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INFORMATION AND COMMUNICATION TECHNOLOGIES IN PUBLIC CHILD WELFARE: A SYSTEMATIC LITERATURE REVIEW

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INFORMATION AND COMMUNICATION TECHNOLOGIES IN PUBLIC CHILD

WELFARE: A SYSTEMATIC LITERATURE REVIEW

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A Project

Presented to the

Faculty of

California State University,

San Bernardino

_____

In Partial Fulfillment

of the Requirements for the Degree

Master of Social Work

_____

by

Stephanie Kiyako Yoshikawa Schneider

June 2017

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Approved by:

Dr. Carolyn McAllister, Faculty Supervisor, Social Work

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ABSTRACT

This systematic literature review synthesizes findings from empirical studies published between 1989 and 2016 to examine types, use, purpose and implementation of information and communication technology in public child welfare to determine if there are thematic reoccurrences in these arenas. Study results yielded information to the field of social work and public child welfare by determining themes in successful usage, purpose and implementation of information and communication technology in public child welfare to better serve those vulnerable populations. This systematic literature review contextualizes and identifies these themes across the literature. Studies included in this review were analyzed and categorized to determine reoccurring themes in information and communication technology use, purpose and implementation.

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CHAPTER ONE

INTRODUCTION

Introduction

The expanse of information and communication technology (ICT) has been introduced to public child welfare in various facets including but not limited to: SMS messaging, email, online training, web based applications, decision making tools, mobile phones, video conferencing, and comprehensive databases. ICT can have significant impact on service delivery, and the efficiency of social workers, ultimately impacting the families and communities they serve. Public child welfare faces high caseloads, crisis, and workforce shortages. ICT has the capacity to increase worker efficiency (Garrett, 2005). However, mistrust in use and purpose of ICT, and poor implementation processes can create huge public financial burdens, contradict worker efficiency and agency goals (Ince & Griffiths, 2011).

Problem Statement

Notably, a drastic shortfall in understanding and trust in ICT within social services is the conspicuous lack of empirical research about use, effectiveness and replicability (Chan & Holosko, 2016). Technology within social services indicates an increased efficiency and increased accessibility of services and resources (Garrett, 2005). However, public sector use of ICT is often lagging, with the lack of funding as a primary reason (Garrett, 2005). Identified concerns

with ICT include but are not limited to: ethics, confidentiality, security, financial liability, worker perceptions, feasibility, and ease of use (Tregeagle & Darcy, 2008). As ICT continues to expand, further implementation into public child welfare is inevitable (Tregeagle & Darcy, 2008).

This systematic literature review adds to existing research by aiming to determine, in the context of public child welfare identification of: 1) thematic uses of ICT, 2) thematic purposes for ICT, 3) successful methods of ICT implementation and 4) problematic ICT implementation.

Purpose of the Study

Public child welfare utilizes technology for a multitude of reasons including but not limited to: legislative mandates, monitoring and tracking of outcomes and worker efficiency, as well as improving service delivery (Tregeagle & Darcy, 2008). Extensive research has been completed on ICT in public child welfare (Barker, Warburton, Hodgkins, & Pascal, 2014;Duncan, Hye-Chung, Weigensberg, Flair, & Stewart, 2008). As these agencies are often funded through taxpayer dollars, effective ICT use and implementation can save taxpayer monies by reducing failed, or ineffective ICT. Line workers, who investigate cases of possible child abuse, and workers who carry cases in which the agency is involved with stand to benefit greatly from ICT that has meaningful use, purpose and successful implementation. ICT has the potential to create drastic system and worker efficiency through: reducing worker time spent on documentation, paperwork, and other bureaucratic processes. This enables

workers to increase time spent on stabilizing and strengthening families, increasing services to families with children, thorough and timely investigations, meeting state and federal mandates, increasing time with families to reunify and close cases efficiently and safely, reducing harm and danger to children, and improving outcomes for foster children. Examining reoccurring motifs regarding purpose, use, and successful or failed implementation of ICT in public child welfare to provide insight to increase worker efficiency, improve fiscal responsibility, and to better serve the vulnerable and high risk populations of the world.

<center>Significance of the Study for Social Work</center>

Public child welfare and social work in general have been slow to adapt to the use of technology (Smith & Eaton, 2014). Considerable sums of taxpayer monies are invested to incorporate ICT into these agencies. However, lack of trust by line workers, ineffective technology systems, inept incorporation strategies lead to squandered resources, and ultimately harm to the children and families the agencies were designed to serve. This systematic literature review endeavors to identify thematic reoccurrences regarding ICT in child welfare to shed light on successful uses and implementation strategies, and imprudent uses of technology and implementation strategies to further promote social change, social justice, and to meet the needs of at risk and vulnerable families with children.

