Information and Communications Technology Use in Parent Educator Practice

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Dedication

This thesis is dedicated to all the families that led me to embark on this journey.
Secondly, it is dedicated to my parents for their examples of life-long learning and leadership.

Abstract

This study examined licensed Parent Educator's use of information and communications technology (ICT) in educational practice. Using online survey research, data was collected in three areas: types and frequency of ICT use, educator characteristics, and institutional support for ICT use. Analysis of 201 responses revealed four groups of users based on the number and frequency of ICT types used: High Number- High Frequency, High Number-Low Frequency, Low Number- High Frequency, and Low Number-Low Frequency. Email, internet searching for information, and document preparation are used frequently by most; few use social media. Analysis revealed that demographics show no relationship to technology use. Educators' perceived self-efficacy was related to ICT use. Institutional support in the forms of access to devices, instructional climate and instructional support had a significant influence on ICT use. The results have implications for individuals and organizations integrating information and communications technologies into Parent Educator practice.

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Chapter 1: Statement of the Problem

Parent Educators (PE) are teachers who work with parents regarding matters of parenting, child development and family life. These professionals play a vital role in promoting family well-being by providing information, support and guidance to parents. Parenting is a constantly evolving challenge for parents: children grow, parents change, and family life can be altered by circumstances within the family such as the birth of child with a disability or by societal factors such as the loss of a job. In the United States, beginning in 1889 with the development of the settlement houses such as Hull House, parent educators of various backgrounds have sought to help parents face challenges by providing parent education (Arcus, 1995). Today, parenting education is practiced by people with diverse backgrounds including social workers, medical professionals, psychologists, community based educators such those employed through Cooperative Extension Service and those with teaching licenses, such as in the state of Minnesota (Duncan & Goddard, 2011). Parent education can be provided in settings ranging from one-to-one meetings to large scale one-time events. Parent education activities are provided in a wide variety of formats including providing web-based information, guided practice of parenting techniques about a specific issue, or facilitating an ongoing discussion among a group of parents about a topic of interest.

As cultures, family patterns, and communication technologies have changed, parenting education has changed. The explosion of information and communications technologies (ICT) has altered the landscape of human interaction, learning, and information gathering. Formal education from preschool through higher education has incorporated ICT into all aspect of education from classroom management to discipline specific learning applications (e.g., Purcell, Heaps, Buchanan, & Friedrich, 2013; Parette, Quesenberry, & Blum, 2009). The question needs to be asked: To what extent does ICT play a role in the PE's practice of parenting education?

For the purposes of this research, information and communications technologies will be defined broadly as:

> "Those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g., computers and other devices), software applications, and connectivity (e.g., access to the Internet, local networking infrastructure, and videoconferencing)." (Toomey, 2002, para. 3)

This definition also embraces more recent advances in ICT that include media that is mobile (i.e. smart phones or tablet computers), social, collaborative and creative.

The role of ICT is expanding in both families' daily lives (e.g., Rothbaum, Martland, & Jannsen, 2008) and in educational practice (e.g., Purcell et al., 2013). The use of ICT provides an avenue to reach parents. Parent educators are uniquely qualified to provide high quality educational opportunities that integrate technology (Hughes, Bowers, Mitchell, Curtis & Ebata, 2012). Incorporation of technology based applications into face-to-face activities has the potential to expand parent learning. Parent Educator participation in web-based learning opportunities has the potential to expand the scope of current programs to new or wider groups of parents.

To maintain its attention to quality, the field of parent education needs to understand the impact and implications of technology use within parent educator practice but research in this area is limited. It is not known to what extent PE's are incorporating general or specific learning technology based applications into their practices. Variables that may encourage or discourage the use of technology by PE's need to be explored.

Using online survey research, this study examined aspects of the current state of ICT use by Parent Educators licensed as teachers in the state of Minnesota. Identifying types of technology use along with influences on ICT use may assist PE's as well as the organizations in which they work when making decisions about technology use, programming, professional development and institutional support.

With the overall goal of providing a description of the current state of technology use by licensed Parent Educators, the following research questions will be addressed.

1. What types of technology are Parent Educators (PE) using in their practice and how frequently are these technologies being used?

2. Is there a relationship between technology use and the educator characteristics of age, years of experience as a PE, the type and amount of education for ICT use, or perceived self-efficacy in technology use?

3. Is there a relationship between technology use and the characteristics of workplace or institutional support: access, instructional climate and instructional support?

As support for this research, a review of the literature is offered. First, the current status of technology use both by parents and in parent education will be summarized as a basis of understanding the importance of ICT use by PE's. Using Bandura's theory of triadic reciprocity as a framework (Bandura, 1986), the literature related to individual educator characteristics, the influences of the institutional environment, and educator use of technology in practice is explored. It is necessary to examine studies of educators in related educational fields as the literature specific to parent educators is extremely limited. Examining these areas will establish a basis for the study of ICT use by Parenting Educators.

Chapter 2: Literature Review

The literature review focuses on three major areas. First, the functions of parent education will be described, followed by a review of the current status of information and communication technologies (ICT) being used by families as well as in parent education. This develops an understanding of the potential value of ICT use by Parent Educators (PE's). Secondly, a theoretical framework for examining ICT use by educators is established. The third section provides a review of the literature pertaining to current ICT use in education. Research that directly examines technology use by Parent Educators is limited in scope, so literature is reviewed for two closely related fields of non-formal adult education, Cooperative Extension and Adult Basic Education (ABE). To further develop the depth and scope of issues related to technology use in education, research related to ICT use by pre-service and practicing teachers of kindergarten through high school (K-12) is included. The review will conclude with a synthesis of how the literature supports the study of the use of ICT by parenting educators, thereby establishing a basis for the research questions.

Parent Education, Families and ICT Use

The focus of this research is on Parent Educators who provide non-formal adult education. Merriam, Cafferella and Baumgarten (2007) define non-formal education as organized learning opportunities outside the formal educational system that tend to be short-term, voluntary and have few, if any, prerequisites. For the purpose of this study, parenting education is defined as intentional educational offerings aimed at all adults who serve as caretakers of children (Stolz, 2011). Parenting education programs, as one avenue of family life education, have one or more of four major premises underlying the design and delivery of programs: preservation of culture, remediation of existing problems, prevention of problems, and the development of human potential (Arcus, Schvanevedlt, & Moss, 1993). Core competencies for Parent Educators cover three broad areas: (a) strong understanding of theoretical perspectives and research related to

children, families and parenting, (b) attitudes of tolerance, acceptance and commitment to families, (c) instructional, relational and professional skills (Stolz, 2011, p. 203). While professional standards for Parent Educators are widely used (NEPEF, 2012), there is not consistent professional development program or national standard for Parent Educators. The National Council on Family Relationships has developed the Certified Family Life Educator program for family life educators, who may have parent education as a focus (NCFR, 2013). The only state that has requirements to license Parent Educators as teachers is Minnesota.

Jones, Stranik, Hart, McClintic and Wolf (2013), in their work on the diverse roles of Parent Education practitioners, outline three facets of the practice of parent education: methodology, teaching approaches and facilitation of parent learning. Parenting education methodologies include: large group presentations, small group facilitation, one-on-one consultation, development of information, and the dissemination of information. Secondly, parent educators use multiple teaching approaches: expert, facilitator, critical inquirer, collaborator, interventionist, and eclectic. Thirdly, to promote parent learning within a situational context, PE's share information, support, teach, counsel, mentor, collaborate and advocate for families.

Walker (2010) outlines a rationale for PE's to integrate technology into educational programming. The rationale includes accepting that parents are using technology as a valued tool, the need to adapt the expertise of PE's to the new technologies, and for use in advancing our advocacy for families in the changing context of ICT. Prior to considering how Parent Educators are adapting their expertise for the use of ICT, an understanding of the current state of ICT use by families is needed.

ICT use by families. Families are using a wide variety of ICT devices and technology based applications. By 2008 the PEW Internet and the American Life Project had identified that technology devices were embedded in family life, finding that 95% of married families with children have cell phones and use the internet as do 88% of other multi-member households

(Wellman, Smith, Wells & Kennedy, 2008). In 2013, PEW reports that 91% of Americans own a cell phone and 56% have smart phones (PEW, 2013a). In addition, 75% of the population has access to the internet (PEW, 2013b). The PEW Internet and American Life Project data shows that common purposes for accessing the internet include: using a search engine to seek information (91%), send or receive email (88%), look for information about a hobby or interest (84%), seek products or services (78%), use a social networking site (67%) and visit local, state or federal government sites (67%) (Pew, 2013c). Each of these activities have been shown to be used for family related purposes (Walker & Rudi, in press).

Research has focused on parental demographic and technology use variations. Radey and Randolph (2009) confirm the findings of other studies, showing mothers to be the primary seekers of parenting information. Radey and Randolph also found that younger and single parents are more likely to use the internet. In a literature review of ninety four articles, Plantin and Daneback (2009) learned that parents used ICT for both parenting information and parenting support. Primary areas of information seeking include parenting topics, health information, and activities. Based on data from parents who responded to an online survey investigating ICT use for parenting purposes, Walker, Dworkin and Connell (2010) reported that 53% of respondents read emailed newsletters at least weekly, 20% read and commented on blogs, and 45% are using social networking sites. Parents report using cell phones and the internet as resources for family communication and connection (Wellman, et.al, 2008). ICT based social support is an important supplement to family and other social supports (Madge & O'Connor, 2006).

Rothbaum, Martland, and Jannsen (2008) examined differences in technology use, skills and satisfaction based on parents' socioeconomic status, identifying that the digital skills divide is present among parents, mirroring the general population. Ease of access contributes to parents' use of internet resources (Blackburn & Read, 2005). In summary, research with families has

established that large number of parents use ICT to communicate, learn, and connect to others in ways that support their journeys as parents, yet they demonstrate diversity in their ICT practice.

ICT applications in parenting education. As technologies have become embedded in families' daily lives, the field of parenting education adapts and responds. ICT has become an element of professional practice, affecting program delivery and program design. No research was located about how ICT applications are being used in parent education offered in physical face-to-face settings. No research was located about programs that use a combination of in-person meetings and ICT based applications.

Within the range of parent education offerings, Ebata and Dennis (2011) identify two general types of non-formal program delivery using ICT. One is structured learning experiences with curricula. The second is learning modules available when an individual has a "need to know". Each type of programming can be combined with opportunities for interaction with PE experts synchronously or asynchronously.

Some parent education programs originally developed for face to face delivery have been effectively modified for the internet such as "Focus on Kids" developed by Schramm and McCaulley (2012).This evidence based face to face program was recreated in an online version. Studying delivery methods, both versions were found to be equally effective, though the online version received slightly lower satisfaction ratings by parents.

In an example of a structured learning experience, Baggett, Davis, Feil, Sheeber, Landry, Carter and Leve (2009) found that an internet based, computer delivered, multimedia parent training intervention program with mothers of children at risk for social -emotional issues has the potential to increase parent participation in children's mental health programming by reducing the perceived stigma of participation in group classes. In the study by Baggett et al., parents perceived the ICT delivered program as personal, interactive, and easy to use. The data linked

gains in parent skill to increased infant social interactivity with their parent and the wider environment.

