

The Impact of Technology in the Classroom  
A Study of Teaching Strategies on the Gifted and Talented Learner

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## **Abstract**

This study was designed to determine whether technology based teaching strategies impacted student achievement for students enrolled in a gifted and talented 7<sup>th</sup> grade language arts class. Students were randomly divided to one of two groups: treatment or control. The treatment group completed a character analysis assignment using a class wiki website. The control group completed the same assignment without the use of technology. The control group answered their questions on paper. The literature used was a play that was read with both groups together as a class. After each scene of a play was discussed, students were divided according to their group to complete the analysis of the characters. The assessment called for students to write a monologue from the point of view of a character in the play. They were permitted to use the any work completed for the character analysis assignment. The results indicate that there is no significant difference in using technology based instruction for the 7<sup>th</sup> grade gifted and talented language arts student.

# **CHAPTER I**

## **INTRODUCTION**

### **Overview**

Gifted and talented education has shaped and shifted its identity over the past several decades. In the past thirty years, gifted and talented education has struggled to find as many advocates willing to nurture students so that they can achieve their true potential. Several laws have been passed to ensure that the needs of children and adults with disabilities have their educational needs met. In addition, according to Good (2008) “No Child Left Behind” has put an emphasis on ensuring that academically challenged children are able to be successful in their primary and secondary education. Gifted and talented education, however, has become less of a focus in the United States. Perhaps students identified as gifted and talented are of less concern to educators, politicians, and society as a whole because there is little doubt that gifted and talented students will be successful; the cultivating of a gifted child will not impact the child’s ability to thrive. These students, however, may very well shape the future of the country; in the exponentially changing field of technology, this may be especially true.

### **Statement of Problem**

The purpose of this investigation is to discover if incorporating technological teaching strategies into the gifted and talented language arts classroom will have an impact on student achievement.

### **Statement of the Hypothesis**

Technology based teaching strategies will have no impact on student achievement for the gifted and talented learner in a 7<sup>th</sup> grade language arts class.

## **Operational Definitions**

The independent variable in this study is the teaching strategies that the students will receive in the 7<sup>th</sup> grade gifted and talented Language Arts class. Half of a class will receive technology-based instruction via a classroom Wiki page. These students will complete a “Character Log” as they read the play “The Long Shot”. The other half will receive the same instruction (and same “Character Log”) using traditional classroom worksheets. The dependent variable in this study will be the student achievement on a performance based assessment. Students will compose and perform a monologue using the point of view from a specific character from the play. The scored rubric from the performed monologue is defined as the student achievement.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

This literature review examines the importance of effective teaching strategies for the gifted and talented student in a middle school English class. Included in the review is a history of the identification of a gifted child. It also describes effective instruction for an advanced learner in language arts class. The struggle to differentiate for children learning at different levels and paces is a well-known hurdle for teachers. Common sources for this struggle are cited in the review of the literature. Lastly, the most effective strategies for accelerated learners are discussed.

#### **The Gifted Student**

According to Good (2008) the term “gifted” in its application to children emerged in the 1920’s after Terman of Stanford University developed an American version of Binet’s test, the Stanford Binet Intelligence scale. In its earliest stages, “gifted children” were children who scored higher of a certain IQ range deemed normal for most. Soon after, gifted programs emerged across the country. Later, alternative conceptions of giftedness were proffered, which led to the expansion of the identification of giftedness .

Good (2008) explains that during the panic following United States’ failure with Sputnik, the educational system was an easy target for blame. Complaints that gifted students had been neglected were aimed at the educational system. During this time, focus on programs for gifted students flourished for a short, although intense, period of time. In the late 50’s the definition of “gifted” shifted once again as students with a high creative ability, despite their low IQ, were acknowledged as gifted. It was noted that this group of students along with the previously



identified high IQ students, were equally superior in school achievement in comparison to the school population as a whole (Good, 2008).

As children with disabilities won educational rights in the early 1970's, parents who believed their children were gifted began to press the schools for programs to serve them. With this it was discovered that many gifted students were not being identified and few of those who were identified were receiving a differentiated education (Good, 2008).

No Child Left Behind brought a new set of challenges. Good (2008) explains that with the new mandates, teachers, principals, and superintendents are held accountable for their students' scores on performance tests. Focus shifted from teaching to the middle to teaching to the struggling students. This has left students identified as gifted often neglected and effectively unserved. Gifted education exists to provide these students with a differentiated curriculum so that they can receive a free, appropriate public education.

According to Good (2008), the definition of a gifted student and methods of identification have developed and shifted over the years. Today, most school systems implement a combination of assessments in order to identify the gifted student. Some commonly used categories for assessment include classroom conduct, social integration, maturity toward school tasks, and academic achievement (Perrone, Wright, Ksiazak, Crane, & Vannatter, 2010).