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CHAPTER TWO

LITERATURE REVIEW

Introduction

Social work has a historical reluctance to implement technology into its day to day practice (Barker, Warburton, Hodgkins, & Pascal, 2014). ICT continues to grow exponentially and further propagate into public sectors. ICT within child welfare can have positive benefits, if purpose, use and implementation are effective; such as increased worker efficiency, increased client access to workers, and responsible spending of public monies. Adverse effects of poor use, purpose and implementation of ICT can result in fiduciary irresponsibility, worker frustration and distrust, and wasted resources. The following review of the literature examines the existing research of ICT within public child welfare, such as adoption, successful use and implementation, and ineffective use and implementation.

Child Welfare and the Adoption of Technology

Previous research regarding technology and social services indicate that technology can be utilized to increase efficiency, increase accessibility of resources and services (Garrett, 2005). Research (Klaus & Hartshorne, 2015) indicates that technology itself poses new challenges in regards to its use, and maintaining privacy and security. Child welfare workers have been historically reluctant to adopt ICT into their professional practice (Smith & Eaton, 2014).

Often line workers attribute ICT as instruments of administration and management meant to control their practice (Garrett, 2005). Smith and Eaton (2014) conducted multiple surveys and interviews regarding child welfare workers attitudes regarding technology and concluded that further qualitative study needs to be done to truly understand the reluctance in acceptance of ICT and dissemination into practice; as the experiential narrative could provide more in depth and applicable understanding regarding the use and purpose of ICT which directly affects approval of ICT into practice. LaPoint-Cox (2014) postulates that individuals in the social service field are not adverse to the increased utilization and dissemination of ICT however would prefer to have a complete and thorough assessment and knowledge of the technologies before incorporating them into their scope of practice.

Social work's reluctance in accepting ICT may cause practitioners to become out of touch with contemporary culture, causing a disconnect between practice and clients which further creates difficulty in engaging and may cause harm to clients who live in a world where this technology is not only accessible but a facet of their daily lives (Barker, Warburton, Hodgkins, & Pascal, 2014). Researchers (Quinn, Sage, & Tunseth, 2015) found that child welfare workers were willing to utilize ICT if they understood the technology, the purpose behind the use, and felt that ICT would be beneficial for the families that they worked with.

There are recognized limitations of ICT in effectively managing knowledge in human services organizations (Fitch, 2012). Massive public information gathering databases, such as California's Child Welfare System/Case Management System (CMS) began to rise up around 1989 (Webster, Needell, & Wildfire, 2002). As the era of technology reigns, child welfare agencies must continue to move along the continuum. Personal workstations, computers, mobile technologies and mass data bases are more common, partially due to the falling financial costs of technology. Pelkonen and Valvovirta (2015) found that public employees and administration are interested in the procurement of services via technology however current challenges, such as legislation, policy, legal mandates and cost often impede the process.   ICT projects are often considered high risk for public organizations often due to increased financial liability (Jang, 2014). These challenges in the procurement and use of ICT can have significant impact on the field's adoption of technologies

   Information and Communication Technology in Public Child Welfare

Successful Use, Purpose and Implementation of Information and Communication Technology

ICT has the capacity to enhance communication with service users, such as computer mediated communication (Davies & Morgan, 2005). ICT also provides potential to further worker-client relationships and encourage increased self-disclosure, and increased participation in services (Tregeagle & Darcy, 2008). ICT allows service users autonomy and anonymity as communication

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does not have to occur face to face, which can increase confidence (Tregeagle &

Darcy, 2008). Use of SMS messaging, email, and chat systems can encourage

less confrontational conversation between workers and clients (Barker,

Warburton, Hodgkins, & Pascal, 2014). ICT also has the capacity to expand

client's access to workers and information through the use SMS messaging,

email, and mobile phones (Tregeagle & Darcy, 2008).

ICT allows increased engagement of service users (Fairclough,

2003). Forms of ICT that encourage this include resource websites, such as

Ireland's Web Safety in Youth Work that provides youth work practitioners with

information, examples and resources for Internet safety (National Youth Council

of Ireland, 2017). Other examples include web and mobile based applications

that link service users to resources near them using GPS technology (Barker,

Warburton, Hodgkins, & Pascal, 2014).

Public child welfare is laden with the development of systems to capture

large amounts of data to identify trends in maltreatment, efficiency and outcomes

(Nguyen, 2007). These mass databases also allow for integrated documentation

and access to case information quickly (Peckover, Hall, & White, 2009).

Technology reduces drains on resources for documentation and reconciling

caseloads (Nguyen, 2007). The United States has publicly accessible data

through the Adoptions and Foster Care Reporting and Analysis System (U.S.

Department of Health and Human Services, 2015). Another large data

processing system that has been developed is the Child Welfare Services/Case

Management System (California Child Welfare Indicator Project, 2015).

