being career ready entails not only having technical skills but academic skills as well. Plank, (2001) has written that, "For many decades, high schools seemed to focus on preparing students for *either* entry-level jobs *or* postsecondary education" (p. 280). To keep up with the realities of today however, CTE high schools now want to prepare their students for postsecondary education as well as employment (Fletcher, 2006).

Social studies develop students' skills to distinguish facts from opinions, detect biases, prejudices, and unwarranted claims, weigh contrasting evidence, recognize the core of one's argument and its logic along with the strength of evidence, and critically evaluate other's positions and perspectives (Yilmaz, 2008). Possessing these skills will make CTE students attractive candidates for admittance into the selective worlds of postsecondary education and employment and help them to overcome the obstacles they may face in these settings once they are there. Despite these benefits, CTE students cannot effectively develop social studies skills if they are not engaged in the subject. Therefore, if social studies teachers working in CTE schools fail to provide their students with an engaging social studies education, they are also putting them at a disadvantage for being successful in today's world.

How Can a Prospective Social Studies Teacher Meet the Challenge of Providing an Engaging Social Studies Education in CTE High Schools?

Although engaging CTE students in social studies poses a unique challenge and failing to do so can result in highly undesirable consequences for our democracy and for individual student success, I am not trying to scare prospective social studies teachers from seeking employment in CTE high schools. If anything, this challenge provides prospective social studies teachers with the opportunity to make a real difference in society and in CTE students' lives by helping to provide that growing segment of the population with the skills necessary to become good citizens and socio-economically successful. The good news is that there is already a proven strategy for social studies teachers working in CTE high schools to meet the challenge of engaging their students so that all these things may happen.

Connecting Social Studies and CTE

For a social studies teacher to simply state that learning about social studies is important for the future of our democratic society and for individual success in the future is probably not enough to motivate CTE students to engage in the subject. DeWitt (2008) has written about CTE students losing interest and motivation in academic subjects such as social studies because their teachers fail to show them real-world applications. I realize now that this is precisely what my own students were conveying when asking the old question, "Why do we have to learn this?"

The stereotype that social studies are only about the rote memorization of encyclopedic lists of names and dates has long bedeviled the subject (Gilbert, 2011). The key to engaging CTE students in social studies therefore lies not in perpetuating this stereotype but in connecting the subject to these students' interest in the career and technical aspect of their education in order to show them relevancy for learning about it. Cutshall (2003) states that if teachers do this well, CTE students begin to appreciate the practical applications of academics and in addition, improve in these areas as a result.

Successful Examples of Connecting Social Studies

In order to illustrate how to connect social studies to CTE students' interest in the career and technical aspect of their education, I have provided a few successful real-life examples other authors working in the field of CTE have written about. Prospective social studies teachers can use these to get an idea of how to implement this strategy if they find themselves teaching in a CTE high school.

Mr. Rewerts' Research Project

In his social studies class, Shannon Rewerts has students research a career and put together a five-to eight-minute speech and presentation board to share with parents at a career fair. "It's pretty intense with the project," he said, noting, however, that students also say it's their favorite unit all year. Students score high on the economic questions on the state test, which Mr. Rewerts said he covers in the career unit and is a good indication that the concept works (Adams, 2012, p. 8).

Maria's Story

Maria thought she wanted to work in the health care field…maybe she would even become a doctor one day. However, she was bored in school and found it hard to engage in learning… Maria recounts how her experience began to turn around in the 10th grade when her high school created a health academy. The academy established high expectations for its students: every student would be prepared for the full range of postsecondary education opportunities, and for the world of work. The academy assessed not just specific knowledge recall, but also communication, collaboration, critical thinking and problem-solving skill proficiency. The academy's program of study ensured that Maria could gain entry to, and succeed in community college or university… The health theme and interdisciplinary approach made Maria's learning much more interesting and helped her "connect the dots." In world history, she learned about global health issues, and through her civics and economics courses, she learned about the cost of health care and the complex interconnections between health care, education and jobs (Darche & Stam, 2012, p. 21).

Social Studies Issues and the Building Trades

A teacher was reading the book, *House on Mango Street,* by Sandra Cisneros. In discussing the book, the teacher engaged students in a conversation about living in a poor neighborhood, and its effects on the family and school The students responded with ease to this focus on the building trades. They pointed out the effect of using high-quality materials on the building, and how living in a well-constructed home affects the family (Quinn-Knight, Donahue, & Knight, 2008).

Conclusion

Providing an engaging social studies education in CTE high schools is definitely a challenge. We know that CTE high schools suffer from the negative perception that their students have less possibility of excelling in academics than students in traditional high schools and that as a result, students attending CTE high schools can share a particularly high sense of academic futility (Van Houtte and Stevens, 2010). Furthermore, CTE students can tend to perceive learning about social studies as irrelevant given the career and technical focus of the education they have chosen to pursue and thus, they are often reluctant to engage (DeWitt, 2008).

Regardless, providing an engaging social studies education in CTE high schools is of the utmost importance. With the current boom of students enrolling in CTE courses, it is crucial not to let this growing segment of the population grow up without the skills for participating in our democratic society. Furthermore, an engaging social studies education helps to prepare CTE students for the social and economic realities of the 21st century by providing them with skills that will help them succeed in the worlds of postsecondary education and employment.

