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STUDENTS' PERCEPTIONS OF ACADEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT

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STUDENTS' PERCEPTIONS OF ACADEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT

by

Joan M. Carraher

A DISSERTATION

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In Partial Fulfillment of Requirements

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Major: Educational Studies

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Under the Supervision of Professor Delwyn L. Harnisch

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Joan M. Carraher, Ed.D.

University of Nebraska, 2014

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1:1 Laptop initiatives continue to grow throughout Nebraska schools. There are many questions regarding their effectiveness in improving student learning, justifications for expenses, and the process to guide such an initiative.

The purpose of this case study was to explore students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 district where students in grades 7 through 12 have 24/7 access to a school-issued laptop. Students in their first (8^{th} grade) and third-year (10^{th} grade) of learning in a 1:1 environment at a Nebraska school district participated in this study. Data was collected from an online survey, through focus-group interviews, and from an archived document of a district-administered survey conducted prior to this research study. Data from the online survey, the archived district survey, and results from the Nebraska State Accountability (NeSA) writing assessments were used to support the themes uncovered from the focus-group interviews.

Results indicated students do perceive an increase in academic self-efficacy and describe self-regulatory behaviors. Five themes were identified in the focus group interviews: improved organization, use of a variety of laptop production tools and internet programs and resources, challenges of learning in a 1:1 environment, increase in academic self-efficacy, and examples of self-regulation.

Students believe programs, tools and resources available on their laptop allowed them to become better organized. Students used a variety of laptop tools and internet programs and resources to enhance their learning. Challenges identified were internet connectivity issues, automatic updates and computer restarts, and the distractions of non-educational laptop uses. A belief that writing has become easier, their capacity to conduct research has increased, better note taking skills, and learning to use a computer and its associated programs, were examples students shared of increased academic self-efficacy since having 24/7 laptop access. Self-regulation behaviors identified by students included their use of online textbook tutorials, reviewing teacher podcasts, using programs to study, internet research of class concepts, and taking advantage of organizational tools.

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Chapter 1

Introduction

Statement of the Problem

One-to-one laptop computing is a growing phenomenon throughout school districts in the state of Nebraska as well as throughout the United States. Several states have adopted large scale 1:1 initiatives for their respective school districts (Bebell & Kay, 2010). According to the Nebraska Department of Education website, as of February 2014, there are currently 71 Nebraska school districts who have implemented a 1:1 laptop initiative. As communities, boards of education, and school leaders contemplate such a move, questions abound as to effectiveness in student achievement and other effects on student learning. Another concern is whether or not the costs associated with such an initiative is worthwhile.

One-to one initiatives seem to be gaining momentum as schools strive to provide a learning environment conducive to teaching 21st Century Skills. United States Department of Education (USDE) Secretary, Arne Duncan, released the National Education Technology Plan, "Transforming American Education: Learning Powered by Technology." Based upon President Obama's ambitious goal for the United States to tout the highest proportion of college graduates throughout the world by 2020, this plan is intended to integrate advanced technologies into educational entities. The goals of this technology plan are to enhance student learning, design and implement effective practices, and use data provided by such technologies to glean information for continuous school improvement (USDE, 2010).

Initiatives such as these will likely continue to drive the growth of 1:1 computing initiatives in school districts across the nation. The task at hand is for stakeholders, school leaders, and boards of education to discern if the adoption of a 1:1 laptop initiative would benefit their staff and students, their goals for such an initiative, and how to prepare and execute the implementation.

There have been widespread studies completed on 1:1 initiatives to gauge such an initiative's effect on student achievement and student learning, but this research has largely been the result of data gathered from teachers, administrators, and test scores. A missing and important component in the research of 1:1 laptop initiatives is the voice of students and their stories of learning. Although there are studies available where students have completed surveys, studies which include interviews with students on their attitudes and perceptions are few. Lacking in research is the investigation of how 24/7 access to a laptop by middle and high school students affects self-regulatory behaviors and academic self-efficacy. This information will be of value for school districts who wish to see their mission of creating 'life-long learners' come to fruition.

Research conducted by Pintrich and De Groot (1990) revealed a positive relationship between academic self-efficacy beliefs and cognitive and self-regulatory strategy use. Listening to how students learning in a 1:1 setting describe self-regulation and academic-self efficacy can provide important information for school administrators and teachers. Research has concluded that while a high amount of learner control is conducive for students who are highly self-regulated, it does not work well for those who are not (Winters, Greene, & Costich, 2008). Since a 1:1 setting seems to require a greater

degree of self-regulatory behaviors to be successful, research to examine the effects of a 1:1 initiative on students who show poor self-regulatory skills would provide important information for implementation. Identifying behaviors and environments which support effective 24/7 learning for students lacking academic self-efficacy and self-regulation, and by learning how different groups of students make use of their laptops throughout the school year, would afford insight to maximize the 1:1 learning initiative.

Purpose of the Study

The purpose of this case study was to examine 8th and 10th grade students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment. In this study, data on students' perceived ratings of self-efficacy and self-regulation was gathered through an online survey of 8th and 10th grade students. Eighth grade students provided data as students who have completed their first year of such an initiative, while data provided by the 10th grade students allowed an exploration of perceptions of students who have spent three years in a 1:1 environment.

Results from the surveys were used to purposefully select individuals for participation in focus-group interviews as well as support findings from the focus-group interviews. Individuals were selected based upon their perceived self-efficacy and self-regulation ratings. Four focus groups, of 5 students, were identified:

1. 8th grade students showing low ratings in self-regulation and/or self-efficacy
2. 8th grade students showing high ratings in self-regulation and/or self-efficacy
3. 10th grade students showing low ratings in self-regulation and/or self-efficacy
4. 10th grade students showing high ratings in self-regulation and/or self-efficacy

Focus-group interviews provided a deeper understanding of students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 environment.

Research Questions

Central Question: How do eighth and tenth grade students describe academic self-efficacy and self-regulation during their first and continuing years of learning in a 1:1 environment with 24/7 access to a laptop?

Sub-questions:

1. What self-regulation strategies are students employing while having 24/7 access to a laptop?
2. How do students describe any perceived effects on academic self-efficacy? Are there any specific academic tasks mentioned?

Answering the research question involved focus-group interviews with students selected for participation based upon their self-assessment on the Bandura (1990) subscales for self-regulation and academic self-efficacy.

The selected students were asked to respond to the questions below during a focus-group interview with the researcher. Bulleted items were used as prompts if needed.

1. Please describe some ways you have used your school laptop?

   Probes:

   - Course management programs, note taking, calendars, webcam, completing assignments, projects, voice to text feature or text to voice features?

- In specific classes, how is it used?
- Can you demonstrate some tools, programs, or resources you regularly use?

2. Please tell me about your technology experiences and skills prior to and since having 24/7 access to a laptop?

   Probes:

   - Prior to receiving your school laptop, did you have access to a computer at home?
   - What did you spend your time doing on your home computer?
   - Since getting a school laptop, do you feel you are spending more time outside of school doing school-related work?
   - How often did you use a computer at school? How were you using it at school?
   - How has your computer use changed at home and school since having your school laptop? Frequency of use?
   - How comfortable were you using a computer prior to receiving a school laptop?
   - Do you have any newly developed skills? Multi-media programs, video recording/editing? Spreadsheets? Video-Conferencing? other web tools?
   - How are you learning the new skills required with laptop use?

3. What has changed in your school environment since your school's 1:1 implementation?

Probes:

- What are teachers doing differently?
- What types of new/different learning activities are you doing?
- What changes have you seen in testing or assessments?

4. Do you believe having 24/7 access to your school laptop has an impact on your learning course content?

   Probes:

   - How has it affected your performance in your classes?
   - How has it affected your attitude towards any of your classes?
   - Are there specific subject areas where you think it has helped you to become more successful?
   - Are there subject areas you have found to be more challenging?
   - Are there subject areas you have found to be more enjoyable?
   - Do you think you do better in any of your classes because of your laptop use?
   - Do you feel you are producing higher quality work?
   - Which tools, programs, resources, or instructional strategies have helped you become successful?

5. Are there ways you feel the laptop could be used to further enhance your learning?

   Probes:

   - Teaching practices?

- Tools, programs, or web resources?

6. What do you like best about your laptop and learning in a 1:1 laptop environment?

   Probes:

   - The most valuable tool, program, or web resource?
   - Most frequently used tool, program, or resource?
   - Different types of learning activities?

7. Is there anything about having a school laptop or learning in a 1:1 laptop environment that you feel has a negative effect on your learning?

   Probes:

   - Any distractions?
   - Coursework more challenging?
   - Increased expectations by teachers?
   - Lack of computer/technology skills?

8. Is there any additional information you would like to add regarding learning in a 1:1 laptop environment?

The central question was answered through the analyses of the focus-group interview responses and the online survey.

Definition of Key Terms

For the purpose of this proposed study, the following terms are defined for clarification:

High School Freshman Students—The grade level configuration in this study will include students enrolled in grade 9.

Laptop—A portable, lightweight personal computer which has the capability to connect to a wireless network for both internet and local network access.

1:1 Laptop Initiative—In a 1:1 laptop initiative, each student in determined grade levels is issued a laptop. In this study, 1:1 laptops will include 24/7 access by the students with their wireless laptop for the duration of each school calendar year.

24/7 Laptop Learning--While some 1:1 programs allow students 24/7 access, some districts restrict the use to school hours. With 24/7 access, students have the laptops in their possession 24 hours a day, 7 days a week throughout the school year.

Self-Efficacy—Bandura (1977) defines self-efficacy as a person's belief about his or her ability to achieve or perform at a certain level in a specific area. It is the belief one has regarding his or her capability to 'do something' rather than how one feels about him/herself.

Academic Self-Efficacy—Bandura (1997) described academic self-efficacy as an individual's belief that he or she can achieve at a certain level in an academic task or accomplish a specific academic goal.

*Self-Regulation—S*elf-regulated learning has been defined by Bruning, Schraw, Norby, and Ronning (2004), as, "the ability to control all aspects of one's learning, from advance planning to how one evaluates performance afterward" (p. 117). Zimmerman (2008) described it as, "those self-governing processes and self-beliefs that facilitate the student's transformation of mental abilities into school performance abilities" (p. 166).

Self-Directed Learning—Students take the initiative for additional/further learning through independent inquiry and research.

Significance of the Study

The intent of this study was to add to the literature focusing on 1:1 laptop initiatives and their impact on students' education. Schools across Nebraska as well as across the globe struggle with providing educational opportunities to prepare our students for their future. Rapid technological advances dictate change in the traditional lecture-memorize-regurgitate format to which our 21st Century students are being subjected. In order to change the way students are being taught, many school districts have—or are considering—the adoption of a 1:1 mobile initiative whether it is a laptop or other mobile computing device.

While research on 1:1 laptop initiatives has often focused on areas of student achievement, it is equally important to investigate the role such an initiative may have on academic self-efficacy and self-regulatory behaviors. If having round-the-clock access to the tool (laptop) enhances these constructs, including self-directed learning, then it seems the financial and human resources necessary to launch a successful initiative would be well spent. Because of the importance of students' academic self-efficacy and self-regulation in fostering independent, life-long learners, identifying how students use their laptop in a one to one environment that promotes the aforementioned would be beneficial to all school leaders. Whether they currently have or are considering such an initiative, identifying web tools, computer/web-based programs, instructional strategies, and professional development activities would be useful and important information for

everyone involved in educating students. Information gleaned from this study could be of importance to political lawmakers, boards of education, school leaders, and anyone who has the authority or desire to help improve our educational systems.

Summary

This chapter set the foundation for this dissertation by providing the reader with a statement of the problem, the central and sub-questions to be explored in this case study research. Key terms found in this dissertation are defined followed by the significance of this study. Chapter 2 includes a review of the literature on 1:1 laptop initiatives and is broken down into the following sections: Effect on teachers and instructional practices, Effect on student learning, Self-regulation in learning, Self-efficacy in learning, and Self-efficacy in relation to self-regulation.

Chapter 2

Review of Related Literature

Introduction

> I remember my very first methods class in this building 25 years ago and I started class with a statement that I thought was rather profound at the time. I said "I'm going to prepare you to teach, but I want you to think what your job would be if every child had the Library of Congress on their desk. If information was no longer the issue, what would you do?" Guess what? That has happened and we still haven't changed what we do! We act as if we are the possessors of knowledge and we're not! We don't know squat compared to what kids could access if they wanted to. So what are we going to do about that? (An instructor in 2010)

The above quote was included in a dissertation study conducted by Becking (2011) researching instructor technology use at the college level. This is just as relevant for K-12 institutions. Today our students do have at their disposal an unlimited amount of information available through web resources but educational instruction has been slow to fully embrace and utilize these resources.

Providing students 24/7 access to educational web resources is a primary goal of 1:1 laptop initiatives. Students believe using technology is an essential ingredient in helping them become engaged and achieve in school (Spires, Lee, Turner, & Johnson, 2008). In order to provide a 21st Century education and offer students opportunities to learn 21st Century Skills, a growing number of school districts are implementing a 1:1 laptop initiative.

As school districts throughout the country implement 1:1 laptop initiatives, the literature base continues to grow. With the wealth of literature available, this literature review will focus upon areas pertinent to the proposed study: implementation, effect on teachers and instruction, effect on students and learning, self-regulated learning,

academic self-efficacy, and self-efficacy within the construct of self-regulation. A summary of the literature review will point to the need of further research on what effects learning in a 1:1 laptop environment may have on students' ability to self-regulate learning and academic self-efficacy.

Implementation

Implementation of 1:1 initiatives vary greatly among schools: planning for the adoption of such an initiative, funding, choice of platforms, hardware and software, goals/expectations, professional development, and classroom practices of both students and teachers (Bebell & O'Dwyer, 2010). While the verdict is still out as to the effectiveness of such an initiative in regards to improving student achievement and teaching, what has been found is how such an initiative is implemented is directly related to its success or lack thereof. In the article, "One-to-One Computing Has Failed Our Expectations," Researchers Norris and Soloway (2010) argues the reason such initiatives are not producing results is because of implementation practices. Instead of utilizing the laptops as simply an 'add on' to complement existing curriculum and practices, curriculum and instructional practices must change to include opportunities for collaboration and investigation.

Project RED, a nationwide research effort to explore what's working in technology-enriched schools, surveyed 997 schools during the 2009-2010 school year regarding issues related to school leadership, environment, technology implementations, and instructional and financial impact. From their research, it was concluded that 1:1 computing initiatives may result in a significant impact on teaching and learning if it is

done properly. The report revealed 9 factors that should be present before a school can enjoy the maximum benefits of a one-to-one computing environment:

1. technology integrated into every intervention class;
2. leadership to create change through professional development;
3. daily opportunities for online collaborations;
4. integration into core curriculum at least on a weekly basis;
5. weekly online formative assessments;
6. low student/computer ratios;
7. virtual field trip opportunities at least monthly;
8. daily use of search engines; and
9. principal training in best practices.

Researchers have found schools with poorly-implemented 1:1 initiatives displayed little statistical difference from schools who rarely utilized technology (Greaves, Hayes, Wilson, Gielniak, & Peterson, 2010b). The role of leadership is a vital piece in the implementation and fidelity of successful use of technology in the schools. Drayton, Falk, Stroud, Hobbs, and Hammerman (2010) identified school-level leadership as an essential ingredient in the successful implementation on 1:1 computing. There is a great need for school leaders to communicate effectively the expectations of such an initiative to all stakeholders and to provide ongoing support for teachers throughout the planning, implementation, and continued integration (Maninger & Holden, 2009). It is important for school leaders to hold conversations among all stakeholders regarding beliefs about learners and learning and the role that technology can play in achieving

goals (Windschitl & Sahl, 2002). A Texas study reported the importance of school leaders in obtaining teacher 'buy-in,' providing preliminary professional development for staff, and a strong commitment to transform student learning (Shapley, Sheehan, Muloney, & Caranikas-Walker, 2010). Donovan, Hartley and Strudler (2007) concluded in their study regarding teacher concerns that professional development should include differentiated training to meet the needs of the teachers involved in the implementation of a 1:1 computing initiative. They also express the need for allowing teachers a voice in the process and keeping them well informed of decisions regarding implementation. Today we have teachers just out of college who have grown up with technology—our digital natives, and teachers who still fear they may break something if they turn one on—our reluctant digital immigrants.

Effect on Teachers and Instructional Practices

While the effect on teachers and instructional practices are not entirely clear, what is clear is teachers are the key players in whether or not such an initiative is effective. Bebell and Kay's (2010) study of a Massachusetts middle-school initiative found "it is impossible to overstate the power of individual teachers in the success or failure of 1:1 computing" and "teachers nearly always control how and when students access and use technology during the school day" (p. 47). When teachers receive essential supports throughout implementation, along with clear rules and expectations among the school community (students, teachers, administrators, and parents); teachers can benefit from a 1:1 computing initiative.

Previous studies have revealed widespread teachers' concerns of how their teaching will need to change when a 1:1 initiative is adopted (Penuel, 2006). A study conducted by Donovan et al. (2007) concluded that when schools adopt a 1:1 computing initiative teachers are really being asked to adopt two initiatives: changing classroom practices to allow for a greater degree of student-centered practices and the utilization of laptops.