Australia's Looking After Children Electronic System was developed for data

collection and aggregation, program evaluation and ongoing planning (Dixon,

2001).   The United Kingdom utilizes electronic recording of data for staff to

analyze their own work, and contribute to service wide performance goals

regarding outcomes for children (Tregeagle & Darcy, 2008). Public child welfare

also has begun the incorporation of documentation, data retrieval, and data

access via mobile technology such as mobile phones, tablets, laptops and

incorporating comprehensive databases to be available on mobile devices

(Bowen, 2014). The leap to providing line workers access to case information

has become wide spread in the United States (Bowen, 2014).

Structured decision making tools that are used in public child welfare to

use research based methodologies to provide child welfare workers a practical

approach to assessing risk (Johnson, 2004). ICT has the ability to produce and

distribute information en masse automatically and reliably (Tregeagle & Darcy,

2008).

Ineffective Information Communication Technology Uses, Purposes and

Implementation

Often human services organizations misunderstand that ICT in it of itself is

insufficient to ensure effective service delivery (Jang, 2014). There are workers

who feel contemporary technology has a narrow and limited use in the field

(Parrot & Madoc-Jones, 2008).Child welfare workers often view technology as a

means of accountability and productivity which is difficult to show when working

with other human beings. Many child welfare workers on the front line believe

and view technology as a way for management and administration to keep tabs

on them, to accuse them of not completing enough work in a timely fashion

(Tregeagle & Darcy, 2008).

Immense data bases that link individual children can make it difficult to

see familial and social relationships while workers get lost in the database

searching for information (Hall, Peckover, & White, 2010). The U.K's Integrated

Children's System (ICS), a mass database designed to capture and streamline

child welfare failed on many levels (Ince & Griffiths, 2011). The failure of ICS

demonstrates the consequences of poor ICT purpose, use and implementation

such as: lost time due to chasing errors in the system, delays to case work,

increase in time for administrative duties versus time spent with families, lowered

morale, lowered worker motivation, increased cost due to additional training,

duplication of work, and poor practice (Ince & Griffiths, 2011).

Child welfare workers and administration also fear technology taking over

practice and replacing human interactions with the families that they work with

(LaPoint-Cox, 2014). Even centers that hold virtual visits are viewed with

apprehension regarding possible lost human interaction (Quinn, Sage, &

Tunseth, 2015). Child welfare workers and administration also fear that their

practice is being shaped by elected officials pushing the use of current

technologies, while those elected officials are being pushed by information and

communication technology companies (Garrett, 2005). Researchers (Peckover, Hall & White, 2009) found that offices with higher percentages of workers uncomfortable with technology were less likely to utilize available technology in their practice. Much of the technology that was currently used was rated to be user unfriendly which may have also led to workers not choosing to utilize technology at their means (Peckover, Hall, & White, 2009). Public sector use of ICT is often in response for legislative demand for change and managerial demand for accountability (Tregeagle & Darcy, 2008). ICT is often used to advance managerial interests, improve productivity, cutting cost, automating decision making, monitoring staff, and to reduce fraud (Tregeagle & Darcy, 2008). Ongoing development and use of ICT in public child welfare can also appear to be coalitions between ICT developers and administration in the creation of profitable software and firmware (Garrett, 2005).

In areas that are heavily researched, such as public child welfare, often the demand and interest for the use of ICT comes from a research interest, and is not integrated for the purposes of immediate practice (Tregeagle & Darcy, 2008). ICT that is not developed with the purpose of assisting front line worker's need for access to information to assist in decision making processes are not likely to be found valuable by line workers (Munro, 2005). Examples include comprehensive databases that are designed to capture large amounts of data in an attempt to understand and predict trends in child maltreatment, and outcomes as well as determine workforce accountability (Hall, Peckover, & White, 2010).

Workers who do not reap benefit from the use of ICT will fail to see the intent or purpose behind it. Further, comprehensive data processing systems to store and analyze data to improve public child welfare outcomes the still requires a knowledgeable analyst to process and translate the information into an understandable form (Webster, Needell, & Wildfire, 2002).

Other risks that involve the use of ICT in public child welfare include increased vulnerability of children, loss of assessment capacity, diminished worker-client relationship and lack of reach to individuals who do not have access to ICT (Tregeagle & Darcy, 2008).

Theories Guiding Conceptualization

In reviewing the literature regarding ICT there are several theoretical concepts that have guided studies that have been previously done. Theories regarding network society (Quinn, Sage, & Tunseth, 2015) and constructivist grounded theory (Pelkonen & Valovirta, 2015) were utilized in some studies. Other studies did not specifically state the theoretical framework that was utilized. For the purposes of this systematic literature review sociotechnical systems theory will be utilized. Sociotechnical systems theory denotes an approach to organizational work design, recognizing the interaction between human beings and technology as well as the interactions between societal systems and human behavior (De Greene, 1990). Sociotechnical systems theory appropriately frames the understanding of the use, purpose and implementation of ICT in public child welfare by integrating understanding of how technology interacts with

human beings and other complex societal infrastructure. An understanding, and synthesis of empirical work regarding ICT and public child welfare it is essential to understand that ICT as a system will interact uniquely with individuals and other systems.

