Parental perspective on technology integration in PK-2 in a rural community school

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This study investigated parental perspectives of PK-2 classroom technology integration and parental familiarity with 21st Century Skills and their importance in their children's education and future success in a global economy. Through this descriptive study the researcher used mixed-methods of a survey and semi-structured interview to gather information from parents in a small, rural school in southeastern Iowa. The research found that parents of this age group do place value on technology integration as it relates to both their children's academic and future success. Most parents of this age group working outside of an educational setting were unaware of what constitutes 21st Century Skills.
PARENTAL PERSPECTIVE ON TECHNOLOGY INTEGRATION IN PK—2 IN A RURAL COMMUNITY SCHOOL

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by
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ABSTRACT

This study investigated parental perspectives of PK-2 classroom technology integration and parental familiarity with 21st Century Skills and their importance in their children’s education and future success in a global economy. Through this descriptive study the researcher used mixed-methods of a survey and semi-structured interview to gather information from parents in a small, rural school in southeastern Iowa. The research found that parents of this age group do place value on technology integration as it relates to both their children’s academic and future success. Most parents of this age group working outside of an educational setting were unaware of what constitutes 21st Century Skills.
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CHAPTER 1
INTRODUCTION

A 2006 Federal report indicated that United States 15-year-olds lag behind their international peers in the ability to transfer knowledge to real-life situations in both math and science (Butler, 2006). In addition to this, many of today’s employers are expecting college graduates to enter the workforce with technology skills capable of enhancing the company’s global competitiveness. World economies rely heavily upon computer-based systems where technologically-skilled operators are paramount. In rural communities parents may have a tendency to underestimate the importance of early technology integration and the role it will play in their children’s futures.

The Rural Community Setting

In order to understand how rural populations might perceive and use current technologies in the school and the home, it is helpful to know what defines a rural area in the United States. According to the USDA Economic Research Service:

In addition to being defined as the area outside urban boundaries [but] determined in different ways depending on the concept—rural includes some set of towns and villages below a chosen population threshold... rural mean[s] open countryside and any place with fewer than 2,500 people. (Bucholz, 2008, para. 7)

Urban American populations exceed those of rural areas however the affinity for rural life is seen in city parks, suburban yards, and the recreational activities of urban people. Rural values provide stability against the rapid change of modern life. It is within this dichotomy that progress hastens nostalgia, as each step toward progress is met with resistance in order to prevent cultural loss (Howarth, 2006).
The Technology Integration Debate

Numerous reports, articles, standards and guidelines have been published explaining and elucidating these skills and how they should be integrated into school curricula. In school districts all across the country, many hours of teacher in-service time is devoted to understanding and embracing these skills within the context of rigorous academic standards. According to the educational consulting firm, Metiri Group (n.d.), “the driving force for the 21st century is the intellectual capital of citizens” (para. 1).

The 21st Century Workforce Commission (2000) points to this as well:

The current and future health of America’s 21st Century Economy depends directly on how broadly and deeply Americans reach a new level of literacy—‘21st Century Literacy’—that includes strong academic skills, thinking, reasoning, teamwork skills, and proficiency in using technology. (p. 5)

Although the need for American graduates with 21st Century Literacy skills is vital, many feel our youngest students’ development is in jeopardy due to indiscriminate technology integration and implementation. The Alliance for Childhood is a non-profit organization committed to educating the public about children’s healthy development, their love of learning, and their joy in living. In its publication, Tech Tonic: Towards a New Literacy of Technology, the Alliance terms this philosophy “reclaiming technology” and states a new definition of technology literacy is needed (Alliance for Childhood, 2004).

The Alliance offers:

This is the crucial starting point in setting the criteria for a child’s relationship to technology: determining what activities lead to the full development of a child’s human
capacities. That concern lies at the very heart of the Alliance for Childhood’s technology literacy guidelines. (p. 51)

If administrators and educators agree with this philosophy, they will make an effort to ensure the students in grades K-2 are using developmentally appropriate technology. With this in mind, finding the balance between the need for global competitiveness and the importance of prudent use of technology will be challenging.

Lone Tree Community School

Students in PK-2 attending this author’s rural school are offered a variety of technology experiences. For instance, the preschool students have free choice time during the day when they can choose to “play” on the computer; however, no actual instruction occurs other than how to use the mouse. The Kindergarten through second grade classes have scheduled times in the elementary computer lab throughout the week. During many of these periods the students are using the computer program SuccessMaker, an educational software differentiating K-8 reading and math instruction. It provides instruction, practice and assessment that aligns to Common Core Standards for both mathematics and language arts at all elementary grade levels. It also accommodates different learning needs— including special education, gifted, at-risk and English language learners.

K-2 classroom and specials instruction also includes the use of computers along with Smart Boards and Promethean Boards. On a daily basis these young students use technology to research, organize, and present information. The school is striving to have the appropriate technology available to the students in order to provide instruction using inquiry-based teaching and learning and that teaches to 21st Century Skills and the Common Core.
Inquiry-based teaching and learning places the emphasis of instruction on the students creating their own focus of investigation into a particular subject. The teacher assists the students in forming that focus and guides them down the correct path during their research. This creates relevancy for students and makes learning more meaningful.

According to Metiri group, 21st Century Skills are those which:

In order to thrive in a digital economy, students will need digital age proficiencies. It is important for the educational system to make parallel changes in order to fulfill its mission in society, namely the preparation of students for the world beyond the classroom. Therefore, the educational system must understand and embrace the following 21st Century Skills within the context of rigorous academic standards.

These digital age proficiencies include literacy in the basics of technology, global awareness, and information; using technology ethically; creativity in thought; use of higher order thinking; possession of collaborative and interpersonal skills; the ability to organize and plan; and the capacity to produce high-quality, real-world results.

The Iowa Department of Education Iowa Core 21st Century Skills (2011) page states the Core:

[is] a well-researched set of standards in literacy and mathematics and essential concepts and skills in science, social studies, and 21st century learning (civic literacy, financial literacy, technology literacy, health literacy, and employability skills). The Iowa Core is not course-based, but rather is a student-based approach that supports high expectations for all students. The vision for the Iowa Core is to ensure the success of each and every student by providing a world-class curriculum. The Iowa Core is designed to improve achievement of all students, preparing them for the world of work and lifelong learning.
It identifies the essential content and instruction of critical content areas that all students must experience. (paras. 2-3)

Lone Tree School has designated this year’s teacher in-service hours to ensure that all educators in the building possess a thorough understanding of Guided Inquiry, 21st Century Skills and the Iowa Core. In addition, the school has recently completed a PK-12, grade-level scrutiny of when and where each of the Iowa Core standards has been taught. After completing this process administrators and educators will be able to fill any gaps in student learning.

**Purpose Statement**

This study described how parents of Preschool through second grade students perceive the importance of technology integration and the importance of 21st Century Skills in their children’s curricula at Lone Tree Community School.

