

## **Teachers' Perspective on Using Technology as an Instructional Tool**

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### **ABSTRACT**

Federal mandates require technology use in the classroom, but not all English language arts (ELA) teachers have implemented technology as an integral part of teaching. The purpose of this qualitative case study was to investigate why ELA teachers in 2 local high schools rarely or never use technology as an instructional tool. The study was supported by theories of constructivism, multiple intelligences, and problem-based learning. The guiding research questions sought to explore teachers' perspectives regarding integrating technology within the ELA curriculum. Qualitative data were collected via face-to-face interviews, field notes from classroom visits, and unobtrusive documents which included lesson plans and check-out logs for equipment from 8 participants. Open coding was used as themes emerged during the data analysis. A qualitative typological analysis was used to analyze individual cases, and a cross-case analysis clustered themes from participants' interview responses. Findings suggested teachers' limited use of technology resulted from inadequate access to equipment, inability to troubleshoot minor technology problems, and the absence of training in learning activities. The project included professional development training sessions focused on technology use as a teaching tool. Recommendations include initiating opportunities for teachers to demonstrate proficiency in embedding technology as a pivotal teaching strategy in all disciplines. By providing effective technology training and embedding technology in instruction, students may be better prepared to compete in the technological society of the 21<sup>st</sup> century and global workforce.

**Keywords:** instructional technology, technology training, ELA instruction, embedding technology

## INTRODUCTION

In 2006, a major change in teacher certification was implemented in the state of Texas for technology integration. New standards in the Long-Range Plan for Technology (LRPT) 2006-2020 require teachers in the state of Texas to master the State Board for Educator Certification (SBECE) Technology Applications standards requiring the integration of technology and instruction. Teacher competency in technology integration for teaching and learning supports the principle that to promote 21<sup>st</sup> century learning, “educators must be competent in 21<sup>st</sup>-century skills” (LRPT 2006, p. 24). The goals outlined in the LRPT focused on four target areas for teachers’ integrating technology: Teaching and Learning, Educator Preparation and Development, Administration and Support Services, and Infrastructure for Technology. The instrument for measuring the progress toward these goals is the School Technology and Readiness (STaR) Chart. “The STaR chart was added as a component of the LRPT to measure state and federal requirements in an effort to improve student learning through the use of technology” (LRPT, 2006-2020, p. 53). STaR is designed to help teachers plan for technology integration and to assess their own progress based on LRPT goals.

The information in Table 1 represents the LRPT goal for Teaching and Learning (TL). “TL must focus on connecting to students’ lives and how people learn” (LRPT, 2006, p. 18). The STaR ratings indicate that HS1 and HS2 are in the developing stage of technology integration. The total rating is a combined score based on how technology is used, when it is use, how often it is used, student mastery, online learning availability, and technology application (Texas Education Agency, 2001). Specifically, there is minimal use of technology as a tool for delivering instruction at both locations.

The high schools used for this study are located in the southern region of the United States. Students attending HS1 and HS2 come from diverse backgrounds and face new graduation standards that require teachers to integrate technology in all subject areas. One high school (HS1) has a student population of 1,100; the second high school (HS2) has a population is 2,100. The demographics of both schools consist of predominately African American and Hispanic students living in a low socioeconomic urban area. Additionally, 11% of the students are identified as Limited English Proficient (LEP). HS1 and HS2, along with high schools across the state, have been involved in technology integration for all subject areas for the past 5 years. See Table 1 (Appendix)

The importance of the STaR rating is that it is an essential tool for measuring teachers’ use of technology in the classroom. “Today’s students have grown up using technology, and teachers must integrate technology to meet the needs of 21<sup>st</sup> century students” (LRPT, 2006, p. 23). Parameters and guidelines for accomplishing LRPT goals and STaR ratings are defined and outlined in the No Child Left Behind (NCLB) Act. Technology integration requirements set forth in NCLB suggest that “teachers and students need to seamlessly use technology to solve problems and communicate in order to thrive in the 21<sup>st</sup> century” (LRPT, 2006, p. 18). The specific goals for the EETT Title II, Part D section of NCLB are

- (a) to improve student academic achievement through the use of technology in K-12 classrooms,
- (b) to assist in eliminating the digital divide and ensuring that every student is technologically literate by eighth grade, and
- (c) to encourage effective technology integration with teacher training and curriculum development. (Enhancing Education Through Technology, 2001, p. 2)

This multiple case study can serve as a model for integrating technology in a broader educational setting.

### **Definition of the Problem**

The problem that this study addressed is the underutilization of technology as an instructional tool in language arts classes at HS1 and HS2. The intent of the study was to explore why language arts teachers do not integrate various technology tools as a component of teaching, even though desktop computers, Smart Boards, iPads, laptops, document cameras, digital projectors, and mobile computer carts are readily available for student and teacher use. Teachers who recognize the ancillary benefits of technology integration in critical thinking and problem solving have a compelling reason to utilize technology in the classroom (Kingsley, 2007, p. 52).

In addition, most current students are already proficient technology users to collaborate with others, to engage in learning activities, to watch movies, and to research information. "Students live their lives with and through the aid of technology while schools have generally remained largely print-based and lukewarm in integrating technology" (Ikpeze, 2009, p. 3). In support of that, Kemper (2007) suggested, "One way to ensure that all students benefit from technology included using it with authentic problem-based instruction" (p. 307). Therefore, integrating technology and instruction will allow students to engage in collaboration, real-world authentic learning, and social interactions with peers that will prepare them for a global society that relies on technology. Swan, van't Hooft, and Kratcoski (2005) found that the use of "technology and mobile computing devices will eventually become a critical factor of learning for improving student motivation and achievement" (p.110). Consequently, the underuse of technology at HS1 and HS2 as a major instructional tool denies students the opportunity to learn using technology.

Data collection for this study was confined to interviews, field notes, and a review of unobtrusive documents (lesson plans and inventory reports) from HS1 and HS2. The data obtained from teachers in the language arts department in both schools of study may contribute to isolating and implementing the instructional practices needed to increase the use of technology in order to enhance the academic experiences of high school students in language arts, a core academic course. Kemper (2007) suggested that technology gives all students access to vast amounts of resources, powerful tools for constructing knowledge, and global communication with experts, mentors, and peers. New technologies and mobile computing have rapidly influenced the way people live, work and communicate on a daily basis.