Despite the challenges and pressures of providing an engaging social studies education in CTE high schools, we know that social studies teachers working in these schools can do so by connecting social studies to their students' interest in the career and technical aspect of their education. In order to connect social studies to the career and technical interests of all students, social studies teachers working in CTE high schools may need to individualize instruction since some CTE high schools place students from across the spectrum of career and technical fields together in the same social studies classes. It would certainly be easier to conduct lower level, whole-class instruction centered on the recall of facts and dismiss the importance of providing an engaging social studies education in CTE high schools. However, it is our duty as teachers to prepare our students for the future at hand.

As enrollment of students in CTE courses booms, so do the chances of a prospective social studies teacher teaching in a CTE high school. If having to work harder due to having to find ways to connect social studies to CTE students' interest in the career and technical aspect of their education is what it takes to get these students engaged in the subject, then this is what providing an engaging social studies education in CTE high schools entails. Are you up to the challenge?

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Biography

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Please Step Away from the Textbook: A Case for Decreasing the Use of Textbooks in Social Studies Classrooms

William Byrnes

Abstract: Many social studies teachers rely on their textbook as their main tool of instruction. This paper suggests that social studies teachers should instead try to use their textbooks as little as they possibly can. The move towards a decrease in the usage of textbooks by social studies teachers would be supported for several reasons. Instruction with a focus on strategies such as textbook reading has a negative impact on students' feeling towards the topic of social studies. Social studies textbook themselves can also be home to a variety of issues including incorrect information, various forms of bias, and confusing language. The literature in the field supports the idea that decreased textbook usage would benefit social studies instruction.

Introduction

"What page are we supposed to be on?"

"Wait, what page?"

"Do you mean this page with the big map on it?"

I have heard questions similar to those far too often in the time I have spent teaching social studies. It does not matter how many times I tell my students what page to turn to, or even if I have the page number written on the board, a large majority of the class will still repeatedly ask what page they are supposed to open their textbook to. I could simply assign these common questions to the fact that many of the students just do not pay attention during class, but I believe there is more to it than that. I think those questions about page numbers are caused by the fact that once students hear that we will be opening up the textbooks in social studies their level of interest begins to drop and they simply "tune out." Social studies can often be considered a boring subject by some students and when they begin to see their textbook as the sole embodiment of the subject, it really does not help matters. In addition to this issue, on several occasions I have personally done something I have seen other social studies teachers do, which is to tell my students to disregard a piece of information in their textbooks because it is either incorrect or outdated (among other reasons). Due to these kinds of occurrences I believe social studies teachers should try to decrease the use of textbooks as their main source of information and tool of instruction in the classroom.

The Impact of Textbook Usage

This past year while I was as a pre-service teacher in a 6th grade social studies class there was often an audible groan to be heard emanating from the students whenever I asked them to open up their textbooks. To me that made it seem like I had lost the war (their interest in the topic being discussed) before the first battle (that day's lesson) had even been fought. The groans I had heard did not really mean anything to me until one day when I did something while teaching that caused me to have a personal revelation. After telling my students we were going to be doing a good amount of reading out of the textbook, I actually apologized to them for it. I said "I'm sorry, but we are going to be reading out of the textbook quite a bit today." I apologized like I was subjecting them to punishment for a crime they did not commit. I had chosen to do the textbook reading for that lesson because I personally thought that the textbook I was using expressed the information I wanted to get across in a clear and easy to follow manner, but I know that fact did not really mean much to my students. To them it was simply another social studies class where they would be sitting at their desk reading out of the book, and it did not inspire them or spark their interest. After this event I started to make a point to look at the topic being discussed for each lesson and asking myself what instructional materials and strategies would create the most interest from my students, not once did the answer come back, "Try to use the textbook as much as possible."

While this issue of relying on the textbook too much could seemingly apply to all school subjects, I have set my focus on social studies for two major reasons. The main reason I focused on social studies is because it is a subject I have taught myself so I have an understanding on the role the textbook can play in instruction. Another reason I have focused on social studies is due to how common a reliance on the textbook can be in that subject, and the impact that reliance has on the students. Ellis, Fouts, and Glenn (1992) stated that social studies teachers, more so than teachers in other subjects, rely on lectures, worksheets, traditional tests, and textbook usage as their primary forms of instruction. The role of the textbook in social studies seems to be magnified when compared to the other subjects. Research has shown that when students begin a social studies course their most immediate concern is what

type of teaching style the teacher will use in the class, and that students consider reading from the textbook too much as one of the most likely reasons they would lose interest in the topic of social studies (Chiodo & Byford, 2004). Now why would you want to design your class around an instructional style that causes your students to lose interest in the subject? The simple answer is that you would not, but you can only arrive at that answer once you are aware of the impact your style of teaching and choice of instructional materials will have on your students. I believe this is not an issue many teachers are aware of or consider. There is a positive we must not forget when talking about students' feeling towards the subject of social studies. Even though some students may label social studies as a boring subject, it has been found that they do not actually consider the subject matter itself to be boring, but rather the approach used by so many social studies teachers (Chiodo & Byford, 2004).

Personally, I think there can be benefits from using the textbook for social studies instruction in certain cases. One benefit of using the textbook less often is that it helps to make the times where you do choose to use it more meaningful. When you do finally tell the students to take out their textbooks and turn to a certain page they will recognize this is an uncommon event and infer that what you are reading out of the textbook is indeed an important piece of information.