Faced with issues of low in-person treatment follow-up by minorities and low income families, Carey, Wade and Wolf (2008) researched the effects of two ICT delivered program formats on parents of children with traumatic brain injury. The first program, an online family problem solving intervention, involved regular communication with professionals including web-based synchronous video conferencing. The second program, Internet Resource Intervention, consisted of a web page with information and links to other resources. The first program was found to reduce depression in caregivers. A major finding of the study was that prior experience with technology based applications increased compliance and benefit from both programs suggesting that to use ICT based programing successfully, parents may need to have specific training about how to use the technologic aspects of the program such as video conferencing.

Several issues related to the effectiveness of parent education programming via ICT have been identified including participant difficulty managing the devices or applications, low interest in programs, and the potential for harm if parents are not critical consumers of information. Carey et al. (2008) observations echo Ebata and Dennis (2011) who argue that a drawback to the use of ICT in parent learning is the potential for parents to become overloaded by technical difficulties, leading them to miss the information crucial to meeting learning objectives. Demonstrating an inconsistency of findings between research studies, Carey et al. (2008) findings contrast with those of Walker, Im and Vaughn (2012) who observe that interest in web-based information declines as parent psychosocial risk factors increase suggesting that incorporation of ICT into programming requires careful consideration of the methods needed to effectively reach the target audience. Expressing a concern about the potential for parents to encounter incorrect and potentially harmful information via internet information searches, Martland and Rothbaum (2006) urge PE's to teach parents to consider the veracity and safety of information and support sources.

Martland and Rothbaum also focus on teaching search skills to parents based on individual need, citing literature indicating that those with low and moderate levels of education show less skill in finding the information they are seeking.

Evaluations of online and technology-driven family education are just emerging. Walker and Rich (2010) suggest ICT based programs show strong potential as effective mechanisms for outreach and engagement, learning and behavior change. In a meta-analysis of nineteen online based parent education programs Nieuwboer, Fukkink, and Hermanns (2013) find online programming to be effective in improving parent knowledge, attitudes and practices as well as improving child outcomes. Issues of participant ability, understanding, and motivation are found to be potential limiters to families' use of available programming delivered through online ICT.

Summary of parent education, families and ICT use. As the devices and connectivity of ICT become nearly ubiquitous in our society, large numbers of parents have adopted multiple forms of ICT for communication, information seeking, and social support (Wellman et al., 2008). Research has shown benefits of parent education programs that use online delivery methods but little is known about the incorporation of technology based applications into other types of parent education offerings. To effectively address parent's information seeking and learning needs, Parent Educators must be involved in the development, promotion and facilitation of ICT inclusive programming, yet little is currently known about how and why individual PE's are using ICT in practice. In a survey of professional parenting educators in three regions of the U.S. Walker and Kim's (2010) provide descriptive information about educators' use of technology in practice. Walker and Kim (2010) observed that majority (89%) used the internet for information seeking, 60% use technology when making presentations, 50% used online surveys, and 36% created or maintained websites. Web-conferencing, social networking, online discussions, and/or instant messaging for work purposes were noted by 25% of the respondents.

Further knowledge of the current patterns ICT use by PE's is necessary. It is also necessary to explore the influences of the educator as well as the workplace or institutional environment on ICT use for educational purposes. A stronger understanding will allow individuals and institutions to address potential needs for technology support including professional development. To develop an understanding of ICT in non-formal parent education, a conceptual framework is needed.

Conceptual Framework for the Study of ICT Use by Parent Educators

An appropriate framework for examining Parent Educators' integration of technology into practice is the social cognitive theory of learning with a focus on the concept of triadic reciprocal determinism (Bandura, 1986). The theory states that individual learning is an interplay between social forces and cognition. The components of those forces are aligned in three areas: personal characteristics, external environmental factors, and overt behavior as seen in Figure 1.

Figure 1. Bandura's Triadic Reciprocity of Causality Model

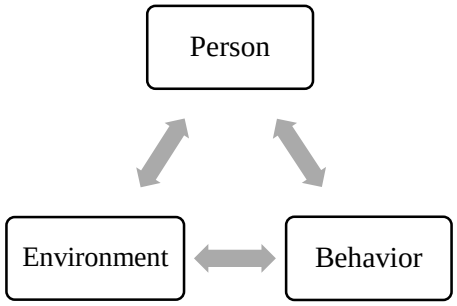


Figure 1. Adapted from *Image, 2013*

Social cognitive theory defines personal characteristics to be cognitive activities, affective states, and biological events including the personal characteristic of the cognitive activity of perceived self-efficacy. Personal characteristics such as age or status have an effect on social interactions which shape behavior. Bandura theorizes that individuals will be more likely to engage in behaviors that they believe will have valued results and that perception of self-efficacy leads to

the pursuit of mastery (Bandura, 1999). Environment is considered to have both physical and socio-structural elements. Behavior is affected by the environment and can consequently alter the environment. In describing triadic reciprocal determinism, Bandura (1989) summarizes that overt behavior is dynamically co-created through reciprocal interaction among personal characteristics, environment, and behavior on an on-going basis. The elements that make up each of the three components may not have an equal effect within each person or setting. In any given situation, the strength between interactions may be unequal. Reciprocal influences are not postulated to occur simultaneously, with change occurring incrementally. Time is considered a factor in activating reciprocal influences (Bandura, 1989). The concepts of triadic interaction can be used to examine potential relationships between Parent Educator characteristics, the institutional environment and the use of ICT in parenting education.

ICT Use in Education

The construct of technology use in education has been variably addressed in the literature. Research ranges from simple counts of types and frequency of use of devices through examining how educators incorporate ICT into lessons based on the educator's philosophy of education. Measures of actual use of ICT in the various forms of education have taken multiple forms. Methodologies generally involve self-report, a method that Lawless and Pellegrino (2007) sharply criticize in their review of research on the role of professional development. In addition to use by Parent Educators, ICT use by non-formal educators, pre-service and practicing teachers will be examined to develop a deeper understanding of ICT use by educators.

Use by Parent Educators. In the only study specifically of parenting educators (family life educators), Walker and Kim (2010) surveyed the use of technology in the workplace and personally. Respondents reported on the number of devices or technology applications they used regularly (self-defined), either personally or work purposes. Findings for technology use in the workplace show the most common types of use to be the internet (88.8%), cellphones including

texting (65.5%) and making presentations using PowerPoint (60.2%). There was a sharp contrast with PE's personal use of social networking (67%) and that used for work (23%). Based on respondent comments, this difference is theorized to be related to institutional access and policy related to the use of social networking. Walker and Kim (2010) also assessed technology acceptance attitudes using the Technology Acceptance Model by Davis (1989) as adapted by Teo, Lee, and Chai (2008). Walker and Kim's findings indicate that attitudes were influenced by the perceived ease of use, perceived usefulness and subjective norms. Facilitating conditions (e.g., availability of training) influenced attitudes only as it was related to perceived ease of use. Walker and Kim suggest that PE's may need to experience that training or professional development actually improves ease of use before it affects PE's regular use of technology.

Use by non-formal adult educators. Reviewing research about technology use in closely related fields of non-formal adult education aids in understanding the potential types and benefits of technology use in the adult education setting of parenting education**.**

Using case study methodology with two county Extension offices, Diem, Hino, Martin and Meisenback (2011) examine the potential for ICT use among Extension Educators finding that lack of money, time and training are barriers to ICT use though no data regarding current levels of use is presented. Additionally, Diem et.al. note a barrier to technology use is educator concern that a transition to ICT based programming would create a loss of existing clientele and create potential problems by attracting clientele from beyond their funding jurisdiction. This may be a potential concern of Parent Educators funded by local school districts.

Investigating the extent of technology integration in instruction by Adult Basic Education (ABE) educators, Kotrlick and Redmann (2005) report that student access to email and the internet increased educators integration of technology into educational opportunities. In another setting, Peffer, Bodzin, and Smith's (2012) online survey of technology use and found that 98% of the non-formal environmental educators sampled used email. Over 60% use calendar functions

and organizational tools. Nearly all (95%) used forms of presentation software as an instructional tool. Under 25% used discipline specific learning technologies (e.g., mapping software, migration modeling) as part of educational programming.

Use by pre-service educators. Research about ICT use by pre-service K-12 educators during their professional preparation training is diverse with a strong focus on pre-service teachers learning to incorporate ICT into educational practices. The Technological, Pedagogical Content Knowledge (TPACK) framework developed by Koehler and Mishra (2009) has been applied and adapted for pre-service teachers in attempts to determine how preparation in the interacting domains of technology, pedagogy and content knowledge provided a basis for the integration of ICT into teaching (e.g., Koh & Shanti, 2011, Lux, Banger, & Whittier, 2011).

Pre-service educator understanding of technology use in education is influenced by the ways that instructors incorporate technology into course work. Oliver, Osa, and Walker (2012) in a study of instructor and student use in one educator preparation program note that 80% of instructors used Blackboard™ (a learning management platform) and PowerPoint™, while only 50% used video. All other technology options listed in Oliver et al.'s (2012) research, including wikis, whiteboards and library databases, were used by under 20% of instructors. While instructors were reported to feel a value in pre-service educators learning to use instructional technologies in P-12 classrooms, little direct instruction in the incorporation of ICT was noted. The most common tools in which pre-service teachers received direct instruction were learning management platforms (i.e., Blackboard™), presentation programs (i.e. PowerPoint™) and video. Many instructors at that institution (29%) reported that they did not teach the use of any instructional technology. The authors provided no demographic information about the instructors. Studying a particular pedagogical practice which home economics pre-service educators may incorporated into their own teaching, computer supported collaborative learning, Ma and Pendergast (2010) found that pre-service teachers benefited from e-learning facilitation by an

instructor and the use of analytic tools to reflect on their quality of collaboration, critical thinking, and creativity.

Use by practicing educators. Purcell, Heaps, Buchanan and Friedrich (2013) writing for the Pew Internet and the American Life project, researched teachers' personal and classroom use of ICT. The major uses of ICT reported were locating information and materials to enhance or expand lessons and to keep abreast of professional developments in their fields. Parette, Quesenberry and Clum (2010) discuss developmentally appropriate use of technology to support instruction in early childhood settings. Ma and Pendergast (2008) observed that perceived ease of use was the sole determinant of intention to use ICT, though educators' individual perception that their own use was important to peers and perceived ICT self-efficacy did play a small role. Lokken, Cheek, and Hastings (2003) in a study with Family and Consumer Science teachers found insignificant correlation between use and computer attitudes or computer experience.

A major barrier to technology use in instruction is having adequate time to learn about the technology and prepare lessons (e.g., Brinkerhoff, 2006; Clark, 2005; Shamburg, 2004). Educators' work time is generally highly structured. Administrative support plays a role in the availability of professional development related to ICT use along with time for lesson planning that integrates technology (Kopcha, 2012).

Technology use summary. Increased integration of ICT into education is a common goal of governments and institutions, but the varying definitions of types of technology, levels of integration, and types of technology use differ across studies making ICT use difficult to quantify. Use of ICT is occurring across all educational environments. Educators are using technology to enhance or manage productivity on personal and institutional level. Educators at all levels are using presentation tools in educational activities. The theoretical underpinnings for ICT integration within education affect how use is encouraged, defined and measured.