### **Evidence of the Problem at the Local Level**

As a result of NCLB's technology component, HS1 and HS2 have increased the availability of technology devices and software which is represented by a ratio of one computer for every three students. The school is equipped with technological hardware (desktop computers, laptops, Smart Boards, clickers, iPads, document cameras, digital projectors) that students can use to acquire the skills needed to become proficient in using technology as a learning tool. Even with the increased availability of technology devices and software, the level of technology integration in the classrooms at both schools remain low, according to data retrieved from the 2010 Texas Teacher School Technology and Readiness (STaR) Chart (see Tables 1 and 2).

The four areas measured by the STaR Chart include Teaching and Learning, Educator Preparation and Development, Leadership Administration and Instructional Support, and Infrastructure for Technology. In the area of Teaching and Learning, the summary results of the STaR chart indicated teachers at HS1 and HS2 scored low on using technology in the classroom for instructional purposes. Criteria describing each scoring category are provided in Table 2. See Table 2 (Appendix)

The data in Table 2 provide a scoring rubric for technology integration patterns and frequency of use in the classroom use. The Teaching and Learning (TL) portion of the STaR Chart is focused on curriculum integration, application of content, instances of student online learning, and student mastery of technology applications. The data in Table 3 indicate the level of technology integration for teachers at HS1 and HS2 during the 2010-2011 school year. Specifically, the data are based on the STaR results for the area of TL. Teachers in HS1 and HS2 are in the developing stage. See Table 3 (Appendix)

A total score of 6-8 indicates that Language Arts teachers on both campuses are in the early stages of technology integration. A total score of 9-14 reveals that teachers are in the developing stage; a total of 15-20 indicates an advanced level of technology integration; and a score of 21-24 suggests that the targeted level of technology integration has been reached according to the goals outlined in NCLB. The evidence provided in Table 3 indicates that the use of technology as an instructional tool is a problem in the study locations. Hence, it is important to address the lack of technology usage with the teachers of the study.

### **Evidence of the Problem from the Professional Literature**

President George W. Bush called for the reform of the American educational system through the enactment of the No Child Left Behind (NCLB) Act in 2001. The passage of NCLB was in response to President Bush's concern for educating all children attending schools within the United States. Lu and Overbaugh (2008) indicated President Bush emphasized his belief in public schools and a commitment to increase funding to ensure that our neediest children received education using technology. The accountability measures based on NCLB requirements were intended to improve educational standards throughout America, particularly in the area of technology.

A major component of NCLB designed to improve teaching and learning is called Enhancing Education Through Technology (EETT) (NCLB, 2001, 1671-1672). The goals for technology integration and professional development for teachers are outlined in the EETT section of NCLB. The primary goal of EETT is to improve student achievement through the use of technology in K-12. Additional goals include assisting every student to become technology literate by eighth grade and encouraging access to technology resources and professional development.

In response to EETT goals, Lu and Overbaugh (2008) suggested funding for technology and professional development should be increased to ensure the success of NCLB. Schools have been successful at the "infrastructure level with more than 90% of schools providing access to computers and the Internet" (Lu & Overbaugh, 2008, p. 43). Yet technology such as desktop computers, Smart Boards, iPads, laptops, document cameras, digital projectors, and mobile computer carts as instructional tools have "not yet progressed much beyond using technology for creating teaching materials" (Overbaugh & Lu, 2010, p. 44).

Some studies have indicated long-term investments for professional development in technology integration are needed to improve teaching and learning. Maniger (2009) suggested the United States experienced an “increase in interest and investments in computer technology in schools at the national, state, and local levels partly in response to the NCLB goal to improve teaching and learning using technology in elementary and secondary schools” (p. 2). However, the statistics for technology integration remain low. “Teachers use technology several times a week for classroom preparations, but only once or twice a year for instruction” (Groff, 2008, p. 22). The underuse of technology is a global problem that reaches far beyond the boundaries of the United States.

The problem of underuse of technology in the classroom has worldwide implications, as seen in a study of technology use in schools in Botswana. One study conducted in the South Central region of Botswana concluded that 77% of the 260 teachers in the study did not use technology for instruction; the level of qualification, experience, age, or gender did not matter (Ogwu, E. & Ogwu, F., 2010, p. 49-57). This particular study also indicated that barriers such as inadequate training, funding, equipment, facilities, and curriculum all had a major impact on integrating technology and curriculum. The barriers to using technology as a regular instructional strategy are found in global educational settings and thus reveal an implication of social change this study can affect locally and globally.

In recent years, increasing technology use in schools has become a common goal in an effort to meet government mandates for teaching and learning (LRPT, 2006, pp. 17-18). Teaching students to become technologically efficient has implications for economic growth of America. This assumption is embedded in the purpose of NCLB and is evident in President Obama’s call for a revolutionary transformation to the educational system. A pivotal component of Obama’s educational revolution is the National Education Technology Plan (NETP) that was developed in 2010. NETP is designed to change teaching and learning through the use of technology. Under this plan, education is driven by two specific goals. First, the proportion of college graduates will increase from the current 41% to 60% of the American population holding a 2-year or 4-year degree by 2020. Second, the achievement gap will be decreased so that all students can graduate from high school ready to succeed in college and careers. NEPT (2010) guidelines stated “the challenge for our education system is to leverage teaching and learning by creating engaging and relevant experiences for students using technology in authentic and meaningful ways.” Several researchers provided information on current trends for integrating technology and data-driven decisions that will lead schools in the direction of excellence with technology in the classroom (Cauley, Aiken, & Whitney, 2010; Lombardi, 2007; Zhao, 2007). The importance of technology as a learning and teaching tool as evidenced in federal laws that mandate the use of technology in the classroom and as verified in current literature support the importance and timeliness of this study.

## **PURPOSE OF THE STUDY**

This qualitative case study was designed to investigate technology as an instructional tool in order to increase the level of technology integration in two urban high schools. The goal of this study was to provide a detailed view, from teachers’ perspective, of using technology in the classroom. These elements can best be determined through a qualitative study. This type of research study begins with “assumptions about a specific problem that needs to be explored” (Creswell, 2007, p. 37). Qualitative research uses different strategies of inquiry, data collection,

and data analysis in order to provide a detailed descriptive view of the problem based on participants' perceptions. The data collected for this study provided specific information on the experiences, skills, technology implementation, and attitudes of the teachers interviewed. The findings of this study have the potential to positively impact teachers' use of technology with instruction and improve students' academic achievement in the classroom.