Summary

This chapter reviewed literature regarding public child welfare and ICT. Contemporary studies regarding ICT use in the field of public child welfare indicates that line workers rate the current technology available as user unfriendly (Peckover, Hall, & White, 2009), and often view technology as a managerial method of control and tracking productivity (Tregeagle & Darcy, 2008). However public child welfare has adopted ICT in the forms of data bases (U.S. Department of Health and Human Services, 2015), data processing systems (California Child Welfare Indicator Project, 2015), mobile technology (Bowen, 2014), assessment tools (Johnson, 2004) and others. Public child welfare can view ICT projects as financially risky (Jang, 2014). Furthermore there are numerous identified concerns with ICT in public child welfare. These concerns for ICT in public child welfare include: ICT being designed primarily for research purposes instead of immediate line worker benefit (Tregeagle & Darcy, 2008), or ineffective ICT which duplicates work, lowers morale, and has high financial expenditure (Ince & Griffiths, 2011), loss of worker client engagement and relationship (Hall, Peckover, & White, 2010). Possible gains for incorporation of ICT involve: ability to capture, store and analyze comprehensive

data (Naccarato, 2010), increased worker efficiency and access to case records (Barker, Warburton, Hodgkins, & Pascal, 2014), increased worker availability to clients (Bowen, 2014), and increase in worker client engagement (Tregeagle & Darcy, 2008). Currently there is no fundamental understanding across agencies as to how or why to use, or not use forms of ICT. Examination and identification of themes present in use, purpose and implementation practices of ICT in child welfare may enlighten key elements for success in these areas.

CHAPTER THREE

METHODS

Introduction

This chapter describes the design of the systematic literature review including the data sources, databases used, timeframe of the studies and search terms. This chapter discusses the inclusion and exclusion criteria for the literature included in this systematic review, and process for data extraction and analysis.

Study Design

The study design is a systematic literature review of published, peer-reviewed empirical research on the purpose, use and implementation of ICT in public child welfare. The study design aimed to identify thematic reoccurrences of purpose, use, and implementation of ICT in public child welfare. This systematic literature review searched databases for existing research regarding purpose, use and implementation of ICT in public child welfare with specific inclusion and exclusion criteria. Once the studies were selected through the inclusion criteria the data was processed for data extraction and analysis.

Data Sources

A comprehensive search of peer-reviewed and empirical studies was initiated utilizing searching scholarly journals such as: *Child Abuse Review,*

Research on Social Work Practice, Journal of Technology in Human Services, British Journal of Social Work, Child Maltreatment, Children and Youth Services Review, a search function such as *Academic Search Premier*, *JSTOR, Social Care Online,* and *EBSCO host*, as well as one search engine: Google Scholar using deviations of key search terms to locate data. Key terms that were used are as follows: technology, child welfare, social services, information and communication technology, ICT, implementation, purpose, use, child protection, CPS. The electronic search yielded the initial results. The abstracts of articles included in the initial search results were then reviewed to determine if the study met inclusion criteria. If the abstract met one or more of the inclusion criteria then the full article will be retrieved for full review.

Inclusion and Exclusion Criteria

For the purposes of this systematic literature review only published, peer-reviewed, empirical studies were utilized. All studies included were in regards to one or more of following regarding purpose, use, and/or implementation of ICT in public child welfare: the study indicated that it is original research, the article is an empirical study in regards to policy or legislation, or reviews of empirical literature. Articles were from 1989 through 2016. 1989 marks the era of which massive governmental databases, such as California's Child Welfare System/Case Management System began to be publicly launched (California Child Welfare Indicator Project, 2015). Studies were qualitative or quantitative. If

the article abstract did not meet one or more of the inclusion criteria due to a lack of information within the abstract the article was retrieved for full review.

Studies were excluded for the following reasons: the article contains a study that dates further back from 1989, or was published after the writing of this systematic literature review. Studies in regards to ICT and were not specific to public child welfare were excluded. To avoid duplication articles were also excluded if the report was based off of another study that was already included in this review. Studies were also excluded if after full review the study was found not to meet one or more of the inclusion criteria. Tables regarding the findings of the selected studies are included in this systematic literature review regarding methodology, types of ICT studied, sample bases of the studies, use, purpose, implementation of ICT, US or foreign studies, and success or failure of the ICT being studied.