The educational context is shown to interact with technology use including the educational setting, level of institutional support and the type of learner. The interaction of the educator with technology use needs further exploration.

Educator Characteristics and Technology Use

Of the realm of potential educator characteristics, existing research (e.g., Papanastasiou & Angeli, 2008; Lokken, Cheek, & Hastings, 2003) frequently collects data about educator age and the amount of teaching experience. Prenksy (2001) discusses issues related to ICT use in education using the concept of digital natives (those that grew up in an ICT based environment) versus older teachers or parents who are considered digital immigrants. This concept has led researchers to postulate that there will be differences in technology use based on age and years of teaching experiences. Professional development or education for ICT integration into educational practice is researched, generally with the intent to determine what types of professional development increase the use of educational technologies (e.g., Brinkerhoff, 2006, Lawless & Pellagrino, 2007, Kopcha, 2012). An individual's sense self-efficacy for ICT integration is examined for its influence on technology use. Literature related to the effects of age, teaching experience, professional development and perceived self-efficacy on ICT integration are reviewed for each of four educator groups: Parent, non-formal, pre-service, and practicing educators.

Age. Educator age is often collected as part of surveys, but is not always interpreted in relation to the findings of the particular study (e.g., Lechuga, 2011). No research was located that explored the effects of educator age for PE's, non-formal or pre-service teachers. The effects of a teacher's age on ICT use have been found to be significant with younger teachers using a wider variety of ICT more frequently (Lokken et al., 2003; Purcell et al., 2013). Purcell et al. (2013) show that teachers under the age of 35 were more likely to use wikis, to blog and to maintain websites than those over 35.

Years of experience. A review of the literature reveals no analysis to the role of teaching experience on ICT integration for parent educators or Cooperative extension educators, Surveying Adult Basic Education (ABE) and English as a Second Language (ESL) teachers in Texas, Lechuga (2011) collected data about years of teaching experience but does not interpret it related to actual technology use. For non-formal environmental educators, Peffer et al. (2013) note increased technology incorporation among those who have K-12 teaching experience though finds no differences for length of teaching experience in general or length of time in current position. The work of Purcell et al. (2013) infers that teacher age is synonymous with teacher experience. Woods, Karp, Hui, and Perlman (2008) cite studies that indicate that fewer years of teaching experience is related to increased use of technology in teaching, but their own research with Physical Education teachers determined that this was not significant.

Professional development. While research among non-formal educators regarding ICT related professional development is limited, there is extensive and varied research concerning K-12 educator professional development for ICT. A driver for this type of research may be federal and state initiatives regarding enhancing education through technological literacy (Bakia, Means, Gallagher, Chen & Jones, 2009). Without educators who can integrate technology, institutions will not be able to meet the standards and guidelines of the initiatives, thus increasing the need to examine professional development.

***Non-formal educators*.** Diem and colleagues (2011) note that Extension educators had a limited awareness of the capabilities of ICT, so were unaware of the potential types and benefits of training related to the incorporation of ICT. Kotrlick and Redmann (2005) found that ABE teachers were using workshops, conferences and self-directed learning about ICT at higher levels than college courses or colleague support. In a study of non-formal environmental educators, Peffer et al. (2013) discovered that among non-formal environmental educators technology

integration increased when the technology used in training was immediately available and directly applicable to the specific teaching situation.

***Pre-service educators*.** Since 2000, pre-service teacher education programs in the state of Minnesota have applied the National Council for Accreditation of Teacher Education (NCATE) standards, now called the Council for Accreditation of Educator Preparation (CAEP) standards. Within Standard 1.5, providers (educator preparation programs) have the responsibility to "ensure that completers model and apply technology standards as they design, implement and assess learning experiences to engage students and improve learning; and enrich professional practice" (CAEP, 2013). Minnesota has additional technology integration standards which include integrating technology to cover subject matter, address individual learning needs and diversity, contribute to the learning environment, and manage communication (MDE, 2013). Even with standards for the professional development of pre-service teachers in place, Oliver et al. (2012), in a quantitative survey of professional preparation for technology integration at one institution, found problematic issues with the preparation of pre-service teachers for the integration of instructional technologies. The issues include varying understandings of theory, varying beliefs about efficacy, and varying levels of ICT integration into pre-service instructional programs. Each of these issues have the potential to impact an individual's actual technology use within their future teaching practices.

Practicing educators. In a sample skewed toward technology savvy teachers, Purcell et al. (2013) finds that 62% of teachers feel that their schools provide adequate resources and support for ICT integration and that 68% provide formal training. In contrast to the idea that professional development is structured, Purcell et al. report that 85% of teachers learn about ICT independently. In a literature review of research regarding professional development for technology integration by educators, Lawless and Pellegrino (2007) find that the most common

continuing education format was a brief (up to half a day) workshop on the operation of a specific hardware or software tool. Lawless and Pellagrino note that teachers who participate in professional development voluntarily are likely to have different motivations and outcomes than those for whom participation is mandatory.

Lawless and Pellegrino (2007) advocate that research about technology integration needs to attend to the depth, breadth and focus of the professional development activities using measures other than self-report for teacher knowledge, behavior change and student outcomes. Brinkerhoff (2006) studied a model of professional development based on the National Educational Technology Standards for Students (NETS_S) teaching standards. The study conducted forty days of technology training over two years. This study found that teachers perceived self- efficacy for using technology in educational activities increased but there was low level of mastery for linking technology use to learning objectives and limited ability to assess the effectiveness of the teaching methods in achieving learning objectives (Brinkerhoff, 2006). Brinkerhoff concludes that his findings echo those of others: learning to use technology as part of higher level teaching strategies is not an event, but a long term process that requires considerable time and effort on the part of the educator. In a two year mixed methods study with elementary teachers, Kopcha (2012) observes that having a dedicated technology mentor available in the building for a year assisted teachers in expanding both their pedagogical understanding of technology use and their abilities to maintain the technology. After the period of mentoring, teachers were transitioned to the "community of practice" approach. While teachers continued to use previously learned teaching practices, the community of practice approach did not significantly further alter ICT use.

In summary, professional development is considered key to advancing educational uses of ICT. For professional development to be effective, educators (including Parent Educators) must be aware of the potential uses of ICT. They must willingly participate in training or self-education. There must be institutional support for the process.

Perceived self-efficacy. Bandura (1989) discusses the role of self-belief in efficacy as an important component of the acquisition of skills and the ability to be self-directing, thus perceived self-efficacy for ICT use may play a role in how an educator approaches both professional development and the use of technology based applications. The construct of self-efficacy is variably defined in the literature. The term perceived self-confidence is often used synonymously (Tezci, 2011). In non-formal education, Kotrlick and Redmann (2005) investigated the related influences of teacher technology anxiety and self-perceived teaching effectiveness in ABE teachers. Kotrlick and Redmann's findings showed two major results. One is that increased educator anxiety about ICT use decreased actual use. The second is that teachers perceived themselves as effective teachers whether or not they integrated ICT into teaching.

Browne (2009), in developing the Technology Integration Confidence scale, examined the role of perceived self-confidence in pre-service teachers based on NETS-T (National Educational Technology Standards for Teachers). Browne equates self-confidence to self-efficacy through Bandura's concept that self-belief contributes the ability to achieve the desired outcomes. Though the findings were not significant, Browne states that if individuals are not confident about attempting to use technology in teaching there is little chance they will make meaningful efforts at incorporation.

Personal characteristics of practicing educators appear to be related to confidence in technology use. In a sample of teachers in which 71% were female, Purcell et al.(2013) report that 67% of males and 52% of females were" very confident" about their ability to learn to use digital technologies. Age played a role in confidence with 69% of those under 35 feeling confident compared to 44% of those over 55. Less than 10% reported that the individual teacher's own lack of confidence was a major deterrent to ICT integration in teaching. In a study of ICT integration by Family and Consumer Science teachers, Lokken, Cheek, and Hastings (2003) found that older teachers in their sample had less confidence about using computers.

In summary, a variety of constructs related to an individual's perceived self-efficacy to effectively use or integrate ICT have been researched. Perceived ability or self-confidence has been shown to be weakly linked to actual use.

Educator characteristics summary. While theorized to play a role, research shows a mixed picture regarding the role of educator characteristics in ICT use. Teacher age has both been shown to have an impact on ICT use, with younger teachers using more forms of ICT in a wider variety of ways (e.g., Purcell et al., 2013) and not have an impact (e.g., Lokken et al., 2003). Length of teaching experience has been shown to have no effect, but teacher age is often presumed to correlate with length of work experience. The role of professional development for ICT integration in education has been extensively researched, highlighting the need for voluntary participation in learning activities that are tailored to the educators' situation. A variety of constructs related to perceived self-efficacy have been linked to ICT use. The educator characteristic of age has been shown to play a role in perceived self-efficacy indicating an interaction within the characteristics. Issues of staff support and staff time for ICT related professional development are tied to institutional support.

Institutional Support and Technology Use

Institutional support for ICT use can be considered a component of Bandura's (1986) concept of environment. Institutional support for integration of ICT is multi-faceted. Issues of physical access to technology and issues of socio-structural support must be considered. Physical access includes access to both hardware and technology based applications including software. Instructional climate is an interpersonal construct that includes encouragement or modeling from other staff, including administration (Gopalakrishnan, 2006). Instructional support includes technical support, appropriate policies, and alignment of technology with curriculum (Staples, Pugach, & Himes, 2005). No research directly related to institutional support of PE's was located.

To provide a basis for considering the role of institutional support for ICT use, research regarding non-formal, pre-service and practicing educators will be considered.

Access. In the Adult Basic Education (ABE) setting Kotrlick and Redmann (2005), using survey research, indicate what are described as minor barriers related to amounts of hardware and internet access though no data is provided. Survey research by Lechuga (2011), reported that in Texas, 76% of the ABE educators had internet access in the workplace, of which 76% was high speed access. For discipline specific instruction, access is often operationalized to the availability of equipment such as modeling software or measurement tools (e.g., Isleem, 2003; Woods, Karp, Hui, & Perlman, 2008). In the K-12 setting, Purcell et al. (2013) found that teachers of higher income students use more ICT in educational practice as their students have access to larger numbers of personal devices.

Instructional climate. A two year study of six models of ICT support for adult education programs revealed that four areas were the most relevant to developing a sense of support for ICT use: personal encouragement and motivation, instructional mentoring by staff that did not also have full time teaching assignments, routine technical support, and administrative support (Gopalakrishnan, 2006). Gopalakrishnan observed that there were multiple effective methods for providing each of these, but that all four were necessary to sustain a climate that encouraged ICT use in education. Papanastasiou and Angeli (2008), in their development of the Survey of Factors affecting Teachers Teaching with Technology (SFA-T^3), found that perceived support from colleagues for ICT use accounts for 12.5% of the variance in the survey, making it the highest factor other than teachers' individual computer knowledge and frequency of use. Researching technology use by technology teachers in the state of Ohio, Isleem's (2003) analysis of survey results show that ICT use was positively influenced by perceived support from colleagues including encouragement, sharing information, assisting with technical support and providing a good role model.