**Justification of the Problem**


Parents need to understand the importance of technology integration in the early elementary classroom. However, in order to appreciate the importance placed upon early technology integration, they need to become familiar with 21st Century Skills.

move beyond a focus on basic competency in core subjects to promoting understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects” (Iowa Department of Education website, Iowa Core 21st Century Skills page, 2011, paras. 1, 4). The 21st Century Skills framework was adopted by the Iowa Legislature in the 2007 legislative session and includes employability skills, financial literacy, health literacy, civic literacy, and technology literacy.

With a governmental mandate of the 21st Century Skills education for Iowa students, it becomes essential that parents realize what that will mean for their child in the classroom and quite possibly at home. In this case the school is responsible for opening communication between itself and the home. In an English study on parental welcoming of home-to-school communication published by Selwyn, Banaji, Hadjithoma-Garstka and Clark (2011), findings indicated:

From the data collected directly from parents, as well as from the reports of school managers and teachers, it would seem that parental reception of these applications and services was ‘mixed’. However, in most schools the ‘external’ take-up of the Learning Platform by parents had not been as successful as its ‘internal’ take-up by staff, students, and school managers. Most schools considered this low level of engagement as not being specific to Learning Platform technologies per se, but linked to a general disconnection of some parents from school life. (paras. 21-23)

The possibility of parental disconnection from school life deems describing parental perspectives relating to 21st Century Skills, on early technology integration important.

Although many rural households have computers, there are still those homes where access to broadband limits the use of technology. Conclusions from a model based on engineering data
indicate eventually cost and demand will leave at least 12% of U.S. households without broadband availability (Prieger, 2003). The school therefore becomes the only place such students can begin to become skilled technology users.

In 2007 the International Society for Technology in Education (ISTE) updated its technology standards to address what “skilled technology users” indicates. These are being termed advanced competencies, and according to Donald G. Knezek, ISTE’s chief executive officer, they are “ask[ing] schools to instill critical-thinking, analytical, and technology skills, as well as the ‘soft skills’ of creativity, collaboration, and communication” (Manzo, 2009, para. 20).

Interestingly, a nationwide poll of registered voters was also conducted in 2007 and it revealed that those Americans were deeply concerned about our nation’s youth not being prepared to compete globally. In fact 88% of voters said they believe that schools can and should incorporate 21st Century Skills such as critical thinking and problem-solving skills, computer and technology skills, and communication and self-direction skills into their curriculum (Partnership for 21st Century Skills, 2007).

This fairly high percentage points to the fact that a moderate number of voters in the country are thinking about America’s future as it relates to global competitiveness. What it does not point out, however, is how many of those Americans are parents, and if their community is urban or rural. These two missing aspects of the poll results would be important to administrators and educators in both rural and urban communities inasmuch as they could indicate (1) what parents understand about 21st Century Skills and (2) the level of parental support that exists for early technology integration.

**Research Questions**

Through this study the researcher will answer these questions.
1. What do the parents of PK-2 students at Lone Tree Community School know and understand about early technology integration and 21st Century Skills?

2. Based on what these same parents know and understand about 21st Century Skills, specifically technology literacy and early technology integration, how important do parents feel the skills and technology are to their children’s success in school?

**Limitations**

One limitation of this study is the number of parents who will take the time to fill out and return the surveys. Another limitation is the number of parents who are familiar with 21st Century Skills and their children’s future need for global competitiveness.

**Significance**

The United States continues to lag behind other countries in education and is “woefully ill-prepared for the demands of today’s (and tomorrow’s) workforce” (The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management Consortium, 2009, p. 9). It is important that administrators and educators in rural community schools understand parental perspectives on early technology integration and how those perspectives may affect their support of the school’s curricula.
CHAPTER 2
LITERATURE REVIEW

The purpose of this study was to describe how parents of Preschool through second grade students perceive the importance of technology integration in their children’s curricula at Lone Tree Community School. The professional research focuses on three concepts related to technology and early education: integration of technology in PK-2 classrooms; adult perceptions of technology; and the importance of 21st century technology literacy skills in education.

Integration of Technology in PK-2 Classrooms

In Couse and Chen (2010) the National Council for Accreditation of Teacher Education (NCATE) highlighted that the importance of children’s active use of technology lies in decision making, writing and drawing, and logical thinking to solve problems and illustrate ideas. In addition children’s active use of computers in the classroom means that they need to be in control of both the computer and the software they are using.

The researchers conducted a study focused on the viability of tablet computers in early education by investigating the ease of acclimation preschool children exhibited while learning to use the tablet to draw. The study involved 41 three to six-year-old children who were videotaped while using the tablets. Significant differences, related to tablet use, were found between sessions, and engagement tended to increase with age. Teachers reported high interest in the tablets as well as product results considered normal to above normal in comparison to traditional drawing implements.

The authors found that earlier studies provided anecdotal support for guidance needed in the implementation of technology in early education settings but found a gap specifically in the use of a stylus, allowing preschool children the unique opportunity to be in control of their own
thinking and learning. Therefore they sought to examine how stylus-interfaced technology aligns with technology curriculum for early education and perhaps more importantly its effectiveness at keeping children motivated and engaged in order to meet curriculum standards. Those standards should also align with the relevant technology for students standards enacted in 2007 by International Science for Technology in Education (ISTE). These include Creativity and Innovation; Communication and Collaboration; Critical Thinking; Problem-Solving and Decision-Making; and Technology Concepts and Operations.

Both quantitative and qualitative data were recorded to assess the viability of the tablet with preschool children at a university-based early childhood education center in the northeastern United States. The quantitative data was drawn from examining each child’s interaction with the computer both during and after instruction. Then a comparison was drawn between classroom groups to determine differences by age in the ways that the children worked with the computers. The qualitative data was acquired through a grounded-theory approach in examining the experiences of the students and teachers during the process of using the tablet computers in a preschool setting.

The limitations to this study were the authors set out to develop an empirical basis for the viability of the tablet computer as a learning tool in preschool classrooms. However, the study was actually more descriptive in nature and the data was limited to the children in that sample.

Couse and Chen (2010) did find significant differences in the level of use, as related to the hierarchy of ISTE’s technology standards, between the introductory and final sessions. At the introductory session, 75.6% of the children reached the Create level and 24.4% of the children reached the Investigation level. By the final session, 98% of the children had reached the highest level, and only one child, 2%, was still functioning at the Investigation level. In addition,
teachers qualitatively assessed the students’ drawing and regarded 66% of them as typical. However, they found that 20% were above expectations for what was usually produced in the classroom with traditional drawing tools.

What may have more implications for the implementation of technology into PK-2 classrooms is the study’s data regarding persistence with the media. Although most of the children experienced several occurrences of technical difficulties, many did not seem to be bothered by them. Seventy-six sessions had reported technical incidents where 57.3% resulted in no frustration and 96.1% involved three or fewer incidents of it.