Some social studies teachers hold the belief that as long as their students can read the information from the book, and answer a corresponding question on a test, that they have succeeded in their job of teaching. Some in the field would argue that is not a correct belief though, since there is so much more to the topic of social studies than remembering a few names and dates so you can bubble in an answer on a test a week later. Schneider and colleagues (1994) stated, "The primary purpose of social studies is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world" (p. 3). The goals laid out by Schneider et al. (1994) are not ones that can be accomplished by just reading out of a textbook and filling out a worksheet. The Fair Go Team stated that simply reading about social studies is not enough to fully teach students the concepts found within social studies, and that simply using pieces of literature that are not accompanied by additional instruction serves only to render the literature used as almost meaningless (McGuire, 2007). By choosing to use the textbook as their sole source of information and instruction some teachers are achieving nothing but short-changing their students when it comes to their education in social studies.

Problems Found in Textbooks

In addition to the impact overuse of a textbook can have on students' enjoyment or interest in social studies there is another major reason why I think teachers should use their textbooks less during class. This second reason is the fact that many social studies textbooks are not the perfect containers of information many seem to think they are. There are a variety of issues related to social studies textbooks that should really scare anyone who relies on them for information during classroom instruction. They can be full of factual errors, various forms of bias, and confusing language.

In a review of social studies textbooks Adkinson and Elliott (1997) found a variety of errors in the explanation, coverage, and discussion of the Electoral College. If a topic as important as the Electoral College can be the subject of errors in social studies textbooks, what other subjects or topics might be victims of such misinformation? Bias present in textbooks can have an impact on students' views of the world. According to analysis of high school world history textbooks conducted by Marino (2011), textbooks focusing on "world history" spent a minimum of 55% of their pages specifically discussing European history. Does it mean that the history of the rest of the world is not worth learning about or discussing when compared to the history of Europe? What kind of message does this send to students whose family descends from a part of the world that is not in Europe? Is it telling those students that their family history is irrelevant and not worth mentioning? These are questions teachers must consider when looking at the textbook they use for instruction.

According to Budiansky (2001) many students are forced to use textbooks that are written with language that is two grade levels above their own. With textbooks featuring language beyond the age of the students using them it should not really come as a shock that many students do not like to read out of them. Would you enjoy being forced to read out of a book that features language you cannot comprehend? I would think not.

The majority of the states in the United States have adopted core curriculum standards to govern what is taught in their schools. The social studies curriculum, like that of other subjects, in these states is governed by these standards. These standards lay out exactly what a student should be learning about in social studies for each grade level in that state. While the textbooks used in a class may happen to address some of the standards outlined for the content and grade level of the course, textbooks are rarely ever written with those standards in mind (Dunn, 2000). Because of this, if a teacher chooses to design their lesson around what is presented in the textbook they must then also do additional work in order to bring the information from the book in accordance with the state standards. In these cases it would be a better use of teacher time to look at the state standard they are addressing and select only

instructional material that is in line with those standards. There of course may be cases where the course textbook addresses these standards perfectly, but chances are this will not happen every time.

The age of textbooks is another factor that social studies teachers should be constantly aware of. A survey of teachers found that 25% were using textbooks that were at least 10 years old, and more than half believed that their students were being exposed to outdated information because of it (Diegmueller, 1996). Now in a topic such as math using a textbook that is 10 years old might not be that great of a concern, but in a constantly evolving field like social studies, it is a serious issue. When world events can change the boundaries on a world map in an instant it is important that the instructional materials used in social studies classrooms are as up to date as they can be. While it is always possible to point out to your students that a specific piece of information in a textbook is now outdated (it is something I have done myself), it would probably be much more beneficial in the long run to never expose them to that piece of dated data in the first place.

Alternatives

If socials studies teacher do opt to use their textbook less they must fill that class time with other materials and activities. The point of this article is not to suggest exactly what those other materials or activities should be. Since the realm of "social studies" covers such a wide array of topics I don't feel that I am knowledgeable enough to say exactly what all social studies teachers should do in their classrooms in place of using the textbook. At best all I can do is give this general suggestion: try something new or different. Some of the strategies I have observed other teachers using include having the students create an art project that expresses the important aspects of a different culture, or having them take sides and stage a debate on an important issue. Project based instruction is another route teachers could opt to take since it has recently been shown to be more effective than standard teaching strategies when it comes to academic achievement in social studies (Summers & Dickinson, 2012). The analysis of primary source documents is a long-standing practice in the realm of social studies that is becoming an increasingly more popular strategy to be used as an alternative to textbooks. In order for a teacher to incorporate an alternative teaching strategy into their classroom they must first think about and consider the possible alternatives, which I hope this article causes them to begin to do.

Conclusion

There are plenty of things a teacher needs to do when they begin to teach a social studies course. I feel that one of the most important things they can do is to closely examine the textbook they have in their classroom to decide what kind of role it will play in their teaching. I am not advocating eliminating textbooks completely from all social studies classrooms. What I am advocating is that teachers think very carefully before using their textbook as their main tool of instruction. They must be sure that the pros of using the textbook outweigh the cons that may arise from its usage. Teachers must consider whether their use of the textbook will have a negative impact on their students' feelings towards the subject matter. They must also decide whether the textbook they are using is even worth the paper it is printed on. After all textbooks are not perfect; a variety of problems can exist within their pages. At the end of the day all this article is really suggesting is that social studies teachers should consider setting down the textbook and stepping away from it on a regular basis. I think it is a decision that would benefit teachers and students alike.

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Biography

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How to Address Misconceptions in Geography

Brandi Sharlow

Abstract: Student misconceptions in geography are a hot issue in social studies education. This is a *how to* instructional article for addressing those common misconceptions and why it is important for social studies education. Misconception, throughout this article, refers to those preconceived notions and ideas that students develop outside of school from prior experiences. Misconception is the most recognized term to refer to preconceived ideas, preconceptions, notions, distortions of knowledge, errors and factual and conceptual misunderstandings. The scope will include how and why misconceptions develop, and those factors that perpetuate those misconceptions. This article explains specific methods and resources that can be used in the geography classroom to successfully address students' misconceptions and overcome this obstacle to learning.