Instructional support. The policies of institutions affect the access and integration of ICT on several levels. O'Neill, Zumwalt, and Bechman (2011), studying social networking use by Extension educators discovered limited policies related to social media use. O'Neill et al. (2011) describe fragmented policies related to four areas: (a) avoiding personal use on work time, (b) requiring the use of research based content in the materials educators post online, (c) requiring that educators not use trade names in posts, and (d) definitions of types of inappropriate use by educators which lead to disciplinary action. With practicing educators, Purcell et.al. (2013) discerned that institutional policy that blocked access to popular social networking platforms inhibited the integration of social networking into educational practice. Isleem's (2003) findings on instructional support shows that teachers feel a need for administrative support which includes providing high levels of access, frequent upgrades or updates of ICT, and professional development opportunities. Examining technology use in three elementary schools, Staples, Pugach, and Himes (2005) describe the importance of the school principals' support for ICT use in alignment with curriculum combined with support for professional development. Looking at institutional policy for ICT use more holistically, Tondeur, van Keer, van Braak, and Valeke (2008) identify three interconnected areas that promote ICT integration: a shared vision for teaching with ICT, a well-developed policy for ICT use, and teachers who understand the policies and share the values underlying the policies.

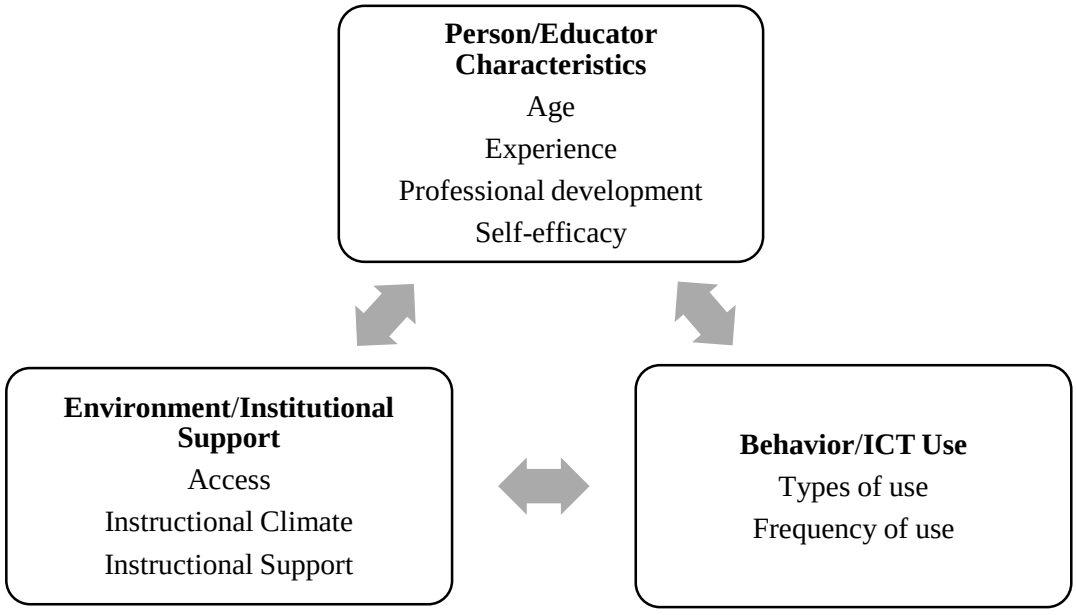
Institutional support summary. Research across educational fields points to the importance of the role of institutional context in the technology attitudes and practices of educators. The interacting influences of all areas of institutional support need to be considered. Access alone does not lead to ICT use (Cuban, Kirkpatrick, & Peck, 2001). Multiple facets of the relationships between the socio-structural components of instructional climate and support interact with access to support ICT use for educational purposes.

Literature Review Summary and Synthesis

Parents are using information and communications technologies as tools for learning and support in their parental roles. A variety of uses of ICT in parenting education have been shown to be effective for promoting parent learning. As parents' participation in parenting education opportunities is generally self-motivated, PE's need to use methods that are both educationally sound and connect with participants, many of whom could be considered "digital natives"(Prensky, 2001). Using Bandura's (1986) concept of triadic reciprocity found within the social cognitive theory of learning as a framework, the literature review indicates that interaction between current patterns of ICT use, the influences of individual educator characteristics and the influences of institutional support likely play a role in educator use. Educators' use is known to be influenced by the educator characteristics of age and professional development while self-efficacy seems to play a weaker role. A confounding factor is that educator age has been determined to have an influence on perceived self-efficacy for ICT use. The three facets of institutional support each play a role in supporting or discouraging ICT use by educators.

In order to effectively meet the educational needs of parents, it is necessary to examine information and communication technology use by Parent Educators. As shown in Figure 2, a model was developed for application to this examination. The person component of the model will be labeled as educator characteristics. The personal or educator characteristics included in this study will be age, years of practice or experience, professional development related to ICT, and perceived self-efficacy. The workplace environment component, labeled institutional support, will examine physical access to ICT devices as well as the socio-structural components of instructional climate and instructional support. Behavior, labeled as technology use, considers the number of types and frequency of use for devices, software, communication activities, and instructional tools. This research will focus on the aspects of the model related to behavior. Potential interactions between educator characteristics and environment will not be examined.

Figure 2. Model of Triadic Reciprocal Causality as Adapted for the Study of ICT Use by Parent Educators



Educator characteristics and institutional support may be shown to be related to the use of technology within parenting education practices.

Research questions and hypotheses

The three research questions are:

1**.** What types of information and communication technologies are Parent Educators (PE) using in their practice and how frequently are these technologies being used?

2. Is there a statistically significant relationship of technology use (as measured by type and frequency) to the educator characteristics of age, years of experience as a PE, the amount of ICT related professional development, or perceived self- efficacy in technology use.

H 1. Use will vary by age.

H 2. Use will vary by length of teaching experience. .

H 3. Use will vary if college credit has been used as a form of professional development-continuing education for ICT use.

H 4. Use will vary by the amount of continuing education as professional development for ICT use

H 5. Use will vary by perceived self-efficacy.

3. Is there a statistically significant relationship between Parent Educator technology use (as measured by type and frequency of use) and the characteristics of institutional support: access, instructional climate and instructional support?

H 6. Use will vary by access.

H 7. Use will vary by instructional climate.

H 8. Use vary by the level of perceived instructional support.

Chapter Three: Methodology

To answer the research questions a survey was constructed and administered to licensed Parent Educators (PE's) from Minnesota. The variables used for this study were contained in a larger survey investigating parent educator's technology use and needs for professional development. This chapter describes the development of the survey, the survey items used in this study along with a brief overview of the full survey, the study sample, and survey distribution. The analysis plan is described along with the methodology for constructing user groups. The four user groups will be used to explore relationships between variables.

Survey Tool Development

A review of the literature determined that no suitable survey existed specifically to examine technology use by parent educators. To create the survey, a panel of university experts with experience in survey development, educational technology, and parenting education was consulted. The survey was designed in accordance with the principles of Dillman, Smyth, and Christian's Tailored Design Method (2009). The starting point for the creation of survey variables for the Technology Use in Parent Education survey was the Survey of Factors affecting Teachers Teaching with Technology (SFA-T³) (Papanastasiou & Angeli, 2008). Originally created to measure technology utilization by classroom K-12 teachers, the SFA-T³ measures six technology related areas: knowledge of computer software, frequency of software use, computer attitudes, perceived self-confidence, and needs for school climate support. Other documents used to inform survey development were the survey of K-12 educators about the use of social networking and content sharing tools (Schmucki, Hood, & Meell, 2009) and the topics of instructional climate and instructional support addressed by Gopalakrishnan (2006).

In the survey, the word "technology" is used to imply the "information and communication technologies" (ICT). "Technology" in all its permutations was selected as a more accessible term to contemporary adults. The use of academic or technical language was avoided,

for example “perceived self-efficacy” is labeled as “comfort using technology”. Survey question language was carefully crafted to operationalize definitions of terms related to ICT use, attitude, and support to increase item clarity. All items in the survey were written or modified to apply to parent education professionals with the exception of the Technology Acceptance Model survey by Davis (1989) as adapted by Teo, Lee, and Chai (2008).

An initial version of the survey was piloted with two PE’s in early May, 2013 using a “think aloud” interview protocol. Based on the results of the pilot, modifications to item wording were made and a version of the survey was constructed for an online trial. Three additional PE’s piloted the online version of the survey, providing feedback which was used to further clarify question wording to more directly express the intent of the survey development team. The final version of the survey includes 31 questions (Appendix 1). Question branching patterns and skip logic were applied to increase question relevance and improve survey flow.

The survey contains questions in six sections:

- Professional practice information.
- Participant demographics.
- Technology use in parent education including access, type of use, frequency of use and purpose of use.
- Perceived self-efficacy rating for technology use.
- Technology work place climate and support scale.
- Other information the respondent would like to provide regarding technology use in parent education.

Variables

Use. Frequency of use types of technology was indicated through a six-frequency range (1 = *no access,* 2 = *never use,* 3 = *one time monthly or less,* 4 = *twice a month,* 5 = *one to two*

times a week, 6 = *almost every day*). Fifteen activity types were chosen based on common parent educator tasks, known parent uses of technology, or perceived potential for integration into parent education activities. Examples of the activity types include use of widely available software (e.g., presentation tools, publication tools, and spreadsheets), use of email, seeking information on the internet, developing or posting to webpages or blogs, using social networking, and other. The choice of "other" was followed by space to provide a written answer.

Educator characteristics. Age and years of practice were written as numbers. Ethnicity was selected from a list of seven choices, respondents could write in their preferred ethnic designation if other was selected.

Professional development for ICT use was measured by two questions. Any college-credit course work in ICT integration was indicated (*yes = 2, no = 1*). The number of ICT integration related continuing education courses completed was chosen from a continuum (*none, 1-2, 3-4, 5 or more).*

Perceived self-efficacy was phrased as comfort in eight areas of involving technology use. Examples of items in the scale include confidence in knowledge about using copyrighted materials, designing technology enhanced learning activities and solving problems when technology doesn't work as expected. Items were rated on a five-point scale (1 = *completely disagree* to 5 = *completely agree*). A scale score was constructed by adding the responses to all items (range = 8-40).

Institutional support. The level of institutional support had three measures: physical access to employer provided devices, instructional climate and instructional support. Access to technology was measured as access to devices supplied by the employer: computer with internet, laptop with internet and handheld device with internet. Respondents indicated whether access was available (0 = *no* / 1 = *yes*). An access score was constructed by adding responses for the three devices (range = 0-3)

The institutional climate and support scale consisted of 12 items rated on five points (1 = *completely disagree* to 5 = *completely agree*). Based on the work of Gopalakrishnan (2006), the scale was divided into two variables for analysis: instructional climate and instructional support. The instructional climate scale consists of five items related to social support, for example support from administration and exchange of ideas for ICT use with other staff. The instructional climate scale score range is 5 (*low*) to 25 (*high*). The instructional support scale of 7 (l*ow*) to 35 (*high*) consists of seven items related to employer structure, for example the availability of technology and technical support.