Teachers were interviewed about their perceptions of student interest and tablet viability and provided qualitative evidence for each. They reported that the children’s interest in the tablet computer was very high and observations pointed to the motivational effects of the new technology. In order to test a possible “novelty effect” tablets were given to one of the classrooms for the last two months of school and according to a sign-up sheet, interest in using the tablet remained very high.

In conclusion Couse and Chen (2010) stated:

The majority of the children indicated a preference for the tablet computer over traditional drawing media….They indicated that the ‘colors were brighter,’ ‘you don’t run out of ink,’ and ‘you don’t have to rinse off your brush.’”….Given the ease with which the children in this study were able to acclimate to using this new technology, along with the high level of interest and engagement they demonstrated, the tablet computer seems to be a potential learning tool for young children. Finally, what seemed to matter in regard to technology and learning are the ways that teachers choose to use the technology (Evans et al., 2008, p. 95)
Gimbert and Cristol (2004) looked closely at the often difficult and always multi-faceted task teachers face when attempting to integrate technological knowledge and skills corresponding to the district’s curriculum and enhance young children’s learning. As school districts began working to meet ISTE’s 2007 National Educational Technology Standards (NETS) for teachers and students, educators needed to demonstrate a sound understanding of technological knowledge and skills. To that end this study addressed the question “In what ways can early childhood teachers successfully enhance young children’s technological competence?” (p. 207).

This action research extended over a 15 week period of time. Eight university faculty and classroom researchers worked together to gather and analyze data obtained through questioning the classroom teachers to generate themes about integrating technology into early childhood classrooms. A within-case analysis validated participant assertions, and a member check was performed. The participants were five early childhood teachers who integrated technological tools into the curriculum in an attempt to enhance their young students’ learning while demonstrating PK-2 technological competencies. The five classrooms included one preschool, one Kindergarten, two first grade and one second grade. To determine if the students met the district’s technology standards, grade level teams assessed each unit’s outcomes. The classroom examples show how early childhood teachers introduced age appropriate technology, created structured activities, and designed end-products demonstrating their PK-2 NETS standards competencies.

Gimbert and Cristol’s (2004) findings pointed to the following:

In each case teachers identified professional sharing and collegial support *in the classroom*
as essential inputs for their development.... [The] teachers claimed that young children learning to use technological tools to create and solve teacher-directed activities need the support of an active adult role model, rather than a passive bystander....Collaborative teaching and learning between university faculty and classroom teachers is a vehicle for teacher professional development that results in real and meaningful changes in how teachers use technology in their classroom practices. [And] while young children learn in meaningful ways, their teachers learn as well in ways that will have a long-term impact on infusing technology into their curriculum and/or teaching practices. (pp. 213-214)

**Parental Perceptions of Technology in Schools**

While it is understood by educators in school districts across the world that technology, specifically information and communications technology (ICT), has an immediate and necessary role in education, parents of students at elementary and secondary levels may not perceive ICT as an important component in their child’s curriculum.

Kerwalla and Crook (2002) began to delve into this through their study seeking to determine how British children used computers both at school and at home and what ideas their parents held about ICT in both contexts. Although parents had purchased computers and educational software in the hopes of supporting their child’s learning at home, it was found they were very seldom used for that purpose. In addition, it was noted that for many reasons parents did not become directly involved in directing how the home use of their computer related to use of a computer in school.

This study involved four primary schools in an English market town; this town was chosen for its broad social and ethnic mix. Seventy-seven children from age 7-11 were randomly chosen for interviews from their school registers. Because the children’s uses of ICT in their
school settings all fell within a well-documented pattern of use, the research focused on their use of computers at home. The children were interviewed about working with computers at school using both a tape recorder and a word processor, and teachers from the 25 classrooms were asked to complete a brief questionnaire. The home-based field-work involved interviews with parents and their children and computer system logs determined both a user and their time spent on the computer.

For data analysis Kerwalla and Crook (2002) first categorized children’s time spent on the school computer in seven software classifications. For purposes of this study home software was of the kind not typically found in the classroom. The seven categories were as follows; the parentheses illustrate how the software was used in school: reference (searchable hypermedia archive), drill and practice (curricular question and answer cycles), educational game (reasoning problem embedded in a narrative), electronic book (page-turning frame for illustrated text), Internet resource (e.g. web browser), generic creative tool (e.g. text and image processors), and control technology (e.g. programming tools controlling screen robots).

The students were asked about the applications they remembered using regardless of the number of times. Word processing, educational games, and reference CD-ROM’s were the most commonly reported with 83%, 62% and 56% respectively. In addition, art packages, drill and practice software, Internet/email and, databases and spreadsheets had been used.

All of the previously listed software categories were also found in the home with the exception of the control technology. In addition, the families owned entertainment-based games as opposed to educational ones. On average, the families owned 20 CD-ROM titles and 64% were found to be educational in nature- that is classroom CD-based software. Surprisingly then the home-logging data revealed 66% of user time was invested in playing entertainment games, 14%
using generic/creative tools, and educational games, despite their prevalence, accounted for only 9.8% of time.

The placement of computers was also investigated in order to form an idea of how the computer fit into the families’ lives. The parents offered many reasons for their choice of placement within the home such as security issues, seriousness of use, and public/private dimension. In addition each family had adopted rules pertaining to permission of use, interference with family life, session length, software choices, care of equipment, operation costs, and privacy of user’s files.

When Kerwalla and Crook (2002) discussed with the parents why they had acquired a home computer, 75% of them mentioned the need to support their children’s work at school. Moreover, those purchases were followed by purchases of educationally relevant software. These would seem to indicate high, in-home parental support for the classroom agenda. However, the system logs of computer use revealed that two-thirds of time was spent on the kind of games not found in a school context. What did this say about parental perspectives of technology in these schools?

The expectation was that in the home, parents would be situated to assist their children with school work, yet this rarely happened. This was perhaps due to a separation typical of school and home life. However, it was clear that the parents had become uncomfortable about the implications of their overt role in directing school activities on the home computer. Perhaps their initial purchasing enthusiasm was dampened by their realization of how they would need to be involved. Many parents mentioned ‘hot housing’ meaning they were concerned that the schools would accuse them of trying to create a ‘superbaby’ or in other words a genius. Interestingly, it was in relation to more traditional homework assignments that parents felt it more appropriate to
get involved with school-related activity. This drew attention to the large gap between the school and the learning sustained at home.

A study by Ortiz, Green, and Lim (2011) sought to determine parental perspectives on the importance of home computer use for themselves and their children. The study tried to answer how often parents use the computers themselves, whether parents viewed computers as important learning tools, and if they saw a relationship between computer use and academic achievement. The exploratory study involved parents whose K-6 children were enrolled in a Southern California school. The elementary school had a minority student population of 85%, and of those students 35% were English language learners. The largest ethnic group (53%) was of Korean descent and the school was located in a middle-to-upper socioeconomic neighborhood. In addition, it was situated within a district where parent involvement was emphasized.