### **Differentiation for the Gifted Student**

Good (2008) argues that differentiation for the gifted student can be defined simply as meeting with identified gifted students and doing something different with them from what other students are doing. Therefore, pulling a gifted student to meet with a gifted teacher for a pull-out group may qualify as differentiated instruction. According to VanTassel-Baska & Stambaugh

(2005) it is the content, process, and product included in these programs, however, that have raised questions about their effectiveness on the gifted learner.

Commonly used methods of differentiation for a gifted student include acceleration, interdisciplinary instruction, small group work, project and product development work, student presentations and displays, special social-emotional learning activities, and an emphasis on teaching thinking skills (Perrone, et al., 2010). According to Perrone, et al. these methods reap benefits for the gifted learner that extend into adulthood.

### **Implications for Gifted Learners**

According to Lee, Olszewski-Kubilius, & Peternel (2009) the implications of a student identified as gifted during middle school and receiving effectively differentiated instruction reaps benefits into high school and post grade school. Gifted students who participated in a three-year preparatory program during middle school experienced advantages beyond academics. Participation in the program yielded increased parental involvement and higher parental expectations. In addition, the majority of those students were placed in Honors English their freshman year of high school.

Education geared for gifted students is beneficial post graduation as well. Perrone, et al. (2010) argue that placement in a gifted classroom impacts the student academically, socially, and emotionally. Furthermore, gifted adults (previously gifted students) were more likely to have children identified and placed into gifted classes.

According to Schneider (2006), rather than cultivate a positive educational experience, gifted education can also yield negative outcomes when the needs of the gifted and talented learner are not met. In standard classes, disciplinary problems may arise when the needs of the learner are not served; in gifted and talented education, however, the learner will withdraw from

the daily learning objectives and stop making progress. In some cases students will maintain the status quo; they easily achieve exemplary grades, but are bored and lack challenging academic work. Other students may regress and become apathetic towards their education which results in less than satisfactory grades even though the child is capable of achieving advanced scores.

### **Effective Instruction in Gifted & Talented Education**

Effective instruction in a classroom designed for gifted English students may not differ in appearance from effective instruction in a standard English classroom. The key is differentiation. Ahrens (2005) introduces effective instruction for English classrooms in a middle school setting; independent reading and strategic comprehension skills instruction should be a component of every lesson. An opportunity to self-select reading materials at independent read levels increases student engagement and investment in the learning. In order to implement successfully, teachers must first gain knowledge of students' individual reading abilities. Students should have access to resources such as space, technology, reference materials, manipulatives, materials to promote creativity, and a selection of fiction and nonfiction works (Noel & Edmunds, 2007).

A strong pedagogical and English language background for the teacher is pertinent to ensure the success of gifted students. Bowe (2009) cites a strong background in the English language as a necessity for the success of gifted students, but warns that the antiquated methods of the red pen may stifle a student's progress and motivation. The educational background received in college must be incorporated into our knowledge about language so that teachers can address the spoken realm of English in the curriculum. In addition to the strong background, a platform for ongoing learning must be in place for the teacher. Lipsitz & West (2006) list professional development that challenges teachers as a component of a highly effective school.

On the small scale, professional development for teachers of gifted and talented is necessary to keep teaching strategies relevant in the classroom. With technology on the rise, professional development for teachers of gifted students enables the teachers to keep students interested, challenged, and motivated.

Lastly, more work does not equate to a curriculum for gifted learners. In an effective gifted and talented classroom, raising the expectation of the learner differs from increasing the work load. These heightened expectations may apply to the curriculum's content, the process in which it is taught, or the product (assessment) that is expected as the outcome (VanTassel-Baska & Stambaugh, 2005).

### **The Struggle to Differentiate for Gifted Learners**

With the influx of buzz words, resources, and innovative teaching strategies, teachers are encouraged to move out of their comfort zone. According to Ahrens (2005) teachers are reluctant to trust their knowledge of their students' abilities when implementing a new strategy. A teacher's faith in their own ability as an educator can determine the success or failure of a new strategy, curriculum, or program. Other challenges for serving gifted learners in the English classroom include a lack of planning time, lack of relevant pedagogical skills, lack of knowledge for modifying the curriculum, difficulties of effective use and location of resources, and lack of classroom management skills (VanTassel-Baska & Stambaugh, 2005). Regardless of these limitations, growth, change, and advanced levels of achievement can only occur when educators and learners acknowledge the barriers and take steps toward minimizing them.

Schneider (2006) cites leadership as an important resource for teachers of gifted and talented students. The building principal becomes one of the members involved in the long term progress of the gifted and talented program. In order to be effective, the administrator must have

a strong understanding of gifted and talented education. Teachers need supportive administration that is willing to foster growth in the gifted and talented program.