Components of the Full Survey

Appendix 1 contains the full survey. The remaining survey elements are briefly described. Profession practice information measured additional areas of licensing, number of hours worked, weeks worked per year and practice settings (amount of employment). The number of other parent educator and professional coworkers was collected. The types of program focus were gathered from a checklist. Within the section on professional development regarding ICT, continuing education topics of interest and prior independent learning about a topic was recorded. Interest in further continuing education for ICT use in parent education was determined using a checklist of potential topics. Educator information was collected for the location of the workplace, the level of education and the institution where parent education licensure coursework was completed. Three types of access to devices (employer provided, shared employer provided and self-provided) was collected from a list of seven devices. The purposes of use by type of technology was measured on a checklist of six areas: administrative tasks, aid in curriculum delivery, access high quality information, communicate or build relationships, participant discussion, and to promote my program. Marking multiple purposes for each type was allowed. The technology attitudes scale as used by Walker and Kim (2010) was included. The survey concluded with an open-ended question allowing respondents to provide additional information.

Study Sample

Parent educators licensed as teachers by the Minnesota Department of Education were selected as the study sample. Specific to the state of Minnesota, this teaching license was originally created to provide qualified teachers for the Early Childhood and Family Education program developed in the 1970's as a statewide program to promote high quality preschool and family development for children ages zero to five. Licensed parent educators are required to have specialized college level training in facilitating parent development, parent-child relationships, early childhood development, family development, and/or family engagement with culture and community (MNAFEE, 2011). Licensed parenting educators also work in a variety of other settings including Cooperative Extension Service, human services agencies, health care, and parent coaching organizations.

A list of all licensed parent educators and those holding a variance to teach parent education was obtained from the public records of the Minnesota Department of Education in early May 2013. After duplicates were removed the list included 1202 licensed parent educators plus 17 teaching in ECFE programs with a license variance for a total sample of 1219.

Sampling Procedure

The final online version of the survey was developed for distribution and data collection using the Qualtrics survey software tool provided by the University of Minnesota. Evans and Mathur (2005) synthesized the benefits and issues of the use of online surveys including wide reach, low cost, timeliness, question diversity, and ease of data entry. Although impersonality, potential perception of the study as junk mail, low response rates, and issues with question clarity are drawbacks to the use of an online survey, methods were employed to reduce these issues. Based on the principles of Tailored Design Method (Dillman, et.al. 2009), four methods for applying social exchange were used to strength response rates. The methods were: making personal contact with potential respondents at a professional conference prior to the release of the

survey (the Minnesota Association of Family and Early Educators Spring conference, April, 2013), sending the survey from a respected source, emphasizing the benefit of the individual's response to the field of parent education and providing a chance to receive incentives. In this case, the study included a random drawing among those completing the survey for an IPad4G or a Canon A1200 digital camera.

The survey was granted Institutional Review Board approval by the University of Minnesota on May 23, 2013. Using the email addresses acquired from the Minnesota Department of Education, the survey was electronically distributed to licensed parent educators on May 23, 2013 and to the variance group on May 25, 2013. The information about the benefits and risks of the survey was provided on the opening page, so that completing the survey constituted providing informed consent. The survey remained open until July 1, 2013. To increase participation rates (Dillman, et.al. 2009), reminder emails were sent to those who had not completed the survey on June 5, 2013 and June 18, 2013.

Initially security on the survey was over-enabled by activating the "prevent ballot box stuffing" feature of the survey tool. This prevented 15 people from re-entering the survey if it was not completed during the first session. These 15 were sent retake opportunities on June 20. None of the 15 responded.

Responses were downloaded from the Qualtrics survey tool into a SPSS data file (Version. 21, 2012) for analysis. Email responses were received from nine individuals indicating that they were retired. These individuals were removed from the survey. Two surveys were returned as rejected leaving a possible sample of 1208. When the survey closed, 408 had attempted to participate in the survey providing an overall response rate of 34%. The responses of 38 participants who are licensed parent educators but have never practiced as a parent educator were removed. To obtain usable data for the analysis, 88 cases with more than 40% of missing data for the variables of interest for the study were also removed. Finally, 82 cases where

respondents were not currently working as Parent Educators were removed. The remaining number is 201 usable data cases. This is 49.2 % of survey respondents or 16.6% of the initial sample pool.

Creation of User Groups

Using a scale score as a measure of technology use would be the most straight forward method of measurement, but does not allow for differentiation between those who use varying numbers of technology at different levels of frequency (Isleem, 2003). To begin to account for possible differences, user groups were created on two dimensions. The first dimension was the number of types of technology used at any frequency. The second was the frequency of use.

To construct the user group variable, a new variable was created by summing any use of any technology type. Using the median of eight (range = 0-15, *M* = 7.54, *SD* 2.58), this variable was divided into low users (under 8 types used, *n*= 100, 49.8%) and high (8 or more types used, *n*= 101, 50.2%). Frequency of use was recoded, creating a new variable that created a scale of the number of activities done weekly or more often. The range was 0 (none) up to 12 activities done frequently (*M* = 4.00, *SD* = 1.70). No one used 13 or more technologies on a weekly basis. The median (4) was used to create two groups: low frequency users (less than 4 types used weekly or more often, *n* = 82, 40.8%) and high frequency users (4 or more types used weekly or more often, *n* = 119, 59.2%).

Using the created variables, respondents were further recoded into four groups. Low number-low frequency (Low#-low frequency) users *(n*=64, 31.8%) are those who use fewer than the median number of technologies along with less frequent than median frequency of use. High number–low frequency (High#-low frequency) (*n* = 18, 9.0%) are those who use the median or higher number and whose frequency of use is lower than the median. Low number- high frequency (Low#-high frequency) users *(n* = 36, 17.9%) use lower than the median number of types at median or higher frequency. High number-high frequency (High#-high frequency) *(n* =

83, 41.3%) are those whose use is at the median or higher for both the number of technologies used and frequency of use. The user groups serve as the dependent variable in analysis.

Data Analysis Plan

The analysis plan for each research question is listed. Descriptive and inferential statistics are used. The .05 alpha level was used as the criteria for statistical significance in inferential tests (Utts & Heckard, 2006).

Question 1: Use. What types of technology are Parent Educators (PE) using in their practice and how frequently are these technologies being used? Counts and percentages are provided for the frequency of use of each technology type.

Question 2: Educator characteristics. Is there a relationship between technology use and the educator characteristics of age, years of employment as a PE, the amount of ICT related professional development, or perceived self- efficacy in technology use?

Each of the individual educator characteristics served as a separate independent variable for analysis using analysis of variance (ANOVA).

H1. Use will vary by age.

H2. Use will vary by the years of practice.

H3. Use will vary if college credit has been used as a form of professional development-continuing education for ICT use.

H4. Use will vary be the amount of continuing education as professional development for ICT use

H5. Use will vary by perceived self-efficacy.

Question 3: Institutional support. Is there a relationship between parenting educator technology use and the characteristics of institutional support: access, instructional climate and instructional support?

Each of the components will serve as the independent variable to be examined using ANOVA for variance among the dependent variable of user groups.

H6. Use will vary by access.

H7. Use will vary by instructional climate.

H8. Use will vary by instructional support.

Chapter 4: Results

In this chapter descriptive data is used to outline Parent Educators (PE) type and frequency of technology use. A demographic picture of the sample for educator characteristics is given. The levels of institutional support for information and communications technology (ICT) are provided. This is followed by comparative data analysis of the user groups to educator characteristics and measures of institutional support. Concluding the chapter is a summary of the differences among the user groups.

ICT Use by Type and Frequency

Table 1 on the following page provides the statistics for the frequency of use for all the technology types. Three technology activities were used frequently (weekly or more) often by the majority of respondents: Internet searches (95.5%), email (90.5%) and creating documents (75.5%). Messaging was used frequently by 29.8% while frequent use of any other type of technology was done by 20% or less of respondents. On a less than weekly basis, several types of technology showed strong use patterns including showing videos (70%), using presentation software (39.3%), creating publications (35.6%), and using spreadsheets (33.5%). Two types showed both the lowest level of availability and least frequent use: creating multimedia (10.6% indicate any use), and teaching online which is reported at two times a month or less by 10.5% and frequently by half a percent. Over 40% indicate access to specific technologies that they do not use: create webpages or blogs (51.3%), create publications (41.9%), engage in social networking with participants (47.7%) or other professionals (47.2%), or use spreadsheets (46.9%). See Table 1 which provides statistics for frequency of use for all technology types.

Table 1

Technology use by frequency as counts and percentages

Type	N	No Access		Never Use		≤ 1 x month		2 x month		1-2 x week		Almost every day	
		n	%	n	%	n	%	n	%	n	%	n	%
Presentations	196	30	15.3	55	28.1	61	31.1	16	8.2	17	8.7	17	8.7
Documents	200	1	.5	5	2.5	15	7.5	28	14.0	67	33.5	84	42.0
Video	200	10	5.0	14	7.0	90	45.0	50	25.0	25	12.5	11	5.5
Publications	191	22	11.5	80	41.9	56	29.3	12	6.3	17	8.9	4	2.1
Spreadsheets/Databases	194	9	4.6	91	46.9	48	24.7	17	8.8	20	10.3	9	4.6
Graphics	189	16	8.5	111	58.7	44	23.3	13	6.9	3	1.6	2	1.1
Use email	200	1	.5	1	.5	5	2.5	12	6.0	17	8.5	164	82.0
Use internet for information	198	0		0		1	.5	8	4.0	45	22.4	144	72.7
Create webpages or blog	191	14	7.3	98	51.3	35	18.3	21	11.0	19	9.9	4	2.1
Create Multi-media	190	40	21.1	130	68.4	15	7.9	3	1.6	1	.5	1	.5
Use Messaging	191	19	9.9	74	38.7	26	13.6	15	7.9	24	12.6	33	17.3
Use SN w/ Participants	193	19	9.8	92	47.7	32	16.6	10	5.2	25	13.0	15	7.8
Use SN professionally	193	17	8.8	91	47.2	35	18.1	19	9.8	21	10.9	10	5.2
Teach online	190	40	21.1	129	67.9	16	8.4	4	2.1	0		1	.5

Seven respondents indicated use of other technologies not included in the survey. Two indicated participation in webinars. Other technology activities noted in comments included overhead projector, photo management programs, QR code reader, survey tools, and video chat. One respondent noted the use of personal social media to promote program offerings.

Educator Characteristics

Age, ethnicity, and experience. The overall age range was 23–67 years with a median age of 51 years (*M* = 49.40, *SD* = 9.87). The ethnicity was 93.5% white (*n* =188), 1.0% Native American or other (*n* = 3), and .5% Asian (*n* = 1). PE's years of experience ranged from one to thirty years (*M* = 14.77 *SD* = 8.21, median = 15).

Education for ICT use. Twelve PE's (6.1%) have taken college courses related to technology activities. The majority of respondents (83.3%) have taken ICT related professional development courses. Of the 186 who had taken courses, 36.4% taking one to two courses, 24.2% taking three to four courses and 21.7% taking five or more courses (*M* = 2.50, *SD* = 1.02).

Perceived self-efficacy. The perceived self-efficacy scale scored ranged from 11-40 points, of a possible range of 8-40 (*M* = 29.23, *SD* = 5.06). A high level of confidence is reported for the use of email (95.9% agree or completely agree) and the internet (96.0% agree or completely agree). The areas with the lowest perceived self-efficacy were using social networking to connect with program participants (24.8% agreed or completely agreed) and using social networking to promote programming (28.9% agreed or completely agreed). See Table 2 (p 40) for the mean, standard deviation and percentage of response for each question of the scale.