Introduction to the Issue

The following is an account from an actual high school classroom situation and it perfectly highlights the issue of common misconceptions in geography that our students have developed and the deeper problems that could lie beneath.

> "You can't drive from Brazil to Texas," the wide- eyed, eleventh grade female student exclaimed enthusiastically in response to another student's claim of her uncle's journey. "What makes you say that?" Mr. Carano asked. "It's on the other side of the ocean," she responded. Mr. Carano had to walk over to the map to trace the route for the student before she realized, "Oops. Wrong continent! I thought Brazil was in Africa" (Carano & Berson, 2007, p. 66).

This is an example of a factual misconception and was addressed by Carano (Carano & Berson, 2007) in his classroom situation, described above. Factual misconception refers to the error in knowledge or lack of knowledge that results in a student incorrectly believing a *fact* in geography rather than misunderstanding or having a distorted knowledge or belief in a larger, overall concept (Keeley, 2012). Meaning, Carano corrected the minor factual, superficial misconception by illustrating the proper location of Brazil on a map, but failed to address the deep- rooted conceptual misconception that might also exist. The conceptual misconception is the much larger picture that needs to be considered. This student may have developed the misconception that Brazil was in Africa because she saw places like Brazil as different, weird, abnormal, primitive, and inferior and naturally placed it within another misconception, that of Africa and its' peoples and cultures (Ukpokodu, 1996). The problem here is not necessarily a simple factual misconception that could be *fixed* by showing the student her error on a map. The issue that is largely overlooked by preservice, beginning, and even experienced teachers is that we try to fix and move on or simply disregard such comments as silly or ignore them completely. The real issue is not that the student is simply unaware as to where Brazil was on a map, but rather, that the student might hold a conceptual misconception regarding multicultural perspectives. Unfortunately, Carano fixing his student's misconception, regarding the physical geography of a place, was only a minor glimpse into the real problem: geographic illiteracy and the misconceptions that cause it.

Social studies is based upon developing the skills of historical analysis and inquiry by looking at alternative perspectives, determining bias and reliability, and then creating the most informed, reasonable, well rounded hypothesis or conclusion given the information available. If a student has this type of misconception regarding other cultures and perspectives and lumping together anything that seems strange or primitive into a dismissive category, that student is conceptually inhibited from truly learning social studies and developing geographic literacy. As preservice and beginning teachers in social studies, we need to address misconceptions in geography to not only improve our teaching methods and practice, but to help our students reach the objectives for social studies and become well rounded and informed citizens who are able to consider multicultural perspectives in this diverse and interconnected world.

Why do Misconceptions Develop

To better understand what geography teachers must consider before addressing student misconceptions, the discussion of why these geographic misconceptions develop needs to be addressed. Going back to basic cognitive educational psychology research and studies, it is known that students will often develop and create misconceptions

whenever they encounter new ideas and concepts (Keeley, 2012). Children attempt to make sense of the world around them and the cause is purely biological. When a student encounters a sense of cognitive dissonance when a new idea or concept is exposed to them, the student will either "accept, reject, or modify" that idea to fit with a previously held conception (Keeley, 2012). Hence, misconceptions that students have are not a one-time deal or a simple thought, but rather a deeply rooted cognitive development that occurs throughout the course of the students' prior experiences. Another scientific explanation that explains the lack of geographic literacy amongst modern students is that "students individualize the characteristics of people in their in-group and perceive their behavior as 'normal', but they view out-groups in terms of generalized traits and other stereotypical characteristics" (Carano & Berson, 2007, p. 66). This is perfectly on point with Carano's own World Religions student who viewed all "out-groups" as the same and generalized them despite physical geographic relevance.

Factors That Contribute to the Development of Misconceptions

Development of misconceptions may be a natural reaction to new ideas and concepts, but the perpetuation and prolonging of such initial ideas and concepts truly becomes a problem when a student is exposed to other factors that cause and perpetuate their previously held ideas and beliefs. Carano and Berson (2007) have found, through various research and studies, that technology, the media, and classroom materials are primarily to blame for student's misconceptions in geography. Ukpokodu (1996) and Keeley (2012) also agree with these sources of student misconceptions, but they go further by citing teachers as responsible as well.

It is easy to understand how media and technology cause students to develop conceptual misconceptions regarding physical and cultural geography. Turning on any American television at any given time, a student is exposed to starving children in Africa, drug smugglers and violence in South America and so forth. It is no wonder that whenever students hear or learn about other foreign cultures in geography they dismiss the other's perspectives. This cause is also evident in classroom instructional materials. Students see certain images and develop cultural and conceptual misconceptions from T.V. and the internet, but they also read Western perspectives on imperialism and colonization in places such as Africa in their school textbooks. These materials are perpetuating what students already *know*.

Ukpokodu (1996) and Keeley (2012) blame teachers for perpetuating student's misconceptions as well. Ukpokodu (1996) cites numerous amounts of research, classroom experience and curriculum guidelines to illustrate that although geography teachers try to teach diversity and multicultural units in social studies classrooms, these units and studies on other cultures tend to be museum or tourist based approaches. Museum and tourist based approaches are the traditional way of teaching cultural geography. They emphasize the looking in and observing of other cultures as objects of study rather than trying to teach from the other perspectives. If we constantly continue to teach only Western perspectives of African history or highlight the unique and exotic cultures, animals, and artifacts of Africa, students will hold on more and more tightly to their conceptual misconception that Africa is different, weird, abnormal, and therefore un-relatable to them. Therefore, by trying to overcome stereotypes and bias, teachers unconsciously often make students' misconceptions about geography more true to them and harder to overcome.