Windschitl and Sahl's (2002) ethnography of three middle school teachers revealed such initiatives can transform classrooms when there is a change in teacher beliefs and philosophy. "the laptops were catalysts that enabled a participant, who had pre-existing dissatisfaction with teacher-centered pedagogy and rote-level learning, to transform her classroom through experimentation and collaborative student work and project-based learning" (p. 202). Mouza (2008) found a student-centered classroom was a result of a proper implementation of a 1:1 computing initiative. Teachers who utilize technology in the classroom are more likely to adopt a more constructivist philosophy in their classroom practices (Becker, Ravitz, & Wong, 1999). When teacher training focuses upon integrating the technology with an emphasis on problem solving and critical thinking skills, rather than utilizing the laptop, changes in teacher practices are more likely to occur (Morrison, Ross, & Lowther, 2006). Findings of a study of a teacher laptop initiative also found that providing relevant training on technology implementation can result in a change in classroom practices and attitudes. Creating better teachers was a theme found in a mixed-methods study by Raulston and Wright (2010). Through their research, it was found that teachers believed the adoption of a 1:1 computing initiative

made them a better teacher. The availability of unlimited resources, collaboration with colleagues, increased ability to provide students with the education needed to develop 21st century skills, and accessibility of productivity and communication tools were all mentioned by participants in this study. Teachers who had previously been feeling the effects of burn out were revived. A teacher in the study exclaimed that "it brings new life into the whole teaching experience" (Raulston & Wright, 2010, p. 21).

Effect on Students and Learning

The primary reason for a school to consider the implementation of a 1:1 computing initiative is the desire to improve educational opportunities for their students. Donovan, Green, and Hartley (2010) expounded the importance of describing implementation details when presenting outcomes of 1:1 initiatives since the logistics of the implementation: planning, fidelity to the initiative, and professional development and support has a direct relationship to outcomes—especially in student achievement. Although studies have revealed varying degrees of 1:1 initiatives' effect on student achievement, in most cases it has been a positive experience as it has impacted other facets of student learning.

A mixed-methods study conducted by Oliver and Corn (2008) documented student technology use and proficiency before and after implementation of a 1:1 computing initiative. Findings from this study revealed the following: higher satisfaction with technology, increased frequency in utilizing technology in core subjects-especially math and science, increased two-way communication in the classroom, and enhanced technological skills—especially in online collaborative environments.

In the study, "Technology as a Change Agent in the Classroom" (Morrison et al., 2006), set out to discern whether or not students achieve differently in a l:1 environment. The research was conducted in fifth and sixth grade classrooms of a Midwestern suburban school district who gave students and parents the option of participating in a 1:1 classroom. Fifth and sixth grade students were given assessments to determine the impact of the 1:1 initiative in writing and problem-solving. Students in the 1:1 classrooms significantly outperformed their counterparts in both the writing and problem-solving assessments. The increase in writing proficiency was largely contributed to a greater use of word processing by students in the laptop classrooms. In the area of problem solving, the researchers attributed the increased engagement of the laptop students in research activities provided in the 1:1 classrooms, to the increased performance (Morrison et al., 2006).

Lei and Zhao's (2008) study at a Midwestern Middle School gauged student achievement by comparing students' cumulative grade point averages (GPA) over the course of a school year. Ending GPA from the previous school year was compared to GPAs at the conclusion of the first academic year of the 1:1 computing initiative. A Paired Sample Test reflected a marginal increase in cumulative GPAs. The researchers cautioned the use of GPAs to measure achievement because the technology component is only one of many factors that could influence the scores and thus the outcome of the comparison.

Students' improved ability to organize learning materials was a theme identified by Scheckelhoff's (2007) qualitative research on adolescent girls' perceptions of 24/7

access to a tablet laptop. Girls involved in the study also appreciated the ability to have notes and other materials stored electronically in one convenient location for easy retrieval and less likelihood of misplacing important documents.

Another question investigated in the Morrison et al. (2006) study regarded student behavioral changes after moving to a 1:1 setting. Students with 24/7 access to their laptop reported the following positive outcomes of such an initiative: increased computer skills, having more fun in school, a greater interest in learning, and the desire to get better grades.

The 2010 Project RED (Greaves, Hayes, Wilson, Gielniak, & Peterson, 2010a) report concluded that when systemic change in the educational institution is the goal, a 1:1 initiative can result in fewer disciplinary actions and a reduction in drop-out rates. Increased engagement in the 1:1 setting as well as the daily use of technology has been found to reduce the need for disciplinary actions and improve daily attendance. This study also suggested that students are less likely to drop out of school when intervention classes with technology integration are provided, use of technology is integrated into core subject areas, and students have the opportunity to experience regular virtual field trips,

Along with the benefits of a well-implemented 1:1 initiative, there are also some concerns raised by parents and teachers. In the Lei and Zhao (2008) study, over a third of parents of students in a 24/7 environment felt their student spent too much time on his or her laptop. Almost 40% of teachers believed students were having a harder time concentrating in class because students were distracted by email, games, music, and

social networks that are easily accessible to them on their laptops. Students overwhelmingly disagreed the laptops were a distraction from their learning.

Self-Regulated Learning

"The rapid pace of technological change and accelerated growth of knowledge are placing a premium on capability for self-directed learning" (Bandura, 1995, p. 17).

Loyens, Magda, and Rikers (2008) pointed out an important difference in the concepts of self-directed learning (SDL) and self-regulated learning (SRL). SDL allows the learner greater capacity to self-select and evaluate learning materials. While SDL can encompass SRL, the opposite does not hold true.

Zimmerman and Lebeau (2000) identified similarities between SDL and SRL: active engagement and goal-directed behavior including goal setting, task analysis, plan implementation, and self-evaluation of the learning process.

Based upon key components of Bandura's (1977) learning theory and other areas of cognitive psychology, theories of self-regulated learning have been investigated by many researchers. Self-regulated learning has been defined by Bruning et al. (2004) as, "the ability to control all aspects of one's learning, from advance planning to how one evaluates performance afterward" (p. 117). It is a process which enables students to manage their thoughts, behaviors, and emotions during their educational experiences. Kaufmann (2004) describes self-regulation as the students' intentional efforts to manage, direct and control complex learning tasks.

Self-regulation theories most often include the following components: metacognitive skills, utilization of strategies, and control of motivation (Zimmerman,

1990). More recently, Zimmerman and Schunk (2008) described self-regulated learning as the self-beliefs and self-governing processes which lead the students to make use of their mental abilities in their school performance and makes a case for self-regulation as an essential ingredient to the learning process. Wolters (2011) pinpoints self-regulation as a way to improve students' study skills as well as create better learning habits.

Identifying appropriate strategies to promote students' self-regulated learning is important for academic success. Zumbrunn, Tadlock, and Roberts (2011) summarized the following processes which should be taught to students in order for them to become better self-regulators of their learning: goal setting, planning, self-motivation, attention control, flexible use of learning strategies, self-monitoring, appropriate help-seeking, and self-evaluation (p. 9). To encourage students to self-regulate their learning, Zumbrunn et al. (2011) review of the literature pinpointed the following strategies: direct instruction and modeling of self-regulation processes, guided and independent practice, social support and feedback as well as reflexive practice.

Instructional practices identified to promote student achievement and thus increase the likelihood of students' self-regulatory practices are as follows (Bruning et al., 2004):

- provide choice to promote independence;
- community building through collaborative activities;
- scaffolding instruction to break down complex material; and
- ongoing assessments--including peer and teacher feedback.

Creating/shaping, independent life-long learners require students to have knowledge of and practice self-regulatory behaviors. Looking at the instructional practices listed above, a 1:1 initiative could promote instructors' use of these strategies to promote such behaviors.

Providing choice—Silvernail and Lane (2004) found in their research on the Maine Learning Technology Initiative that over 70% of the teachers surveyed in a 1:1 initiative reported the availability of laptops helped them to individualize instruction and adapt their curriculum to better meet students' needs by providing more choices to show mastery for objectives presented. "Students can explore . . . and create new and creative products to share their learning" (p. 15). The ability to find and access internet resources for which they are comfortable reading and comprehending was also reported in a student interview conducted by Silvernail and Lane (2004) as being a major advantage of having round-the-clock access to a laptop and thus the internet.

Collaborative Activities—The International Society for Technology in Education (ISTE) proposes standards for students (NETS*S, 2007) to become proficient in their use of technology for effective learning and living productively in our digital world. Specifically, students and teachers alike must have opportunities for engaging in collaborative activities with one another and their peer groups. In a 1:1 environment, students and teachers would have the availability of the resources (hardware and web access) needed to engage in such collaboration. The Partnership for 21st Century Skills (2006) proposes the inclusion/integration of 21st century skills within the schools'

curriculum not as an added feature. Collaboration is one such feature—for teachers and students, within the school and throughout the global community.

Scaffolding—A student's response in an interview for Silvernail and Lane's (2004) study: "You are able to learn quicker because you actually have resources that you can use. Like if you don't understand math, we found a site that teaches everything step by step" (p. 19). Ongoing Assessment—A teacher's interview response in Silvernail and Lane's (2004) study,

> Students who do not do well on paper/pencil tasks shine when using their laptops; multimedia projects allow opportunities for authentic assessment for students of all abilities to show what they have learned; online access to simulations, interactive sites, and real scientific and mathematical information makes the learning come alive for students and the teaching more rewarding too. (p. 22)

Study strategies identified by Randi and Corno (2000) which enable students to learn efficiently include planning, focus of resources to meet goals, persistence, use of external resources, control of ones emotions, and seeking help when needed. In a 1:1 environment, both students and teachers have reported the availability to access a plethora of external resources to support instruction and learning has been an important factor in the success of such an initiative. Maninger & Holden (2009), in interviews with teachers, found teachers perceived the laptop integration as an enhancement to the students' daily activities because of the extended opportunities for the students to choose from a variety of materials and resources provided to them.

Students' uses of these self-regulatory skills extended learning outside the classroom day, and students were found to be making better use of their time. Reporter Sue Stidham shared information on the Baxter Springs, Kansas 24/7 initiative in the

Library Media Connection (2008) on the success of their implementation. A student was quoted, "By making learning easier and fun, the laptop initiative has greatly increased my capacity and willingness to learn" (p. 54). Another staff member at this Kansas school shared her perception in which the improved quality of student work was the greatest benefit of the initiative. This staff member claimed students' assignments were far superior to what they had been in the past, and students were making far better use of their time. Instead of wasting those last few minutes of a class period, she added students were usually found working on their laptops (Stidham, 2008).

Shapley et al. (2010) examined the relationship between students' achievement scores and students' use of their school-issued laptops for learning at home. Students' home use was found to be a positive, consistent predictor of reading and math achievement test scores. As instructional strategies have an impact on students' engagement in self-regulatory behaviors, teaching and learning in 1:1 environments may foster the inclusion of such teaching practices.

Research conducted by Cavanaugh et al. (2007) revealed students learning in a 1:1 initiative were found to have a significant increase in conducting independent inquiry and research. Results from this study also revealed low-achieving and at-risk students were more engaged in self-directed learning than were traditional and high-achieving students.

Self-Efficacy in Learning

> We find that people's beliefs about their efficacy affect the sorts of choices they make in very significant ways. In particular, it affects their levels of motivation and perseverance in the face of obstacles. Most success requires persistent effort, so low self-efficacy becomes a self-limiting process. In order to succeed, people

> need a sense of self-efficacy, strung together with resilience to meet the inevitable obstacles and inequity of life (Bandura, 1977).

Bandura (1977) described self-efficacy as a person's belief about his or her ability to achieve or perform at a certain level in a specific area. In Pajares (2006), Bandura identifies the positive relationship of students' self-efficacy for learning processes to growth of cognitive competencies. Bandura points out the fact that students now have greater control over their own learning because of the plethora of resources such as multimedia instruction, libraries, and museums available to them on the World Wide Web. As such, it is important to remember that students "are agents of their own learning, not just recipients of information" (p. 10).

Whether one decides to take on a task and expend the effort and persistence needed to complete it—even when the task becomes difficult—is dependent on one's self-efficacy (Pajares, 2006). Pajares likens self-efficacy as a 'reflexive loop' between the individual and his or her experiences in an environment. Self-efficacy is a product of their experiences. Academic self-efficacy is a learner's belief that he or she can perform a specific academic task or achieve a specific academic goal (Schunk, 1991). Horn, Bruning, Schraw, Curry, and Katkanan (1993) found learners with a higher degree of self-efficacy for a task were more likely to engage in a greater number of strategies which would lead to better performance. People with a high degree of perceived self-efficacy are more likely to accept and take on challenges or difficult tasks, become more interested and engrossed in activities, and maintain a strong commitment to the activity. With a perception of a high belief in ones self-efficacy, a person is more likely to attribute failures or setbacks to lack of effort or insufficient knowledge in which they

could acquire. Instead of feeling a task or activity is beyond their control, with effort on their part, a person feels they are able to exercise control over the situation. Bandura (1995) believes there are four influences on people's beliefs about their efficacy:

1. Mastery Experiences—When a person experiences failure before a sense of self-efficacy is established, the failure will undermine their ability to achieve success in a given task or activity. When successes come too easily, a person comes to expect quick results and they will likely become more discouraged from his or her failures. To become resilient, one must experience successfully overcoming obstacles through sustained effort to realize that success requires this perseverance.
2. Vicarious Experiences—Watching people similar to him or herself succeed through extended efforts will likely lead one to believe that they also are capable of achieving success in comparable activities. Likewise, watching another fail despite sustained efforts may undermine a person's sense of self-efficacy. A person's perceived degree of similarity to the models strongly influences the impact on ones perception of self-efficacy. When a person views the model as possessing similar characteristics, the model's successes and failures have a greater influence. People also seek models who display the competencies for which they aspire to attain. By observing the models' behaviors, they identify strategies and effective skills to become successful and thus a greater perception of self-efficacy.

3. Social Persuasion—If a person is verbally persuaded that he or she possess the characteristics needed to achieve or accomplish a given task, he or she is more likely to expend greater and sustained effort. This verbal persuasion reduces self-doubt of one's ability and skills when challenges arise and also leads a person to expend the effort needed to succeed, thus developing a greater sense of self-efficacy. In contrast, when a person is given an unrealistic boost, he or she may achieve disappointing results. To assist a person in raising their self-efficacy, one must provide situations that can foster success and avoid circumstances which may set them up for failure. It is important to guide them in the realization success should be measured by his or her improvement not in comparison to the achievement of others.
4. Emotional States—Positive moods enhances ones perceptions of self-efficacy while a dismal mood decreases it. It is necessary to guide one to realize that emotions often misrepresent the degree of self-efficacy and lead to self-doubt in his or her capabilities.

In a longitudinal study conducted at three elementary sites and one middle school, where students had been in a 1:1 environment for three years, researchers found the quantitative data collected from the students revealed increases in their agreement to phrases addressing self-efficacy. While the researchers found there was a wide discrepancy in implementation and varied outcomes, one commonality they found among the four schools was the consensus of the majority of students expressing their belief the

integration of the laptops in their studies resulted in a gain of positive experiences (Spektor-Levy, Menashe, Doron, & Raviv, 2010).

At the Denver School of Science and Technology, researchers Zucker and Hug (2007) were commissioned to examine the public charter high school's 1:1 laptop initiative. Findings released in their report revealed 65% of the students felt the integration of the laptops had a "very" positive impact on how much they learned in school, while another 29% claimed there was "somewhat" of a positive impact on their learning. The students also reported the laptop initiative had a positive effect on how well they can collaborate with other students, their interest in school, and the positive effect on their grades (Zucker & Hug, 2007).

Grundmeyer's study (2012) investigated the perceptions of first-year college students who had at least two or more years of learning in a high school with a 1:1 initiative. Students believed they were more college-ready because of their experiences with 24/7 access to a laptop. Utilizing their laptops for online classes while in high school was identified as an important benefit to their college readiness.

Self-Efficacy in Relation to Self-Regulation

Looking at both constructs of self-efficacy and self-regulation, Pajares (2008) identified a reflexive, positive impact which self-efficacy and the use of self-regulation strategies have on one another. Learners with higher self-efficacy beliefs were found to more frequently utilize self-regulation strategies, and the use of self-regulation strategies can lead to increases in self-efficacy beliefs and academic achievement. Zimmerman and Schunk (2008) also reported a reciprocal relationship between a learners' capacity of self-

regulation and beliefs of self-efficacy. These researchers have found that when students increase their capacity to self-regulate, their self-efficacy beliefs also increase.

Self-efficacy for self-regulated learning is defined by Zimmerman amd Martinez-Pons (1988) as a students' belief in their ability to use self-regulatory strategies such as goal setting and planning, self-monitoring, and self-evaluation.

Zimmerman (2000) described the relationship between self-regulation and self-efficacy as a cycle which includes three phases: forethought, performance control, and self-reflection.

1. forethought—processes which come before efforts to act (goal setting & planning);
2. performance control—processes which occur during learning (task strategies, imagery, self-instruction, attention focusing); and
3. self-reflection—processes which occur after the performance (self-evaluation, causal attributions).

Zimmerman (2000) makes the claim that forethought processes influence performance control processes, which in turn influence self-reflection processes. When self-reflection processes influence the forethought processes in subsequent learning attempts, the cycle is complete. Self-efficacy beliefs exist within this system of self-regulatory beliefs and processes primarily in the forethought stage (p. 56).

In the forethought stage, self-efficacy beliefs are critical to this process because a high self-efficacy allows for sustained and higher levels of motivation. Learners also display greater resiliency when they face challenges in their learning if they possess a

higher self-efficacy for the task. While self-efficacy is identified as a forethought process, it also influences other self-regulatory processes throughout the cycle.