## **METHOD**

The approach identified as the most suitable for this particular study was a case study, which is an empirical inquiry that investigated a contemporary phenomenon in depth and within its real-world context (Yin, 2009, p. 18). A descriptive case study design that rendered a comprehensive explanation of the participants' perspectives on using technology in the classroom was implemented. This study was motivated by the belief that integrating technology and the need to effectively train teachers on using technology as an instructional tool through professional development may have an important impact on student performance.

For this project, teachers from two urban high schools were interviewed in a natural setting to gain information on their use of technology in ELA classes. Creswell (2003) suggested several methods of inquiry for qualitative studies. This study followed the multiple-case study tradition because it explored two groups of individuals engaged in the same content area over a shorter period of time in comparison to the time required for an ethnographic study. This study used interviews as a primary source of data. This study focused on a total of eight teachers, one teacher from each grade, 9-12, who were teaching in the English Language Art Department (ELA) at HS1 and HS2. The study sought to address the following research questions:

1. How are teachers currently using technology in ELA content lessons?
2. How does technology integration impact instructional practices offered in English Language Arts (ELA) classes to enhance learning?
3. What are reasons teachers do not use technology regularly as an integral part of instruction?

## **Participants**

It was important to select participants who best understood the research problem presented for the study. "The idea is to purposefully select participants who can provide the best information based on the research questions" (Creswell, 2003, p. 185). Teachers from the ELA Department of two high schools with similar demographic characteristics provided in-depth information on teachers' perceptions on using technology in the classroom. Hatch (2002) suggested that participants who share common characteristics are homogeneous samples. Therefore, participants were familiar with the concept of integrating technology with their curriculum in the classroom.

## **Criteria for Selecting Participants**

Purposeful sampling was used to select participants. Creswell (2007) revealed the researcher selects participants and site locations to purposefully inform the research problem and phenomenon of the study (p. 125). For this study, the participants were certified and experienced

in teaching ELA courses in Grades 9-12 for a period of 1-30 years. Each participant was actively teaching at the study location at the time of the study. Creswell (2007) advised not to include more than four or five participants in a single study. However, Yin (2009) suggested using the number of participants or cases “deemed necessary or sufficient for your study” (p. 58). Eight teachers from two different schools (four from HS1 and four from HS2) who teach in the ELA Department participated. This study was confined to interviews with selected participants, field notes from classroom visits, and the collection of unobtrusive documents.

Once approval from the district to conduct the study was received, a meeting with the campus administrators at HS1 and HS1 was scheduled. During the meeting with the designated administrator, a written copy of the purpose and intent of the research study was provided. Efforts were made to ensure that all information and concerns were addressed. After the meeting a list of the ELA teachers with their assigned grade level was provided by the administration. All ELA teachers at HS1 and HS2 were provided with an invitation to participate in the study.

The email invitation included a request for participation detailing the study process, participant and researcher expectations, and my contact information. Upon receiving a response with the intent to participate from each volunteer, a meeting was scheduled with the selected participants to address any questions or concerns about the study. Once all questions were answered, the interview date and time was scheduled. Finally, an email message was sent to all ELA teachers at both locations thanking them for their participation in the study.

## **Data Collection**

Face-to-face interviews were conducted using an interview guide with open-ended questions. Hatch (2002) indicated the researcher leads a structured interview with guiding questions for a set amount of time; the interview is often recorded. The interviews were held where the participants worked; interviews took place over a period of 2 weeks. Each formal interview lasted approximately 45 minutes. Hatch (2002) suggested interviews allow researchers to gain insight into participants’ perspectives. Accordingly, the interview data supplied valuable information for designing a professional development plan as a solution to the concerns revealed during the interviews. The interview time and location were agreed to by the participants and me. Unobtrusive documents were collected before each interview began.

Once the data were collected, interviews transcribed, data organized, categories created, and coded into themes, the data were stored in a secure location. Open-ended questions were used for this project study to allow participants to provide adequate detailed information to answer each question. Janesick (2004) stated interviewing is a valuable component of qualitative research that provides rich and meaningful data (p. 71).

Occasionally, during the interviews participants’ comments led to additional questions prompting a deeper understanding to the original question. Creswell (2007) suggested interview data builds an in-depth picture of the participants’ perceptions and concerns (p. 132). In support of that, Hatch (2002) emphasized interviews are guided by the interview questions; researchers must be good listeners to know when to probe for more information (p. 115). Therefore, participants were provided time to elaborate when answering questions and to share details on a specific lesson that they used for integrating technology in instruction.

Hatch (2002) suggested data from interviews be transcribed as soon as possible following the interview (p.112). Consequently, transcribing the interviews began immediately following each participant interview. Then, copies of individual transcripts were emailed to participants for

member checking; participants were given an opportunity to change or add information to their personal transcript to ensure accuracy. No changes or additional information were provided by participants. However, unobtrusive documents were collected from each participant and served as another data source for this study. Yin (2009) revealed using multiple sources for evidence is a major strength of case study data collection that allows the researcher to address a variety of issues and concerns (pp. 114-115). Therefore, the triangulation of transcript review, the rich descriptive responses, and unobtrusive documents strengthened the study's validity.

## **RESULTS**

The data for this study were collected from a purposeful sampling of teachers from two different urban schools with varied years of teaching experience. All participants were members of the ELA department. The findings were analyzed to answer the following research questions:

1. How are teachers currently using technology in ELA content lessons?
2. How does technology integration impact instructional practices offered in English Language Arts (ELA) classes to enhance learning?
3. What are reasons teachers do not use technology regularly as an integral part of instruction?

Typological analysis was used to analyze the data. Hatch (2002) stated a typological analysis is best suited for analyzing interview data (p. 229). The interview questions were relevant to one of the research questions and sorted accordingly. Color coding was used to show data relationships within each case, HS1 and HS2. Data were review several times in order to identify key words and phrase. Emerging themes were used to sort data according to interview questions; this type of coding made it easier to complete a cross-case analysis. The results of the analysis are explained for each research question and relevant interview questions.