Strategies for Addressing Misconceptions

Once a geographic misconception has been targeted, the instructor has to remember that simply correcting the student will not address a deeper conceptual problem. Rather, a network of resources and tools must be used to gradually help that student move past what they *know*. Vygotsky (as cited in Ukpokodu, 1996) illustrates basic strategies that are critical when engaging and motivating students to understand a new concept. It seems basic and outdated, but classic methods still work. Try collaborative activities where students can work through misconceptions or address new ideas and concepts together with teacher scaffolding. Remember, students experience a sense of cognitive dissonance whenever they are exposed to new ideas and concepts and this is the opportune time to address misconceptions (Keeley, 2012). Creating relevance is also critical to overcoming misconceptions to guide and further student learning. According to Ukpokodu (1996), when a geography teacher introduces a new and foreign culture, such as Africa, it is always better to begin with similarities between cultures to establish a rapport, understanding, appreciation, and respect for that other culture. This way the student can relate with the new culture or perspective, rather than when the teacher uses the "museum approach".

Modeling proper geographic skills and inquiry is also a great strategy to help students move past conceptual misconceptions. Teachers might try using articles, movie clips, and Internet websites in the classroom that are produced or made in countries other than Western Europe or America. When a teacher shows students that using a resource, for a report or homework assignment, from Slovakia or Korea can also provide as perfectly reliable and informed information and ideas as those from the United Kingdom or Canada, it physically demonstrates to students how to find and use multiple perspectives.

Another strategy, perhaps one of the most effective, that geography teachers can utilize to facilitate a gradual conceptual change for their students to unlearn preconceived knowledge and misconceptions is to literally use those misconceptions themselves to address the issue. Sadler (1998) refers to these misconceptions as "stepping stones" that can be used to not only motivate and inspire interest but to create relevance to something the students already know. For example, the student from Carano's class who thought Brazil was in Africa demonstrated that she thought "all people from South America lived in huts and sold drugs to Americans", could be approached to use this as a type of investigative activity to find actual statistics and reliable sources from that culture that supported or disproved this misconception (Carano & Berson, 2007). By playing on the student's misconceptions and generalizations about those cultures she considered to be "out-groups", the teacher could not only teach the student to find and determine reliable sources, but also help the student gradually see that her ideas about this culture came from movies and a lack of factual knowledge.

Resources

Whereas Ukpokodu (1996) and Keeley (2012) were more focused on students' lack of interaction with multicultural perspectives and teacher bias as the main perpetuating cause of students' misconceptions in geography, Carano and Berson (2007) felt that technology and the media were mostly to blame. Therefore, technology and the media itself can be a valuable resource to address student misconceptions in geography.

One great resource is interactive maps, such as Google Earth, which can be used to engage students and show them progress in a three- dimensional way that they can cognitively visualize. However, using the resource is not enough. Google Earth could be implemented within a Five Themes of Geography lesson to best address misconceptions in geography and promote diversity and cultural awareness. The Five Themes of Geography has been around approximately twenty years, but now available to all teachers are resources, such as, computers, smartboards, and other technology, which can be combined with The Five Themes of Geography strategy to allow geography teachers to expand and truly address misconceptions in a way to promote gradual conceptual change, motivate and engage, and develop other valuable social studies skills all at once (Ukpokodu, 1996). The days of only addressing the superficial misconceptions by outlining on a flat hanging map or globe are over, and, the days of addressing gradual conceptual change to overcome deep rooted preconceived notions from prior experiences are here.

Another excellent resource to help students in all areas of social studies and to help achieve geographic literacy and to promote multiple perspectives to open students' minds to other cultures, is CNN Student News. Students' misconceptions in geography are largely due to a lack of experience with other "unusual" perspectives and the perpetuation of these cultures as inferior or wrong by technology and the media. CNN Student News provides the perfect media/technology resource to combat this major problem in our field. CNN Student News covers current events, offers global perspectives, and integrates current pop culture and news that students can relate to, all in one ten- minute daily broadcast. It is specifically designed for junior high and high school students and at the very least exposes students to new ideas and concepts that can open up a moment of cognitive dissonance for students to begin to inquire or for teachers to jump in to address the student's geographic misconceptions with more classroom strategies. CNN Student News can be a great resource to elaborate and build upon student's ideas and can be a great way to extend lessons on cultures or government and economics. Time restraints in the classroom may limit the use of this resource to perhaps only once a week or once a unit; however, CNN Student News offers transcripts of all their past shows which allow teachers the opportunity to scan through topics and shows to find the best fit for that particular lesson or that particular group of students.

Conclusion

Misconceptions in geography are a current hot topic in the field of social studies. How to actually identify and address misconceptions in geography is an even bigger issue that is rarely discussed by educational professionals. As preservice and beginning teachers, it is important to be aware of current issues in the field. It is also important to continue learning how better instruction in the classroom can enhance student learning. As teachers, there is only a minimal amount of time we have with our students, and that time must be used wisely.