Kissing Cousins is a metaphor used by Pajares in an interview with Bembenutty (2007) in describing the interdependent relationship of self-efficacy to self-regulation. Pajares points to research revealing that academic self-efficacy beliefs influence all self-regulation phases: forethought, performance, and self-reflection. When a student believes he or she is capable of performing an academic task, a student will utilize more cognitive and metacognitive strategies. Students, regardless of ability or previous achievement, will work harder and longer and persevere despite roadblocks, distractions, or challenges.

Pajares found that high self-efficacy in a student promotes his or her use of effective self-regulatory strategies. Whether or not students engage in the self-regulatory processes of self-monitoring, goal setting, self-evaluation, and strategy use depends upon their academic motivation influenced by their self-efficacy beliefs.

Summary of Literature

Much of the literature regarding the adoption and implementation of a 1:1 laptop initiative reveals the importance of leadership to ensure and guide a successful implementation. Community and staff involvement for buy-in is critical prior to making the decision to provide each student with 24/7 access to a school-issued laptop. Professional development for staff, clear expectations and goals for use, and a dependable infrastructure (wireless access, sufficient bandwidth, server backup) are also vital ingredients.

When implementation is successful, several outcomes have been observed to positively affect education:

- a shift from teacher-centered to student-centered practices;
- increased engagement and motivation;
- fewer discipline issues;
- higher rates of student attendance;
- increase in self-directed learning; and
- development of 21st Century Skills including collaboration and communication, critical thinking and problem solving, digital literacy, and creativity.

What is not clear is the relationship between a 1:1 initiative and student achievement. A study conducted for the Maine Laptop Initiative indicated teachers generally perceived higher achievement for their students (Mitchell Institute, 2004). Harris and Smith (2004) reported students with disabilities benefited in improving their quality and quantity of writing. Silvernail and Gritter (2007) also found a statistically significant improvement in students' scores involved in the Maine initiative. The researchers analyzed achievement data on the writing section of the Maine Educational Assessment (MEA) from 2000 through 2005. By 2005, many schools were in their third year of the initiative. An average of the writing scale scores through this 5-year period revealed a 3.4 point increase, and proficiency rates on the state writing assessment for 8th graders increased from 29.1% to 41.4% proficient (p. 6).

Previous research on 1:1 laptop initiatives has indicated a positive relationship between such an initiative and students' beliefs regarding their improved ability to control their learning experiences. When students believe their actions and efforts to achieve or perform a specific academic task will have an effect on the learning outcome, they will engage in self-regulatory behaviors to achieve academic success.

Chapter 3 will include the qualitative methodology used to conduct this case study. A description of the study site and student participants will be shared and will be followed by a discussion of the procedures used for the data collection and analysis.

Chapter 3

Methods

Definition of Qualitative Method, Case Study

To best examine perceptions of self-efficacy and self-regulation while learning in a 1:1 laptop initiative, the researcher employed a qualitative methodology utilizing a case study approach to gain an in-depth understanding of this phenomenon. A case study approach with focus-group interviews allowed the students to share their stories of laptop use and their educational environment.

"A descriptive case study in education is one that presents a detailed account of the phenomenon under study" (Merriam, 1998, p. 38). Merriam's reasoning for employing case study research is that it allows the researcher to "gain an in-depth understanding of the situation and meaning for those involved" (p. 19). By utilizing a single-site, descriptive case study approach in this examination of students' perceptions of self-efficacy and self-regulation, the researcher was be able to provide a "rich, 'thick' description of the phenomenon under study" (p. 27). With a 1:1 laptop initiative, a case study design is appropriate because "An innovative program may be a case" (Stake, 1995, p. 2).

Yin (2009) recommends case studies when (1) the main research questions posed are of "how" or "why" in nature, (2) the study is in a real-life situation of a contemporary phenomenon, and (3) the investigator has little control over events affecting the study (p. 8).

Participants/Setting

Purposive sampling was employed in this descriptive case study of 8th and 10th grade students in a Nebraska public school district with a current 1:1 laptop initiative. Creswell and Plano Clark (2007) define Purposeful Sampling as the selection of individuals and sites who "have experience with the central phenomenon or the key concept being explored" (p. 112). The participating school district was one who was in their 5th year of a 1:1 laptop (24/7) initiative in grades 7-12. The researcher had professional knowledge of this district's 1:1 initiative through a prior study on their campus as well as visits to the district for the purpose of exploring their 1:1 laptop initiative.

The Nebraska school district participating in this study implemented a 1:1 laptop initiative during the 2008-09 school year for their 7-12 students. They have recently entered into a second lease for laptops with Apple. This K-12 district is located in a rural community with a population of approximately 3700. The district's enrollment is approximately 750 students. Students enrolled in grades 7-12 are housed in a campus separate of the PK-6 students. Enrollment for the 7-12 grades is approximately 325. Grades PK-6 enrollment is approximately 425. A private K-12 school is also located in the community. With the arrival of agricultural industry in the area, migrant population has increased in the district. During the 2012-13 school year, 20% of the student population was of a minority race, with about half of this same subgroup identified as English Language Learners and 45% identified as receiving free/reduced meals. Just over

19% of the students receive special education services. The district's mobility rate for the same school year was just over 8% and above the Nebraska average.

District data reveals a 93% graduation rate and the achievement of meeting Adequate Yearly Progress for the Middle and High School students during the 2012-13 school year. Teacher count for the district was at 67 with 65% of the teachers having attained at least a Master's degree.

Since becoming a 1:1 school, the technology integration specialist has been selected as an Apple Distinguished Educator and a Google Certified Instructor. This district has also been dubbed as an Apple Distinguished School. The Apple Distinguished School program is for schools that meet criteria for innovation, leadership, and educational excellence, and demonstrate a clear and consistent vision of exemplary learning environments. The school district often is host to boards of education, administrators, parents, and students to showcase their 1:1 laptop initiative as other districts consider implementation.

Approval and Recruiting Process

Once permission was secured by the district's superintendent and approval was granted by the Institutional Review Board (IRB), the assistance of the district's technology integration specialist was enlisted to assist with the recruitment of the student participants. With the help of the technology specialist, the researcher scheduled an onsite visit to the district's campus to present an overview of the study to 7th and 9th grade students in April of 2013. Students were given copies of documents regarding the study: Parental consent forms (requiring a parent signature), student assent forms, and an

informational letter describing the study and introducing the researcher. Due to a lack of response and participation by the students, and at the suggestion of the technology specialist, the researcher petitioned the IRB for permission to waiver a signed parental consent form as well as provide each survey and interview participant a $5.00 gift certificate (Appendix A). On their first day of the 2013-14 school year, 8th and 10th grade students were given a copy of the Parental Information Letter by the technology integration specialist (Appendix B). With this incentive and eliminating the need for a signed consent form, all but two (10th graders) of the students elected to participate in the study conducted during the first few weeks of the 2013-14 school year.

An article (Appendix C) written by the researcher was placed in the school newsletter with information regarding the study and this same article was also published on the district's 1:1 website. The researcher went onsite during the first week of the 2013-14 school year to administer the online survey to all 8th and 10th grade students during a time mutually agreed upon with the school principal and classroom teachers, and a time that did not interfere with instruction. The 10th graders (with the exception of the two who opted out of the study) completed the online survey together in a large lecture room. Eighth graders completed the survey during different class periods, and some students did experience connectivity problems while accessing the survey.

To get a broader picture of student perceptions, purposeful sampling was used to identify students for focus group interviews based upon survey data—those who had shown either extremely high or low ratings in academic self-efficacy scores and self-regulation scores. Patton (2002) promotes purposeful sampling in the design phase of

qualitative research because it allows an in-depth look into the case. From this data, 4 focus groups—consisting of 5 students each—were selected and invited to participate in the focus-group interviews with the researcher—an 8th grade group and a 10th grade group revealing high self-regulation and academic self-efficacy scores, and a group each of 8th grade and 10th grade students showing low ratings in the survey scores.

Data Collection and Analysis

In this case study design, both quantitative and qualitative data were gathered. The purpose of the quantitative data was to purposefully select interview participants and to gather student demographic information and students' ratings on academic self-efficacy and self-regulation. This data was also used to support the findings from the focus-group interviews. In the first phase of this study, quantitative data was collected through surveying all 8th (n = 41) and 10th (n = 44) grade students enrolled in the school district followed by purposefully-selected students for the focus group interviews. Eighty-five (85) online surveys were completed: females (n = 47) and males (n = 38).

Quantitative data collection. Through use of the Qualtrics web-based survey tools made available by the University of Nebraska, students were given an online survey consisting of demographic items and 2 subscales from Bandura's (1990) Multidimensional Scales of Perceived Self-Efficacy (MSPSE). Permission was granted for use of these subscales (Appendix D). There were 9 items on the Self-Efficacy for Academic Achievement subscale and 11 items on the Self-Efficacy for Self-Regulated Learning subscale. Bandura's (1990) survey is a widely-used instrument to measure perceived self-efficacy. Internal consistency reliabilities have been reported as ranging

from 0.60 to 0.93. This survey has been used with various student age groups including middle grade, high school, and college freshmen.

Bandura's Multidimensional Scales of Perceived Self-Efficacy (MSPSE).

Two subscales from the MSPSE were included in the online survey: Self-Efficacy for Self-Regulated Learning and Self-Efficacy for Academic Achievement. The Self-Efficacy for Self-Regulated Learning consisted of 11 items which measured participants' perception of their capability to use various self-regulated learning strategies. The Self-Efficacy for Academic Achievement scale contained 9 items which measured the participants' perception of their capability to achieve in the content areas of mathematics, algebra, science, biology, reading and writing language skills, computer use, foreign language proficiency, social studies, and English grammar. The items for both subscales are depicted in Table 1. For each item, students rated their perceived self-efficacy according to a 7-point scale. The descriptions were as follows: 1 = Not Well at All, 2, 3 = Not Too Well, 4, 5 = Pretty Well, 6, 7 = Very Well.

Demographic items included current estimated grade point average (GPA), estimated number of minutes spent on their laptops completing schoolwork during and outside of the school day (weeknights, weekends,vacations during the school year), and male/female information which allowed the researcher to explore relationships or patterns of these variables to self-regulation and self-efficacy scores and themes from the focus-group interviews. For identification of students for the focus group interviews, students were asked to indicate the first and last initial of their name along with the last four digits of their telephone number.

Table 1

Bandura's Multidimensional Scales of Perceived Self-Efficacy (MSPSE)

Items
Self-Efficacy for Self-Regulated Learning
How well can you:
1. finish homework assignments by deadlines?
2. study when there are other interesting things to do?
3. concentrate on school subjects?
4. take class notes of class instruction?
5. use the library to get information for class assignments?
6. plan your schoolwork?
7. organize your schoolwork?
8. remember information presented in class and textbooks?
9. arrange a place to study without distractions?
10. motivate yourself to do schoolwork?
11. participate in class discussions?
Self-Efficacy for Academic Achievement
How well can you:
1. learn general mathematics?
2. learn algebra?
3. learn science?
4. learn biology?
5. learn reading and writing language skills?
6. learn to use computers?
7. learn foreign languages?
8. learn social studies?
9. learn English grammar?

The online survey (Appendix E) administered through Qualtrics was given to the classes during an onsite visit by the researcher. Two sections of 8th graders and the entire class of 10th graders were provided the link for the survey during times least disruptive to their regular instructional day. The survey took approximately 10 minutes to complete by each group.

Mean scores for students' academic self-efficacy and efficacy for self-regulation were computed and students showing either very high or very low averages for both of the subscales were invited to participate in focus-group interviews to complete the qualitative phase of the study. Four focus groups were selected based upon the MSPSE Subscales' data—a high and low group for each of the 8th and 10th grade classes.

Qualitative data collection. Focus group interviews provided the data gathered for this portion of the study. According to Stake (1995), "The interview is the main road to multiple realities" (p. 64). Averages for each student's responses on the Bandura subscales were computed on an Excel spreadsheet. This allowed the researcher to identify students from each grade level who reported a low or high average of academic self-efficacy and self-regulation. Interview participants were identified by their grade level and survey code and invited to participate in a focus-group interview with the researcher. Notice of their selection and an invitation to participate in one of the focus group interviews was carried out by the technology integration specialist who had been working with the researcher to organize site visits for the study. The 5 selected students for each group agreed to participate in their respective focus group resulting in 20 total participants among the 4 groups. All interviews were held during the school day in their

school building. Focus group interviews were conducted over the course of 2 school days. An 8th and 10th grade group were interviewed during each visit. The focus-group interviews consisted of several open-ended questions to allow the researcher to identify themes from student responses. Interview protocols were given to each student prior to starting the interview and their initials were obtained to indicate their permission for audio recording (Appendix F). Students were audio recorded during the interview with recordings being later transcribed by the researcher.

Transcriptions for each interview were entered into a master Google document and sorted by questions. Each of the four groups' responses were color coded in this master transcription, so the researcher could get an overall feel of the students' perceptions as well as comparing and contrasting responses among the four groups. Transcriptions were also separated by group for within-case analysis. Qualitative data was analyzed by the researcher through several thorough readings of the transcribed responses. The scripts were marked to identify main ideas and key codes, and from these markings and notations a list of coding categories was developed. Text data was further scrutinized to allow for the identification of several themes. Further analysis was completed with the use of a qualitative software program, MAX Qualitative Data Analysis, (MAXQDA), version 11.

Archived Data

A spreadsheet of responses collected through a district-administered online survey was made available to the researcher. This was a survey given to the district's 7-12 students to gauge their perceptions of the strengths and weaknesses of their laptop

initiative. Information from this survey was used to present to the board of education as they contemplated entering into another lease-purchase for laptops. This document was shared with the researcher by the district's technology integration specialist who helped facilitate the study. Permission was given by the district's superintendent for its inclusion in this study. A perusal of the information in this document provided valuable support for the themes identified by the researcher in the focus group interviews. After themes were identified from the interviews, the researcher examined the archived data for remarks which aligned with the responses from the interviews.

Validity and Reliability

Merriman (1998) suggests triangulation to enhance the validity of findings in a research study. Triangulation may involve the use of multiple sources of data, multiple investigators, or a variety of methods to confirm findings. Stake (1995) warns researchers not to depend on good intentions or intuition for accurate reporting but touts the importance of seeking other plausible explanations and checks for accuracy as a means for triangulation. In this study, the researcher collected data from multiple sources: online survey responses, focus-group interviews, and student responses from a district administered survey completed prior to this study. During each of the focus group interviews, the researcher often restated or summarized student responses to assure accuracy and clarity of the information given. Students were given the opportunity to audit the final transcripts to check for accuracy. The researcher also made known potential for bias in conducting this study.

Bandura's scales also have a proven reliability. Bandura's (1990) survey is a widely-used instrument to measure perceived self-efficacy. Internal consistency reliabilities have been reported as ranging from 0.60 to 0.93. Reliability of the scales in this study resulted in a Cronbach's Alpha of 0.86 on the Academic Self-efficacy scale and 0.93 on the Self-Regulated learning scale.

Researcher's Resources and Skills

Obtaining both Master's and Educational Specialist's degrees have provided the researcher many opportunities for research through various courses and coursework prior to starting a doctoral degree. Participation in the University of Nebraska-Lincoln's Nebraska Assessment Cohort coupled with several research course throughout a doctoral program have allowed the researcher to develop a solid foundation of research tools. Coursework has also provided the researcher several valuable experiences in applying various methodologies to conduct research with opportunities to analyze both qualitative and quantitative data. Time is a limited resource for the researcher as she is employed as a school superintendent with many obligations for her time.

Role of the Researcher

My perceptions of a 1:1 computing environment have likely been shaped by my background as a K-12 teacher, school Local Area Network (LAN) Manager, and administrator. For two years, while working as a school administrator, I was also the supervisor for a Technology Education Challenges in High Schools (TECHS) course provided by our Educational Service Unit. During that time, I had written and was awarded a grant for the TECHS course where we were able to purchase laptops for the

three students enrolled in this asynchronous course. The students were allowed to have the laptops 24/7 for the school year much to the dismay of other students and staff. While serving as superintendent of that school district, a web-based artificially intelligence assessment and learning system was adopted for the seventh grade math class along with other students who were struggling in math classes. Use of this computerized program, known as ALEKS (Assessment and LEarning in Knowledge Spaces) was made possible because of a sweepstakes won by the district which included 20 tablet, laptop computers. My work with curriculum, instruction, assessment and technology has also allowed me to see the benefits of technology integration for students and staff.

Potential Ethical Issues

While I feel as though I have been objective in my analysis and interpretation of the students' data, I would be remiss to not identify potential bias.

- As a public school superintendent I have had the privilege to get to know and work with many other school administrators. The superintendent and technology coordinator in this school district are two colleagues for whom I have great respect. This school district is also one of the districts where I have conducted prior research on 1:1 Laptop Initiatives but none of the participants are the same.
- Because of my professional and personal experiences, I have always been interested in the benefits of 1:1 computing environments for students. As an administrator in a district who has recently implemented such an initiative, I have come to this study with the belief that a 1:1 environment greatly

enhances the learning environment and opportunities for our staff and students.

Research Study Timeline

The road to completing my dissertation has been wrought with some obstacles along the way. My initial proposal to my committee required changes before it was approved for submission to the Institutional Review Board. The following is a schedule of dates and other problems met along the way.