### **Effective Strategies for Gifted Learners**

According to Tobin (2008) an emphasis on student choice for literature is a strategy for the gifted learner that is not only motivating, but a method of differentiation. A variety of literature at varying levels is the beginning stages of effective instruction for gifted learners. In addition, a variety of tasks at varied levels enables the gifted learner to demonstrate understanding and mastery of a skill through their preferred mode of learning. Another strategy that can be implemented in tandem with the previous strategy is using small groups for instruction or collaboration. Individualized instruction that allows for the varying of pace produces great learning outcomes (Subotnik, Tai, Rickoff, & Almarode, 2010). Flexibility on the part of the teacher is crucial as the students are making educational decisions that drive their course work for the unit. Some other strategies that have been effective in an extracurricular program used journaling, silent reading, and writers' workshops to improve literacy and comprehension skills (Lee et al., 2009).

Technology in any classroom can be a source of enrichment or disappointment. The teacher is the central factor in the failure or success of introducing and implementing computers in education (Subhi, 1999). Teachers who were identified as high-level risk-takers demonstrate positive attitudes towards the use of computers in their teaching activities. This willingness to implement new methods of delivery can reap long lasting benefits on students. Using technology in the English classroom includes a series of rationales for implementation; they range from preparing students for a future in which computer skills will be necessary, to using a cost effective means of teaching. The most striking of the rationales in this study was the idea

that technology can be used to enrich the existing curriculum and improve instructional process and learning outcomes.

### **Summary**

This literature review examines the widely varied and arguable definition of the “gifted” learner and the manner in which it has shifted and developed through history. The literature agrees in implementing differentiation in order to promote the achievement of a students’ highest potential. It is also acknowledges that while differentiation is the best means to achieve one’s potential, many obstacles stand in the way of an English teacher before implementation. Lastly, some best practices to promote literacy and achievement in the gifted and talented English classroom revolve around a teacher’s flexibility and willingness to provide opportunity for students to make decisions about their literature and vehicle for assessment, and to incorporate technology into daily learning.

## **CHAPTER III**

### **METHODS**

The purpose of this study was to investigate whether technology-based teaching strategies impacted student achievement for students enrolled in a gifted and talented 7<sup>th</sup> grade language arts class.

#### **Design**

The design of this study was quasi-experimental and used a posttest only format. The independent variable was the teaching strategy, while the dependent variable was the student achievement. The treatment group received technology based instruction via a Wiki website while the control group completed the same assignment via pencil and paper.

#### **Participants**

The participants used were 7<sup>th</sup> grade students enrolled in a gifted and talented language arts class. The class was divided in half to create a treatment and a control group. The class met Monday through Friday from 8:20 to 9:10 a.m. The treatment group was 57% female and 43% male. The control group was 62% female and 38% male. The school is located in a middle class area of Baltimore County.

#### **Instrument**

The instrument used was a performance assessment included in the Baltimore County 7<sup>th</sup> grade gifted and talented language arts curriculum. The assessment included a rubric with four areas of measurement: point of view, methods of characterization, appropriate conflict, and tone. Students were assessed on their ability to write a character sketch that encompassed the personality of a character from the play “The Long Shot”. Students read the play together in class and then maintained character logs (either on the Wiki or paper copy) in order to analyze character traits, motivation, and goals. The assessment evaluated a student’s ability to capture

the true essence of the character based on their analysis from the character logs. The performance assessment has content validity because it was created by a group of experts in the field of 7<sup>th</sup> grade gifted and talented language arts. In addition, this assessment format is familiar to students as they have had similar assignments and rubrics in the past.

### **Procedure**

This study was intended to determine if technology-based teaching strategies impact student achievement in a 7<sup>th</sup> grade gifted and talented language arts class. First, students were divided into two groups using a table of random numbers. Half of the class represented the treatment group while the other half represented the control group. As a whole, the class was instructed on the methods of characterization. A play, “The Long Shot”, was read together as a class. Over the course of two weeks, students read the play aloud during class and discussed the characters, conflicts, and themes. Students were allotted class time each day in order to complete character logs based on their assigned group: web-based character log (treatment) or paper copy character log (control). Because the web-based character logs were posted to the Wiki in a manner that enabled the treatment group to see their peer’s work, the control group was instructed to work primarily independently, but they were permitted to discuss with other members of the control group aspects of the character log that were confusing.

At the end of the two weeks, students were given the performance assessment. Again, the assessment was explained to the class as a whole. For the character sketch assessment, students were instructed to work independently and silently; all students were permitted to reference their character logs and script of “The Long Shot”. All students were given twenty five minutes to complete the assessment.