### **Within-Case Analysis**

The interview questions and relevant key words and phrases were identified using open coding of interview data from within each case, HS1 and HS2. Data findings for each study location, HS1 and HS2, are presented as a within-case analysis according to themes that emerged from data collected during participant interviews.

#### **Theme 1: Technology Use in ELA lessons**

Theme 1 addressed the following research question: "How are teachers currently using technology in ELA content lessons?" The data findings from the interviews were based on interview questions that provided specific information on how technology was used by teachers at the study locations. The interview questions relevant to this theme are listed below.

Q2. What types of technologies are available for classroom use?

Q4. How are you currently using technology as an instructional strategy?



- Q8. Explain how you are meeting NCLB requirements for technology integration.
- Q9. How much time do you spend to using technology for instructional purposes compared to administrative purposes?

**Technology use in HS1's ELA lessons.** The data from Q2 indicated that teachers at HS1 identified the technology available for classroom use as outdated desktop computers, digital projectors, document cameras (Elmos), and Smart Boards. However, the SmartBoards were designated for another department, and only one ELA teacher had access to a SmartBoard. Participant 3 indicated that the available Smart Boards were used as a projector screen because no one knew how to properly use the Smart Board. Participant 2 revealed that there are projectors and document cameras in ELA department, but no one has a Smart Board. This participant also indicated that most classrooms a projector screen. Participant 4 revealed most teachers in the ELA department have projectors and document cameras, but SmartBoards are in the science and math classes. Participants 1 and 3 used personal laptops and iPads in their classrooms to enhance lessons with videos or presentations. Data from Q4 revealed teachers at HS1 used video clips with lessons in the classroom when using technology for instruction. The data indicated Participant 1 used Clickers to introduce and review lessons on a weekly basis. Participant 1 also used a SmartBoard and iPad apps to modify lessons. Participant 2 used technology mainly for administrative purposes including checking district email, entering grades, and taking attendance. Participant 3 stated, "I actually do not use technology." Data revealed Participant 3 has a classroom infrastructure that requires effective planning in order to use technology. Specifically, Participant 3 indicated student desks are located close together and not conducive to using technology. "The way my classroom is set up would not be feasible for showing movies or presentations. The projector screen hangs almost in the middle of the classroom." Data indicated Participant 4 used PowerPoint presentations and videos fairly often in the classroom.

According to the data from Q8, only Participant 1 of HS1 was familiar with NCLB requirements for technology integration. Data indicated Participant 1 used webinars and various websites to acquire information on state, district, and local requirements for technology integration. Participants 2, 3, and 4 of HS1 acknowledged that they were not familiar with NCLB requirements for integrating technology in the classroom.

The time spent using technology was addressed in Q9. Data from interviews suggested participants at HS1 used the majority of time using technology to input grades and attendance. According to the data, Participant 1 used technology 50% of the time, but would use it more for instruction if the administration valued technology integration. "I could use it more but administration does not understand the value of technology." Participant 2 indicated 90% of time technology was used for administrative purposes. Data revealed Participant 3 spent a lot of personal time away from campus researching activities and lessons. Participant 3 used technology for taking attendance and grades while on campus. Participant 4 admitted technology was not used nearly as much for instruction compared to administrative purposes.

**Technology use in HS2's ELA lessons.** Data from Q2 suggested teachers at HS2 were also able to identify available technology. However, mobile laptop carts and clickers were identified in addition to the digital projectors, document cameras, and desktop computers. Teachers at HS2 were able to check out mobile laptops from the library in an effort to increase technology integration in the classroom. Participants 1 and 3 indicated different classrooms have

different types of equipment. Most classrooms are equipped with digital projectors and document cameras, but SmartBoards are limited. Only Participant 4 had access to a Smart Board in the ELA department at HS2. Participant 2 commented that the mobile cart has to be shared campus-wide. This participant stated, “If you ask ahead of time, the librarian will accommodate you.”

The data from Q4 indicated Participant 1 of HS2 used technology mostly for instructional purposes. Data suggested Participant 1 used the Internet, video clips, sound, and photos to teach cinematic film lessons. Participant 2 used laptops in the classroom for research projects at least once a month. This participant suggested students become more familiar with software applications and technology the more they use it for assignments. Participant 3 indicated a SmartBoard was not available and used a desktop computer and projector to present video clips to integrate media into lessons. Participant 4 used PowerPoint to present a daily agenda for the class. The SmartBoard served as a projector screen. Participant 4 occasionally used the touch screen functions of the SmartBoard.

Data from Q8 suggested none of the participants from HS2 were aware of the requirements for technology integration either. Specifically, Participant 1 stated, “I do not know what the NCLB requirements are.” Participants 2 and 3 answered “No” to Q8. Data indicated Participant 4 was not familiar with any requirements for technology integration outlined in the Enhancing Education through Technology (EETT) section of NCLB. The goal of EETT is to enhance teaching and learning using technology.

According to data findings for Q9, participants at HS2 spent time using technology mainly for instruction. Participant 1 indicated most administrative work was done away from campus. Technology is used strictly for instruction, attendance, and an occasional email. Specifically, Participant 1 stated, “I do very little administrative work at school. So during the hours I am here the technology I use is for instruction.” Participant 2 revealed that technology was used 25 to 30 minutes a day for instruction; providing interactive activities were a major part of instruction. Data indicated Participant 3 used technology on a daily basis. Specifically, 80% of the time technology was used for instructional purposes.

## **Theme 2: Technology Integration in ELA classes**

Theme 2 addressed the following research question: “How does technology integration impact instructional practices offered in ELA classes to enhance learning?” The data findings from the interviews were based on several interview questions that provided specific information about technology integration by teachers at the study locations. The interview questions relevant to this theme are listed below.

- Q1. Explain the campus goals for technology integration.
- Q4. How are you currently using technology as an instructional strategy?
- Q5. How do textbook lessons correlate with using technology in the classroom?
- Q10. Describe how the available technologies might be used to increase technology integration on this campus.