- February 2013—Application made to the Institutional Review Board Permission by the district to conduct research with all 7^{th} and 9^{th} grade students.
- April 2013—IRB approval was received.
- April 2013—Recruiting of participants at study site by the researcher and distribution of Parent Consent and Student Assent forms.
- May 2013—Deployment of online survey to measure self-efficacy for academics and self-regulation. Survey closed due to lack of participation.
- July 2013—Request to IRB to grant a waiver for parental permission and to allow for incentive ($5.00 gift card) for all students participating in the online and focus-group interviews.
- August 2013—Onsite recruiting with updated forms and information. Researcher onsite to administer online survey.

- September 2013—Purposeful sampling from online survey data to identify focus group participants and request their ongoing participation in an interview.

Focus Group Interviews completed onsite.

- January 2014—Transcriptions of interview audio completed and sent to interview participants for corrections or comments.
- February 2014—Quantitative (online surveys), Qualitative (interviews) data, and district archived data are analyzed.
- April 2014—Completion of Doctoral degree requirements, including defense.

Summary of Methodology

Chapter 3 began with the researcher's rationale for employing a case study to investigate self-efficacy and self-regulation in a 1 to 1 laptop environment. The reader was provided with a thorough view of the study population and sample. An in-depth description of the study site was also included. Means for data collection and analysis, survey instruments, and verification procedures, were followed with the researcher's self-report of resources and skills. The role of the researcher, coupled with ethical considerations was divulged, and the chapter concluded with a study timeline (including Institutional Review Board authorizations).

The chapter to follow, Chapter 4—Results, contain a synthesis of the transcription data by themes which were uncovered through analysis of the students' responses. As the overall themes of self-regulation and academic self-efficacy were the foundation for this study, data supporting these themes were drawn out from the students' responses and

reported as such. Supporting data from the online survey and archived data from a district-administered survey were used to support discovered themes.

Chapter 4

Results

This chapter provides an account of the research results after an analysis of the focus group interviews and online survey data. Supporting data regarding students' perceptions from the district-wide survey is also included as a means to add to the validity of the findings in this study.

The question of moving to a 1:1 environment continues to be an issue for not only Nebraska school districts but districts across the nation. Discovering the educational benefits of any 1:1 implementation as a means to justify the financial and human resources needed continues to be essential. While increased student achievement should be the measuring stick of any school's educational initiative, it's also important to examine effects which could lead to increased productivity, student engagement, academic efficacy, and self-regulation of learning.

This study's purpose was to examine 8th and 10th grade students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment in a Nebraska rural school district. While both quantitative and qualitative data were collected, the primary purpose of the quantitative, online survey was to allow purposeful sampling for the selection of focus-groups participants. Online data collected was also analyzed and used to support the findings of the qualitative data analysis. The online data was collected through the Qualtrics web-based survey system made available by the University of Nebraska at Lincoln. Students agreed to participate by indicating their agreement on the opening page of the survey which also included an overview of the

study. Online survey data from Bandura's (1990) self-regulation and self-efficacy scales was entered into an Excel spreadsheet for each of the participants. Students were sorted by grade level and then averages were computed for each participant on each of the scales. Students were sorted low to high by the mean of their self-regulation scale, and then a sort was completed for the mean on their self-efficacy scale. The students with the five highest averages and five lowest averages for the combined scales were identified. From this information candidates were selected and extended an invitation to participate in a focus group interview with the primary researcher. Focus groups consisted of the following characteristics:

- 8th grade group displaying a combined high self-efficacy and self-regulation perception
- 8th grade group displaying a combined low self-efficacy and self-regulation perception
- 10th grade group displaying a combined high self-efficacy and self-regulation perception
- 10th grade group displaying a combined low self-efficacy and self-regulation perception

Qualitative data, collected through focus group interview transcripts, provided the researcher with a descriptive account of student learning in a 1:1 laptop environment. An archived document of survey results previously administered to the district's 7-12 students was provided to the researcher by the integration specialist at the school district where the study took place. This survey was created and administered by the school's

technology committee to gauge effectiveness of their 1:1 laptop initiative. Information from the district's survey results was shared with their board of education in support of the continuation and renewal of their 1:1 initiative and agreement with Apple. Online survey data was also analyzed and selected information reported to support the discovered themes.

Research Questions

Central Question: How do eighth and tenth grade students describe academic self-efficacy and self-regulation after their first and continuing years of learning in a 1:1 environment with 24/7 access to a laptop?

Sub-questions:

1. What self-regulation strategies are students employing while having 24/7 access to a laptop?
2. How do students describe any perceived effects on academic self-efficacy? Are there any specific academic tasks mentioned?

Interview questions and probes were designed by the primary researcher to gather students' views regarding their learning experiences in a 1 to 1 environment. At the conclusion of each focus group interview, students were asked for any additional information they'd like to add which hadn't been covered during the interview. Students were also given another opportunity to add to the discussion after their reading of the focus-group transcripts.

The focus-group interviews provided a platform for the students to express their perceptions of learning while having 24/7 access to a laptop. Focus group interviews

were conducted in their school building with all but one being conducted in a low-traffic area of their school library/media center. The final interview was conducted in the office of the technology integration coordinator. Interviews for the four focus groups were conducted on two separate visits, with 2 interviews conducted on each visit. Interviewees for the first visit consisted of the students of the perceived 'high, self-efficacy and self-regulation' group for 8th and 10th grade, while the second visit involved students from the perceived 'low, self-efficacy and self-regulation' groups for each of the two grade levels. Interviews lasted approximately 20 to 30 minutes and provided ample time for the students to respond to the researcher's questions and to share their thoughts and perceptions of learning in a 1 to 1 laptop environment. Interviews were coordinated by the district's technology integrationist and took place during the school day at a time agreed upon by the students, teachers, and principal.

Interviews began with the researcher sharing the interview protocol with the participating students and securing their permission to be audio recorded. Students had received a copy of the protocol and interview questions prior to the day of the interview.

Qualitative Results

Audio recordings made during each of the four focus group interviews were transcribed by the primary researcher. After transcriptions were completed, the researcher compiled the text responses by question into a master document to allow for an overall picture of students' perceptions. The focus group data was then analyzed by their designated grouping to compare and contrast the perceptions of each group. Coding of key words and identification of themes was completed for each group and then the

groups as a whole. The analysis of responses indicated many common themes among the groups. As a means to help the researcher identify key themes, analysis of the transcribed data was completed on several occasions. Coding, categorizing, and development of themes was completed both by hand and with the use of the MAXQDA qualitative data analysis software program to allow the researcher multiple exposures to the data and a more comprehensive analysis.

Codes were identified through multiple readings of all of the transcripts. Identified codes are included in the following table. Repetitive words or phrases used by the students are displayed in Table 2.

After the identification of codes, codes were organized into categories followed by the development of themes. Five themes emerged from the research data:

1. Laptop access, programs and features allow for better **organization.**
2. Students utilize a variety of **laptop production tools and internet programs.**
3. Students face several **challenges** while learning in a 1:1 environment.
4 Students describe an increase of **academic self-efficacy** while learning in a 1:1 environment.
5. Students describe **self-regulation** strategies used while learning in a 1:1 environment.

Themes 4 and 5 were included to answer the central research question posed in this study, “How do eighth and tenth grade students describe academic self-efficacy and self-regulation after their first and continuing years of learning in a 1:1 environment with

Table 2

Identified Codes from Focus Group Interviews

Words or Phrases Repetitively Used by Interview Participants	
Blackboard	Notetaking Notes
Creativity	Organization
Distraction	Paperless
Easy/Easier	Personalization
Expectations	Powerpoint
Facebook	Projects
Homework	Quizlet
iMovie	Research/Search
Internet	Study
Keyboarding/Typing	Technology
Keynote	Wireless
Music	Word (Microsoft)
No Sharing	Writing/English

24/7 access to a laptop?" These two themes encompass many of the ideas uncovered in the students' focus-group interviews and placed within other themes as well.

Laptop access, programs, and features allow for better organization. While examining key codes, the categories of both organization and convenience came to light. After contemplating the relationship of **convenience** and **organization** and whether or not to report them as separate themes, it was decided to combine them into one theme.

While there were many comments regarding the conveniences of having a laptop 24/7, those comments also allude to those conveniences allowing for better organization.

In each of the focus groups, students shared their perceptions of being better organized since having 24/7 access to 'their' laptop. Use of the learning management system, Blackboard, was frequently touted as being very helpful in their ability to keep track of homework assignments, course documents, and internet resources. Teachers also utilized Blackboard to administer tests and provide students with web quests in addition to posting class announcements. Teachers used the calendar and course announcements to remind students of upcoming due dates for assignments along with testing dates.

The conveniences of having their own school-issued laptop has allowed students to become better organized. Prior to implementing a 1:1 laptop initiative, students had to share laptops from a wireless cart. Because of having to share, they were often faced with not being able to find their work or having their work deleted by other students. A claim made by a student, "It was hard because we had to make sure we got the same laptop and where we had to put them back, we had to go looking for it." Students also believe that not having to share their laptop has allowed them to personalize it with features such as iCal to further organize school and personal obligations. Students mentioned the use of bookmarks to organize their online resources and websites. Students create their own folders on their desktop and keep coursework files in their appropriate folders for easy retrieval. With using the laptop for note taking and assignments, students reported they do not have to worry as much about losing assignments or misplacing notes. "We take notes on the computer, so we don't have the

paper to keep track of. It's all there organized." Students also added that they had the opportunity to access notes on Blackboard if they could not get them written down during class time.

Having access to online textbooks is also a bonus to having 24/7 access to a laptop. One of the groups reported the use of an online math program, IXL, and felt like having this easy access made it easier than having to carry around textbooks. When faced with having a few minutes of class time remaining and their work finished for that class, students felt they were more likely to get on their laptop and pull up an unfinished assignment from another class. If it meant getting their book bag and pulling out another textbook, it's likely they wouldn't have made as good of use of those spare minutes. "a lot of our books are on the computer now, so we don't have to bring textbooks to class. We can just read them directly off our computer." And yet another student contributed, "We're lugging around a computer versus 8 books to every class."

When posed with the question, "What do you like best about your laptop and learning in a 1:1 laptop environment," a student responded, "Just the fact that it's easier to take notes and you can all kind of store it; and it's right there for you, and you can bring it up anytime."

Archived survey response data further validated better organization as a benefit to 24/7 laptop access, "I am able to access my books online, without having to carry those heavy books home. The applications that these laptops offer me help me stay organized, so I have the ability to write down my homework due. They also help me get creative and experimental with projects."

Students utilize a variety of laptop production tools and internet programs. Throughout the Focus Group Interviews, students frequently espoused the use of many software and web-based, online programs they used on a regular basis—either to complete class assignments or for enjoyment.

The program most frequently mentioned by students in all of the groups was the use of the software program, Microsoft Word. Word is regularly used by both teachers and students. Teachers use Word to create course documents and materials, and students often utilize the program to take notes and to complete assignments—especially for writing reports, essays, stories, journaling, or practically any written document expected from them to complete. Students in Spanish use Word to complete course assignments and frequently take advantage of the translation function provided in the program. One student reported using Word to create his own stories for his own enjoyment after his required classwork is completed. Students often complete assignments in Word and submit electronically to their teachers for editing and/or grading.

PowerPoint, another Microsoft product, was another installed software program the students used for either class project presentations or as a study aid. Students reported creating presentations for various classes and using it to create flashcards for a study aid. Keynote was another presentation software application students mentioned as being used for class projects.

Students in two of the focus groups shared that they also use the program, Inspiration, to create mind maps, graphic organizers, and outlines in some of their classes. When further questioned about their use of this application, students said they

have used it under their own initiative to help with writing assignments or as a study tool in addition to teacher-directed lessons/assignments. A student extolled the benefits of Inspiration, "We use Inspiration sometimes too, and that's where you can make webs, like an outline thingy with all of your ideas, and that really helps with English. Like you can make a word web then just push a button and it makes it into an outline for you."

iMovie, an Apple software product, was a highly-referred to program the students used for creating their own digital movies in project-based assignments in various classes. A student explains, "Like last year we would do like a reading one, where you would have your book and you'd have to do an iMovie project when you're done about your book, like with pictures and kind of explaining what the book was about." Another student offered, "Last year we did an iMovie in Social Studies for 'Who I AM,'" where students created a digital autobiography on their life and ancestry. Students have also created iMovies about historical events as part of class requirements in Social Studies.

Quizlet, an online study tool was a favorite of three of the focus groups. Although it was not mentioned in one of the 8th grade groups, that could be due to an oversight rather than a lack of use. Students reported Quizlet as a valuable online tool to help them study and learn new vocabulary terms. Either the teacher or students can create digital flashcards which can incorporate images, audio, and text. These flashcards can then be used to play a variety of games to help students understand and spell the terms. Regarding her use of Quizlet, one student reported, "In science, we're assigned words, and we have to make a new quizlet of vocabulary words—a deck thingy—deck of cards, and in reading our teacher does it, all we have to do is go to her page, and click on

Quizlet and download that copy to our Quizlet, I like to put them in myself because I can learn them better. . . ."

Sophomore math students reported using Geogebra, an interactive geometry, algebra, and calculus program as a learning tool for concepts in those curricular areas. Excel Spreadsheets was another program mentioned for use in math classes. An eighth grade group reported the use of the online program, IXL. This online program is a game-based learning environment which teaches concepts aligned with state standards through short instructional videos and a plethora of interactive games.

Internet access for completing Google searches was also mentioned frequently by the students. Students often used searches to gather information, find images, use maps, and conduct research for projects or papers. A 10th grade student mentioned he was able to access game film from football and basketball games.

Eighth grade students spoke of their use of the text to speech and speech to text applications found on their laptops. Only one student reportedly tried the speech to text function, but several had utilized the text to speech application to listen to textbooks.

The learning management system, Blackboard, as discussed under the theme of organization, is another web-based, online program teachers and students use with great regularity. Students find this program extremely useful in communicating with their teachers, checking their grades, course announcements, and due dates.

Students also enjoy using their laptops to listen to their favorite music, either music they have downloaded or listening online through sites such as Pandora and Slacker. IPhoto for editing pictures is also used for both personal and schoolwork.

A unique use of the laptop was shared by one of the students, "When I used to be doing art I would cheat; I would trace on my computer screen and use that instead." The student would use the print preview mode and trace the image from the laptop screen.

Students face several challenges while learning in a 1:1 environment. While students shared some challenges they face on a regular basis, they were also quick to say that those challenges they face are far outweighed by the benefits of having 24/7 access to a laptop. A student shares this thought before addressing negative aspects of a 1:1 initiative, "I don't think that there's any kid in our school who doesn't like the laptops. I think that for every kid there's something they can find that they like on it."

The primary challenges of having 24/7 access to a laptop appeared in the form of distractions. Students lamented the distraction of non-educational opportunities available on the laptop both at home and school. While many students shared that the laptop was primarily used for only school-related work, many shared that Facebook often entered in as a distraction to their completing homework. Facebook is blocked during school hours but students can access this online social media website after 3:30 PM. Another student shared that while there are consequences in place and are given for misuse, sometimes students still post mean things about others on this website.

Along with social media, access to games also pose a problem for some students. A student shared, "Sometimes kids, like I don't do this because I really don't use it for gaming and stuff like that, but some kids will play games all of the time on them to the point where even some educational games are out of the equation." Another student shared, "Yeah, there's just so many other things you can do on your computer that can

distract you from doing your actual homework." Yet another student offered, "Sometimes you'll see somebody listening to music or watching their screens instead of paying attention to what the teacher's saying or doing."

A challenge mentioned by all of the groups was the problem they faced with technical issues. Students reported that there were sometimes headaches caused with wireless access. "We usually have internet problems in some classes. Our airports aren't that big, like in English cuz we're sharing an airport with two other classrooms and during that period of the day they use it a lot, too. So the internet is always pretty slow." The researcher can also attest to this fact as both of the 8th grade classes (same classroom, different times of day) were plagued with trouble connecting to the wireless at the time of the online survey portion of this study. Other technical issues, although less frequent, were the inconveniences of automatic updates causing restarts. One student shared, "Today in Reading we were typing in our vocabulary words in a PowerPoint and like she had all of them done, and then our computer had to restart, and we didn't have any of it saved, so it deleted the whole thing and we had to do it over again."

Students also reported the minor issue of having to adjust to online textbooks and the problem of eye strain/fatigue due to their longer periods of screen time throughout the day. A student clarified, "Sometimes you're staring at a computer screen all day in some classes, it gets your eyes hurting."

Students describe an increase of self-efficacy while learning in a 1:1 environment. Easier. A word count of 'easier' in the focus group transcriptions yielded a total of 27 hits. Of the groups, it was mentioned more frequently by the 'high' self-efficacy and self-regulation students in the 10th grade with 12 occurrences of easy/easier.

What is easier? Hands down the students espoused the use of the laptop to complete virtually anything having to do with writing. Writing for assignments—whether it be notetaking, an essay, responding to worksheet questions, story writing, or formal papers—the students shared how much easier schoolwork was when they did not have to turn in handwritten work. One student contributed, "like if we're assigned a story to write or something like that, then it's a lot faster just to type it, and it's a lot neater." Regarding English class, another student shared, "It used to be just paper and pencil but now it's a lot easier 'cause you can just type it and it's not as time consuming." When further questioned about whether or not they believed the quality of writing had improved the student responded, "Yeah, 'cause you have more time to put into it rather the time spent writing (handwriting). You can type faster, so there's more information you can put in that you can access. You have time to go back and review and maybe make changes." While not directly saying he/she thought to be more capable in his/her writing skills, this student did allude to the idea that writing for class was more enjoyable with the comment, "I like English because you can do like a lot of writing stuff on your computer, and she has a bunch of other stuff like a Writer's notebook that we use on the computer, and it's different every day." After asking for further information on a "Writer's notebook" the student offered that it was a teacher created journal document

where they respond to different topics each day as part of their class requirements. And a final student sharing her thoughts on her ability to learn in her English class, "It was English last year, we had mostly not very much on the computers, and it was too much and I just didn't comprehend, and now this year it just feels so easy now that we're doing a lot more on the computer and taking stuff slow and everything."