Institutional Support

Access. Twenty four respondents (11.9%) indicated no employer provided access to a computer device while 102 (50.7%) had access to one device, 61 (30.3%) had access to two, and 14 (7.0%) had access to three devices.

Instructional climate. Table 3 (p. 45) displays statistics related to each question in the scale. Scale scores covered the scale range of five to 25 (M = 16.84, SD = 3.93). Administration (61.0% agree or completely agree) and other co-workers (59.4% agree or completely agree) are encouraging of the incorporation of technology. Parent Educators are aware that other PE's are using technology (62.1% agree or completely agree) however a lower percentage (45.2%) frequently exchange ideas about technology use with other PE's. Only 37.4% agree or completely agree that technology use is frequently discussed in staff meetings.

Instructional support. Table 4 (p. 46) provides statistics for each question in the scale. The reported score range was eight-35 (M = 21.38, SD = 5.71). The majority of respondents reported internet access at work (89.9% agree or completely agree). Less than half (41.6%) agreed or completely agreed that technology support staff was able to help them, with only 36.4% agreeing or completely agreeing that technology support was available when needed. Forty percent agreed or completely agreed that their workplace had clear policies about the use social networking. The area with the lowest level of support was the time needed to integrate technology into educational offerings (22.9% agreed or completely agreed).

User Group Analysis for Educator Characteristics

Analysis of variance (ANOVA) was used to examine whether the user type groups varied with the educator attributes of age, years of practice as a PE, the two types of education for ICT use, and perceived self-efficacy. Table 5 (p. 47) provides the group means, standard deviation and F-statistic for each of the educator characteristics The results lead to the rejection of hypotheses:

(H1) groups will vary by age (p = .477), (H2) groups will vary by years of teaching practice (p = .519), (H3) groups will vary based on whether college credit was been used for professional development (p =.195) and (H4) differences among the groups are affected by the amount of continuing education for professional development (p =.064). The data allows the acceptance of (H5): group composition varies based perceived self-efficacy (p < .001).

User Group Analysis for Types of Institutional Support

Analysis of variance (ANOVA) was used to examine whether the user type groups differed with the institutional support components. See Table 6 (p. 48) for the means, standard deviations and F-statistic for each of the scales. The results show difference between groups is affected by each of the measures: employer provided computer access (p = .006), instructional climate (p < .001) and instructional support (p < .001) allowing the acceptance of hypotheses six through eight.

Comparison of User Groups

The High#-High Frequency group was the largest of the four groups (n = 83). The High#-High Frequency group was the youngest, had the greatest access to devices, greater amounts of ICT related education and the highest scores on the scales of perceived self-efficacy, instructional climate and instructional support. The Low#-Low Frequency group (n = 64) was older, had the lowest level of access, the lowest amount of continuing education as well as the lowest scores on the measures of perceived self-efficacy and institutional support.

Comparing the High#-Low Frequency group (n = 18) to the Low#-High Frequency group n = 36), the two groups were very similar in age, levels of ICT related education, access to devices and instructional climate scores. The High#-Low Frequency group had higher levels of perceived self-efficacy and instructional support, while having more years of experience than any group.

Table 2

Perceived self-efficacy by mean, standard deviation and percentages

Question	*M*[a] (*SD*)	Completely disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Completely Agree (%)
Apply fair use and copyright laws when I use resources from the Internet	3.75 (0.98)	4.5	5.6	20.2	50.0	19.7
Design technology enhanced learning activities	3.14 (1.05)	7.5	20.3	28.9	37.1	6.1
Use email to communicate with program participants	4.66 (0.60)	0	1.5	2.5	24.2	71.7
Solve any problems that occur when technology doesn't work as I planned	2.83 (1.05)	8.6	35.0	25.4	26.4	4.6
Use the internet to find information, products and services related to instructional needs	4.46 (0.60)	0	1.0	2.9	44.7	51.3
Use social networking to connect and share resources with program participants	3.29 (1.16)	8.1	16.7	30.3	28.3	16.7
Use social networking to promote my program and its objectives	3.21 (1.13)	6.1	22.8	30.5	25.4	15.2
Use technology to connect and share resources with peers	3.91 (0.89)	1.0	5.6	21.7	44.9	26.8

Note. Sample size for each item. $n = 194$

[a] Score range: completely disagree (1) to completely agree (5)

Table 3

Instructional Climate Scale question responses by mean, standard deviation and percentage

Instructional Climate	*M*[a] (*SD*)	Completely Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Completely Agree (%)
Other co-workers encourage me to use technology	3.52 (0.89)	1.5	13.2	25.9	50.3	9.1
Administrators of my program encourage me to use technology	3.62 (1.03)	3.1	12.3	23.6	41.5	19.5
I often exchange ideas about technology use with other Parent Educators	3.20 (1.10)	5.6	24.9	24.4	34.5	10.7
There are other Parent Educators in my program who use technology in teaching and learning	3.52 (1.14)	7.6	12.6	17.7	44.9	17.2
In staff meetings, we frequently discuss using technology in practice	2.98 (1.12)	9.1	28.8	24.7	29.8	7.6

Note. Sample size for each item. *n* =198.
[a] Score range: completely disagree(1) to completely agree(5)

Table 4

Instructional Support Scale question response by mean, standard deviation, and percentage

	M[a] (*SD*)	Completely Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Completely Agree (%)
Hardware and software is easily available for me to use	2.77 (1.16)	15.7	28.3	25.3	24.7	6.1
Technical support staff of my program are adequately able to help me	3.05 (1.17)	11.7	22.3	24.4	32.5	9.1
There is technical help available at the times that I need it	2.87 (1.19)	15.2	25.8	22.7	29.3	7.1
The technology infrastructure of my worksite is adequate	2.81 (1.19)	17.8	23.9	23.9	28.9	5.6
My program has clear policies about the use of social networking	3.12 (1.12)	7.6	24.2	27.8	29.8	10.6
I have access to the internet at my workplace	4.28 (0.87)	1.5	5.1	3.5	43.9	46.0
I have the time I need to develop educational offerings that incorporate technology	2.50 (1.16)	22.8	32.0	22.3	18.3	4.6

Note. Sample size for each item. *n*=195

[a] score range of completely agree(1) to completely disagree(5)

Table 5

Statistics by group for educator characteristics

Variable	Low#-Low Frequency (*n* = 64)	High#-Low Frequency (*n* = 18)	Low#-High Frequency (*n* = 36)	High #-High Frequency (*n* = 83)	
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F* [a]
Age	50.71 (8.92)	50.00 (9.04)	49.74 (10.84)	48.14 (9.80)	.834
Years of practice	14.85 (7.89)	17.44 (5.54)	14.18 (9.70)	14.38 (8.26)	.759
ICT college credit	1.06 (0.24)	1.13 (0.34)	1.11 (0.31)	1.02 (0.15)	1.58
ICT continuing education	2.29 (0.88)	2.38 (1.02)	2.42 (0.90)	2.72 (1.13)	2.45
Perceived self-efficacy	25.78 (4.77)	29.06 (2.81)	28.50 (4.21)	32.26 (4.05)	27.89***

Note. Sample size for each item. Age *n* = 187, years of practice *n* = 200, college credit *n* = 198, ICT continuing education *n* = 198, perceived self-efficacy *n* = 194.
[a] *p < .05, ** p < .01, ***p < .001

Table 6

Statistics by group for institutional support components

Variable	Low#-Low Frequency (*n* = 64) *M* (*SD*)	High#-Low Frequency (*n* = 18) *M* (*SD*)	Low#-High Frequency (*n* = 36) *M* (*SD*)	High #-High Frequency (*n* = 83) *M* (*SD*)	*F*[a]
Employer provided computer	1.04 (0.74)	1.44 (0.85)	1.5 (0.65)	1.4 (0.78)	4.248**
Instructional Climate Scale	15.21 (3.81)	16.66 (4.36)	16.42 (3.71)	18.24 (3.5)	7.912***
Instructional Support Scale	19.06 (5.82)	21.00(4.36)	20.11 (4.79)	23.74 (5.71)	9.808***

Notes. Sample size for each item. Employer provided computer *n* = 201, Instructional Climate *n* = 194, Instructional Support *n* = 195

[a] *p < .05, ** p < .01, ***p < .001

Chapter 5: Discussion, Limitations, Implications and Recommendations

This study is the first known to examine information and communications technology (ICT) use in educational practice by a licensed Parent Educators (PE). The results indicate that Parent Educators are using technology in ways that are individual, selective and situational. A statistical relationship exists between Parent Educators' ICT use and the educator characteristic of perceived self-efficacy as well as all three components of institutional support. These relationships confirm the application of Bandura's social cognitive triadic reciprocal determinism theory as it is used in this study. PE's who use high numbers of technologies on a frequent basis report higher levels of confidence about integrating ICT into educational offerings in addition to reporting higher levels of access, more support from colleagues, and supportive workplace structures. The statistical analysis used does not suggest a direction in the relationship, but suggests that offer a foundation for further study and support to Parent Educator's use of ICT. The findings will be discussed in relationship to the research questions. The results will be compared to research findings about other types of educators. Connections to the theoretical model will be described. Limitations in the use of the theoretical model are addressed. An example of technology use by a PE is provided as a demonstration of the relationship between the theoretical framework and PE practice.

Discussion

Technology use by Parent Educators. A better understanding the types of technology and frequency of use in Parent Educators (PE) practice developed from the data. Email, word processing or document creation, and the use of the internet for information search were used weekly or more often by the majority of parent educators. These three types are also the most highly used across all other educator groups reviewed (Oliver, Osa & Walker, 2012; Peffer, Bodzin & Smith, 2012; Walker & Kim, 2010). Several types of technology such as showing

video and using spreadsheets are used by many PE's on a less frequent basis. The results show that ICT use is both individual and selective. Influences on the selective or situational use of a specific technology may be access, ICT function, educator comfort, and pedagogical purpose.

When compared to Walker and Kim's (2010) study of technology use by Family Life Educators, increased ICT use by PE's is noted, though the types of technology examined are not identical. In the current study the median number of types of ICT used was eight, compared to four in the Walker and Kim study. This may mean that use of the internet for information search has increased. Social networking among professionals may be higher. A small increase appears to have occurred in the number that post to webpages or blogs with a small decrease in the use of presentation software. Walker and Kim's study used a paper and pencil version to collect data in conference settings which may make it more representative of parent educator technology use than the online only survey.

Relationship between use and educator characteristics. The second research question asked: Is there a relationship between technology use and the educator characteristics of age, years of employment as a PE, the amount of professional development undertaken, or perceived self- efficacy in technology use?

Analysis indicates that age was not a contributor to differences in ICT use reflected by the number of devices and frequency of device use reported. Age had been noted to be an influence on ICT use in studies of other types of educators (e.g. Lokken, et al, 2003; Purcell et al, 2013) with teachers under 35 using a wider variety of ICT. The results of this research show no significant variance based on years of practice, consistent with studies of other educators (e.g. Peffer et al, 2012; Woods et al, 2008).