<div align="center">Data Analysis and Extraction</div>

Once the comprehensive search was conducted and studies were selected for inclusion the potential studies were entered into an Excel file for data analysis and extraction. The final selected studies were reviewed and classified into categories regarding methodology, type of ICT and if the study was in regards to purpose, use or implementation of ICT, US or foreign based, and if the ICT was a success or failure. These categories were reviewed to attempt to identify thematic occurrences regarding the use, purpose or implementation of ICT in public child welfare.

Data Synthesis

Due to the possible and probable significant differences in methodology a meta-analysis was not possible. Ergo the results were synthesized by categorizing findings to review for reoccurring motifs in purpose, use and implementation of ICT in public child welfare.

Limitations and Bias

This systematic literature review aims at providing a distinctive contribution to research however there were limitations in the study. One such limitation is that only empirical, peer-reviewed, published studies that were available in English were included in this systematic literature review. Unpublished documents, public child welfare agency reports, studies published in languages other than English and expert testimony were not included in this study. Future studies may consider including those data sources. Furthermore the exclusion of unpublished studies, studies published in languages other than English may present bias into the study. Another concern with the presentation of bias into the study is that the study was performed by one investigator as which bias may be present in the selection of studies to be included in this systematic literature review.

Summary

This chapter reviewed the design and process of the systematic literature review. A comprehensive search of data bases for identified key terms was

conducted. Key terms included: technology, child welfare, social services, information and communication technology, ICT, implementation, purpose, use, child protection, CPS. The abstracts of the initial search result were reviewed to determine inclusion or exclusion based off of the stated criteria. Articles in which the abstract met inclusion criteria were subsequently retrieved for full review. Articles in which the inclusion or exclusion criteria were unable be met due to insufficient information provided in the abstract were retrieved for full review to determine if they met inclusion criteria. Full review of the articles entailed full review and categorization of the following: citation, purpose of the study, methodology utilized, types, purpose, and implementation processes of ICT and if the study revealed any success, failure or no results. Due to the possible and probability of mixed methodology a meta-analysis is unable to be performed. The limitations of this systematic literature review are discussed as there is the possibility for bias due to the systematic literature review utilized only studies that are empirical, peer-reviewed and available in English. Further bias is possible due to the nature of the systematic literature review being completed by one investigator.

CHAPTER FOUR

RESULTS

Introduction

This chapter discusses the findings of this study. Findings of the study

and tables are provided to assist in the description of the results of the study.

Once the comprehensive search was completed utilizing scholarly journals,

search functions and a search engine the results were analyzed in the following

categories: methodology of the study, sample of the study, type of ICT

discussed, purpose of the ICT, use of the ICT, implementation plan, if the ICT

was determined to be a success or failure, and if the study was US based or

international. After the search was completed, duplicates were excluded and any

questionable studies were read in full to determine if they met inclusion criteria

sixty one studies remained. Please see Appendix A for a full list of studies

included.

Presentation of the Findings

<u>Methodology of Included Studies</u>

Table 1. Methodology of Included Studies

Methodology of the study	Number of Studies	Percent of Studies
Review of Literature	23	37%
Mixed Method	18	29%
Qualitative	14	23%

Quantitative	6	10%

Of the sixty one studies that met inclusion criteria there were four

methodologies present. The majority of the studies utilized a review of literature

to base their research on. This literature included scholarly works, but also

included government reports and other data to determine their findings. Mixed

methodology included any study that utilized two more forms of research. These

studies often used both a review of literature and qualitative data. Studies that

used qualitative data performed interviews with their samples to gather data.

Lastly studies that were identified using quantitative data utilized surveys, or

outcomes measurement to gather research.   The least popular methodology that

was utilized was quantitative. There were far fewer studies looking at survey

data, or numerical information to make determinations. Quantitative data

gathered from a secondary analysis of the 2008 Survey of Organizational

Excellence provided key findings that the large databases used failed to fulfill the

intended purposes of ICT driven interventions, and instead fragmented

knowledge (Jang, 2015).

Samples of Included Studies

Table 2. Samples of Included Studies

Sample of the Study	Number of Studies	Percent
Sample not	30	49%

clarified		
Child Welfare staff, social workers, management and others	16	26%
Client Sample: including foster families, children or client families	9	15%
Combination of the samples	4	7%
Literature Only	2	3%

Of the studies that met inclusion criteria, a majority of the studies did not clarify the sample of the study. Of the studies that clarified their sample population the most frequent sample population that was used was child welfare staff; including individuals in line staff positions, supervisory positions and management positions. Less frequently used were client samples. Client population samples ranged from foster families, to child welfare dependent youth to families involved with public child welfare systems. Studies that utilized these samples frequently studied ICT where the client was the end user of the technology. Four studies utilized a combination of samples. An internet based referral service that was accessible to workers, clients and the public was researched (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015). The technology in question was used by both child welfare staff to provide clients with referrals to service, and accessible by clients to initiate their own referrals both samples were studied (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015). The least frequently utilized sample was exclusively studying available literature.