Students believed they were able to take better class notes with their laptops. Notes that are more legible and understandable. A student's response on his using the laptop for notes, "In Spanish I have a thing of notes, I type notes on it every day, and that's really helpful to me." Yet another opinion offered when asked what they liked best about learning in a 1:1 environment, "Just the fact that it's easier to take notes." When asked about ideas they had for further effective use of the laptops, a student offered, "I think the way we're using our laptops has been pretty effective for our learning. I really think right now we're doing pretty good because kids are using them for purposes like I said earlier just notes, typing paragraphs, or speeches." For this student, accessing a laptop for any type of writing has been made easier with 24/7 access to a laptop.

Some students shared that math class has been easier since having a 1:1 initiative. Each of the groups mentioned a math teacher who recorded his math notes and problem examples on his Smartboard. The class recordings were then made into a podcast and uploaded into his Blackboard documents for students' retrieval. Students found this helpful with a student explaining, "I used it when I didn't understand the assignment and I could go back and sometimes I just couldn't get something and I just went back and replayed it so many times. . . ." Another student commented on the podcasts, "If you

forgot like what the math assignment was, or how to do it, you could go to a website and click on a link to bring up the podcast, and watch him that day how he showed it to the class." Other students appreciated the recording to fall back on when they were absent from school. A sophomore student also contributed his thoughts regarding math becoming easier with 24/7 access, "Math is easier with a laptop. I like the math because we can watch online videos from the textbook provider, so it's like having a personal teacher at home, kind of."

Learning vocabulary terms was also reported to be easier with having a laptop at their convenience. Whether it be using a software program or an online program such as Quizlet, students believed that studying and learning new terms was much better than previous methods of practice.

Students also felt that they are more successful at conducting research with having unlimited online resources at their disposal. A student offered, "Yeah, it definitely makes it a lot easier to look up information and learn more about a certain subject. Maybe if you had to do like a PowerPoint for like something for like biology or history, and you can just Google it and find certain sites that have the information and you can use that information in your project. It's easier than trying to find it in your textbook or like an encyclopedia." Another student interjected the responsibility that also comes along with using these resources, "But when you copy/paste you have to put the author and give credit."

Homework can be a challenge for all students at some point in time. Learning in a 1:1 environment appears to have made homework a little less painful and given students

a tool (laptop) which helps them become more likely to successfully complete their homework. With the teachers' and students' utilization of the learning management system, Blackboard, students have a 'one-stop-shop' to access everything they need to satisfactorily complete their homework. From teacher-created documents, class notes, videos, and internet resources, students are more likely to be able to keep track of their assignments and homework. Students also mentioned how teachers were becoming more creative with the types of assignments they were given and in turn, allowing the students to create ways to showcase their learning through the use of various programs available to them on their laptop. Since going 1:1 students have had the opportunity to engage in project-based assignments. A student shared, "They're a lot more creative, we are creating more."

When asked what they felt had changed in their school environment since implementing a 1:1 initiative a student provided these thoughts,

> I think because we have the laptops the teachers do give us more work, and expect a little more out of us because it is a better tool to use instead of using like pencil paper or like having to look through the book the whole time. I mean it's easier to do homework on the computer with the internet and with typing, so I do think they expect a little more out of us and give us a little bit more.

To follow up on this students were asked if they felt like they were spending more time on schoolwork outside of school since going 1:1. Many felt they were spending more time on school-related work, but also felt that they were being given more homework than before the implementation, "Yeah, 'cause we can just take it home with us now and get on the internet and do it." A student offered this opinion when asked about having an increased homework load, "It might've reduced it a little but we still

spend quite a little time on homework. It makes it simpler to study." Another student shared her views on increased teacher expectations and ability to meet them, "I just think the teachers like expect more, like if they give you the time and the access you have the time and ability to make it more in-depth. We rise to that challenge."

Another comment pertaining to homework, "I feel like I can concentrate more when we have homework and stuff, I like it a lot better than pencil and paper. It's easier." And yet another student reports, "I really do like it for my school work, and it's been very helpful."

One would expect that students learning in a 1:1 laptop initiative would experience an increase in efficacy for using the laptop and tools associated with it. Students interviewed in the four different focus groups for this study have confirmed this to be true. Having access to a laptop 24/7 has increased students' self-efficacy in using a computer and many software programs, web applications, and tools.

Students often shared their perceptions of doing more project-based assignments where they were allowed to use the tools to create a way to showcase their learning. They also mentioned the fact that while their teachers would demonstrate the basics of a software or web-based productivity program, the students would further explore the tool/application's capabilities on their own. A student offered this when asked about their development of new technology skills since becoming a 1:1 laptop school and something they felt they've become particularly good at doing. "I've become particularly good at Keyboarding, iMovies, using Word documents, and setting up all the arrangements on there." A further explanation on making of an iMovie, "Last year we

had to make the book trailers which was really fun because we had to act out scenes from the book and record them." Another student shared this thought,

> Mine's (computer skills) been a lot better. When I first started using it in elementary we didn't get to take it home. I've gotten way better at learning different types of things on the computer. Just like the copy and paste, and like all the different controls you can use.

Computer classes are a part of the district's curriculum and one student attested to the helpfulness of those courses when asked if they were more comfortable with their technology skills, "Yeah, a lot more 'cause like in the junior high we always had computer classes, and that helped."

A tenth grade student offered this comment when asked about changes in their skills, "It's gotten better, easier, like if someone asks me a question about the computer I can answer it a lot better than before we went 1:1." Looking to the future and the importance of acquiring computer skills was identified by a student, "I kinda like being able to use Macs like that, like knowing how to use them, so that in the future if I need to use them for college or something like that then I'll know how to use 'em. And they're just a lot of help."

Eighth grade students also shared their ability of how to create and manage their own blogs, "Everyone in our whole grade has their own blog and we blog about stuff for English and then people can blog about personal stuff that they want to have on there."

When asked to describe some ways they've used their laptops, a student responded that sometimes it was used to take a test. Another student mentioned taking the Nebraska State (NeSA) and the Measure of Academic Progress (MAP) assessments online while another shared that some teachers put their tests on Blackboard where they

are electronically scored to provide immediate feedback. Although very brief, there was some mention of their perceptions of testing on a laptop versus the paper/pencil method.

> Not really a change in testing, a lot of paper and pencil. But like the state assessments are a lot easier. Some classes we'll do it on the computers, and some classes it'll be paper and pencil. It's kinda nice to know your score when you're done 'cause it grades it for the teacher.

Archived data also support the theme of increasing self-efficacy. Student responses from the district administered survey:

- "School changed by becoming easier for me. It is easier for me to get help if I need it, and I don't have to stay up till midnight working on homework."
- "Before 24/7 learning, it wasn't fun to learn. Now we as students have so many options to choose from. Teachers also have better and more ways to keep students interested in the material they are teaching."
- "Getting my homework done faster and better and getting a little better at getting good grades."
- "My books are interactive and have tools for reading and studying. Therefore I stay focused on learning more because it's actually interesting and engaging."
- "I think that I've learned a lot and my grades have went up. I'm very happy how it has changed my education."
- "It has made me smarter and a better decision maker."
- "Computers have made learning a little easier for me when we can watch videos about the subject sometimes and also other things too."

- "The laptops help to keep students thrilled to learn. They also help with the at home part of learning. If we need help at home we can chat our teachers or look something up online."
- "It makes things easier to learn and do. Looking up information is a lot easier and faster. I like that I have access to the rest of the world, all the time!"
- "Well I happen to be a kinesthetic learner and before now there wasn't much for kinesthetic people. . . . Now there is hands-on stuff for more things like vocab and lots more stuff I've started learning even better since I've had a computer to work with."
- "They have effected my grades a lot in science we usually make PowerPoints and I was able to critique it more and finish it on time."
- "It made some class easier like Spanish class because now you don't have to go to her desk for a speaking quiz you can just record it and not have to be embarrassed."
- "The laptops many features have given kids an opportunity to be creative and use their imagination. In one way or another they have taught us that there are many things out there!"
- "Made me be able to do my homework and study easier then what it was before."

Students describe self-regulation strategies used while learning in a 1:1 environment. Throughout the interviews students shared several behaviors which can be considered 'self-regulated' learning. As reported in Chapter 3 of this study, learners with

higher self-efficacy beliefs are found to more frequently utilize self-regulation strategies and the use of self-regulation strategies can lead to increases in self-efficacy beliefs and academic achievement (Pajares, 2008).

Some students reported they were spending more time outside of the school day completing homework assignments. This follows the premise that the more efficacious students will spend a longer time working on a task for which they feel they are likely to be successful. Pajares (2008) found that students, regardless of ability or previous achievement, will work harder and longer and persevere despite roadblocks, distractions, or challenges.

While also addressed in the 'challenges' theme, students discussed the distractions associated with learning in a 1:1 laptop environment and their struggle to overcome them. Students described self-regulatory behaviors to avoid those distractions. "Yeah, it (laptop) can be a distraction, but then you just think like if I don't get my homework done, I'm going to have detention and have to stay after school so you just have to think before what your consequence is." Referring to evening homework time a student offered, "I'd at least check Facebook once a night then I'd go and do homework and do some other things." Another student echoed the challenge, "Yeah, there's just so many other things you can do on your computer that can distract you from doing your actual homework." They appeared confident, that for the most part they could self-regulate and avoid those distractions.

A student mentioned the use of a laptop feature to help avoid the distraction of classroom noise while he was studying—that of text to speech. He shared, "I've used it

(text to speech) a couple of times, like if it is loud in the classroom I'd just put my headphones in and listen to what it's saying." A second student contributed that she also uses the text-to-speech feature to listen along with her reading of her social studies text book to aid comprehension.

Another self-regulatory behavior identified was students self-monitoring their learning. With the availability of Blackboard, students reported they frequently checked this learning management system to check their grades and stay on top of class announcements and due dates for assignments. If students were absent from school, they used Blackboard to access their assignments and class notes rather than waiting until they returned. When posed with the statement that there didn't seem to be any excuses for not doing homework or completing assignments, with the availability of the resources on Blackboard, students wholeheartedly agreed.

Students also made use of iCal to enter in due dates for assignments and appointments. A student shared one of his uses for iCal, "I use it to like set, in English we have to do a blog, so I use it for the reminders, like on the morning when it's our time to do it, it will pop up on your screen and says you have to do the daily blogger. Another student added, "I use it just for homework for when it's due and everything."

Taking responsibility for their learning was also evident in students' use of accessing resources to increase their understanding of math lessons. Students took advantage of watching teacher-created podcasts of his math lessons when they didn't understand or were absent from class. A student also indicated he appreciates having his math textbook online for further assistance. He shared, "I like the math because we can

watch online videos from the textbook provider so it's like having a personal teacher at home."

Students also reported taking responsibility to further their own learning of software and online programs beyond what was required of them. While students shared that their classroom teacher would demonstrate a program, they frequently explored the program further to create a higher-quality product than what was assigned. "Maybe a teacher will show us how to use one certain part of like an application, but otherwise, we just explore."

While there were several instances of self-regulatory behaviors, a behavior which was not reported by any of the students was their use of online resources for self-guided learning about a topic of interest to them or to enhance their learning of course content. When students were asked of their belief of 24/7 access impacting their learning, responses were limited to their use of class resources provided by the teacher. In a 1:1 study completed by the researcher for a graduate class at an earlier date, students shared that learning in a 1:1 laptop environment provided them with unlimited access to learn about anything of interest to them. Students in this past study were also found to participate in the self-regulatory behaviors of goal setting and planning in addition to the behaviors identified in this study. It is important to note the participants in the earlier study were either 11th or 12th grade students.

Archived survey data included the following responses which reinforce the theme of self-regulation behaviors occurring in a 1:1 environment:

- "It has taught me responsibility, as well as learning opportunities. I feel I can study with my preference of study type. Whenever I'm learning about something in the classroom I am more apt to go explore more about it."
- "Having the internet at my fingertips constantly is amazing for education and I cannot imagine it any other way at this point. If a topic comes up or I have an idea, a Google search yields a ton of information very quickly. I can read a Wikipedia article during downtime in class or browse news websites if I have nothing to do during study hall. The exposure to information is awesome and makes the day as educational as I want it to be."
- "The macs let me access other websites that explain what I am learning about more in depth and it can explain it better. Without the laptops I probably wouldn't have the grades I have."
- "With the ability to use the laptops, I have been able to expand my knowledge in my subject. Also, I have been able to get a head start on college and take several classes online."
- "I like to use Powerpoint or Keynote to make flashcards and study vocab. My grades on vocab quizzes have actually improved since the 24/7 learning."
- "Many of our textbooks can also be found on the computer, which is nice because then we have access to interactive quizzes, labs, videos, podcasts, examples, and many other learning tools that have improved my study and comprehending abilities. For another example, I use my online math book

very often because it has step-by-step example videos that really help me understand how to do math problems."

- "It is made it easier to take notes and then study them later because some of us do not have the best hand writing or it may even take us longer to write then type. It has also helped because I can check my grades at any given time to see what I need to work on."
- "We have millions of resources at our fingertips. It's really improved my learning by giving me a chance to search for things I'm interested in or don't understand very well. I've learned so much in these last 3 years that we have had this 24/7 learning."

Summary of qualitative analysis. Students participating in the focus group interviews provided the researcher with a rich description of how their laptops are used while learning in 1:1 environment. Students reported they utilized their laptops most often for school-related work. They benefitted from a variety of web-based programs, installed productivity software, and tools. These applications provided a means for students to organize and access information to complete their schoolwork, take notes during classes, and create ways to showcase their learning.

Evidence of increased self-efficacy was found through the focus-group interviews. Students reported they believed writing for class assignments was made easier. Having information organized on their laptops led to better management and their ability to complete homework, and the frequent use of their personalized laptops allowed

for increased exposure and improved learning of how to use a variety of computer programs, functions, and tools.

Students also described self-regulation while having 24/7 access to a laptop. Avoidance of games and social media to complete homework and focus attention in the classroom was mentioned as a challenge. Students utilized Blackboard to keep track of course announcements and due dates. iCal was used by some students to record due dates and set alerts for school-related work. Engaging in extended activities to increase their learning was also evident with students taking advantage of online textbooks and videos for extra tutoring to help with their understanding of course concepts. The following section provides descriptive data found to support identified themes.

Supporting data for qualitative findings. Snider's (2010) reflection that numbers impress would meet the agreement of most qualitative researchers. She also shares the opinion that numbers conceal far more than they reveal. Yin (2011) identifies case study research as being based on its own separate method which contains its own design, data collection, and analytic procedures. He explains, "As one indicator of the separateness of the method, contemporary students and scholars are now able to start and complete their own case studies by using qualitative or quantitative techniques" (p. 19). In this case study, the researcher included quantitative data to help explain the case: an additional description of the students learning in a 1:1 and as a means to validate the findings of the qualitative data collected in the focus group interviews.

The following data section includes tables and figures created from the Qualtrics online survey results administered prior to the focus group interviews. All 8th and 10th

grade students in the district completed this survey. Although the primary intent of the survey was to purposefully identify focus-group participants, the data also helps to provide a deeper description of the demographics of the district and the students who participated in this case study.

In regards to the survey item on ethnicity, the 8th and 10th grade students most often described their ethnic group as White (see Figure 2). Native American was indicated for the responses in the 'other' category.

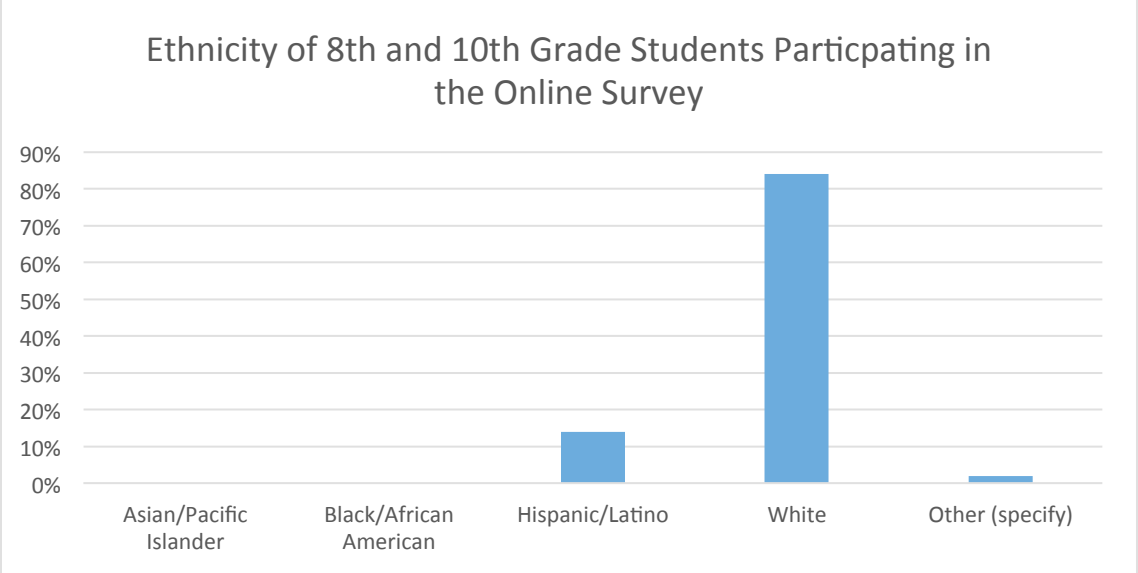

Figure 1. Breakdown of Ethnic groups for all online survey participants (n = 85).