**Technology integration in HS1’s ELA classes.** Question 1 was designed to inquire on participants’ knowledge of campus technology goals. The data provided results that revealed participants at HS1 had no knowledge of specific goals for technology integration at their location. Participant 1 stated that the campus did not have any specific goals for technology

integration. “We are just required to have technology written in our lesson plans. There is no goal for how it will be integrated across the curriculum.” Participant 2 indicated that the principal at the beginning of the year wanted more technology, but now that they have a new principal: “I’m not sure what his technology goals are.” Data suggested Participant 3 had some knowledge of campus intentions for using technology. This participant’s knowledge was based on previous information. “They were talking about getting more technology, but we have a new principal now.” Data indicated technology goals at HS1 were never given to teachers. Participant 4 revealed explicit technology goals were never given to teachers. “They want us to use technology, but administrators failed to explain how.”

Data for Q4 provided information on how technology was being used as an instructional tool to increase technology integration. Participant 1 from HS1 acknowledged that clickers were used for content review. The Smart Board was used approximately twice a week to check students’ understanding of lesson content. However, the data indicated Participant 2 did not use technology for instruction; technology was used mainly for inputting grades and attendance. The data for Participant 4 suggested PowerPoint presentations and videos were used to enhance instruction. Yet, Participant 3 stated, “I actually don’t use technology.” Therefore, the data indicated that Participant 3 did not use technology as an instructional tool.

Question 5 addressed the integration of textbook curriculum with technology integration. Data from HS1 indicated textbook activities integrated with technology through the use of video clips. Participant 1 indicated the new textbook adoption, Springboard, integrates with technology using movie clips that are relevant to specific lessons. Participant 2 revealed some textbook activities require the use of movie clips. Participant 2 stated, “If I cannot show it from my computer it just does not happen.” These data revealed Participant 2 did not actively focus on integrating textbook activities with technology. Participant 3 suggested video clips were only used after lessons were presented. Participant 4 noted the video clips provided in the Springboard curriculum were inadequate for technology integration. The video clips did not always show in its entirety.

**Technology integration in HS2’s ELA classes.** In comparison, data collected for Q1 at HS2 suggested that most participants were aware of the campus goals for technology integration. Participant 1 mentioned specific goals were not communicated but teachers were expected to use technology. Data indicated Participant 2 was familiar with campus goals for technology use in the classroom. This participant revealed some students at HS2 have not used technology. “I have kids who have asked me how to turn on a laptop. So just getting them acquainted with laptops and desktops is something we deal with on a daily basis.” Participant 2 also noted, “It is important for us to integrate technology in our classrooms.” Participant 3 suggested that the goal is to use technology daily to enhance real world connections for students. Participant 4 acknowledged that teachers were encouraged to integrate technology at HS2 on a daily basis to meet the learning abilities of all students.

Participants at HS2 used technology to enhance instruction on a daily basis. Participant 1 responded to Q4 and indicated technology was used continuously by incorporating video clips, sound, and photos during a unit on cinematic film. Participant 2 used online resources for student research assignments. Students at HS2 are familiar with Google as a search tool. Data also revealed Participant 3 used a desktop computer and projector to present visuals and video clips to enhance lessons. Participant 4 occasionally used a SmartBoard so students could engage in interactive technology activities.

Data from Q5 indicated participants in the ELA department at HS2 used a mixture of collaborative curricula including Springboard, Holt McDougal, and Empowering Writers. Participant 1 used the Springboard textbook to prepare students for standardized testing. The textbook lessons supported technology integration using video clips. Participant 2 used a video disc provided with the Springboard curriculum. Participant 3 used the Internet to download video clips from the Springboard publisher's website. Participant 4 indicated some literature textbooks are registered online and provide Internet links for lesson activities.

Participants from HS2 provided information in response to Q10. Participant 1 suggested a computer lab be established using available resources so students could have access and time to use technology for assignments. Participant 2 suggested technology professional development for using Smart Boards and clickers for teachers at the beginning of the school year. "We need training on everything, Smart Boards, digital projectors, document cameras, and integrating technology and instruction." Participant 3 indicated technology integration would increase if all technology equipment was available to ELA teachers. Participant 4 stated, "A streamline effort department-wide" would possibly increase technology integration; frequent access to technology and training would help.

### **Theme 3: Barriers to Technology Integration in ELA classes**

Theme 3 addressed the following research question: "What are reasons teachers do not use technology regularly as an integral part of instruction?" The data findings from interview questions provided information on barriers identified by participants that hinder technology integration. The interview questions relevant to this theme are listed below.

Q3. Describe your comfort level in using technology in your classroom.

Q6. What are some of the barriers you encounter using technology in the classroom?

Q7. How can you control or eliminate the barriers, if any, that you experience?

**Barriers to technology integration in HS1's ELA classes.** The data based on Q3 revealed that three out of four participants at HS1 were comfortable using technology in the classroom. Participant 1 indicated confidence using technology daily with students for instruction. "I use technology daily with my students. I am very comfortable using it." Participant 3 stated, "I am very comfortable using the projector and screen. So I guess I am comfortable but with limits." The common technology equipment participants used in their classrooms included digital projectors and desktop computers. Participant 4 used technology in college during teacher training courses. "I am very comfortable with it." Of the participants at HS1, data indicated Participant 2 was not comfortable using technology in the classroom. Participant 2 stated, "Most of my lessons do not incorporate technology. I am not very comfortable using technology for instruction." Participant 2 indicated, "Professional development would help make me feel comfortable using technology for instruction."

Question 6 requested participants to provide information on the barriers they encountered using technology in the classroom. Participant 1 indicated HS1 had problems with limited network connectivity. Specifically, teachers at HS1 had occasional problems gaining access to the Internet and online resources. Participant 1 stated, "Some of the computers we have are

extremely old and slow.” This participant also stated, “Technology is not equally divided.” In other words, every department did not have access to the same technology equipment. Most teachers in the Science and Math departments at HS1 had access to SmartBoards in their classroom, but the ELA teachers only had one SmartBoard available for the entire department. Participant 1 identified another barrier to using technology as the inability to immediately solve technical problems. “There are times when my projector bulb blows out and for that particular day I have to try to borrow someone else’s projector or not complete that lesson. Participant 2 suggested the lack of professional development for integrating technology and instruction as a barrier. Specifically, Participant 2 stated, “I know I could transition into using technology, but I need help.” Participant 3 stated, “I have always been fearful of technological glitches and problems with technology equipment.” Participant 3 expressed a desire to learn how to correct technical problems through professional development. Participant 4 mentioned technology availability was a barrier due to limited time for setting up equipment between classes. “We have 45-minute classes, so time would be a barrier. There are only five minutes between classes to try to switch equipment, especially if you teach different courses.” Participant 4 stated, “I have an AP class, which is an advanced placement class, and I have a regular English class. When trying to switch as quickly as you need to, you don’t have as much time as you really need to set up equipment.”