A 24 question survey was circulated to 957 families. The survey consisted of three sections: 9 demographic questions, such as parent ethnicity (including generational aspects) and educational background, 6 questions pertaining to their perspectives of personal computer usage, and 9 questions asked about their attitudes regarding their children’s use of computers. Out of the 957 surveys sent out, 62% were returned and of those returned, 68% came from Asian families, 26% came from White families and 6% came from Hispanic families. A large majority of the respondents (62.5%) were primarily 1st generation to the United States. In addition, 71.3% of the parents had attended college, with 18.8% of those earning post-graduate degrees. The annual income for a little more than half of the families (55%) ranged from $46,000 to more than $60,000. And finally, 55.3% of the families had students in upper elementary classes.

Many of the parents (77.5%) had used computers for a least three years or longer, and almost all of them (97.5%) agreed that not only are computers important learning tools but that
knowing how to operate one relates to better job opportunities and success. Parents also agreed about the importance of their children being able to access a computer at home (93%) as well as at school (96%). A great number of parents (82%) also stated that schools should offer computer training courses in order for students to begin at an early age developing study habits and performing homework tasks with the aid of one. Most parents (91%) recognized a positive relationship between their child knowing how to properly use a computer and success in life.

Ortiz et al. (2011) recognized that the limitations to this study lay in the facts that the parents resided in middle to upper socioeconomic neighborhoods, most attended college and earned substantial incomes, and homes had an average of two computers.

Corbett and Vibert (2010) found that parents of students in a Canadian rural small town school had attached a hierarchy of value to educational text. The parents placed traditional hard copy school textbook and literature at the top and plastic virtual and visual texts at the bottom. Their study analyzed data from year one, 2008-2009, of a film-making project entitled A Lens on Community: Video Ensemble Process in a Rural Middle School. One of the project’s goals was to learn how rural children, parents, and teachers understood literacy/literacies in an age of an abundance of information technologies along with the limited accountability surrounding literacy in the 21st century. Their paper discussed data from interviews with parents conducted in 2008-2009. It is important to point out that Corbett and Vibert stated “...we believe that narrow understandings of both literacy and rurality have not been particularly helpful in addressing the transformation of rural communities and regions both in Canada and around the world” (p. 10).

In general, parents’ responses about their children’s interaction with visual and virtual literacies were complex. They recognized how central to their own work and social lives digital literacies had become. Consequently they understood the place these plastic literacies held not
only as components of the school literacy curriculum but as socially and educationally engaging. However, most still placed a higher premium on print literacy. These were considered safe and approved because the school used them developmentally and sequentially. In addition, they “taught” skills considered to be “basic” and necessary for literacy and the obtainment of both successful employment and full social participation.

Safety was a central concern as new and emerging literacies brought new risks into their children’s lives even while at home. Inappropriate Internet content, the possibility of private playfulness becoming public, and the potential for stalking and abuse were all mentioned by parents. They realized that “emerging virtual social networking spaces like Facebook and Twitter are not as safe as they imagined their small town and rural communities to be, because ‘everybody knows everybody else’” (Corbett & Vibert, 2010, p. 12).

In addition, parents stated concerns about their children’s increasing engagement in the virtual world of information technology as it can cause youth to withdraw from reality, become physically inactive, or turn out to be isolationists who lack social abilities and sensibilities, perhaps even losing touch with nature and their own bodies. Corbett and Vibert (2010) found the idea of safe Internet space held prominence with all parents, and they maintained some form of surveillance over their children’s Internet activity. Paired with this was the notion of developmental appropriateness and the worry about their children’s exposure to mature content that may cause them to grow up too fast. The impression that children are “growing up too fast” illustrates how idealistically parents view a hard copy text literacy; it is safe and sequenced.

The Importance of 21st Century Technology Literacy Skills in Education

As indicated by the previous studies there are mixed parental perspectives about the technology integrated into their children’s curriculum. However, there may also be a lack of
knowledge regarding the term “21st Century Skills” and what place those skills have in their children’s future. It is important that parents understand what is being noted by employers regarding college graduates in the United States in relation to their global competitiveness competencies.

Rutkowski, Rutkowski, and Sparks (2011) used data from the 2006 Second Information Technology in Education Study (SITES) survey to investigate the challenges that remain in integrating ICT into teaching practices for developing 21st Century Skills worldwide. Their article inquired into the one commonly cited obstacle to those teaching practices: school-based support. More specifically “does ICT support for particular 21st-century teaching activities predict the increased use of ICT in conjunction with those activities in the classroom?” (p. 197).

Data for this analysis came from the SITES 2006 study questionnaires administered to school principals, technology coordinators, and math and science teachers, along with survey results of eighth grade math and science teachers in approximately 400 schools per country. The survey tried to determine if ICT was used in six different 21st century learning activities: extended projects, short-task projects, production creation, self-accessed courses and/or learning activities, scientific investigations (open-ended), and field studies. The technology coordinators reported on the extent that ICT support was available for teachers who wanted to use those same 21st century-type activities. In addition, the authors reasoned that institutional support for 21st century-type activities in general would predict ICT support for the same. To ascertain this, the principal was asked to report the frequency of pedagogical support for grade 8 teachers wanting to integrate ICT through those activities by experienced colleagues, the school principal, the technology coordinator, or experts from outside the school.
Finally, as a measure of school support, principals answered questions relating to specific actions supporting either 21st century teaching activities or ICT use: reallocating workload to allow collaborative planning time for classroom innovations, reallocating workload to allow for technical support for such innovations, organizing workshops to demonstrate ICT-supported teaching and learning; reviewing teachers’ pedagogical approaches, establishing new teacher teams to coordinate implementation of innovative teaching and learning, changing class schedules to facilitate such implementation, establishing incentives for teachers who integrate ICT in their classrooms, and encouraging teachers to collaborate with outside experts to enhance their pedagogical practices.

To answer their research question, the authors had to develop several logistic regression models looking at the following: probability of mathematics and science teachers using ICT by country, the same teachers using one of the six 21st century-type activities, and the ICT and school support for the 21-century-type activities.

This report found that, for math and science, the relationship between institutional support of ICT and teachers’ use of ICT for 21st century-type activities is largely country dependent. In general a small list of countries exhibited an association between support for ICT use and its use with 21st century-type classroom activities. With the exception of two countries, institutional provision of ICT technical support is frequently not associated with the development of innovative ICT-using 21st-century pedagogies imagined in national policies.