On the demographic online survey, students were asked to indicate their overall grade point average (GPA). A perusal (see Figure 2) of the students' self-reported grade point averages (GPA) reveals that 60% of the students perceive themselves as a "B" or better student, while approximately 27% gauge themselves as "C" students. On the lower

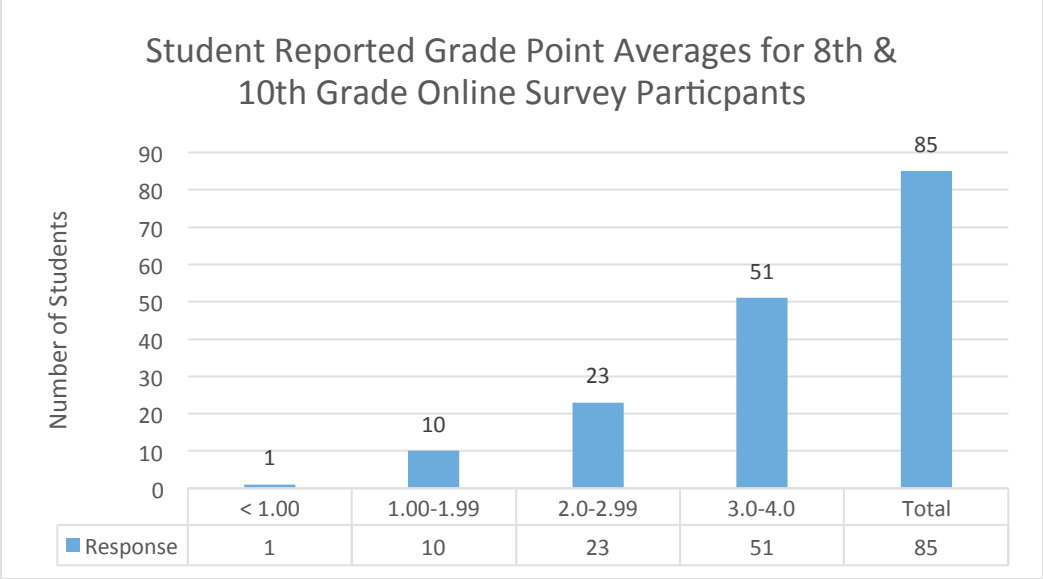

Figure 2. Students' reported GPA for all online survey participants (n = 85).

end of the grading scale, approximately 12% of the students feel they are performing as a "D" student, with 1% reporting as failing. This variety in perception of GPA supports the deviation of students' academic self-efficacy ratings.

Statistical Package for Social Sciences (SPSS) version 22, software was used to explore the relationship between the number of minutes students reported doing school-related work on their laptop outside of their school day (during the week) and academic self-efficacy and then self-regulation. Pearson's r was computed and a non-significant relationship was found in both relationships. Results are displayed in Figures 3 and 4.

Table 2 displays the number of minutes students use their laptop for school-related work during the school day, during after school time, and on weekends or vacations during the school year as self-reported on the online survey. Eighth and tenth

Correlations

		NQ10HomeEv	SellEffTotal
NQ10HomeEv	Pearson Correlation	1	.019
	Sig. (2-tailed)		.866
	N	85	85
SellEffTotal	Pearson Correlation	.019	1
	Sig. (2-tailed)	.866	
	N	85	85

Figure 3. Correlation between minutes spent on school-related work on week nights and academic self-efficacy rating for all online survey participants r = .019, n = 85, p = .866

Correlations

		NQ10HomeEv	SelfRegTotal
NQ10HomeEv	Pearson Correlation	1	-.063
	Sig. (2-tailed)		.565
	N	85	85
SelfRegTotal	Pearson Correlation	-.063	1
	Sig. (2-tailed)	.565	
	N	85	85

Figure 4. Correlation between minutes spent on school-related work on week nights and self-regulation rating for all online survey participants r = .063, n = 85, p = .565

grade students participating in the online survey reported an overall average of 188.85 minutes for laptop use during the school day. For minutes outside of the school day, during the week, students averaged 96.54 minutes/day engaged in school-related work. Weekends or school vacation days, students averaged 99.85 minutes/day doing school-related work on their laptop. The wide range of minimum and maximum times reported explain the large standard deviation for reported use.

Table 3

Reported Minutes Spent on Laptop for School-Related Work for All 8th & 10th Students (n = 85)

	Min.	Max.	Median	Mean	SD
Schooltime Minutes	4.0	560.0	180.00	188.85	125.75
Weekend Minutes	2.0	540.0	60.00	96.54	88.68
Weekend/Vacation Mintues	0	500.0	60.00	99.85	102.26

As would be expected due to the difference in grade level expectations, 10th grade students reported a greater deal of time spent on their laptop doing school-related work at each of the three designated times: during the school day, after school, and on weekends or vacation days during the school year. Table 3 displays the differences in the average time spent for each of grades 8 and 10.

Table 5

Reported Minutes Spent on Laptop for School-Related Work by Grade Level (n = 44)

	Grade 8 Mean	Grade 8 SD	Grade 10 Mean	Grade 10 SD
School-Time Minutes	164.61	135.33	214.85	110.36
Weekend Minutes	75.36	90.96	119.27	81.24
Weekend/Vacation	95.61	94.97	104.39	110.56

As found in the previous table (Table 3), 10th graders reported spending more time on their laptops doing school-related work over the 8th graders. The mean for the

10th grade class is greater than the overall mean for each of the designated times (see Table 5).

Table 5

Overall Comparison of Mean Minutes on Laptop Engaged in School-Related Work

	Grade 8 Mean (n = 44)	Grade 10 Mean (n = 41)	Overall Mean (n = 85)
School-Time Minutes	164.61	214.85	188.85
Weeknight Minutes	75.36	119.27	96.54
Weekend/Vacation	95.61	104.39	99.85

Bandura's (1990) survey is a widely-used instrument to measure perceived self-efficacy. Internal consistency reliabilities have been reported as ranging from 0.60 to 0.93. This survey has been used with various student age groups including middle grade, high school, and college freshmen. An SPSS analysis of the research data from this study reveals a Cronbach's alpha reliability of the 9-item measure of Academic Self-Efficacy as 0.860 while the 11-item measure of Self-Regulatory behaviors is 0.93 (see Table 6).

The mean for each grade level completing the online survey showed somewhat similar ratings across grade levels for both the academic self-efficacy and the self-regulation subscales. Results of a T-Test analyzing students' perceived mean ratings (Table 7) revealed that 10th graders have a higher mean on both sub-scales with a greater difference in mean found on the self-efficacy ratings.

Table 6

Cronbach's Alpha for Bandura Subscales

	Academic Self-Efficacy	Self-Regulated Learning
Number of Items	9	11
Cronbach's Alpha	0.86	0.93

Table 7

Comparison of Overall Mean of Total Subscale Scores of Academic Self Efficacy and Self-Regulation by Grade Level

	Grade 8 (n = 44)	Grade 10 (n = 41)
Self-efficacy Mean	43.77	47.66
Self-efficacy SD	8.16	7.13
Self-Regulation Mean	54.39	-55.95
Self-Regulation SD	10.96	10.49

In line with the overall mean differences of the overall Self-Efficacy ratings displayed in the previous table (Table 7), 10th graders show a higher self-efficacy rating for all but one item in the subscale. With the exception of perceived efficacy in learning to use computers, 10th graders averaged higher on each item on Bandura's Academic Self-Efficacy subscale (see Table 8). The greatest difference in mean ratings was found in the item related to learning a foreign language. This was likely due to the fact that the 8th graders have not had as much exposure (foreign language classes) as the 10th grade students. Tenth grade students participating in the focus group interviews mentioned the use of Word and online resources to help them learn in their Spanish class.

Table 8

Comparison of Grade 8 & Grade 10 Mean Ratings on Bandura's Academic Self-Efficacy Subscale

	Overall Mean (n = 85)	Mean-8th (n = 44)	Mean-10th (n = 41)
How well can you learn a foreign language?	3.93	3.43	4.46
How well can you learn biology?	4.78	4.59	4.98
How well can you learn English Grammar?	4.91	4.70	5.12
How well can you learn Algebra?	5.05	4.95	5.15
How well can you learn science?	5.05	5.02	5.07
How well can you learn general mathematics?	5.26	5.11	5.41
How well can you learn reading and writing language skills?	5.29	5.07	5.54
How well can you learn social studies?	5.31	4.80	5.85
How well can you learn to use computers?	6.08	6.09	6.07

Items coded as 1 = Not Well at All, 2, 3 = Not Too Well, 4, 5 = Pretty Well, 6, 7 = Very Well

A breakdown of item ratings between males and females by all online survey participants show that the males perceive a higher self-efficacy than females on 6 of the 9 items. Females had a higher mean rating in the two math areas along with learning English/Grammar (see Table 9). Aligned with the information received by students during the focus-group interviews, both groups showed the highest mean self-efficacy rating in their ability to learn to use computers. The third highest overall mean was in the

Table 9

Comparison of Male and Female Self-Efficacy Mean Ratings On Bandura's Academic Self-Efficacy Subscale

	Overall Mean (n = 85)	Mean-Female (n = 47)	Mean-Male (n = 38)
How well can you learn a foreign language?	3.93	3.83	4.05
How well can you learn biology?	4.78	4.70	4.87
How well can you learn English Grammar?	4.91	4.94	4.87
How well can you learn algebra?	5.05	5.09	5.00
How well can you learn science?	5.05	4.94	5.18
How well can you learn general mathematics?	5.26	5.47	5.00
How well can you learn reading and writing language skills?	5.29	5.17	5.45
How well can you learn social studies?	5.31	5.15	5.50
How well can you learn to use computers?	6.08	6.06	6.11

Items coded as 1 = Not Well at All, 2, 3 = Not Too Well, 4, 5 = Pretty Well, 6, 7 = Very Well

area of learning reading and writing language skills which also supports the students' repeated indication that 24/7 access to a laptop makes writing easier.

Overall means of the self-regulation items align well with information collected in the focus group interviews. The four highest areas where students felt they could regulate their behaviors were found in meeting homework deadlines, organizing, note taking, and planning. All of these areas were mentioned within one of the identified themes in the qualitative analysis.

The mean scores for the items on Bandura's Self-Regulation subscale are quite similar for both grade levels with the 10th grade having a higher average rating on 6 of the 11 survey items (see Table 10). Motivation to do schoolwork, concentrating on school subjects, planning and organizing school work, and meeting homework deadlines were all areas which the 8th graders had higher average ratings. A lower self-regulation rating by the 10th graders in these areas could possibly be due to the increased demands on their time as high school students are usually engaged in many more extra-curricular activities, jobs, or other demands on their time than 8th grade students.

Information displayed in Table 11 compares mean ratings of males and females on each of the self-regulatory items. Although the males had a higher mean rating for 6 or the 11 items on Bandura's Self-Regulation subscale, both males and females had higher mean ratings for 3 of the same items: meeting homework deadlines, taking class notes, and organizing schoolwork. Females had higher mean ratings for using the library to access information and concentrating on school subjects.

As presented in the Chapter 2 literature review, research concludes there is a strong relationship between academic self-efficacy and self-regulation. An analysis of the students' academic self-efficacy and self-regulation ratings collected in this study also confirms this research (see Figure 5). Looking at both constructs of self-efficacy and self-regulation, Pajares (2008) identifies a reflexive, positive impact which self-efficacy and the use of self-regulation strategies have on one another. Learners with higher self-efficacy beliefs are found to more frequently utilize self-regulation strategies and the use

Table 10

Comparison of Overall Mean Ratings for Grades 8 & 10 for Each of the Questions on Bandura's Self-Regulation Subscale

Self-Regulation Items	Overall Mean (n = 85)	Mean-8th (n = 44)	Mean-10th (n = 41)
Use the library to get information for class assignments?	4.46	4.32	4.61
Study when there are other interesting things to do?	4.58	4.45	4.71
Participate in class discussions?	4.81	4.64	5.00
Motivate yourself to do schoolwork?	4.91	4.98	4.83
Arrange a place to study without disgtraction?	4.93	4.8	5.05
Remember information presented in class and textbooks?	4.94	4.82	5.07
Concentrate on school subjects?	5.18	5.18	5.17
Plan your school work?	5.21	5.23	5.20
Take class notes of class instruction?	5.22	5.00	5.46
Organize your school work?	5.31	5.32	5.29

Items coded as 1 = Not Well at All, 2, 3 = Not Too Well, 4, 5 = Pretty Well, 6, 7 = Very Well

Table 11

Comparison of Overall Mean Ratings for Males and Females for Items on Bandura's Self-Regulation Subscale

Self-Regulation Items:	Overall Mean (n = 85)	Female-Mean (n = 47)	Male-Mean (n = 38)
Use the library to get information for class assignments?	4.46	4.53	4.37
Study when there are other interesting things to do?	4.58	4.40	4.79
Participate in class discussions?	4.8	4.55	5.13
Motivate yourself to do schoolwork?	4.91	4.89	4.92
Arrange a place to study without distraction?	4.93	4.91	4.95
Remember information presented in class and textbooks?	4.84	4.85	5.05
Concentrate on school subjects?	5.18	5.19	5.16
Plan your school work?	5.21	5.40	4.97
Take class notes of class instruction?	5.22	5.38	5.3
Organize your school work?	5.31	5.55	5.00
Finish homework assignments by deadlines?	5.60	5.77	5.39

Items coded as 1 = Not Well at All, 2, 3 = Not Too Well, 4, 5 = Pretty Well, 6, 7 = Very Well

Correlations

		SelfRegTotal	SellEffTotal
SelfRegTotal	Pearson Correlation	1	.740**
	Sig. (2-tailed)		.000
	N	85	85
SellEffTotal	Pearson Correlation	.740**	1
	Sig. (2-tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 5. Correlation between students' reported academic self-efficacy ratings and self-regulation, r = .740, n = 85, p = .000.

of self-regulation strategies can lead to increases in self-efficacy beliefs and academic achievement. Zimmerman and Schunk (2008) also reported a reciprocal relationship between a learners' capacity of self-regulation and beliefs of self-efficacy. These researchers have found that when students increase their capacity to self-regulate, their self-efficacy beliefs also increase.

Online survey data collected through Bandura's subscales of academic self-efficacy and self-regulation provide strong support for the themes uncovered through the focus-group interviews. Increased efficacy for learning how to use a computer was revealed through the students' frequently mentioned use of a variety of software programs, web-based programs, and laptop tools. This belief was supported in the academic self-efficacy subscale with the item, "How well can you learn to use computers?" receiving the highest mean rating. Students' belief that writing has become easier since having 24/7 laptop access is also supported with the overall mean score on

the item, “How well can you learn reading and writing/language skills?” coming in as one of the highest ratings.

The self-regulation subscale data also provided support for discovered themes. Programs/software and tools available on the laptop were also elaborated upon during the focus group interviews to share how they have been able to increase their organization, take better class notes, and complete their homework. Since most all of their homework is stored on their laptop, it is easily accessible to them. Being able to access course information and documents via Blackboard, and the availability of internet resources were also beneficial to their ability to complete their homework.

Supporting data from NeSA-Writing. Students extolled 24/7 access to a laptop partially due to their perception of enhanced writing skills and the easier the task using a laptop. A look at the State of the Schools Report accessed on the Nebraska Department of Education website found the district above the state average for proficiency in the NeSA Writing Assessments for both the 2011-2012 and 2012-2013 school years, in both grades 8 and 11. At the fourth grade, where students do not have the benefit of 24/7 access to a laptop, 40% of the class did not reach proficiency performance compared to the state average of 31% for all fourth graders. Only 1 year of data was available for the fourth grade as it was the Nebraska’s first year of implementing analytical scoring for this group.

Table 12 summarizes the district’s performance for the 2011-2012 and the 2012-2013 NeSA-Writing.

Table 12

Comparison of Proficiency Percentages for District's NeSA-Writing to that of the State of Nebraska for the 2011-12 and 2012-13 School Years

Class	District Proficiency 2011-2012	State Proficiency 2011-2012	District Proficiency 2012-2013	State Proficiency 2012-2013
11th Grade	65% (n = 57)	62%	74% (n = 47)	69%
8th Grade	74% (n = 47)	64%	75% (n = 52)	67%

The 2012-2013 NeSA-Writing was the second year that Nebraska's 8th and 11th grade students' writing assessments were scored analytically to include a breakdown of the following domains: Content/Ideas, Organization, Voice/Word Choice, and Sentence Fluency/Conventions. With the exception of the "Organization" domain for 11th grade students during the 2011-12 school year, all of the district's domain score means were higher than that of the mean for all Nebraska 8th and 11th graders taking the assessment for both the 2011-12 and 2012-13 school years. Table 13 and Table 14 display the comparisons between the state and district's performance for each domain area for Grade 8 and 11 students respectively. Domains are scored on a 2-8 scale.