Question 7 addressed participants’ solutions to eliminating identified barriers they encountered using technology in the classroom. All participants at HS1 indicated better planning as a possible solution. Specifically, Participant 1 and 4 suggested preparing ahead of time by making sure all equipment was charged and working properly. Participant 2 suggested seeking out more technology within the ELA department by borrowing equipment from another teacher. Finally, Participant 3 stated, “If I knew how to solve technology problems before I get to the middle of a lesson using technology in the classroom might be easier.” Participant 3 also suggested providing the principal with a list of needs from the department in an attempt to eliminate known barriers

**Barriers to technology integration in HS2’s ELA classes.** Data relevant to Q3 revealed all participants at HS2 were comfortable using technology in the classroom. Participant 1 stated, “I am a part of a generation that grew up using technology. I feel very comfortable using it.” Participant 2 had basic technology skills that provided some comfort in using technology. Participant 3 stated, “I am very knowledgeable and have been trained on using different types of technology including the Smart Board.” Likewise, Participant 4 indicated, “Technology is something the kids use every day. I am very comfortable using technology.”

Data from Q6 suggested participants at HS2 identified access to technology and technological issues as two common barriers to using technology. Participant 1 noted students do not have access to computers throughout the day. Participants 1 and 4 indicated problems with the infrastructure. Specifically, network drops and electrical outlets were not accessible. “The network drop for the Internet is located across the classroom and the network cable is not long enough.” Participant 2 and 3 identified specific technological barriers to using technology. They indicated problems with equipment not powering up and not knowing how to solve the problem prevented technology integration.” Participant 2 explained, “Sometimes if the projector or document camera does not work properly the entire lesson has to be changed. This is a waste of instructional time.” Similarly, Participant 3 revealed technical difficulties and slow computers as barriers that prevented the use of technology in the classroom.

In response to Q7, Participant 1 of HS2 suggested having more access to technology equipment would eliminate barriers. Participant 2 commented, "Being more prepared and getting to work earlier may help eliminate barriers to using technology in the classroom." Participant 3 suggested teachers are taught to be flexible in the classroom. "When one thing does not work you have to have an alternate plan." Specifically, if the computer, digital projector, or document camera fails to operate properly you must have another option for teaching the lesson. Participant 4 implied teachers must be proactive and prepare in advance for lessons that integrate technology. Participant 4 also suggested designing interactive activities for students that can be completed with or without technology.

### **Cross-Case Analysis**

The guiding research questions sought to explore teachers' use and perspectives regarding integrating technology with curriculum. The purpose of the cross-case analysis was to find common themes between two cases, HS1 and HS2. Yin (2009) suggested displaying data from a cross-case analysis in a table according to a uniform framework (p. 163). Summarized results of the cross-case analysis based on each research question are depicted in Table 4. See Table 4 (Appendix)

The findings from the cross-case analysis presented in Table 4 focused on how available technology was used for instruction. Participants at both study locations used video clips and PowerPoint presentations to support content lessons. Clickers and a Smart Board were used for content review by Participant 1 at HS1. Participants at HS1 and HS2 used a Smart Board as a projector screen to show videos and PowerPoint presentations. HS2 participants also used the Internet to download photo essays, sound, and photos to enhance lessons. Data revealed HS1 used technology on a limited basis for instruction, whereby HS2 used technology for instruction a majority of the time.

The data presented in Table 5 focused on the effects of technology integration as it impacts ELA instruction. See Table 5 (Appendix)

Data findings presented in Table 5 reflect the impact technology integration had on instructional practices. Data suggested participants at HS1 and HS2 were only using video clips, visuals, and PowerPoint presentations in an attempt to integrate technology with the curriculum. As a result, the impact of technology on instructional practices was limited. Participant 2 of HS2 suggested professional development was needed for using Smart Boards and clickers. "We need training on everything, Smart Boards, digital projectors, document cameras, and integrating technology and instruction." Participant responses indicated professional development and access to more technology were potential solutions to increase technology integration at HS1 and HS2.

Another aspect of the study focused on reasons why teachers failed to use technology in participating schools. Table 6 provides an overview of these results. See Table 6 (Appendix)

The interview questions for RQ3, Barriers to Technology Integration in ELA Classes, exposed participants' perceived barriers preventing the use of technology in the classroom. The data showed most participants were comfortable using technology, but they desired training on effectively using technology. Participant 1 of HS1 suggested the inability to immediately solve technical problems as a barrier to using technology in the classroom. Participant 2 suggested the lack of professional development for integrating technology and instruction as a barrier. Specifically, Participant 2 stated, "I know I could transition into using technology, but I need

help.” Participant 3 expressed a desire to learn how to correct technical problems through professional development. “Technology will not be used, and certainly will not be used well, unless teachers are trained in the use of technology” (Moore-Hart, 2008, p. 177-200). Data findings presented in Table 6 supported the need for professional development based on perceived barriers to using technology in the classroom.

### **Discrepant Data**

Three of the interview questions analyzed during the within-case analysis did not answer either of the research questions for this project study. The following interview questions are discrepant for the cross-case analysis:

- Q1. Explain the campus goals for technology integration.
- Q3. Describe your comfort level in using technology in your classroom.
- Q8. Explain how you are meeting NCLB requirements for technology.

The results for these factors are presented in Table 7. See Table 7 (Appendix) The cross-case analysis of discrepant data findings are presented in Table 7. The data from Interview Question 1, Explain the campus goals for technology integration, revealed all participants at HS1 were not aware of any campus goals for technology integration. In comparison, only Participant 1 of HS2 was not familiar with goals for technology integration at that campus. Participants 2, 3, and 4 of HS2 suggested technology integration is encouraged at their campus.

Data findings from Interview Question 3, Describe your comfort level using technology in your classroom, indicated only Participant 2 of HS1 was not comfortable using technology. This participant commented, “I am not very comfortable using it.” Participant 2 of HS1 also indicated a need for professional development. At least three participants, Participants 1, 3, and 4, from HS1 were comfortable using technology in the classroom. Data indicated all participants at HS2 were comfortable using technology for instructional purposes.