Table 3. Type of Information and Communication Technology Discussed

Type of ICT Discussed	Number of Studies	Percent
Databases	38	62%
Communication	13	21%
Internet Based Technology	7	11%
Office Based Technology	5	8%
Decision Support Technology	5	8%
Mobile Technology	3	5%
Digital Intervention	3	5%
Social Media	2	3%
Other	1	2%

Identified information and communication technology discussed within the studies that met inclusion criteria were databases, communication, internet based technology, and office based technology, decision support technology, mobile technology, social media, digital intervention and 'other'. These categories were not mutually exclusive as studies discussed multiple forms of technology.

ICT in the form of databases were most often large administrative databases that functioned for document tracking, outcomes measurement and data collection. Often these large databases were criticized for adding to administrative workload (Holmes, McDermid, Jones, & Ward, 2009), and that the

information gathered was time consuming (White, Wastell, Broadhurst, & Hall, 2010), and there was a loss in the narrative story of the clientele (Wastell & White, 2014).

Communication was another form of technology that was studied, for the purposes of this research communication technology was limited to ICT which purpose was to improve communication via spoken word, written communication, or digital face to face communication. Audio Video Assisted visitation for parents to receive coaching during visitation had preliminary success (Nese, Anderson, & Fisher, 2016).

Internet based technology was described in seven studies. Internet based technology included ICT that based its use on an internet connection. Foster children who were able to utilize email or internet video chat to communicate with relatives, siblings or parents were more likely to maintain connections when placement disrupts (Sen, 2010). Many of the criticisms of internet based technology were lack of access to internet connection (Loree, Beliciu, & Ondersma, 2014; Sen, 2010).

Office based technology included telephones, fax machines, desktop computers, etc. These forms of technology were studied in regards to decrease administrative workload, and increase efficiency (Sage, 2014; Sen, 2010; Zonfrillo, Kumar, Fortes, & Winston, 2012). These office based technologies were often found to increase productivity, but had less of an impact on the narrative quality of social work (Sage, 2014). Although many of the other

systems of ICT, such as databases, mobile technology, social media, digital intervention and decision support technology utilize office based technology to function these categories assess a different function of technology. The category of office based technology specifically analyzes the physical technological equipment.

Decision support technology included systems and programs to assist child welfare workers to make decision regarding child welfare clients and juvenile dependency cases. These technologies were found to provide an overestimation of risk and significantly restricted practice (Gillingham & Humphreys, Child protection practioners and decision making tools: observations from the front line, 2010). Decision support technology is often legislatively or policy mandated (Gillingham & Humphreys, 2010; (Munro, 2005; Wastell, White, Broadhurst, Peckover, & Pithouse, 2010). Decision support technology was often described as a method to standardize practice (Foster & Stiffman, 2010).

Mobile technology for the purpose of this systematic literature review refers to mobile devices including but not limited to: cellular phones, tablets, and laptops with access to internet, databases, decision support technology, and communication. Mobile technology for the purpose of increasing communication noted (Morgan & Fraser, 2010; Nese, Anderson, & Fisher, 2016).

Digital interventions referred to social work intervention in public child welfare. The studies that met inclusion criteria studied interventions that used

digital technology with clientele of public child welfare (Jabaley, Lutzker, Whitaker, & Self-Brown, 2011; Pammer, et al., 2001; Preston, 2015)

Social media refers to any social media platform, either mentioned in specificity and in general.   Two studies referenced social media as the purpose of their study. The purposes of these studies were to examine social media use by social workers (Breyette & Hill, 2015; Sage & Sage, 2015).

In this systematic review the other category referred to any other form of ICT that did not fall into the above categories. Only one study fell into this category and involved a geographic mapping technology to identify data on areas of higher concern for foster youth populations in instances of natural disaster (Webster, Needell, & Wildfire, Data are your friends: child welfare agency self-evaluation in Los Angeles County with the Family to Family iniative, 2002).

Purpose of the Information and Communication Technology

Table 4. Purpose of Information and Communication Technology

Purpose of ICT	Number of Studies	Percentage
Data mining, record keeping, administrative functions	43	70%
ICT to improve service delivery	42	69%
ICT to increase efficiency	38	62%
Communication	18	30%
Support	18	30%
ICT to increase worker retention and reduction of worker stress	2	3%

Purpose of ICT was not mentioned	2	3%

Purpose of technology discussed in the included studies ranged from communication, efficiency, data mining, record keeping and administrative purposes, worker retention and reduction of stress, support, improve service delivery or not mentioned. For the purposes of this literature review these categories were not identified as mutually exclusive.

Forty three studies that met inclusion criteria identified the purpose of the technology discussed was data mining, record keeping and administrative functions. These purposes were often in conjunction with other purposes. Record keeping integration into other purposes were found to make the data difficult to gather (Dewitte, Declercq, & Hermans, 2015). It was also difficult to determine outcomes based purely on ICT used for administrative functions, record keeping and data mining (Kaonga, Baravia, Philbrisk, & Mechael, 2016).