Conclusion

This chapter presented the results from focus group interviews, online survey data, and data from a district-administered survey. Online survey participants included students in both Grades 8 and 10. Only two, 10th grade students declined to participate in

Table 13

Comparison of Nebraska's and District's Performance for Each Domain Area for 8th Grade Students

Domain	District 2011-2012 (n = 47)	State 2011-2012	District 2012-2013 (n = 52)	State 2012-2013
Content/Ideas	6.02	5.71	5.81	5.73
Organization	5.91	5.54	5.65	5.62
Voice/Word Choice	6.09	5.67	5.94	5.78
Sentence Fluency/ Conventions	5.89	5.54	5.75	5.61

Table 14

Comparison of Nebraska's and District's Performance for Each Domain Area for 11th Grade Students

Domain	District 2011-2012 (n = 57)	State 2011-2012	District 2012-2013 (n = 47)	State 2012-2013
Content/Ideas	5.84	5.75	5.96	5.86
Organization	5.65	5.72	6.06	5.83
Voice/Word Choice	6.14	5.93	6.06	5.88
Sentence Fluency/ Conventions	6.25	5.84	5.91	5.75

the study. Interview participants were purposefully-selected 8th and 10th grade students learning in a 1:1 laptop initiative in their school district. Qualitative findings were reported in sections which corresponded with the primary themes that emerged from the results: organization, laptop production tools and internet resources, challenges, description of academic self-efficacy, and descriptions of self-regulation.

Through the focus group interview data, online survey data, and archived data provided by the district, there were many descriptions of increased academic self-efficacy in the ability of students to organize their school work, their ability and interest in writing, and their ability to use a laptop and its programs and internet resources. Students described their ability to self-regulate behaviors in utilizing laptop tools to increase learning, organize and complete homework, and resist distractions which might interfere with completing class assignments.

Chapter 5 presents a discussion of the results and gives recommendations for future research. Implications for stakeholder groups, including administrators, teachers, and students is presented. The chapter concludes with implementation recommendations for a 1:1 laptop initiative which could foster academic self-efficacy and self-regulation with their students.

Chapter 5

Summary and Conclusions

In Chapter 4, the reader was provided the results of the research study. This final chapter includes a summary of the research problem and purpose, methods, and a discussion of the results and implications for various stakeholder groups. The chapter concludes with the study's limitations and recommendations for future research in the area of learning in a 1:1 laptop environment.

Statement of the Problem

One-to-One laptop initiatives continue to expand across the state of Nebraska and throughout the United States. Much discussion has been had regarding their impact on student learning and justification for their costly implementations to the school districts. As districts consider such an initiative and its major investment of financial and human resources for implementation, more research is needed to help guide these decisions.

Purpose of the Study

The purpose of this case study was to examine 8th and 10th grade students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment.

Research Questions

This case study was guided by three questions. The "central research" (Creswell, 2009, p. 129) question, also described by Stake as "primary research" (p. 16) was as follows: How do eighth and tenth grade students describe academic self-efficacy and

self-regulation during their first and continuing years of learning in a 1:1 environment with 24/7 access to a laptop?

Sub-questions, or "topical" questions (Stake, 1995, p. 25) included in this case study consisted of the following:

1. What self-regulation strategies are students employing while having 24/7 access to a laptop?
2. How do students describe any perceived effects on academic self-efficacy? Are there any specific academic tasks mentioned?

Research Methods

Eighty-five (85) students in grades 8 and 10, from a Nebraska school district were the subjects in this case study. These 8^{th} (n = 44) and 10^{th} (n = 41) grade students participated in the online survey portion of the study and 20 of the students (purposefully selected from online survey results) participated in focus group interviews. There were 2 focus groups for each grade level with 5 students participating in each group:

- Grade 8—High Self-Efficacy & Self-Regulation
- Grade 8—Low Self-Efficacy & Self-Regulation
- Grade 10—High Self-Efficacy & Self-Regulation
- Grade 10—Low Self-Efficacy & Self-Regulation

Students selected for the interviews were questioned on their laptop use at school and home to ascertain perceptions of the influence learning in a 1:1 environment has on their academic self-efficacy and self-regulation. In addition to the online survey and focus group data, the researcher also had access to an archived document of district

administered survey results conducted prior to the start of this study. The online survey for this case study was administered through the online Qualtrics program. Quantitative results were analyzed with Statistical Package for Social Sciences (SPSS), version 22. Qualitative data secured through transcriptions of audio recordings of focus group interviews were analyzed by hand and also with the MAX Qualitative Data Analysis, (MAXQDA) program, version 11.

Findings

Before summarizing the themes uncovered in the study, it's appropriate to share a couple of ideas which did not emerge as anticipated by the researcher. When contemplating the sample for this research, it was decided to select students based upon their perceived academic self-efficacy and self-regulation ratings to allow for responses which could lead to discoveries regarding their differences in laptop use. When coding and analyzing the transcription data, no differences were found among the groups in their use or perceptions of its effects on their learning.

In a previous study of 1:1 laptop districts for a doctoral seminar course, students mentioned several instances of self-directed learning. There was no indication in the responses from this study that students took advantage of web resources just to learn about a topic on their own because it was of interest to them. It was indicated they might seek further information on a topic they were learning in school. In the previous study, students interviewed were primarily 12th grade students, so this could be a factor. Five themes emerged from this case study:

1. Laptop access, programs and features allow for better **organization.**
2. Students utilize a variety of **laptop production tools and internet programs.**
3. Students face several **challenges** while learning in a 1:1 environment.
4. Students describe an increase of **self-efficacy** while learning in a 1:1 environment.
5. Students describe **self-regulation** strategies used while learning in a 1:1 environment.

Themes 4 and 5 were included to answer the central research question posed in this study, "How do eighth and tenth grade students describe academic self-efficacy and self-regulation after their first and continuing years of learning in a 1:1 environment with 24/7 access to a laptop?" These final two themes encompass many of the ideas uncovered in the students' focus-group interviews and also described within the first through third themes.

With 24/7 access to a laptop, students have voiced the appreciated attributes such a tool provides including improved organization and the availability of multiple software programs, applications, and internet resources. Students utilize the web-based, learning management system, Blackboard, to access course information and documents; online textbooks, and applications such as the calendar and alerts to help stay organized. Microsoft Word (word processing program) for completing writing assignments and class note taking is often used by students. Students use programs such as Keynote, Powerpoint, and iMovie for project-based assignments. Quizlet, an online program is

utilized to practice vocabulary, while IXL is accessed by the 8th grade students for additional math practice.

Challenges of learning in a 1:1 laptop environment were divulged in the focus group interviews. Automatic updates (which cause unexpected laptop restarts), dropped or unavailable wireless connections, and distractions of non-educational laptop activities were issues shared by the students.

Making use of the resources available to them with their school-issued laptop and wireless internet access, has helped them self-regulate their learning. Through their use of the laptop tools and their ability to access internet resources, students are able to extend and reinforce their learning outside of class time. Online textbooks and teacher-created podcasts are accessed by the students for supplemental tutoring. Students perceive they are spending more time outside of the school day completing homework. Having 'one-stop' access to class materials has promoted timely homework completion. Students take the initiative to explore laptop tools, applications, and programs on their own beyond what is presented by their classroom teacher. Students have had to self-regulate their behaviors with self-monitoring of appropriate use and time spent using the laptop for non-educational purposes.

Access to these tools and resources, in turn, has increased their academic self-efficacy in several areas. Participating students in the interviews perceive writing tasks, note taking, learning vocabulary, learning math concepts has become easier with 1:1 access. They also believe their ability to conduct research and present information, through the use of various productivity programs and accessing internet resources is

easier than prior to 24/7 laptop access. Learning to use a laptop and the many tools and functions associated with it has also been an area where students have become more efficacious.

Implications and Recommendations

An analysis of the online survey data, focus group data, and archived survey data provided findings which support students' perceptions of increased academic self-efficacy and self-regulation while learning in a 1:1 environment. Following are implications and recommendations given in light of the findings emerging from the synthesis.

1. Results shared from this study may be useful in presenting support for a district's implementation of a 1:1 laptop initiative. Boards of Education can use this information to provide an adequate budget for reliable internet connectivity with appropriate bandwidth, network, and wireless systems. Hardware, software, staffing, and professional development are also key components to fully utilize laptop implementation to support student learning and should be important budget considerations.
2. The sharing of students' stories through interviews provided the researcher with evidence that students do benefit from 24/7 access to a laptop. Although concrete evidence regarding increased student achievement is difficult to substantiate for 1:1 districts, there are other important benefits as found in this case study—students' perceptions of increased academic self-efficacy and engagement in self-regulatory behaviors as a result of 24/7 learning.

3. This case study provided information for administrators, school improvement teams, and teachers in regards to the helpful tools, programs, and teaching practices which students found most beneficial while learning in a 1:1 environment. Students appreciated the access to course content and information through Blackboard, the online learning management system. It not only was a great organizational tool, but students benefitted by having access to their grades, and class resources such as videos, notes, worksheets, and links to informational websites through links or documents uploaded by the teacher. Access to online textbooks, which also included video tutorials and interactive activities was also found to be well-utilized by the students. Students felt that computer classes where they were directly taught to use computer applications, software, and programs were helpful. School administrators should encourage, make time for, and provide professional development for staff to further explore best practices for integration.
4. With the benefits also come the challenges in a 1:1 initiative. Becoming aware of challenges students face can assist administrators and teachers to minimize some of the problems. Inconsistent wireless connections were an issue for the students as they complained not being able to connect to the internet. They also lamented the fact of losing work that had not been saved due to an unexpected restart of their laptop triggered by software updates. The value of a strong technology infrastructure cannot be underestimated and districts should take steps to reduce these problems by installing adequate

wireless ports and having sufficient bandwidth. Program updates are necessary. Adjusting settings for automatic updates and installs is convenient, and an assurance updates will be performed; but it can cause undue stress for students. Temptation to play games, listen to music, engage in social media feeds, or other non-educational laptop uses can pose a problem to a student who has a hard time self-regulating their behavior. Class rules and consequences for appropriate use are critical to help students keep those behaviors in check.

5. The perception that students believe learning in a 1:1 environment positively influences their academic self-efficacy was evident in this case study. Students alluded to their belief that completing homework, writing assignments, note taking, organizational skills, conducting research, and learning to use a computer and its associated applications, tools, and programs were much easier since having 24/7 access to a laptop. Students attributed the improvement in those skills to programs such as Word, Keynote, Powerpoint, Quizlet, and Inspiration, iCal, and Blackboard. With the identification of these useful resources, teachers can capitalize on such programs with their students.
6. Administrators and teachers will benefit from the students' descriptions of self-regulation while learning in a 1:1 environment. By identifying useful tools, software and programs students use, teachers can capitalize on those products to allow for widespread and regular use by their students. Taking

some control over their learning was evident as students shared that they take advantage of iCAL and Blackboard notifications to stay on track with coursework and assignments. Students utilized class resources, such as online textbooks, teacher-created podcasts, and internet search engines to help further their understanding and learning of course concepts and content. Students created flashcards with various programs to help with studying vocabulary. Productivity software such as Powerpoint, Keynote, and iMovie allowed students to create, plan, and produce a variety of products to showcase their learning. When given just a basic demonstration of a program, students further explored the program's capabilities to allow for even more creativity.

The implications listed above provide guidance for school administrators, teachers, boards of education and stakeholders in considering implementation of a 1:1 laptop initiative. In addition, findings from this case study also provide guidance for schools who are already engaged in such an initiative by identifying practices which promote students' academic self-efficacy and self-regulation (see Table 15).

Limitations of this Study

The primary limitations of this study were in regard to the sample. Data was only collected from students completing their first or third year of learning in a 1:1 laptop initiative (8^{th} and10^{th} graders) and at a single site. Thus, results cannot be generalized outside of the population involved in the study. Stake (1995) asserts, "The real business

Table 15

Implications for Stakeholders

Audience	Implications
Teachers	Classroom management-rules/consequences Digital etiquette/appropriate use Utilize learning Management System Laptop tools/programs/internet resources beneficial to students' organization and learning Instructional strategies to support integration Project-based learning
School Improvement Leaders	Explore laptop tools, programs, and internet resources to support school improvement goals Create SMART goals for technology use Utilize web-based programs for interventions for struggling students
School Administrators	Professional development for staff on integration and use Dedicated contract days or stipends to allow for professional development/collaboration time District rules/regulations Expectations for integration Provide hardware, software, and network infrastructure for seamless connectivity, management, and storage
Boards of Education	Budget for necessary staffing, hardware, software, and network needs Adopt School Calendar for built in professional development days/time for staff to learn and explore best practices for 1:1 implementation

of case study is particularization, not generalization" (p. 8). Another limitation could also be that the presence of the researcher, and the fact of the researcher being a school superintendent, may have influenced the students' responses to the interview questions. At times the researcher felt as though the students were trying to minimize their laptop use outside of school-related work and downplay any challenges they faced while learning in a 1:1 environment.

Recommendations for Future Research

Information in this case study was provided by students who had completed their first (8th graders) and third (10th graders) year of learning in a 1:1 laptop district. While the results included rich descriptions of students' perceptions of increased academic self-efficacy and self-regulation, suggestions for future research include the need to diversify the sample and collect information on the implementation process.

- Diversification of the sample—while students were purposefully selected through self-ratings of their academic self-efficacy and self-regulation, the narrowed grade levels could possibly be limiting. In a previous study conducted by the researcher, upper-level students (Grades 11 & 12) participated in the focus group interviews regarding their learning experiences in a 1:1 laptop school. Findings from this earlier study revealed that students were taking the initiative to use web resources to learn about subjects for which they had interest. In the current case study, it was not found that students used their laptop for learning content outside of what was being taught in their courses. Conducting similar research with 11th and 12th grade students would likely provide additional information to answer the research question.
- Collection of information on district's implementation—each district's implementation of a 1:1 laptop initiative is unique. From the laptop itself to the preparation for implementation by staff and students, there appears to be limited continuity among schools. How teachers and students are taught to use

the laptop, tools, and programs, and the infrastructure work completed, would provide helpful guidance for those engaging in new and existing initiatives.

- Consideration of other 1:1 Laptop questions:
  - ** Do students perceive a higher efficacy in their ability to achieve a post-secondary education due to learning in a 1:1 district?
  - ** Do students with 24/7 laptop access perceive increased efficacy in their ability to succeed in an online college course while still in high school?
  - ** Do 1:1 high school students taking online college classes describe a greater degree of self-regulation in their coursework than high school students not engaged in a 1:1 district?
  - ** Longitudinal study of NeSA Writing scores in 1:1 districts, do 1:1 districts have a higher average of proficiency than non-laptop districts?
  - ** How are teachers and students prepared for a 1:1 laptop initiative?
  - ** Description of specific strategies teachers are utilizing in a 1:1 environment which can lead to increased academic efficacy and self-regulation
  - ** Are teachers in a 1:1 district more likely to engage in online collaboration with teachers in their subject area or grade level to improve their pedagogy?
  - ** Do instructors in a 1:1 district perceive increased efficacy in their teaching skills? Their ability to increase student achievement?

** Do students in other1:1 districts perceive a higher academic self-efficacy in similar subject areas?

Contribution to Research Literature

This case study provides a description of students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment. An important contribution of the research findings were students' shared perceptions of helpful laptop tools, programs, internet resources, and teachers' facilitated use of their laptops, which could promote an increase in students' academic self-efficacy and self-regulation. Students discussed challenges they faced while learning in a 1:1 district which is also important information for administrators and instructors contemplating or engaged in a 1:1 laptop initiative so those challenges can be minimized—especially those of a technical nature. This study also confirmed the internal reliability for Bandura's (1990) survey subscales of academic self-efficacy and self-regulation. And finally, Pajares metaphor of 'kissing cousins' in regard to the relationship of self-efficacy and self-regulation is confirmed (Bembenutty, 2007). A Pearson correlation analysis of participating students' (n = 85) ratings on Bandura's academic self-efficacy and self-regulation show a strong relationship with an 'r' value of .740. More efficacious students are more likely to engage in consistent self-regulatory behaviors.

Personal Reflections

"Every Path Has Its Puddle" is an English Proverb quoted in Bryant's (2004), *The Portable Dissertation Advisor* (p. 136). My journey through the doctoral program and dissertation process branched out into many curvy paths with a variety of puddles.

Before the wrap up with 'final thoughts,' it's appropriate to share a 'top 5 lessons learned' through the navigation of the study process to get to this point.

- Lesson 1: Life Happens. Early in my doctoral program, my mom began her downhill slide with Alzheimer's. No longer able to live in her home, we moved her to a local nursing home. In just over a year, we were moving her yet again due to the closing of the facility. At this time, her health had declined to the point where she was eligible for hospice care and we moved her to a hospice facility in Lincoln, two and a half hours away. It was a short six months until she succumbed to the horrible disease. Concurrently, accepting a superintendent position in a nearby district and my initiation into "grandmother-hood" provided additional distractions—although welcomed and enjoyed. Nonetheless, it detoured my studies.
- Lesson 2. Proposals are not always accepted. Professional challenges also caused some of the curves and puddles. Early in the dissertation process, my proposal committee requested changes to the proposal before the study could be approved. They were welcomed changes, as it made my study much more manageable and focused.
- Lesson 3: Urgency is yours, not theirs. The next puddle on the dissertation path came from the Institutional Review Board as I navigated the requirements for their approval to conduct my research. Although the necessary documents were submitted to the Institutional Review Board by mid-February, it wasn't until mid-April when approval was granted. The

biggest obstacles appeared to be offering a drawing for gift cards to the participants and conducting the study during school time.