There are already a million things teachers have to do; implementing differentiation, creating engaging and well thought out lesson plans, integrating other contents, meeting requirements and expectations from school districts and administration, covering the state required curriculum and correctly applying and meeting state educational standards. Why should you also now deal with addressing student misconceptions in geography? These misconceptions are not merely correcting your students belief that "all Alaskans live in igloos" or other seemingly silly things, but rather, furthering their academic development in social studies. This requires addressing the issue of

geographic illiteracy, due to misconceptions generated and perpetuated by the media, technology, classroom texts, and teachers.

This article demonstrates several strategies and resources available to all educators not only to address student misconceptions, but also to meet all those other demands for standards, objectives, differentiation, and integration of contents. These options are easily accessible, free, and overlap with other expectations and only encourage professional development. This article also explains where misconceptions in geography come from, how they develop, and what is responsible for making them more deeply rooted in our students' prior experiences. The knowledge itself is enough if teachers of social studies are willing to consider the negative impact of misconceptions on student learning in geography by at least knowing this issue exists and needs to be addressed as soon as possible. The longer misconceptions are left untreated, the more real and in depth they become and therefore harder to "unlearn".

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Google Earth: earth.google.com

Biography

Brandi Sharlow is a recent graduate of the University of Toledo Judith Herb College of Education's Accelerated LAMP program with a Master's of Education. She also received her Bachelor's of Arts degree with a major in history from the University of Toledo in 2010. Her licensure field concentration is secondary education for integrated social studies.

How to Improve Cultural Awareness in the Classroom

Cory Bishop

Abstract: With an ever increasing globally connected world, the need for people to be aware and understand other cultures is of growing importance. As educators, we must find ways to incorporate material into the curriculum that will improve our children's understanding of what culture is, as well as build respect and appreciation for cultures other than their own. Through the use of culturally diverse literature we can expose children to other cultures. By utilizing technology we can improve communication between our students and other cultures, and through the use of field trips we can improve our children's awareness by creating experiences that make the abstract concept of culture more concrete.

Lack of Cultural Awareness is Prevalent in the Classroom

Students in my fifth grade classroom were learning about the American Revolution and the conflicts that were leading up to the Revolutionary War. On this particular day the students were going to learn about the Boston Massacre and an important individual from that event, Crispus Attucks who has sometimes been hailed as a hero. The students were presented with materials containing primary documents, photos, and other information about the events that transpired. This lesson differed from most lessons in that the class was divided in half and each section was given different materials about the event.

One group received newspaper clippings, photos, and other details about the event from the British point of view and the other group received similar materials, but from the colonists' point of view. The students were assigned a task, and that was to find out who was to blame for the Boston Massacre, and come up with reasons to support their view. As I walked around listening to each groups' discussion I could hear the students begin to take sides. After about a half hour, the students presented their ideas. The first group to present was given information from the British point of view, and they began their presentation by protesting, "Down with Crispus Attucks! Down with Crispus Attucks!" As the students presented I noticed a look of confusion on the other group's faces. Why were they supporting the British? Why were they not hailing Attucks as a hero? Some students also had prior knowledge of the United States fighting with the British to gain independence. This created even more confusion, as some students came into the lesson already believing that the British were the enemy. Through prior misconceptions and limiting the material they had access to, the students were not aware of the entire situation, and stereotypes were tested. This activity challenged the stereotypes that were already present in the fifth grade.

What this activity was able to show was the importance of understanding all the information before making a judgment, and why people should be aware of different points of view before allowing stereotypes to be formed. If the material was presented solely out of the textbook the students would have gone on believing that there was only one side to the story, believing that all the British were terrible people, and not allowing for interpretation. As we venture into a more connected global community that integrates different cultures we must help our children strive to understand the world around them. While this activity focused on a historical event and stereotypes related to that time in history, students also have stereotypes about the current world around them. We must help our children to challenge these stereotypes and build their understanding that it is not the United States against the world, but that we are all in this together.

Stereotypes can build and eventually lead to a false generalization of what people believe to be factual information about the entirety of a culture. Lutz (2010) teaches a college course about the Middle East and noticed these stereotypes in adults:

> They initially come to the classroom with the widely held belief that the entire region is awash with terrorists. On the subject of the Israeli-Palestinian conflict, they decidedly support the policies of Israel against the Palestinians without any scholarly examination of the nature of that conflict. They believe that all women in the Middle East are shrouded in chadors and controversy notwithstanding (p. 716).

These kinds of stereotypes create a false idea of different cultures and need to be extinguished. Knowing the negative aspects of poor cultural awareness is not the problem. The problem lies in finding ways to effectively improve cultural awareness in the classroom and how to improve our children's image of the rest of the world.

Throughout this article, the ideas of building cultural awareness will be discussed, as well as ideas of how to build cultural awareness in the classroom. Through the use of culturally diverse literature, technology, and experiences outside of the classroom, educators can work more effectively toward creating culturally aware students.

Integrating Diverse Literature into the Classroom

During the thirteen years that children are in school, they are subject to a wide variety of different literary works. Although the number of different works varies, the majority of what children are exposed to is dominated by Western culture. Western European and American literature are normally the chosen works in an American classroom. I argue that this practice creates a lack of culturally aware students. I argue that more diverse literature should be integrated into the classroom to help promote global awareness and improve our children's understanding and view of the world. The primary issue with our children only experiencing Western culture in literature is that they are not aware and therefore cannot relate to other cultures outside of what they are familiar with. This becomes a problem with not only being aware of other people's cultures, but also with understanding their own, in comparison.