The analysis of data findings for Interview Question 8, Explain how you are meeting NCLB requirements for technology integration, suggested only one participant from the entire study was familiar with NCLB requirements. Specifically, Participant 1 of HS1 indicated knowledge of the requirements set forth in the EETT section of NCLB. At HS2, none of the participants were familiar with the requirements for integrating technology in the classroom for instruction.

### **CONCLUSIONS**

A review of qualitative data collected from face-to-face interviews show that there is a need for professional development in the use of technology for teaching and learning at HS1 and HS2. NCLB (2001) suggested technology integration can enhance teaching and learning in ELA classes. The literature suggested, “Effective professional development is necessary for effective technology use in the classroom” (NCLB, 2001). The data findings indicated participants wanted training on the effective use of technology as an instructional tool. Additionally, data from the cross-case analysis indicated technology use was limited to showing video clips and PowerPoint presentations. The Smart Board was used mostly as a projector screen when the projector was used to display video clips or PowerPoint presentations. Davies (2011) revealed the challenge to

integrating technology is providing teachers with knowledge on how to use technology with curriculum (p. 45).

According to the data findings, a campus-based professional development project is the best solution for increasing the effective use of technology as an instructional tool at HS1 and HS2. The need for professional development has increased because accountability requirements for technology integration and educational outcomes have continued to increase (Gaytan & McEwen, 2010, pp. 77-78). The opportunity to participate in collaborative technology training with peers might be beneficial for participants from this case study. Jones and Vincent (2010) suggested teachers are notoriously reluctant to admitting to not knowing how to use technology; they respond better when learning in a familiar environment with peers (pp. 482-483). Literature suggested effective professional development should (a) provide hands-on activities, (b) continuous long-term learning, (c) self-reflection, and (d) build peer relationships (Desantis, 2012, pp. 51-54). The challenge in using technology in the classroom lies in understanding how to use technology with the curriculum. It is essential that ELL teachers in today's high schools receive appropriate training in this area.

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## APPENDIX

Table 1

### *LRPT Goal and STaR Chart Rating for HS1 and HS2*

Case Study Location	LRPT Goal	STaR Chart Rating
HS1	Teaching and Learning	11
HS2	Teaching and Learning	14

*Note. Texas Education Agency (2011). School technology and readiness: STaR chart report. Adapted from <http://starchart2.epsilen.com/> Copyright 2011 by Texas Education Agency*

Table 2

### *STaR Chart Scoring Guide*

1 = Early Tech	2 = Developing Tech	3 = Advanced Tech	4 = Target Tech
Instruction is teacher-centered and students occasionally use software applications and/or use tutorial software for drill and practice. No technology integration occurs in the foundation subject area TEKS. Some K-8 Technology Applications TEKS are met; high schools offer at least 4 Technology Applications courses.	Instruction is teacher-directed and students regularly use technology on an individual basis to access electronic information and develop communication and presentation projects. There is minimal use of technology in foundation TEKS. Most Technology Applications TEKS are met K-8; high school campuses teach at least 2 Technology Applications courses.	Instruction is teacher-facilitated and students work with peers and experts to evaluate information, analyze data and content in order to problem solve. Technology is integrated into foundation area TEKS, and activities are separated by subject and grade. All Technology Applications TEKS are met K-8; high school campuses offer and teach at least 4 Technology Applications courses.	The teacher serves as facilitator, mentor, and co-learner. Students have on-demand access to all appropriate technologies to complete activities that have been seamlessly integrated into all core content areas. All Technology Applications TEKS are met K-8; high school campuses offer all Technology Applications courses and teach at least 4 courses.

*Note. Texas Education Agency (2011). School technology and readiness: STaR chart report. Adapted from <http://starchart2.epsilen.com/> Copyright 2011 by Texas Education Agency*

Table 3

### *STaR Chart Comparison for HS1 and HS2*

Year	TL1 Pattern of Classroom Use	TL2 Frequency/ Design of Instructional Setting	TL3 Content Area Connections	TL4 Technology Applications (TA) TEKS Implementatio n	TL5 Student Mastery of Technology Applications	TL6 Online Learning	Total
2010- 2011							
HS1	2	1	2	2	2	2	11
HS2	3	2	3	2	2	2	14

*Note. Texas Education Agency (2011). School technology and readiness: STaR chart report. Adapted from <http://starchart2.epsilen.com/> Copyright 2011 by Texas Education Agency*

Table 4

### *How ELA Teachers Are Using Technology*

Interview Question	HS1	HS2	Cross-case Analysis
Q4 How are you currently using technology as an instructional strategy?	Technology used for instruction and presenting video clips and PowerPoint presentations include: <ul style="list-style-type: none"> <li>• PowerPoint</li> <li>• Video Clips</li> <li>• Smart Board</li> <li>• Clickers</li> </ul>	Technology used for instruction and showing videos and presentations include: <ul style="list-style-type: none"> <li>• PowerPoint</li> <li>• Video Clips</li> <li>• Photos</li> <li>• Sound</li> <li>• Smart Board</li> <li>• Internet</li> </ul>	Participants at both study locations used video clips and PowerPoint presentations to support content lessons. Clickers and a Smart Board were used for content review by Participant 1 at HS1. The data revealed all participants used the Smart Board as a projector screen when presenting video clips or PowerPoint presentations. HS2 participants also used the Internet to download and show photos, sound, photos, and the Internet to enhance lessons.
Q9 How much time do you spend using technology for instructional purposes compared to administrative purposes?	All participants used technology for administrative and instructional purposes. The majority of time was used for inputting grades and attendance, and email; instructional time was limited.	All participants used technology for administrative and instructional purposes. The majority of time was used for instruction.	Responses revealed a frequent use of technology for administrative purposes at HS1 and HS2. Participants at HS1 used technology on a limited basis for instruction, whereby HS2 used technology the majority of time with instruction.