Neither taking college courses regarding ICT use or the amount of continuing education related to ICT use have a relationship to technology use. This contrasts with the findings of a

positive role for professional develop among other types of educators (Brinkerhoff, 2006, Kopcha, 2012, Peffer et.al, 2012). This result should be interpreted with caution as the types and purposes of continuing education were not analyzed nor was any potential influence of self-learning via web-based ICT skill development sources considered. Further study with PE's is needed to examine the role of professional development.

Perceived self-efficacy, an educator characteristic that is malleable though education and experience, is shown to have an effect on PE's ICT use. Higher levels of perceived self-efficacy are linked to more frequent and higher number of ICT use. Often defined and measured in different terms, inconsistent effects of perceived self-efficacy have been noted in other studies. Kotrlick and Redman (2005) conclude that increased teacher anxiety about using ICT decreases use. Using a regression equation, Papanastasiou and Angeli (2008) found perceived self-confidence in technology use made a contribution to actual technology use.

Relationship between use and institutional support. The third research question asked: Is there a relationship between parenting educator technology use and the characteristics of institutional support: access, instructional climate and instructional support? Each of the three components of Institutional support were shown to affect Parent Educator frequency and number of technologies used in practice. ICT use is influenced by the situational context of the educator. Gopalakrishnan (2006) as well as Papanstasiou and Angeli (2008) found that social support or encouragement from other staff increased ICT use. This study shows that within Instructional Climate, measures of simple encouragement have higher levels of agreement while measures of direct engagement, such as discussing ICT with peers individually and in staff meetings, have lower levels of agreement.

Measures of Instructional Support showed strong levels of support for the provision of devices and internet access. An area of note is that fifteen of the 24 respondents who indicated no

access to employer provided devices were in the Low#-Low Frequency group. A higher percentage of respondents (94.4%) had access to the internet in the workplace than had access to employer provided devices (89.1%). Less than 40% of PE's agree or strongly agreed that infrastructure, support and policy were at desirable levels. Only ten percent felt that they had adequate time to development educational activities that incorporate ICT. Using different measures, instructional support is also found to be significant in other studies examining a range of components including the availability of technology support (Gopalakrishnan,2006) to coherent policy (Tondeur, et al, 2008).

Relationship to theoretical model. The study results confirmed the influence of the social cognitive theories concept of triadic reciprocity (Bandura, 1999) across two sides of the triadic reciprocity model that were investigated. Educator characteristics and technology use are linked. Institutional support and technology use are linked.

Further support for the relationship between the reciprocity of educator characteristics and technology use comes from Ertmer & Ottenbriet-Leftwich (2010), who discuss factors that contribute to teachers becoming change agents in the use of instructional technology. Providing additional support of reciprocal interaction between institutional support and technology use, Perotta (2013) examined the role of school level factors on ICT integration among British middle school teachers finding interactions between institutional circumstances play a role in shaping teacher experiences and expectations of ICT. While reciprocity between the environment and the educator aspect is not directly addressed in this study, Walker and Kim's (2010) work has relevance, discovering that the path from facilitating conditions (availability of support, guidance and professional development) to computer attitudes was mediated by perceived ease of use. This led Walker and Kim to conclude that institutional support which includes professional development is most likely to contribute to educators' probable use of ICT.

There are limitations with application of the theoretical model to this study. Only a small number of items were tested in each area of the triad. Many educator characteristics are not malleable, making the relationship more linear than reciprocal. The research may describe an iterative process rather than a truly reciprocal relationship.

Example of triadic reciprocity in practice. An example of the triadic reciprocity model in practice is demonstrated in this constructed scenario. Receiving a link from a professional association via email, a Parent Educator views a wiki of PE resources. She determines that the wiki could be an excellent resource, particularly those like herself, who are the only parent educator in their locality. The PE notices that she has several resources she could contribute to the wiki. She registers and follows the provided directions to upload several items related to the neurobiological effects of trauma in young children (Technology Use). Her positive experience increases her perceived self-efficacy (Educator Characteristic). The PE is motivated to consult the technology support staff in her district about available wiki tools for resource sharing among parents in her group (Institutional Support). Provided with access through the district, she used online instruction to learn the tool (Educator Characteristic). The Parent Educator begins a wiki for parents of the infant classes (Technology Use). While only a few parents contribute to the wiki, the majority of the class participants visit the wiki at least one time during the course (Parent Learning).

Limitations

This study used a convenience sample garnered from one sub-group of parent educators. As a self-report tool, which has limitations as described in Lawless and Pellegrino (2007), the data may not be an accurate depiction of actual frequency and number of ICT types in use by Parent Educators. The number of survey responses that could not be used due to missing data (n = 88, or 21%) indicates issues with survey design. While the results increase the understanding of

ICT use and the influences on ICT use, the study sample consisted only of parent educators who must meet the state of Minnesota's high standards of preparation for practice, including standards for knowledge about the integration of ICT into teaching. Additional types of research are needed to expand the understanding of ICT use among Minnesota licensed Parent Educators. The research needs to be expanded to other groups of Parent Educators.

Implications

Bandura's (1999) discussion of the role of self-efficacy on motivation states that those with high levels of perceived self-efficacy are more likely to attribute any difficulties to factors that can be altered, such as unfavorable circumstances. This attribution leads to increased motivation for reflection and planning to alter the situation. Bandura goes on to say that those with low levels of perceived self-efficacy are inclined to attribute difficulties to their own low abilities, which is demotivating. Applying Bandura's understanding of motivation to this research raises several key questions with implications for the practice of parent education. First, what is the individual's role in both developing self-efficacy related to ICT and in using ICT applications in ways that enhance educational practice? Secondly, what is the role of the local institution in both promoting individual self-efficacy and providing institutional support? Thirdly, what influence does increased PE skills and self-efficacy have on the dynamics of institutional support? Lastly, what is the role of the broader Parent Educator profession in researching, developing and supporting ICT use in educational practice?

Recommendations

Recommendations are included for individuals, local institutions that employ PE's and for professional organizations of Parent Educators. As the application of ICT in parent educator practice is individual, selective and situational, these recommendations should be viewed as broad

suggestions only. If applied by each group, the recommendations will work in concert to promote ICT integration into educational practice.

Individuals. Individuals will benefit from accepting individual responsibility to observe, discuss and trial ICT opportunities. Initiating self-development of ICT skills, advocating for local technical support, and engaging in professional development will enhance skills and improve self-efficacy. Engaging with other PE's in the creation, delivery and evaluation of ICT tools for both administrative and pedagogical functions will advance the practice of parent education.

Local Institutions. Parent Educators are employed human service agencies, social service agencies and educational institutions. Leadership in local institutions bears a responsibility to develop a well-articulated vision for the incorporation of ICT and providing the tools necessary to implement the vision. This would include providing physical access to current hardware and software applications, making technical support easily available, and providing technical support that assists PE's in mastering advances in ICT. Encouraging participation in professional development, including professional learning communities, will assist the institution in achieving its vision. Local institutions, in conjunction with individual and professional organizations, need to develop coherent policies regarding the use of social media and other emerging ICT applications within the non-formal adult education setting of parent education.

Professional Associations. State and national associations of Parent Educators, such as the National Parent Educator Network (NPEN) and the National Council on Family Relations (NCFR), are in a position to advance technology and digital learning resources in parenting education. One source of guidance available to professional organizations is the International Society for Technology in Education's "Essential Conditions: Necessary conditions to effectively leverage technology for learning" (ISTE, 2009) Using the ITSE (2009) framework, three areas where professional associations may take the lead in promoting ICT use by Parent Educators are

developing a shared vision, development of external content, and empowering leaders. Shared vision includes developing and communicating a vision for the role of technology, technology based applications and digital learning tools for advancing learning, connection and collaboration among Parent Educators. The area of external content includes developing policies and initiatives that encourage PE's effective use of technology to achieve parent learning goals consistent with their missions. Empowering leaders might include developing ongoing opportunities to build skills in technology use, participate in communities of practice and foster research so that a coherent understanding of best practices for technology integration in parenting education emerges.

In conclusion, this research both echoes and expands on previous research regarding ICT use by Parent Educators: ICT use is individual, selective and situational. Opportunities for professional development may have an impact; however, the impact may be closely related to institutional support. As a field with diverse practitioners, theoretical perspectives and practice settings serving a diverse clientele (Duncan & Goddard, 2011), Parent Educators must always use methods that meet the needs of the learner (Ebata & Dennis, 2011). Parents are using a wide variety of technology applications in their roles as parents. The evolving nature of technology and technology use requires continual reassessment of the merit and value of technology for use in parenting education. Technology use in parent education does not have to be an either/or situation. Face-to-face activities can now occur via video conferencing while a video clip can provide a neutral example on which to base a group discussion either in person or online. Individuals, local institutions and the wider PE profession each have responsibilities for developing, supporting and evaluating ICT use in parent education. ICT applications might best be considered as necessary tools available to Parent Educators who provide high quality parent-centered education.

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Appendix A: Technology Use in Parent Education Survey

Introduction

Welcome! Thank you for choosing to participate in this research. This survey should take about 20 minutes to complete. As a way of thanking you for your participation, you can enter a drawing for an iPad 4G or a Canon A1200 digital camera. At the end of the survey you will be asked to provide an email address; this will be used only to contact the recipient, not for any other purposes. If you don't have time to complete the whole survey at one time, you can save and come back to it. You move between screens using the forward [>>] or backward [<<] buttons at the bottom of each page. The next page will provide you with more information about the survey. Please review this and if you consent to participate, just click the forward button on that page to begin.

Informed Consent

Please review, then click the forward button at the bottom to continue. You are invited to be in a study about the role of technology in the work of Parent Educators. You were selected as a possible participant because you hold a Parent and Family Educator teaching license in the state of Minnesota AND/OR you are currently employed as a Parent Educator in an ECFE program. This survey will ask you about the types of technology you use as a Parent Educator. It will also ask about your professional preparation for the use of technology in teaching, your support for technology use, and some background questions about yourself. The benefit of your participation is the direct impact that you'll have on the supports and resources available for Parent Educators. This study is being conducted by Dr. Susan Walker and Dr. Michael Brown from the Department of Family Social Science at the University of Minnesota. Participation in this study is voluntary and you may choose not to answer all questions. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota, the Minnesota Department of Education Licensing Division or your place of work. This study has minimal risks. Please know that the research team will not have access to information that would allow them to identify specific individuals in the data. In any sort of report we might publish, we will not include any information that will make it possible to identify you. All data collected will be kept private and stored securely. If you have any questions, please contact Dr. Susan Walker, Department of Family Social Science, University of Minnesota. Her phone number is 612-624-1273 and email is skwalker@umn.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you may contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street, SE, Minneapolis, MN 55455 or (612) 625-1650. If you do not wish to participate, please close the survey

Practice Information

What year did you receive your parent educator teaching license? _____

Do you hold a teaching license in one or more other areas?
Yes
No

Do you hold a teaching license in one or more other areas?
If yes, list the other areas here:

*Are you currently employed as a parenting educator?
Yes
No
If yes, how many years did you practice?
If no, have you ever been employed as a parenting educator?
Yes
No
If yes, how many years did you practice?
If no, survey used a skip pattern to the demographic section.

For the following questions, consider all places of employment, consulting or other professional work related to your preparation in Parent Education.

How many total hours a week are you employed as a parent educator?