- Lesson 4. Student participation is not a given. This is where the deepest puddle was encountered. After a visit to the school to recruit students to participate in my research, and providing the necessary documents for their participation, I came up empty-handed. Less than 5 students returned forms allowing them permission to take participate in the study. With the end of the school year imminent, there wasn't time to make an additional recruiting visit before students were released for summer vacation.
- Lesson 5. Perseverance is a must. Visiting with the technology integration specialist, she identified the main road-block as the students not returning their signed parental consent form, not their lack of interest. Armed with this knowledge, a change of protocol was filed with the IRB for a waiver for requiring a parent signature for their student's participation. Parents only needed to sign and return the consent form if they did not wish for their student to participate. This change, coupled with the added incentive of each participant receiving a $5.00 gift card produced a much better outcome in the follow-up quest for data collection. Instead of only a few completing the online study, 85 students chose to participate.

From a school superintendent's point of view, it's a given that students are the key players in any educational system and their insight into curriculum and teaching practices provide valuable information in meeting their needs to become successful

learners. At times during the interview, it seemed some participants were hesitant to contribute, and they truly wanted to focus on only the positive aspects of their 24/7 access. Many were quick to respond their laptop was only used for educational purposes, although a few did mention they caught up with friends on Facebook.

Navigating the path required to engage students in focus-group interviews to hear their stories of learning in a 1:1 environment was troublesome but well worth the effort. How they use their school-issued laptops and their perceptions of the initiative's impact on their learning, provided valuable information for this study.

Final Thoughts

Questions abound as to the effectiveness of 1:1 laptop initiatives in school districts and their worthiness of the financial and human resources such an implementation requires. While 1:1 initiatives are predominantly a drive to promote 21st Century Skills for our students, the impact could provide even further value for student learning through fostering academic self-efficacy and self-regulation. The enhancement of these constructs for students could yield measureable results in student achievement. Having programs, videos, and other educational resources available to students 24/7 is likely to allow students to achieve a greater degree of success. Anytime, anywhere leaning may precipitate the creation of life-long learners who take initiative to learn for the sake of learning. With virtually unlimited access to information, students have the opportunity for exponential learning opportunities. But more importantly, they may become creators and producers of new information.

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Appendix A

IRB Consent for Study Protocol Changes

Sent By: IRB NUgrant System
Sent On: 08/07/2013 08:19 am
Reference: Workflow - 94733
Subject: Official Approval Letter for IRB project #12965
Message: August 5, 2013

Joan Carraher
Graduate Studies
151 N Linden St Spalding, NE 68665

Delwyn Harnisch
Teaching, Learning and Teacher Education
125A HECO, UNL, 68588-0800

IRB Number: 20130412965EP

Project ID: 12965

Project Title: STUDENTS' PERCEPTIONS OF ACADMEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT

Dear Joan:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

It has been approved to incorporate the following items:

o recruitment to be conducted via school newsletter,

o Site coordinator distribution of recruitment materials,

o Parental notification,

o Students may complete the online survey during the school day at a time that will

not affect normal instruction, and

o Compensation of 5 dollars for both survey and focus groups completion.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;

* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;

* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;

* Any breach in confidentiality or compromise in data privacy related to the subject or others; or

* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Julia Torquati, Ph.D.

Chair for the IRB

Appendix B

Parental Informational Letter

University of Nebraska Lincoln

Parental Information

My name is Joan Carraher, and I am the superintendent for Cedar Rapids Public School as well as a doctoral student at the University of Nebraska at Lincoln. This letter is to inform you of the invitation for your 8th and/or 10th grade student to participate in my dissertation research study. I am interested in exploring students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop initiative. Information regarding this study is being made available to help you make an informed decision as to whether or not to allow your student to participate. Your student will also be asked if he/she is willing to participate.

Identification of Study:
STUDENTS' PERCEPTIONS OF ACADEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT

Purpose of the Study:
The purpose of this study will be to examine 8th and 10th grade students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment.

Procedure:
Participation in the first phase of this study requires approximately 10 minutes for the completion of an online survey that will be given in late August or early September 2013. In this survey, students will be asked to rate their level of how well they feel they are able to succeed in various academic areas, how well they can regulate their learning, and approximately how much time they spend using their school-issued laptop as well as general items of gender, race, and grade point average. They will be asked to provide

their first and last initial along with the last 4 digits of their phone number as identification. Their names will not be tied to the online survey or interview responses. Students agreeing to participate will complete the online during school time as established by their school administrator. The survey will be submitted electronically to a secure website made available by the University of Nebraska at Lincoln.

Upon completion of the online survey and analysis of student responses, selected students showing very high or very low self-ratings in certain subject areas and/or regulation of their learning, will be invited to participate in a focus-group interview conducted by me with 3-4 oftheir classmates. This will be held at their school during the regular school day in September 2013 at a time that will not interfere with instructional requirements.

Students selected for afocus-group interview will be identified by their identification code of their initials and the final 4-digit phone number. The site coordinator will be asked to contact the students and coordinate with the researcher on arrangements for the focus group interview. Five students will be selected for each focus group. In the event that it is not possible to accommodate all students' schedules, the interview will be conducted when the majority of the students can attend. There will be at least 3 students in each focus group. The purpose of the interview is to gain a deeper understanding of students' perceptions of academic self-efficacy and self-regulation while learning in a 1-1 laptop environment. This interview would require about 30 minutes of your student's time, depending on their length and completeness of responses. Arrangements for the interview will be made by your school coordinator at a time agreeable to the school administrator and your student. During the interview, responses will be heard by classmates also participating in the interview, students will be asked not share what is said outside the group as a matter of respect for one another's privacy. The focus-group interview will be audio recorded, and students will be asked to indicate their assent for the recording of the interview.

Risks:
There are no known risks associated with this research study.

Benefits:
There are no direct benefits to the student participants in this study. However, findings of this research will be used to provide information and suggestions to school leaders, teachers, and boards of education on practices in a 1:1 laptop initiative which may enhance or impede students' academic self-efficacy and/or self-regulation.

Confidentiality:
All data gained in this study will remain strictly confidential. Neither the school district nor student names will be identified at any time during the gathering, analysis, or reporting of findings from this research. Data from this study will be stored on a password protected laptop which is in the researcher's home office. Data will be only

used by the investigator for purposes of this study. Findings gained from this study will be published as a dissertation and possibly published in journal articles or presented at professional educational conferences.

Compensation:
Students completing the online survey will receive a $5.00 gift card immediately after submitting the online survey. Students selected and participating in the focus-group interview will receive an additional $5.00 gift card which they will receive upon completion of the interview.

Opportunity to ask questions:
Your student's rights as a research participant have been explained to you. You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study. For questions regarding the online survey, focus group interview, or this research study in general, please refer to the contact information below. If you have questions concerning your student's rights as a participant you may ask the researcher who has had training in conducting research with human subjects or contact the University of Nebraska Institutional Review Board at 402.472.6965.

Voluntary Participation and Withdrawl:
Your student is free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship or your student's relationship with the investigators or the University of Nebraska at Lincoln. Whether or not your student participates in this study, his/her grades will not be affected.

You are voluntarily making a decision whether or not to allow your child to participate in the research study. If you do NOT wish to have your student(s) participate in the study, please sign and return this letter to Mrs. Morrow before _____. No action or signature is required if you agree to your student's participation.
If you think of any additional questions during the study, please contact the investigators. A copy of this letter will be provided to you.

If you have questions, please contact:

Primary Investigator:
Joan Carraher, Ed.S.
Cell Phone: 308-223-9959
joancarraher@gmail.com

Secondary Investigator/Advisor:
Dr. Delwyn Harnisch
(402) 472-9413
harnisch@unl.edu

Appendix C

1:1 Study at Eagle Public School

Eighth grade and sophomore students will have the opportunity to participate in a research study conducted by University of Nebraska-Lincoln doctoral student, Joan Carraher. The study, "Students' Perceptions of Academic Self-Efficacy and Self-Regulation While Learning in a 1:1 Laptop Environment" will be conducted at OPS during the month of September.

Data collection will include a brief (10-minute) online survey with items to measure how students rate their perceived ability to perform a variety of academic tasks. In this survey, students will be asked to rate their level of how well they feel they are able to succeed in various academic areas, how well they can regulate their learning, and approximately how much time they spend using their school-issued laptop as well as general items of gender, race, and grade point average. From the survey results, students (8-10 per grade level) will be selected and invited to participate in a focus-group interview with the researcher. Students' identity will not be attached to any of the data collected or reported in the study.

Further information regarding the study and participation will be sent home with all 8th grade and sophomore students during the first week of school. Parents are encouraged to discuss this opportunity with their students and will only need to return the information document if they choose to NOT have their student(s) participate in the study.

Each student participating in the online survey will receive a $5.00 gift card from the researcher. Students selected and participating in a focus-group interview will receive an additional $5.00 gift card.

Data collected in this study will allow Ms. Carraher to complete her dissertation which is required for her doctoral degree at UNL. Carraher resides in Spalding, NE and is superintendent at Cedar Rapids Public School.

Appendix D

Permissions for Use of Bandura's Survey Sub-Scales

Joan M. Carraher <joancarraher@gmail.com>

Survey permissions

Barry Zimmerman <bzimmerman@gc.cuny.edu> Wed, Aug 29, 2012 at 10:51 AM
To: "Joan M. Carraher" <joancarraher@gmail.com>

Hi Joan:

Prof. Bandura is now in his 80s and may not be responding his campus mail as quickly as in the past. You might try his home address: 820 San Francisco Court, Stanford California 943405. As the first author of the 1992 article in AERJ, you have my permission to use the two scales we used in our article: self-efficacy for self-regulated learning and self-efficacy for academic achievement. I hope this helps.

Barry Zimmerman

Appendix E

Online Survey

Participant Online Survey Directions

Identification of Study:

STUDENTS' PERCEPTIONS OF ACADEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT

The purpose of this study will be to examine 8th and 10th grade students' perceptions of academic self-efficacy and self-regulation while learning in a 1:1 laptop environment.

Participation in this online survey requires about 10 minutes of your time. No names will be used in this study.

After the online survey, you may be invited to participate in a focus-group interview conducted by the researcher with 3-4 of your classmates. The purpose of the interview is to help gain a deeper understanding of your thoughts, beliefs, and use of your school-issued laptop while learning in a 1:1 laptop setting. Participation in the interview will take about 30 minutes of your time and will be held at your school, during the school day, at a time agreed upon with your school administrator.

Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researcher or the University of Nebraska-Lincoln. All information gained during this study will remain strictly confidential. No names will be used in this study.

Your rights as a participant in this study have been presented to you. Please feel free to ask questions regarding this research study at any time by contacting Joan

Carraher, Principal Investigator, at joancarraher@gmail.com or cell phone 308.223.9959.

Please answer each survey question to the best of your ability. If you are not sure, please select what you believe to be the best response.
This survey will contain questions regarding the following:

- **use of your school-issued laptop**
- **beliefs regarding your ability to learn in various subject areas**
- **beliefs in your ability to control aspects of your learning**

This survey is divided into 3 sections:

1. **Demographic information (name, ethnic group, grade point average)**
2. **Academic Self-Efficacy (how well you believe you can learn certain subject areas)**
3. **Self-regulation (how well you can control aspects of learning)**

Selecting "AGREE" is your consent for voluntary participation in the online survey and focus-group interview if selected.

Contact Information:

Joan Carraher, Ed.S.,: Principal Investigator of Research Study
email: joancarraher@gmail.com
Cell Phone: 308-223-9959 (preferred contact)
School Office: 308-358-0640
School Fax: 308-358-0640

Dr. Delwyn Harnisch, Secondary Investigator and Advisor
University of Nebraska at Lincoln
(402) 472-9413
harnisch@unl.edu

- ○ Agree

Qualtrics Online Student Survey

As you may know, your district has agreed to participate in a study of laptop use by 8th and 10th grade students in your school. Thank you for making the decision to help provide valuable information for this study. Please answer the questions to the best of you knowledge. If you are not sure of the best answer please provide your best guess.

All survey responses are entirely confidential, although I do ask you to provide your first and last initial followed by the last 4 digits of your telephone or cell phone number, so I will be able to contact you if you are selected for participation in a focus-group interview. Focus-group interviews will include groups of 3-5 students who will answer questions regarding use of a laptop in a 1:1 environment. These interviews will be conducted within the next couple of weeks.

Part 1: Demographics & Laptop Use

1. First & Last Initial and last 4 digits of telephone number _____

2.The person completing this survey is: male _____ female _____
prefer not to answer_____

3. What best describes the grade point average (GPA) you have received in the past year? Please check only one:

_____ <1.00

_____ 1.0-1.99

_____ 2.0-2.99

_____ 3.0-4.0

4. Which best describes your race/ethnicity?
(Please select all that apply.)
O Asian/Pacific Islander
O Black/African American
O Hispanic/Latino
O White
O Other_____(specify)

5. What language is spoken most often in your home?
O English
O Other_____(specify)

6. Which grade levels have you attended in this school? Please mark all that apply.
_____7th grade _____ 8th grade _____ 9th grade

7. On a typical school day, about how many minutes do you use your laptop **at school** for school-related work?

_____ minutes

8. On a typical school day, about how many minutes do you use your laptop **at home** for school-related work?

_____ minutes

9. On a typical day when you don't have school (weekend, vacation, etc.) how many minutes would you say you spend using your laptop for school-related work?

_____ minutes

Part II: Academic Achievement Subscale

Bandura's (1990) Multidimensional Scales of Perceived Self-Efficacy (MSPSE)

7 point scale: 1—Not well at all; 7-Very Well

1. How well can you learn general mathematics?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

2. How well can you learn algebra?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

3. How well can you learn science?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

4. How well can you learn biology?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

5. How well can you learn reading and writing language skills?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

6. How well can you learn to use computers?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

7. How well can you learn a foreign language?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

8. How well can you learn social studies?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

9. How well can you learn English grammar?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

Part III: Self-Regulated Learning Subscale (Bandura, 1990)

7 point scale: 1—Not well at all; 7-Very Well

10. How well can you finish homework assignments by deadlines?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

11. How well can you study when there are other interesting things to do?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

12. How well can you concentrate on school subjects?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

13. How well can you take class notes of class instruction?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

14. How well can you use the library to get information for class assignments?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

15. How well can you plan your school work?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

16. How well can you organize your school work?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

17. How well can you remember information presented in class and textbooks?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

18. How well can you arrange a place to study without distractions?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

19. How well can you motivate yourself to do school work?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

20. How well can you participate in class discussions?
1 2 3 4 5 6 7
Not well at all ***Extremely Well***

Appendix F

Student Interview Protocol

University of Nebraska Lincoln

Student Interview Protocol

Study Title: STUDENTS' PERCEPTIONS OF ACADEMIC SELF-EFFICACY AND SELF-REGULATION WHILE LEARNING IN A 1:1 LAPTOP ENVIRONMENT
Participant Identification Code _____ Date _____

Interviewer/Investigator_____

Scripted Introduction:
Thank you for your participation in this focus-group interview.

I am a doctoral student at the University of Nebraska at Lincoln and conducting this study formy doctoral dissertation, which is in partial fulfillment of requirements for the degree of doctor of education at the University of Nebraska-Lincoln. I appreciate your taking the time to participate in this interview which should take approximately 30 minutes to complete. The interview consists of 8 questions which will help me gain a better understanding of how students describe academic self-efficacy and self-regulation while learning in a 1:1 laptop environment. This focus-group interview, along with the interviews with other selected participants will allow a time for further explanation and exploration of your experiences.

I would like your permission to record your responses during the interview so I can accurately document the information which you provide. The audio recordings will be transcribed verbatim to allow me to further analyze your responses. I will have an experienced transcriptionist who has signed a confidentiality agreement assist me in transcribing these focus-group interviews. Please remember that all of your responses will be anonymous and you will have an opportunity to review the transcript when it is

completed to ensure that I have accurately recorded your thoughts and views. At no time will your name be tied to any of the information. All audio files will be deleted after transcriptions have been completed and undergo your review. If at any time during the interview you wish to have the recording stopped, please let me know. Your responses will be confidential and will only be used for adding to the research of this study.

Please initial and date the following line to indicate that you give me permission to audio record this interview:

_____/_____ Yes, I give you permission to make an audio recording of this interview.
_____/_____ No, I do not give you permission to make an audio recording of this interview.

Your participation in this interview is completely voluntary. You may withdraw your participation in this interview at any time. It may be necessary for me to ask additional questions not listed on this document to enable me to understand, clarify, or further explore yourcomments. As a means of respect for one another in this group, you are asked not to share what is said in this interview outside of this group to protect confidentiality and privacy.

Do you have any questions or concerns before we begin?

1. Please describe some ways you have used your school laptop?
2. Please tell me about your technology experiences and skills prior to and since having 24/7 access to a laptop?
3. What has changed in your school environment since you've been involved in your school's 1:1 implementation?
4. How do you think having 24/7 access to your school laptop has impacted your learning and understanding of course content?
5. Are there ways you feel the laptop could be used to further enhance your learning?
6. What do you like best about your laptop and learning in a 1:1 laptop environment?
7. Is there anything about having a school laptop or learning in a 1:1 laptop environment that you feel has a negative effect on your learning ?
8. Is there any additional information you would like to add regarding learning in a 1:1 laptop environment?

Thank you for your time and important contributions to my research study! I appreciate your taking the time to complete this interview. I will be sharing the transcription of this interview with as soon as it is completed, so that you may review it to ensure it is an accurate account of your perceptions.

Joan Carraher, Ed.S.,: Principal Investigator of Research Study
email: joancarraher@gmail.com
Cell Phone: 308-223-9959 (preferred contact)
School Office: 308-358-0640

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