Although Rutkowski et al., (2010) acknowledged that data from their cross-sectional survey study limits their ability to make causal inferences about the influence of ICT support on 21st century-type learning activities. They concluded with:
Our comparison of national educational systems exposed some national trends highlighting the importance of national policies aimed at these important educational issues [but] as Law and colleagues (2008) stated, many systems studied here had ‘no active, centralized policy to assure that education in their country is well prepared for teaching and learning in the 21st century. (p. 208)

Silvernail, Small, Walker, Wilson, and Wintle (2008) conducted a pilot study to examine the effectiveness of a model/process created to help 6th, 7th, 8th, and 9th grade students in Skowhegan, Maine learn how to evaluate electronic/digital resources used in authentic learning activities. Two years earlier, Skowhegan high school students took a 75 minute scenario-based exam developed by the Educational Testing Service (ETS) testing high school senior and college freshmen students’ ICT literacy skills. ETS defined these skills as, “the ability of post-secondary students to define, access, manage, integrate, evaluate, create, and communicate information in a technological environment” (p. 1).

Overall, the Skowhegan high school students performed well on the assessment. However with the help of the Center for Education Policy, Applied Research, and Evaluation (CEPARE), further analysis revealed that although students could locate potentially useful websites for school-related work they were in need of further instruction in evaluating, integrating, creating, and communicating the information that they did find. This information indicated a lack of continuity in teaching research skills throughout the school and led to a joint effort by the school administration and CEPARE to create materials potentially useful for all teachers during instruction when assigning research. “This type of cross-curricular tool would allow students access to the same process of research in multiple subjects thus increasing the likelihood that transference would take place” (Silvernail et al., 2008, p. 3). Participating staff and teachers
recognized that in a 1:1 laptop learning environment even upper elementary and middle school students would benefit from such a tool and decided to include sixth through ninth grade students in the project.

Experimental and control groups were created within each of the grade levels and the teachers administered pre- and post-assessments. The research tool, the intervention, assisted the students in understanding three important questions to ask about websites: Does the content appear useful? What is the website’s purpose? and How reliable is the website’s information? Then the students were assigned the authentic task of creating a week’s worth of healthy meals using online information. Additionally, the students were directed to three specific websites to use for the project and then evaluated those sites for usefulness, relevance, purpose and reliability.

The pre- and post-assessments were scored by the CEPARE project staff. In addition, twelve students, four in each grade level, including two from each of the groups-experimental and control, were interviewed by the CEPARE staff. The interviews took place after both the pre-assessment and post-assessment. This was done to gain insight into the thought processes of the students during their evaluation of the websites as well as to gain feedback on the research tool and the project as a whole. Silvernail et al.’s (2008) findings were obtained by analyzing the results of the pre- and post-assessments using descriptive and inferential statistics. These indicated that “the scores of students who received the intervention were significantly higher on the post-assessment than scores of students who did not receive the intervention for the 7th, 8th, and 9th grade students combined” (p. 8). Furthermore, no statistically significant differences existed between the experimental and control groups on the pre-test, however post-test differences were significant; clearly the experimental group outperformed the control group. The curriculum intervention was successful at assisting students in acquiring skills in evaluating websites.
Although results showed students in the experimental group outperformed their control group counterparts, the authors of this study indicate its limitations. The assessment mean score was 18.67 out of a total of 40 possible points and does not reflect mastery. In addition, there was a significant amount of material covered in both the intervention and the assessment but the amount of time devoted to instruction of them was small.

**Summary**

The research regarding technology in early education performed over the past eight years provides some insight to integration of technology in PK-2 classrooms, adult perceptions of technology, and parental knowledge of 21st century technology literacy skills and their importance to their children’s success in school.

Although limited to stylus drawing tablet use, Couse and Chen (2010) found preschool students made significant improvements in performance between introductory and final sessions related to the hierarchy of ISTE’s technology standards. The students remained engaged and persisted with the technology despite occurrences of technical difficulty. They also found that the majority of the children preferred the tablet over traditional drawing media. In addition, some teachers ranked stylus tablet end products above their expectations than those usually produced with traditional drawing media. More importantly Couse and Chen (2010) found the ways teachers used technology, but not the technology itself, seemed to matter most.

Gimbert and Cristal (2004) reported on the difficult task teachers face when integrating technology in PK-2 classrooms in attempts to meet district ISTE technology standards. They found teachers identified professional sharing and collegial support in the classroom as necessary for their own development. Teachers also stated young students using technological tools to create and solve problems need active adult role models. Gimbert and Cristal (2004) also indicated an
important bi-product of such instruction is teachers learn in ways that impact their infusion of technology into their curriculum and instructional practices.

Kerwalla and Crook (2002) observed 75% of computer purchases were made in order to support 2nd through 6th grade student’s work at school. However, home system logs indicated two-thirds of computer time was spent on games not related to the school context. Rarely did parents assist their children with computer-based school activities although they did become more involved with more traditional homework assignments. To the former, many parents mentioned ‘hot housing’ and concerns with accusations of trying to create a genius. This would indicate a large gap existing between the school and the learning sustained at home. Additionally, it points to parental perceptions indicating a lack of value attached to the role of ICT in their children’s education.

Ortiz et al. (2011) determined parental perspectives on the importance of home computer use for themselves and their K-6 grade children. They found almost all of them agreed that not only are computers important learning tools but knowing how to operate one relates to better job opportunities and success. They also agreed that having access to a computer at both home and in school is important. A great number of the parents also felt computer training at school should begin at an early age, and most recognized a positive relationship between their child knowing how to properly use a computer and success in life. Ortiz et al. (2011) did however, recognize the limitations to the study inasmuch as the families resided in middle to upper socioeconomic neighborhoods, most parents attended college and earned substantial incomes, and homes had an average of two computers.

Conversely, Corbett and Vibert (2010) found parents of 12 to 14 year-olds in a small, rural, Canadian town had created a textual hierarchy of value to what types of materials their
children used in school. Traditional *hard copy* school textbook and literature was placed at the top, while *plastic* virtual and visual texts ranked at the bottom. Although these parents recognized the centrality of digital literacies to their own work and social lives and understood the place these literacies held in school, they still placed a higher premium on print literacy. Because the school used print literacies developmentally and sequentially, they were considered safe. In addition they taught the skills necessary for literacy and obtainment of successful employment. Safety was a central concern as new and emerging literacies carried new risks into their children’s lives. Parents also indicated unease with developmental appropriateness of the Internet and it being the cause of children growing up too fast. The idea of children “growing up too fast” illustrates how idealistically the parents viewed a safe and sequenced in-print text literacy program.

Rutkowski et al. (2011) indicated the challenges to integrating ICT into teaching practices capable of developing 21st Century Skills worldwide. Their study, based on SITES 2006 information, found that for math and science, the relationship between institutional support of ICT and teachers’ use of it for 21st century teaching activities, was largely country dependent. They indicated their comparison of national educational systems highlighted the significance of national policies aimed at the importance of 21st Century Skills education, but many systems had no centralized policies to ensure their country was well prepared for teaching and learning in the 21st century.