How many weeks per year are you employed as a parent educator?

Parent educators may work at one or at several types of places. Please note the number of hours each week you work in the following locations of employment. Please mark all that apply.

	How many hours per week?
Early Childhood Family Education (ECFE) Program	
Community-based parenting education program(e.g., United Way, church affiliated)	
Publicly-supported program for parents and families (e.g., Headstart, Cooperative Extension, Healthy Families)	
Private practice(e.g., parent coaching, consulting)	
Other school based or education focused programming for parents or families	
Hospital or health focused programming for parents and families	
Other (please describe)	

Thinking of the place you practice parenting education for the majority of time, what is the number of total professional staff with whom you closely work? _____

Thinking of the place you practice parenting education for the majority of time, what is the total number of parent educators who work in your program? _____

What is the focus of your parenting education practice? (Check all that apply)

- ❑ General parenting during infancy and early childhood
- ❑ General parenting middle childhood and/or adolescence
- ❑ Parenting by specific group(s) of parents (e.g., fathers, adolescent mothers, adoptive parents, military parents)
- ❑ Parenting related to a specific topic (e.g., emotional development, sleep, discipline, media use)
- ❑ Other (please list): _____

Professional Development related to Technology Use

*In your college training for Parent Education, did you take a for-credit class (or classes) specifically about using technology in teaching?

- ❍ No
- ❍ Yes

*Since you finished your licensure program, how many continuing education classes or conference workshops have you taken related to using technology in teaching?

- ❍ None
- ❍ 1-2
- ❍ 3-4
- ❍ 5 or more

What topics did they cover?

- ❑ Employment specific programs or technology uses- please describe _____
- ❑ Use of general software / programs such as Adobe or Microsoft- please describe _____
- ❑ Website development _____
- ❑ Use of collaborative tools such as wiki's or Google drive- please describe _____
- ❑ Other- please describe _____

What types of technology have you learned to use through on-line help or tutorials?

- ❑ Employment specific programs or technology uses- please describe _____
- ❑ Use of general software / programs such as Adobe or Microsoft- please describe _____
- ❑ Website development _____
- ❑ Use of collaborative tools such as wiki's or Google Drive - please describe _____
- ❑ Other- please describe _____

If a continuing professional development workshop or course (for CEUs or graduate credits) on the use of technology in parenting education was offered, would you take it?

- ❍ No
- ❍ Not unless it was required
- ❍ Maybe
- ❍ Probably
- ❍ Yes

Why or why not?

Please indicate below the topic(s) that you are most interested in learning about, if you were to take a workshop or class or received specialized training in the use of technology education. (Check all that apply)

	I am interested
Use of presentation programs	❑
Use of programs to make publications (newsletters, flyers)	❑
How to create or manage a website for my parent education program	❑
How to use social media for parent education	❑
How to develop programs that mix face-to-face with on-line elements	❑
Planning lessons with technology to match learning objectives	❑
Ways to help participants find useful information online.	❑
How to develop and manage on-line classes	❑
Other (please describe)	❑

About You: Demographics

*What is your age? _____

*What ethnicity do you primarily identify with?

- ❍ Asian
- ❍ Biracial
- ❍ Black/African American
- ❍ Latino
- ❍ Native American
- ❍ Pacific Islander
- ❍ White
- ❍ Other

Is your work place setting?

- ❍ Urban
- ❍ Suburban
- ❍ Rural
- ❍ Other- please provide zip code _____

Please select the highest level of education that you have completed:

- ❍ Bachelor's Degree
- ❍ Formal training or coursework beyond the bachelor's degree and teaching license
- ❍ Masters or other graduate degree (e.g., MEd, MSW, EdD)

Where did you complete the coursework for your Parent Education License?

- ❍ University of MN - Duluth
- ❍ University of MN - Twin Cities
- ❍ St. Cloud State University
- ❍ Other (please specify): _____

Technology Used in Parent Education Practice

* Of the following devices, please indicate those used in your parent education practice that are:

	Desktop Computer with Internet	Laptop with Wireless Internet capability	Handheld device or tablet with Internet access	Smartboard	Smart phone	Cell phone without Internet access	Landline phone
Provided for your use by your employer?	❑ *	❑ *	❑ *	❑	❑	❑	❑
If provided, is the device shared with others?	❑	❑	❑	❑	❑	❑	❑
Your personal property	❑	❑	❑	❑	❑	❑	❑

***Technology Use**

For each of the following please indicate how frequently (if at all) you use the listed technology in your parenting education work.

In my work I use:	Not available or no access	Never use	Once a month or less often	Twice a month	1-2 times a week	Almost every day
Make presentations (e.g., PowerPoint, Prezi, other presentation software)	❑	❑	❑	❑	❑	❑
Create text documents (e.g., use Word)	❑	❑	❑	❑	❑	❑
Show videos (e.g., DVDs, YouTube)	❑	❑	❑	❑	❑	❑
Create publication-type materials (e.g., Publisher)	❑	❑	❑	❑	❑	❑
Work with spreadsheets or databases (e.g., Excel)	❑	❑	❑	❑	❑	❑

Create graphics (e.g., Paint)	❑	❑	❑	❑	❑	❑
Use email for professional correspondence	❑	❑	❑	❑	❑	❑
Access the Internet for information search	❑	❑	❑	❑	❑	❑
Develop or post to web-pages or blogs	❑	❑	❑	❑	❑	❑
Develop multimedia materials (e.g.,Hyperstudio)	❑	❑	❑	❑	❑	❑
Use messaging for professional reasons (e.g., Text, SMS)	❑	❑	❑	❑	❑	❑
Use social networking (e.g., Facebook) to connect with program participants	❑	❑	❑	❑	❑	❑
Use social networking (e.g., LinkedIn, Facebook, or other educator sites) to connect with other professionals	❑	❑	❑	❑	❑	❑
Teach or facilitate learning through an online course platform (e.g., Moodle)	❑	❑	❑	❑	❑	❑
Other (please describe)	❑	❑	❑	❑	❑	❑

Purposes for Technology Use

For each of the technology activities listed below, identify what purpose they serve in your parenting education practice. Check all purposes that relate to a specific technology activity

	Administrative tasks (e.g., record keeping)	Aid in curriculum delivery	Access to high quality information	Communication /relationship building	Participant discussion	To promote my program
Make presentations (e.g., PowerPoint, Prezi, other presentation software)	❑	❑	❑	❑	❑	❑
Create text documents (e.g., use Word)	❑	❑	❑	❑	❑	❑
Show videos (e.g., DVDs, YouTube)	❑	❑	❑	❑	❑	❑
Create publication-type materials (e.g., Publisher)	❑	❑	❑	❑	❑	❑

Work with spreadsheets or data collection sites (e.g., Excel)	❑	❑	❑	❑	❑	❑
Create graphics (e.g., Paint)	❑	❑	❑	❑	❑	❑
Use email	❑	❑	❑	❑	❑	❑
Access the Internet for information search	❑	❑	❑	❑	❑	❑
Develop or post to webpages or blogs	❑	❑	❑	❑	❑	❑
Develop multimedia materials (e.g., Hyperstudio)	❑	❑	❑	❑	❑	❑
Use messaging for professional reasons (e.g., text, SMS)	❑	❑	❑	❑	❑	❑
Use social networking (e.g., Facebook, Twitter)	❑	❑	❑	❑	❑	❑
Teach or facilitate learning through an online course (e.g., Moodle)	❑	❑	❑	❑	❑	❑
Other (please describe)	❑	❑	❑	❑	❑	❑

Your Comfort using Technology

For each of the following, please mark the response that is the most true for you	1 - Completely Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Completely Agree
	❍	❍	❍	❍	❍
I know how to apply fair use and copyright laws when I use resources from the Internet					
I know how to design technology enhanced learning activities for parent education	❍	❍	❍	❍	❍
I know how to use email to communicate with program participants	❍	❍	❍	❍	❍

I can solve any problems that occur when technology doesn't work as I planned	❍	❍	❍	❍	❍
I know how to use the internet to find information, products and services related to instructional needs	❍	❍	❍	❍	❍
I know how to use social networking to connect and share resources with program participants	❍	❍	❍	❍	❍
I know how to use social networking to promote my program and its objectives	❍	❍	❍	❍	❍
I know how to use technology to connect and share resources with peers	❍	❍	❍	❍	❍

Your Attitudes about Technology

For each of the following, please mark the response that is most true for you	1 - Completely Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Completely Agree
Using technology will improve my work	❍	❍	❍	❍	❍
Using technology will enhance my effectiveness	❍	❍	❍	❍	❍
Using technology will increase my productivity	❍	❍	❍	❍	❍
I find technology is a useful tool in my work	❍	❍	❍	❍	❍
My interaction with technology is clear and understandable	❍	❍	❍	❍	❍
I find it easy to get technology to do what I want it to do	❍	❍	❍	❍	❍
Interacting with technology does not require a lot of mental effort	❍	❍	❍	❍	❍
People whose opinions I value will encourage me to use technology	❍	❍	❍	❍	❍
People who are important to me will support me to use technology	❍	❍	❍	❍	❍
When I need help to use technology, guidance is available to me	❍	❍	❍	❍	❍
When I need help to use technology, specialized instruction is available.	❍	❍	❍	❍	❍
When I need help to use technology, a specific person is available to help me	❍	❍	❍	❍	❍
Technology makes work more interesting	❍	❍	❍	❍	❍
Working with technology is fun	❍	❍	❍	❍	❍
I like using technology	❍	❍	❍	❍	❍
I look forward to those aspects of my job that require me to use technology	❍	❍	❍	❍	❍

Technology in your Workplace

For each of the following, please mark the response that is most true for you	1 - Completely Disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Completely Agree
Other co-workers encourage me to use technology in teaching and learning	❍	❍	❍	❍	❍
The administrators of my program encourage me to use technology in teaching and learning	❍	❍	❍	❍	❍
I often exchange ideas about technology use with other Parent Educators	❍	❍	❍	❍	❍
There are other Parent Educators in my program who use technology in teaching and learning	❍	❍	❍	❍	❍
In staff meetings, we frequently discuss using technology in practice	❍	❍	❍	❍	❍
A variety of hardware and software is easily available for me to use in my program	❍	❍	❍	❍	❍
The technical support staff of my program are adequately able to help me	❍	❍	❍	❍	❍
There is technical help available at the times that I need it	❍	❍	❍	❍	❍
The technology infrastructure of my worksite is adequate	❍	❍	❍	❍	❍
My program has clear policies about the use of social networking	❍	❍	❍	❍	❍
I have access to the internet at my workplace	❍	❍	❍	❍	❍
I have the time I need to develop educational offerings that incorporate technology	❍	❍	❍	❍	❍

What else would you like us to know about the use of technology in Parenting Education or your area of interest?
Thank you for completing this survey! If you would like to be entered into a random drawing for an iPad 4G + case or digital camera, please enter your email address here. Email addresses will only be used for the drawing. Winners will be contacted by July 1.

Appendix B: IRB approval

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2 SURVEYS/INTERVIEWS; STANDARDIZED EDUCATIONAL TESTS; OBSERVATION OF PUBLIC BEHAVIOR.

Study Number: 1305E33981

Principal Investigator: Susan Walker

Title(s):
Technology Use by Parent Educators