Of the sixty one studies that met inclusion criteria forty two studies indicated that the purpose of the ICT mentioned was to improve service delivery. Improvement of service delivery for the purposes of this systematic literature review was only in regards to services directly provided by public child welfare staff to clients. Identifying ICT to improve outcomes for children involved in the public child welfare systems in the instance of a global emergency utilized a

variety of technology and samples to determine that to improve service delivery

further investigation was needed (Kaonga, Baravia, Philbrisk, & Mechael, 2016).

Thirty eight studies indicated that the purpose of the ICT discussed was to

increase worker efficiency. ICT use to increase worker efficiency came with

practice concerns regarding confidentiality, change in professional expectations,

accountability and development of the ICT to increase worker efficiency was not

created in conjunction or with the end user in mind (Burton & van den Broek,

2009). ICT to increase efficiency were met with difficulty as staff often had

embedded work patterns (Foster & Stiffman, 2010).

Eighteen studies that met inclusion criteria indicated that the purpose of

the ICT being discussed was communication. The purpose of communication

includes communication between different agencies which held a great deal of

concern for ethics, privacy as well as a concern for state governments taking a

parental role in the lives of children (Penna, 2005). ICT for the purpose of

communication required ongoing administrative support and training for all

professionals involved (Dodsworth, Bailey, Schofield, Cooper, Fleming, & Young,

2013).

Out of sixty one studies that met inclusion criteria eighteen studies

identified that support as a purpose of the ICT discussed. For the purposes of

this systematic literature review support technology was deemed to be supportive

of workers and clients, although the category is not mutually exclusive of

workers, clients or both. Internet based communication networking technology's

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purpose was to provide support for substitute caregivers of children in the foster

care system to increase and enhance communication between care providers

and the assigned social worker (Dodsworth, Bailey, Schofield, Cooper, Fleming,

& Young, 2013). Audio computer self-interviewing purpose was to support foster

youth to determine wellbeing (Morgan & Fraser, 2010). When social media is

utilized to support professional activism and, support to expand types and

resources of information and networks available to child welfare workers (Sage &

Sage, 2015).

Two studies indicated that the purpose of the ICT discussed was to

increase worker retention and reduction of worker stress. Office based

technology in terms of a 'time tracker' time sheet program was implemented to

reduce the administrative workload of workers (Cahill & Feldman, 1993). Mobile

technology and ICT to provide direct services were also found to serve a purpose

of reducing worker stress and increasing worker implementation (Jabaley,

Lutzker, Whitaker, & Self-Brown, 2011).

One study that met inclusion criteria did not indicate a purpose. This

research indicated that ICT can assist in standardization and control of direct

practice intervention (Chan & Holosko, 2016). As this study indicated that it was

a systematic review of ICT enhancements to interventions there was no specific

purpose to the ICT being reviewed (Chan & Holosko, 2016).

Use of Information and Communication Technology

Table 5. Use of Information and Communication Technology

ICT Use	Number of Studies	Percentage
Gathering and Streaming Information	32	52%
No Specification of Use	17	28%
Reduction of Administrative Workload	10	16%
Outcomes Management	8	13%
Client Use	6	10%
Training	2	3%
Mobility of the Workforce	1	2%
Communication	1	2%

The studies identified a specific use of the technology discussed. These variables were identified as: none mentioned, the gathering and streamlining of information and data, reduction of administrative workload, specific use by clients, specific mobility use, communication use, training, and outcomes management. These variables were not designated to be mutually exclusive of each other. Different studies identified different primary uses of the ICT even when the ICT was the same in each study.

Thirty two studies indicated that the primary use of the ICT indicated that gathering and streaming information. Most likely the form of gathering and streamlining information was in reference to large databases to store information, such as the Integrated Children's System (Gillingham & Humphreys, 2010; Nygren, Hyvon, & Khoo, 2009). Large databases gathering, storing information

as a primary use of ICT provide a coherent and comprehensive system of electronic record keeping were most often used in large governmental agencies (Penna, 2005).

Seventeen studies did not identify a specific use of the ICT discussed. These studies did not specify use of ICT. A discussion of social media use by child welfare did not specify the use of technology, as this was a discussion about possible uses of social media, as well as discussion of ethical use of social media by public child welfare (Sage & Sage, 2015). A study into case manager strain did not specify the use of the technologies that quantitative data was gathered on (Preston, 2015).