Improving Cultural Identity through Diverse Literature

In America, children, as well as adults, struggle with identifying their own culture. Many do not know what their culture entails, or they are not even aware that they have a culture. This becomes a problem when it comes time for children and adults to recognize, respect, and understand another's culture outside of their own. Short (2003) concurs that people must know and understand their own culture before they are able to comprehend another culture by stating:

> All learners, adults and children, must first explore their own cultures before they can understand why culture matters in the lives of others around them. Internationalism does not begin with the ability to consider other points of view but with the realization that you have a point of view yourself (p. 3).

Through the use of culturally diverse literature children become aware that they have a culture of their own. This is done by reading about various cultures and discovering their different ways of life and how they differ from them. This helps build recognition of their own culture as well as the cultures of others, as well as develop their acceptance of them. This idea brings the importance of having culturally diverse literature in the classroom into play. Jewett (2011) explains the benefits of using culturally diverse literature in the classroom:

> When we incorporate children's literature from abroad as well as from the United States into the literacy practices of a first grade class, the potential exists to widen the children's perspectives of the world and build insights about others (p. 20).

The benefit of having culturally diverse literature in the classroom, not only helps children realize their own culture, but also exposes them to so many other cultures, previously unknown to them.

Integrating Technology into the Classroom

Integrating different forms of literature into the classroom can prove to increase cultural awareness as well as build one's own identity, but there is more that can be done to accomplish this, especially as we move forward with technological advances. Technology has opened the door to the rest of the world and has allowed all corners of the world to communicate with each other. Technology has also become part of our everyday lives, especially in our students' lives. Carano and Berson (2007) point out that nearly ninety percent of young people use the Internet. With such a high number of our students already aware of the technology and how to use it, it is time to take advantage of this beneficial tool.

Technology has created a smaller and smaller world where many cultures that otherwise would not have interacted, now interact on a daily basis and a global economy has been created. Other advancements have also helped to create a global economy. Miller and Slocombe (2012) point out: "In the 1990s, many hierarchical political and economic structures in China, India, Russia, and Eastern Europe, became open, enabling billions of people to participate in the market" (p. 18). One major reason for improving cultural awareness is to prepare our students to compete in our modern world. Technology has created the need to improve cultural awareness, and ironically it can

be the tool needed to do just that. By utilizing technology we can improve students' understanding of other cultures. This can be done through the use of the Internet and videoconferencing.

Using the Internet to Communicate

Videoconferencing allows students from all over the world to interact and learn from each other. This has proven to be effective in improving students' understanding of other cultures and help to boost their cultural awareness. A study done in Northern Ireland gave students the opportunity to communicate with students in another country (Abbott, 2004). In this study, schools were paired up and children worked together on different social studies assignments. The students were given access to two discussion areas: "one a 'student café' for social communication and the exchange of personal profiles and the other a 'work in progress' folder for the discussion and presentation of collaborative, curricular tasks" (Abbott, 2004, p. 226). Abbott (2004) discusses the benefits that this provided by stating:

> Cultural awareness developed and the pupils were helped to understand, as far as cognition allowed, that they could communicate with children and young people in another country. Thus they could go beyond the microcosm of their own classroom to the 'global' classroom (p. 237).

This use of technology allowed students to learn about another culture in a way that a traditional classroom could not have achieved.

The Internet has allowed for similar results in the United States. Carano and Berson (2007) discuss how elementary school students communicating with students from the South American country of Suriname were able to build their cultural awareness. After communicating with the students, they created a play focusing on the culture of Suriname and acted out the scenes that highlighted life in the country. Carano and Berson (2007) point out that before the students communicated with the Surinamese students they were unable to identify Suriname on a map, let alone identify with their culture. The benefits of using technology in the classroom have insurmountable benefits, in so many different areas, and when it comes to building and improving cultural awareness it can provide benefits that would not be possible without it.

Using Experiences Outside the Classroom to Improve Cultural Awareness

Ultimately the utilization of technology and the addition of culturally diverse literature to the classroom have one goal in mind, to improve cultural awareness through exposing children to other cultures and building their understanding through experience. Personal experience can have a great impact on a child and on their knowledge and understanding about a subject. These young thinkers need assistance in making abstract ideas concrete and tangible (Parameswaran, 1998). We need to create better experiences for our children to understand such abstract concepts as culture and society. Sometimes this needs to be done outside of the classroom.

"Developmental theorists like Piaget (1970) and Vygotsky (1978) emphasized, that in order to fully transform information into understanding, students need to find personal meaning in the information. Concrete experiences help students incorporate abstract information into their existing knowledge structure" (Parameswaran, 1998). Field trips allow children to experience a subject in a way that they ultimately could not have done in the classroom. These experiences will help children find personal meaning in the information. This is true in any subject or content area, not just social studies.

Parameswaran (1998) discussed how college students benefitted from field experience. Two groups of students, each enrolled in the same course, educational psychology, were presented material for the class in two different ways. One group was presented the material in the form of in-class lecture, and the other was required to go outside of the classroom to various locations to gain direct, real world experience. Each group was presented with the same material, just in different forms. At the end of the course the students were given a post test to measure their understanding of the material presented to them. The results from this test showed that the experimental group answered 84% of the questions correctly and the control group only answered 65% of the questions correctly, showing that the group with field experience performed better than the group with no field experience (Parameswaran, 1998).

Field trips allow students to witness the content firsthand. They are able to see, hear, touch, and talk about the subject, in a way that will build their experience and create a concrete interpretation of the otherwise abstract ideas discussed in the classroom. There are many opportunities available to improve children's cultural awareness through field trips. Trips to museums, monuments, and other attractions are available almost everywhere. As discussed earlier children need to understand that they themselves have a culture, before they can be aware and appreciate other cultures. Field trips allow them to see that it is a part of their culture, their society, and a part of

themselves. From these experiences they are able to build an understanding of their own culture and then continue to build on their awareness of other cultures.