Silvernail et al. (2008) reported on an instructional intervention implemented in grades 6-9. The model/process created assisted teachers in the instruction of evaluation of electronic/digital resources used in authentic learning activities. The intervention, designed to function cross-cirricularly, was found to be successful at assisting students in acquiring skills in evaluating web sites.
Studies cited in this chapter (Couse & Chen, 2010; Gimbert & Cristol, 2004) indicated the importance of early technology integration and its relationship to engagement, motivation, and persistence in learning. They also underscored the need for teachers and students to have support during implementation of district mandated ISTE technology instructional practices.

Parental perceptions of ICT in schools varied somewhat widely. Kerwalla and Crook, (2010) found parents rarely established a connection between school-based ICT and their children’s use of the home computer for school-based activities. The issue of ICT in relation to educational success was not discussed. Ortiz et al. (2011) noticed parents who had attended college and earned substantial incomes perceived computers to be not only important learning tools but integral to their children’s success. However, Corbett and Vibert (2010) indicated parents in a small, rural, Canadian town found print literacy to be more instructionally sound and safer than digital literacy.

Two studies, (Rutkowski et al., 2011; Silvernail et al., 2008), report on the importance of 21st Century Skills in education. Rutkowski et al. (2011) pointed out the international focus on educational systems being well prepared for teaching and learning in the 21st century, and Silvernail et al. (2008) indicated the educational significance of information literacy. However, because they are not specifically situated within the author’s small, rural Iowan city, what all of the studies fail to determine is what parents of PK-2 students at Lone Tree Community School know and understand about 21st Century Skills and early technology integration. And based on what these same parents know and understand about 21st Century Skills, specifically technology literacy and early technology integration, how important do these parents feel the skills and technology are to their children’s success in school? These are the questions this research study will attempt to address.
CHAPTER 3

METHODOLOGY

Based on information in a 2006 study, “Are They Really Ready to Work?” employers said that the future U.S. workforce is “woefully ill-prepared for the demands of today’s (and tomorrow’s) workforce” (The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management Consortium, 2009, p. 6). Parents need to understand the importance of technology integration in the early elementary classroom. However, in order to appreciate the importance placed upon early technology integration, they also need to become familiar with 21st Century Skills.

The purpose of this descriptive study was to determine PK-2 parental perspectives on early technology integration and what those same parents understand about 21st Century Skills as related to their children’s success in school.

Research Questions

1. What do the parents of PK-2 students at Lone Tree Community School know and understand about 21st Century Skills and early technology integration?

2. Based on what these same parents know and understand about 21st Century Skills, specifically technology literacy and early technology integration, how important do parents feel the skills and technology are to their children’s success in school?

Research Design

In a descriptive study, surveys and interviews were used to gather information from parents of PK-2 students about technology integration and 21st Century Skills in their children’s classrooms. Wildemuth (2009) suggests a descriptive study can provide in-depth understanding of a particular situation. Hank, Jordan, and Wildemuth (2009) indicate that a survey is a set of items presented as statements or questions designed to elicit a response to each of the stated
items. Luo and Wildemuth (2009) define the semi-structured interview as an interview with pre-determined questions, however the order and/or wording of the questions can be changed as the interviewer deems necessary. The goal of the research was to determine what the parents of PK-2 students at Lone Tree Community School know and understand about technology and 21st Century Skills as they relate to their children’s future academic success.

A descriptive study helped elicit important information about parental perspectives related to the research questions. A survey allowed a variety of data related to perspectives to be gathered efficiently from the parents. A semi-structured interview provided information in areas where additional clarification or insight regarding formation of perspectives may have been needed. Quantitative data were limited by the number of parents responding to the survey. In addition, the limited number of surveys indicating a positive response to a follow-up interview limited the qualitative data.

**Population**

The participants in this descriptive study were the parents or guardians of all preschool through 2nd grade students at Lone Tree Community School located in the city of Lone Tree, Iowa. The survey was distributed to 111 families and included an item indicating interest in an invitation for a follow-up interview. With a population of 1,214 residents Lone Tree is surrounded by farmland and is situated approximately 25 miles from Iowa City, Iowa. Iowa City has a population of 68,903 and is the site of the University of Iowa, two public hospitals, and one private hospital.
Data Gathering Instruments

Determining parental perspectives relating to technology integration and 21st Century Skills from the parental population was best gathered by a survey as it allowed estimation of characteristics in a population based on sample that is only a part of the population (Hank et al., 2009). Additionally, gaining insight to those parental perspectives by probing beyond their original responses was best gathered by a semi-structured interview (Luo & Wildemuth, 2009). The survey questions used to gather initial data and the interview questions developed from the surveys are listed in Appendix A. The interview topics are listed in Appendix B.

Procedure

After obtaining permission from the University of Northern Iowa Institutional Review Board and Lone Tree Community School Elementary principal to conduct this study, a survey was distributed by U.S. mail to the 111 parents or guardians of students in grades PK-2. Prior to this a pretest of the survey took place to ensure reliability and validity. Fourteen surveys were returned which represented 12.6% of the total surveys distributed. Three follow-up interviews were scheduled as indicated by the number of positive respondents. The survey responses were quantified as percentages and calculated for analysis (Hank et al., 2009). The interviews were recorded, with the permission of the subjects, and then transcribed for analysis (Luo & Wildemuth, 2009).

Summary

Utilizing the mixed-method approach of surveys and interviews in a descriptive study the researcher attempted to determine the parental perspectives relating to technology integration and 21st Century Skills in PK-2 classrooms at Lone Tree Community School in rural Iowa.
CHAPTER 4
DATA ANALYSIS

Based on information in a 2006 study, “Are They Really Ready to Work?” employers said that the future U.S. workforce is “woefully ill-prepared for the demands of today’s (and tomorrow’s) workforce” (The Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management Consortium, 2009, p. 6). Parents need to understand the importance of technology integration in the early elementary classroom. However, in order to appreciate the importance placed upon early technology integration, they also need to become familiar with 21st Century Skills.

Research Question 1

Research question one asked what the parents of PK-2 students at Lone Tree Community School knew and understood about early technology integration and 21st Century Skills. In order to begin to understand the at-home discussions between PK-2 students and their parents, the first survey question asked if conversations focusing on the day at school occurred. All of the participants said these took place, and 71% of those conversations involved the technology their students used at school.

The school technology referred to in the survey included: computer, iPad, electronic book (e-book) reader, cell phone, iPod, digital camera, tape recorder, CD player, DVD/VHS player, and interactive white board. Of those parents responding yes, only 50% stated they were familiar with the technology used at school. The iPad, eBook reader, and interactive white board were, respectively, the technologies with which parents were least familiar.