Table 5

### *How Technology Integration impacts ELA Instruction*

Question	HS1	HS2	Cross-case Analysis
Q4 How are you currently using technology as an instructional strategy?	Participants 2 and 3 indicated they do not use technology for instruction. However, Participants 1 and 4 used the following technology to enhance instruction: <ul style="list-style-type: none"> <li>• Clickers</li> <li>• Smart Board</li> <li>• PowerPoint presentations</li> <li>• Video clips</li> </ul>	Participants at HS2 used technology for instruction on a daily basis using the following technology: <ul style="list-style-type: none"> <li>• Video clips</li> <li>• Photos</li> <li>• Sound</li> <li>• Online resources</li> <li>• Smart Board</li> <li>• PowerPoint presentations</li> </ul>	Participants at both study locations used video clips and PowerPoint presentations with instruction. Participant 1 at HS1 used clickers and a Smart Board for content review. Participant 4 at HS1 used PowerPoint presentations and video clips to enhance instruction. In comparison, all participants at HS2 used technology to enhance instruction in the classroom. Therefore, only 2 participants at HS1 used technology for instruction compared to 4 participants at HS2.

Q5 How do textbook lessons correlate with using technology in the classroom?	All participants at HS1 revealed video clips were available to use with textbook lessons in order to integrate technology. Participant 2 did not purposely design lessons that required the use of technology with textbook lessons.	All participants at HS2 revealed video clips were used to with textbook lessons for technology integration. Participant 3 used the Internet to download video clips from the publisher's website to use with textbook lessons.	Participants at HS1 and HS2 revealed that video clips provided via the publisher on a compact disc (CD) or through the publisher's website were used to integrate textbook lessons.
(table continues)			
Question Q10 Describe how the available technologies might be used to increase technology integration on this campus.	HS1 Participant 1 suggested collaborating with other schools for training and sharing lessons. Participant 2 wanted more technology equipment. Participant 3 wanted a Smart Board and Participant 4 tracking students and attendance.	HS2 Participant 1 at HS2 suggested establishing a computer lab for student access to increase technology integration. Participants 2 and 4 suggested professional development for integrating technology and using the following equipment: <ul style="list-style-type: none"> <li>• Smart Board</li> <li>• Clickers</li> <li>• Digital projectors</li> <li>• Document cameras</li> </ul>	Cross-Case Analysis Participant responses indicated professional development and access to more technology were potential solutions to increase technology integration at HS1 and HS2.

Table 6

*Reasons Teachers Do Not Use Technology for Instruction*

Question	HS1	HS2	Cross-case Analysis
Q2 What types of technologies are available for classroom use?	Technology available for ELA teachers include the following: <ul style="list-style-type: none"> <li>• Desktop computer</li> <li>• Projector</li> <li>• Document Camera</li> <li>• Smart Board</li> </ul>	Technology available for ELA teachers include the following: <ul style="list-style-type: none"> <li>• Desktop computer</li> <li>• Projector</li> <li>• Document camera</li> <li>• Smart Board</li> <li>• Mobile Laptop Cart</li> </ul>	The technology equipment available at HS1 and HS2 were similar. Participants at both locations had access to an obsolete desktop computer, projector, and document camera within their classroom. Participants also had access to a shared Smart Board. Only participants at HS2 had access to a Mobile Laptop Cart that could be checked out from the library.

Q6 What are some of the barriers you encounter using technology in the classroom?	<p>Barriers encountered at HS1 included the following:</p> <ul style="list-style-type: none"> <li>Limited network connectivity to the Internet</li> <li>Obsolete and slow computers</li> <li>Limited access to technology for ELA teachers</li> <li>Access to 1 Smart Board for the entire ELA department</li> <li>The inability to solve computer problems</li> <li>Lack of professional development</li> </ul>	<p>Barriers encountered at HS2 included the following:</p> <ul style="list-style-type: none"> <li>Access to technology</li> <li>Technological issues</li> <li>Infrastructure problems with network drops and electrical outlets</li> <li>Lack of professional development</li> <li>The inability to solve computer problems</li> <li>Obsolete and slow computers</li> </ul>	<p>Both HS1 and HS2 participants identified barriers to using technology in the classroom. Both study locations had infrastructure problems that included network connectivity for Internet access, obsolete and slow running computers, the inability to solve computer problems, and the lack of professional development. Additionally, participants at both locations had limited access to technology equipment, including a Smart Board.</p>
Q7 How can you control or eliminate the barriers, if any, that you experience?	<p>Participants at HS1 identified the following as ways to eliminate barriers to using technology:</p> <ul style="list-style-type: none"> <li>Better planning</li> <li>Checking equipment before class</li> <li>Having the ability to solve technology problems</li> <li>Provide the campus principal with a list of technology needs</li> </ul>	<p>Participants at HS2 identified the following as ways to eliminate barriers to using technology:</p> <ul style="list-style-type: none"> <li>Having more access to technology</li> <li>Having the ability to troubleshoot technology problems</li> <li>Design lessons that with and without technology</li> <li>Prepare lessons that integrate technology ahead of time</li> </ul>	<p>Responses revealed ways to eliminate barriers to using technology. Specifically, participants at HS1 and HS2 identified having the ability to solve technology problems as a common solution. Other solutions to barriers included better planning, lesson design, and more access to technology.</p>

Table 7

Question	HS1	HS2	Cross-case Analysis
Q1 Explain the campus goals for technology integration.	None of the participants at HS1 had any knowledge of the campus goals for technology integration.	Participants 2, 3, and 4 were familiar with campus goals for technology integration. Participant 1 indicated specific goals were not communicated.	Participants at HS1 were not aware of any campus goals for technology integration. However, only 1 participant at HS2 was not aware of campus goals for technology integration.
Q3 Describe your comfort level in using technology in your classroom.	Data findings indicated that Participants 1, 3, and 4 were comfortable using technology in the classroom. Only Participant 2 suggested the lack of professional development as a reason for not using technology with instruction.	Data indicated that all participants at HS2 were comfortable using technology in the classroom.  4:4 = Comfortable	A total of seven participants for this study used technology in the classroom with confidence. Only Participant 2 of HS1 did not use technology for instruction. However, this participant indicated that they would help to increase the use of technology in the classroom for instruction.

Q8

Explain how you are meeting NCLB requirements for technology integration.

Only Participant 1 at HS1 was familiar with NCLB requirements for technology integration. Participants 2, 3, and 4 were not familiar with requirements by NCLB.

None of the participants at HS2 were familiar with NCLB requirements for technology integration.

Participants' knowledge of NCLB requirements for technology integration was limited at both HS1 and HS2. Only 1 of the 8 study participants was familiar with NCLB requirements for technology integration.

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