## CHAPTER IV

### RESULTS

This study was designed to determine whether technology based teaching methods impacted student achievement for the 7<sup>th</sup> grade gifted and talented student in language arts class. Two groups were randomly divided from an existing 7<sup>th</sup> grade language arts class. One group completed a character analysis using a collaborative class website. The other group completed the same assignment using paper copies for the character analysis. After each scene of the play was read together as a class, the separate groups completed their specified assignment. The assessment required students to write a monologue from a character's point of view in the play. All students were permitted to use the work completed for the character analysis while writing the monologue. The null hypothesis that technology-based teaching methods have no impact on the achievement of a 7<sup>th</sup> grade gifted and talented language arts student was retained.

Table 1 details the mean and standard deviation of the posttest scores for each group. The treatment group completed their character analysis using the collaborative class website. The control group completed their character analysis on paper.

Table 1. *Mean and Standard Deviation of Posttest Scores for the Groups.*

| Group     | Posttest Score |
|-----------|----------------|
| Treatment | 86.00 (9.17)   |
| Control   | 85.54 (14.35)  |

An independent t-test was run to determine if there was a significant difference in academic achievement based on posttest scores between the treatment and control groups. Results indicated no significant difference,  $t(25) = .043$ ,  $p > .05$ . The groups performed similarly on the posttest, so the null hypothesis was accepted. These results and their implications will be discussed in the next chapter.

## **CHAPTER V**

### **DISCUSSION**

The null hypothesis that technology-based teaching methods have no impact on the achievement of a 7<sup>th</sup> grade gifted and talented language arts student was supported. Following the implementation of technology-based activities versus traditional paper and pencil activities for students as they were analyzing the characterization of characters in a play, the results indicate that there was no significant difference in the results. Because the results of the posttest were so closely related, the null hypothesis is accepted.

#### **Threats to Validity**

There are many factors that contribute to possible threats to validity. In attempt to reduce threats to validity, students were allotted class time to complete their character logs. However, some students did not use all of the class time allotted to successfully analyze the character and complete their log. In addition, the study was performed over several weeks. Because of this, some students were absent on days that the play was read as a class. The absent students missed vital class discussion of the characters, plot and setting. The missed discussion may have played a factor in the success of their assessment in which they had to write a monologue while applying their analysis of a chosen character.

Students grouped to receive the technology-based instruction had the capability of seeing their peer's character logs via the wiki as they worked. This poses a threat to validity because students grouped to receive traditional instruction could not as easily viewed their peer's character log. Therefore, the treatment group may have a slight advantage over the control group. The control group was instructed to sit together, but to avoid outward discussion about

the assignment. If control group students struggled to answer a particular section of the character log, they were permitted to ask a fellow member of the control group, but the assignment was in no way a collaborative effort. These discrepancies in collaborative work pose a threat to the validity of the results.

In addition, threats to construct validity were present. The assessment measure was pulled from a county curriculum for 7<sup>th</sup> grade gifted and talented language arts. While this assessment has content validity, the measure is not as reliable as an assessment measure with reviews from the Mental Measures Yearbook (Plake & Impara, 2013).

### **Comparison with other Research**

The study indicated that technology-based instruction yielded no impact on student achievement for 7<sup>th</sup> grade students enrolled in gifted and talented language arts. However, in a similar study by Thomson (2010) results indicated online learning can be an effective means of meeting the needs of students classified as gifted. The study included both a qualitative and quantitative investigation of the perceptions of gifted students and their teachers in regards to an online learning program that was designed specifically for the academically talented student. According to Thomson , a technology-based program enables gifted students to work at their own pace, reflect on work, control their learning process, and engage in self-directed and independent learning.

The benefits of online learning according to Thomson (2010) include access to broader educational opportunities, flexibility for students, and an increase in informal communication. It is acknowledged that there are challenges with online learning as well; mismatches between a student's preferred learning style and the online learning environment pose a problem. In

addition, extroverted students may miss the face-to-face interaction with peers. Students who lack strong verbal/reading skills may struggle with a text-heavy online environment. The study also revealed the biggest complaint of online learning was the absence of a teacher to whom the student could readily ask questions. This differs from the current study conducted because the learning took place in the classroom accompanied by a rich discussion led by the teacher; students later worked independently on their character logs in order to analyze characterization.

### **Recommendations for Future Research**

While this study did not yield a significant difference in student achievement, it is important to continue researching the impact of collaborative, technology-based instruction. Other studies have yielded results that prove these teaching strategies do in fact improve student motivation as well as inspire active learning. As society grows more reliant on technology for everyday tasks, teachers must have the savvy to equip their students for the work force. A study on the most effective use of technology in the classroom would help teachers focus the inclusion of technology to best fit the needs of the students. Technology is one vehicle in which teachers can use to ensure students are leaving the classroom prepared. The struggle to differentiate for the gifted and talented student is also made less of a burden through the use of technology. In addition, a study that compares various classrooms that incorporate technology may also yield different results. Which methods were most effective? A perception survey as well as a data driven study may reveal trends in student achievement when technology is regularly incorporated into a teacher's pedagogy.

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