Next the survey sought to establish how technology available in the home compared to what the students actually used at home. See Table 1.
Table 1

*Comparison of Technology in the Home to Student Use in the Home*

<table>
<thead>
<tr>
<th>Technology</th>
<th>In home</th>
<th>Student use in home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>93%</td>
<td>86%</td>
</tr>
<tr>
<td>iPad</td>
<td>36%</td>
<td>29%</td>
</tr>
<tr>
<td>Electronic book (e-book) reader</td>
<td>36%</td>
<td>21%</td>
</tr>
<tr>
<td>Cell phone</td>
<td>100%</td>
<td>43%</td>
</tr>
<tr>
<td>iPod</td>
<td>71%</td>
<td>57%</td>
</tr>
<tr>
<td>Digital camera</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>57%</td>
<td>14%</td>
</tr>
<tr>
<td>CD player</td>
<td>93%</td>
<td>93%</td>
</tr>
<tr>
<td>DVD/VHS player</td>
<td>93%</td>
<td>93%</td>
</tr>
</tbody>
</table>

Ninety-three percent of participants had a computer in the home; however, the participant not marking the computer did mark the iPad. All participants had cell phones and digital cameras while only 36% had iPads and eBook readers. CD players and DVD/VHS were present in 93% of the homes while iPods (71%) and tape recorders (57%) represented the rest of the home technology.

The technologies used at home the most (93%) by students were CD players and DVD/VHS players. Given the age of the students, a fairly large number (86%) of them used computers. Digital cameras (50%), cell phones (43%), and iPods (57%) collectively accounted for about half of the use and the iPad (29%), eBook (21%), and tape recorder (14%) represented the remaining technology use.

The parents were then asked what technologies they considered important for their child to become skilled at using. See Table 2.
Table 2

*Technologies Parents Considered Important to Gain Skills Using*

<table>
<thead>
<tr>
<th>Technology</th>
<th>Important for child to gain skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>100%</td>
</tr>
<tr>
<td>iPad</td>
<td>64%</td>
</tr>
<tr>
<td>Electronic book (e-book) reader</td>
<td>57%</td>
</tr>
<tr>
<td>Cell phone</td>
<td>57%</td>
</tr>
<tr>
<td>iPod</td>
<td>36%</td>
</tr>
<tr>
<td>Digital Camera</td>
<td>71%</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>14%</td>
</tr>
<tr>
<td>CD player</td>
<td>43%</td>
</tr>
<tr>
<td>DVD/VHS player</td>
<td>43%</td>
</tr>
<tr>
<td>Interactive whiteboard</td>
<td>71%</td>
</tr>
</tbody>
</table>

All of the participants stated their child should become skilled at using the computer. Following closely behind the computer are the digital camera and the white board, both at 71%. Parents designated skilled at the iPad (64%) next, and then eBook (57%) and cell phone (57%). A little less than half of the parents (43%) marked the CD and DVD/VHS players as important while the least needed were the iPod (36%) and the tape recorder (14%).

The parents were asked to briefly explain why they ranked the technologies as they did. Those responding indicated that technology helps students maintain attention and encourages learning, society is becoming more technology centered, basic knowledge of computers will open up futures, technology is necessary both personally and professionally, and technology use should be monitored and be age-appropriate.

Finally, the survey asked the parents to place importance on technology which relates to their child’s educational success. See Table 3.
Table 3

*Technology Important to Children’s Educational Success*

<table>
<thead>
<tr>
<th>Technology</th>
<th>Important to educational success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>100%</td>
</tr>
<tr>
<td>iPad</td>
<td>50%</td>
</tr>
<tr>
<td>Electronic book (e-book) reader</td>
<td>57%</td>
</tr>
<tr>
<td>Cell phone</td>
<td>29%</td>
</tr>
<tr>
<td>iPod</td>
<td>29%</td>
</tr>
<tr>
<td>Digital camera</td>
<td>36%</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>14%</td>
</tr>
<tr>
<td>CD player</td>
<td>14%</td>
</tr>
<tr>
<td>DVD/VHS player</td>
<td>21%</td>
</tr>
<tr>
<td>Interactive whiteboard</td>
<td>86%</td>
</tr>
</tbody>
</table>

Once again, all stated the computer as number one with the white board (86%) the number two technology. The eBook (57%) remained the same but the iPad (50%) dropped a little. The remainder in this section, the digital camera (36%) and the cell phone (29%) both drop significantly. iPod skills (29%) and DVD/VHS (21%) skills also lessened in importance while the tape recorder (14%) and the CD player (14%) ranked last for parents.

Again the parents were asked to explain their choices and these closely related themes emerged. Technology is here to stay, technology helps reinforce skills in an alternative way, technological proficiency will be needed for college and beyond, the computer allows access to most or all of our information that is needed, technology helps students maintain attention and encourages learning, computer use is ubiquitous, technology use now helps students gain confidence for using future technology, and learning to navigate information for retrieval of useful and accurate data is important.

Three participants agreed to follow-up interviews which were designed to add depth to the survey information. The first question focused on whether or not computer skills should be a
part of basic instruction just as reading or math. Two of the parents answered yes, indicating that no matter in what field of work one chooses, computers are used in all. One parent felt that reading and math are basic skills which are still needed as foundational building blocks, and basically necessary to even use a computer. Most parents (91%) recognized a positive relationship between their child knowing how to properly use a computer and success in life.

Next the parents were asked about their comfort level in assisting their children with homework on the computer. Once again, two of the parents had similar answers in that they felt comfortable with basic computer use but not much beyond that, with one stating that choosing and using the right search terms for retrieving information is a troublesome area. Not unlike the parents in Kerwalla and Crook (2002) they did become more involved with more traditional homework assignments. However, these parents do value the role of ICT in their children’s education; it is just a matter of not enough practice with computers themselves. The third parent, because of a professional need, felt very comfortable using a computer and in turn assisting with homework performed on it. In two of the households the parent being interviewed had better computer skills than those of their spouses but that was reversed for the third parent.

It is noteworthy to point out that one of the parent participants interviewed has two children with special needs. The first child is older than the student study group but the second is in grade one. The researcher elicited this parent’s unique perspective of technology to gain insight that might not have come to light otherwise. The parent indicated that with the older, non-verbal child assistive technology will be life-long. And although the younger child is verbal, the parent saw an eventual need of assistive technology for writing and perhaps help in organizing the day.
Research Question 2

Research question two sought the parental familiarity with and understanding of 21st Century Skills, specifically technology literacy and early technology integration, then in turn how important they feel the skills and technology are to their children’s success in school? Little more than half (57%) of parents indicated that they are familiar with 21st Century Skills.