Conclusion

The previously mentioned ideas are just a few ways of integrating different teaching strategies into the curriculum to improve cultural awareness. Teaching children to be culturally aware and globally minded will prove its benefit in the years to come. Regardless of being able to compete in a global economy, the need for improved cultural awareness is evident simply to improve our society and the lives of all human beings. In a society and at a time in our history where we are able to get information instantly, the information we receive can sometimes be one sided and stereotypes can be produced. The technological advancements that have brought us to this point and connected us on a global level can also drive cultures and societies apart. We must help our children and our future generations to stop this disconnect between cultures. If we are able to educate our children and teach them about other cultures, and how to recognize all parts of the story before making judgment, we can hopefully start to bridge the gaps that exist between and among cultures.

It starts in the classroom by not allowing misconceptions to begin. Diverse literature can be integrated at an elementary level and used throughout a child's education. This literature can be used to help children identify their own culture, and then start to identify others with a new found respect. Technology helps connect cultures from all over the world and help children connect on a personal level unlike any other time before in our history. Field trips help bring this all together by providing personal experiences for students to understand the abstract concept of culture in a concrete way. Through the use of these ideas, misconceptions students have will be non-existent and only accurate conceptions will be prevalent.

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Biography

Cory Bishop is a graduate student in education at the Universtity of Toledo, Judith Herb College of Education. His research interests include utilizing various methods in K-12 grades to create global citizens by improving cultural awareness in the classroom.

Learning to Teach
Language Arts, Mathematics, Science, and Social Studies
Through Research and Practice

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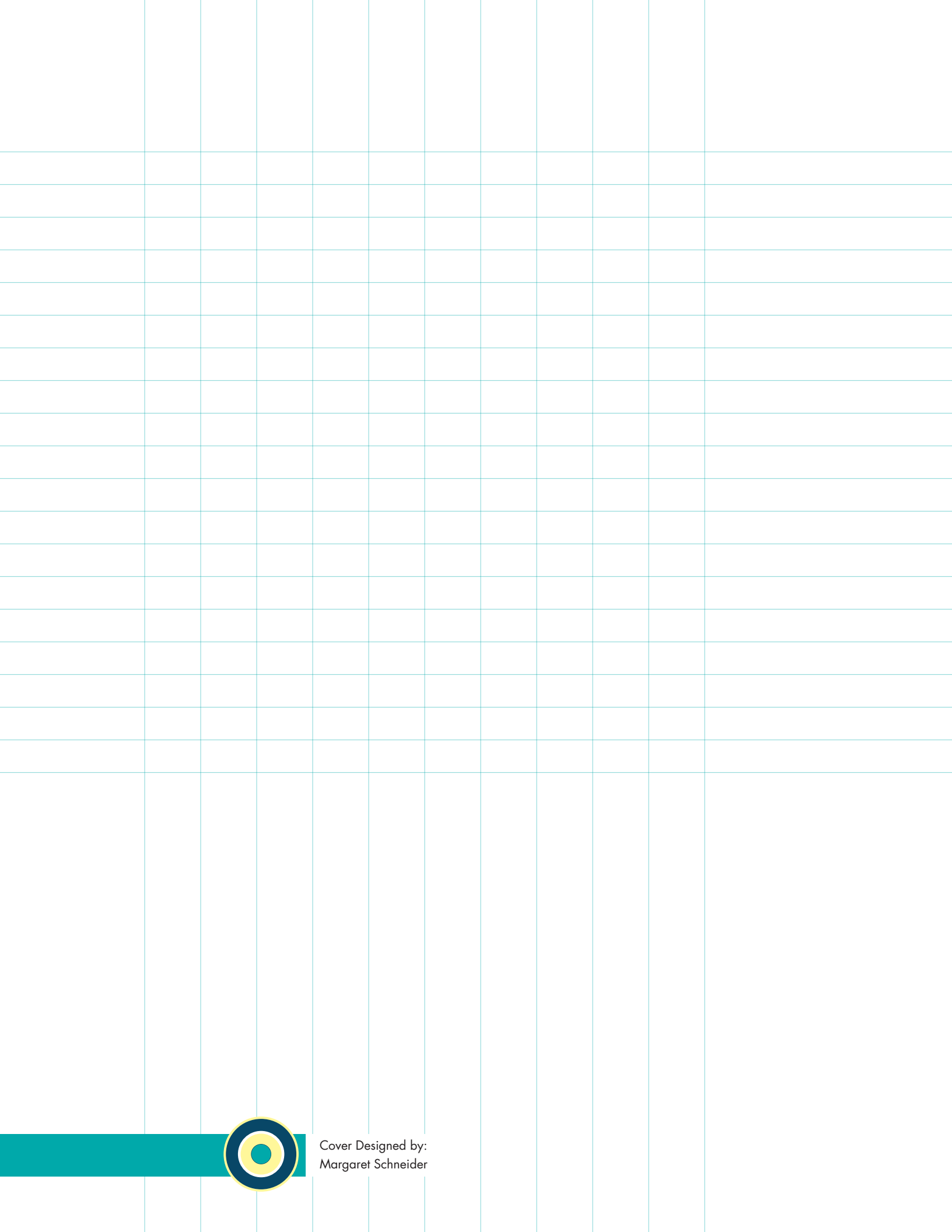
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