Those explaining what they did understand about the term held a variety of ideas about 21st century learning which includes students possessing technology-based skills, going green, creating independent students, teaching critical thinking, and honing skills students will use in real life. These perceptions are fairly close to the goals of 21st century teaching in preparing today’s students for their future outside the classroom walls. However, most (86%) of the parents answering research question two, worked in an educational setting. In addition, most (86%) of the households with one parent working in a school setting earned more than $56,000 which is above the median household income in Iowa annually. Based on the high number of parents working in schools who understand the significance of 21st Century Skills, responses to research question two must be considered in that context. Nonetheless, the question did reveal that most parents working outside of an educational setting were not familiar with 21st Century Skills.
CHAPTER 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Many of today’s employers are expecting college graduates to enter the workforce with technology skills capable of enhancing the company’s global competitiveness. World economies rely heavily upon computer-based systems where technologically-skilled operators are paramount. In rural communities parents may have a tendency to underestimate the importance of early technology integration and the role it will play in their children’s futures. This study determined parental perspectives on PK-2 technology integration and their familiarity with 21st Century Skills. A mixed-method, descriptive case study was used to gather information from a pool of PK-2 parents. Fourteen surveys (12.6%) of the total population were returned.

Conclusions

Research question one addressed what parents knew about the technology that was integrated into their children’s classrooms and how important they felt the technology was to their children’s educational success. All parents were familiar with the computer and nearly all felt that it will be important to their child’s success in school. This aligns closely with the findings in Ortiz et al., (2011) which indicated almost all of the parents (97.5%) agreed that not only are computers important learning tools but that knowing how to operate one relates to better job opportunities and success. The only parent indicating that the computer was not important marked the iPad for that item. The next item of importance for parents was the white board, however a little under half of the parents who were familiar with the white board work in an educational setting which most likely accounted for its higher ranking.

The parents were then asked to briefly explain why they ranked the technologies as they did. Closely related themes about technology’s place in education, in society, in students’
futures both personally and professionally, and that its use be monitored and be age-appropriate emerged. The last perspective was reported by one parent and aligns closely with what was indicated in (Corbett & Vibert, 2010) who found the idea of safe Internet space held prominence with all parents, and they maintained some form of surveillance over their children’s Internet activity. Paired with this was the notion of developmental appropriateness and the worry about their children’s exposure to mature content that may cause them to grow up too fast. In addition, parents stated concerns about their children’s increasing engagement in the virtual world of information technology as it can cause youth to withdraw from reality, become physically inactive, or turn out to be isolationists who lack social abilities and sensibilities, perhaps even losing touch with nature and their own bodies.

In general, parents held technology and its integration into their children’s classrooms in high regard. The fact that iPad technology decreased slightly may relate to the findings in Corbett and Vibert (2010) which indicated that parents of students in a Canadian rural small town school had attached a hierarchy of value to educational text. The parents placed traditional hard copy school textbook and literature at the top and plastic virtual and visual texts at the bottom.

Research question two focused on parental familiarity with 21st Century Skills and, if familiar, how important they felt those skills are to their children’s success in school. Here again, most of the parents who were familiar with them and felt they were important worked in an educational setting. This makes it apparent that a need to educate parents early on about 21st century teaching and learning is crucial.

Finally, three interview participants were asked four additional questions about the computer or other technology. Two of the parents felt that the computer should be taught as a
basic skill along with reading or math, clearly indicating its importance for their children. Those
two parents however, felt that they could only help their children with the basics, especially their
older ones. The third parent, who indicated that the computer should not be included in
foundational skills, was the most comfortable in assisting with homework on the computer.

The first two parents mirrored ideas found in Ortiz et al., (2011) wherein a great number
of parents (82%) also stated that schools should offer computer training courses in order for
students to begin at an early age developing study habits and performing homework tasks with the
aid of one. The third parent more or less aligned with the parents in Corbett and Vibert (2010) who
although recognized the centrality of digital literacies to their own work and social lives and
understood the place these literacies held in school, they still placed a higher premium on print
literacy. Because the school used print literacies developmentally and sequentially, they were
considered safe. In addition they taught the skills necessary for literacy and obtainment of
successful employment.

All agreed that the computer or other technology would indeed motivate their children to
do their homework, and in turn that knowing how to operate a computer or other technology
would help them become successful in life.

**Recommendations**

Because the parents surveyed in this study were parents of very young students,
the first recommendation for further study would be to repeat this process for several other age
brackets at this same PK-12 school. Further studies should include questions specifically related
to 21st Century Skills, what is encompassed by the term, and if parents understand how the skills
are related to employability in a global economy.
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APPENDIX A

SURVEY OF PK-2 PARENTS/GUARDIANS REGARDING THEIR PERSPECTIVES ON EARLY TECHNOLOGY INTEGRATION AND 21st Century Skills

The following survey is part of an effort to understand what the Lone Tree Community School parents/guardians of PK-2 students know about technology used in their children’s classrooms and what they understand about 21st Century Skills. The results of this survey may not be of direct benefit to you or your child/children but may inform future decisions at Lone Tree Community School.

Participation in this survey is strictly voluntary. By returning this survey you agree to participate in this study. You may discontinue this survey and/or your participation in this study at any time.

All responses will be kept confidential.

*Please include your contact information only if you are interested in an invitation to a follow-up interview.*

For purposes of this survey technology is defined as: computers, iPads, electronic book (e-book) readers, cell phones, iPods, digital cameras, tape recorders, CD players, DVD/VHS players, and interactive white boards (Smart Boards or Promethean Boards).

Please Circle Yes or No

1. Do you and your child/children talk about their day at school? Yes No

   1a. If you answered Yes, please check the appropriate topic(s):

      _what they learned that day _was the day fun _was the day bad

      _other- Please explain:

2. Do you and your child/children talk about the technology they use at school? Yes No

   2a. If you answered Yes, are you familiar with all of the technology they have talked about using? Yes No
2b. If you answered No, please check the technology with which you are not familiar.


3. Please check the technology you have in your home.


3a. If you marked any item above, please check the item your child/children use(s) at home.


4. Please check the technology you feel is important for your child/children to become skilled at using.


4a. If you checked any item please state why you feel such skills are important.
5. Please check the technology you feel is important for your child’s/children’s educational success.


5a. If you checked any item, please state why you feel it is important to your child’s/children’s educational success.

6. Are you familiar with the term “21st Century Skills?”

- Yes - No

6a. If you answered Yes, please indicate what you understand about 21st Century Skills.

7. Are you or another adult in your home currently employed?

- Yes - No

7a. If you answered Yes, please indicate the place of employment for each adult in your home.

7b. Please indicate your average yearly income.

- < $25,000 - $26,000-45,000 - $46,000-55,000 - > $56,000

8. If you would like to be contacted for a follow-up interview, please list your information.
APPENDIX B

INTERVIEW QUESTIONS/TOPICS

1. Do you feel your child should be taught how to use a computer or other technology as much as he/she is taught other subjects such as math or reading?
2. Do you feel comfortable helping your child with their homework using the computer?
3. Do you feel that your child is more motivated to do his/her homework if they use the computer or other technology?
4. Would you say that your child needs to know how to use a computer or other technology to be successful in life?