Ten studies identified the use of ICT was to reduce administrative workload for social work staff. The standardized risks and safety assessment tools were cited as a form of ICT to reduce administrative workload by social work staff (Gillingham & Humphreys, 2010; Nygren, Hyvon, & Khoo, 2009). Standardized tools had an identified use of reduction of administrative workloads by creating consistency and standardization in the decision social work staff made regarding children (Gillingham & Humphreys, Child protection practioners and decision making tools: observations from the front line, 2010). Large data bases also identified their use was to reduce administrative workload of social work staff (Munro, 2005)

Eight studies identified outcomes management as the use of the ICT. Large scale government data bases were also cited as having a primary use of

outcomes management (Mitchell & Sloper, 2008; Penna, 2005). ICT with an

identified purpose of outcomes management sought to create more efficient,

coherent and uniform service to clientele by managing outcomes (Mitchell &

Sloper, 2008).

Six studies indicated that the identified the use of the ICT was for client

use. An internet based forum with a purpose of communication and networking

for foster parents had an identified use specifically of client use (Dodsworth,

Bailey, Schofield, Cooper, Fleming, & Young, 2013). Another study identified

client use was video feedback technology for parents to receive coaching during

and after visitation with their children (Nese, Anderson, & Fisher, 2016).

Two studies indicated that the identified use of the ICT was for training

purposes. This identified purpose was not limited to social worker training. The

audio feed back technology that allows parents to receive coaching during and

after visitation with their children acts as a training agent (Nese, Anderson, &

Fisher, 2016). These feedback sessions act as training for parents on interaction

with their children (Nese, Anderson, & Fisher, 2016). Another study investigated

an internet blog utilized to assist facilitator training for Family Group Decision

Making Meetings (Sage, 2014). This study utilized a blog forum to post training

material and updated information on Family Group Decision Making Meetings as

well as post questions and answers in a virtual question and answer forum

(Sage, 2014).

One study indicated that the identified use of the ICT was to improve the mobility of the workforce. Public child welfare staff in Atlanta, GA utilized iPhones and SafeCare to reduce face to face home safety session (Jabaley, Lutzker, Whitaker, & Self-Brown, 2011). This technology allowed for further mobility of the workforce as well as safely reduce face to face home visits (Jabaley, Lutzker, Whitaker, & Self-Brown, 2011). The use of the mobile technology allowed workers to have handheld technology with video call capability to further mobilize the workforce (Jabaley, Lutzker, Whitaker, & Self-Brown, 2011).

Only one study indicated that one of the primary uses for the ICT was communication. Although communication can be inferred as a use from the other studies it was not indicated in the study itself that the purpose of the ICT was for communication.

Implementation Plan

Table 6. Implementation Plan

ICT Implementation	Number of Studies	Percentage
Did not mention an implementation plan	45	74%
Utilization of a phases or stages plan	4	7%
Change in Policy	2	3%
Indiscriminate	1	2%
Pilot program	1	2%
Focus group initiation	1	2%
Practice driven	1	2%

Of the studies that met inclusion criteria of this systemic literature review implementation plan was categorized in values of none mentioned, phases or stages, indiscriminate implementation plan, focus group oriented, a pilot program was initiated, focus group initiated, pilot program initiated, policy driven or practice driven. These values were mutually exclusive. Forty-five studies did not mention an implementation plan.

Four studies discussed using a phases or stages implementation plan. The implementation of a database and processing system for public child welfare agency for rural Native American agency indicated that the most valuable phase of the implantation was the design of the system coordinated between the designers and the end users (Scannapieco & Iannone, 2015). A study regarding Telehealth technology indicated that a stage of successful staff engagement is imperative when implementing ICT (Pammer, et al., 2001).

One study described an indiscriminate implementation plan. This study was in regards to office based technology (Cahill & Feldman, 1993). Although this study indicated that there was an implementation plan it was not described in the study. One study described a focus group initiated implementation plan. This study described an internet support group for grandparents raising grandchildren (Loree, Beliciu, & Ondersma, 2014). This study described a focus group to implement the internet support group by garnering focus group feedback

(Loree, Beliciu, & Ondersma, 2014). One study discussed a pilot program initiated implementation plan. This study described a self-evaluation program within public child welfare (Webster, Needell, & Wildfire, Data are your friends: child welfare agency self-evaluation in Los Angeles County with the Family to Family iniative, 2002). This pilot program was designed as a self-evaluation for public child welfare in Los Angeles County and begun implementation as a pilot program to overcome initial resistance (Webster, Needell, & Wildfire, Data are your friends: child welfare agency self-evaluation in Los Angeles County with the Family to Family iniative, 2002).

Two studies discussed the technology implementation was due to a change in policy. Although the implementation was described as a change in policy there was no clear indication of a detailed implantation plan it was clear that implementation of the ICT was based on policy or legislative change (Peckover & Hall, 2009; White, Wastell, Broadhurst, & Hall, 2010). One study discussed the implementation plan being practice driven. This study described that the technology was implemented into a locally adapted and standardized practice, and the guiding hand of implementation was already established practice and implemented with information primarily from the end user (Tregeagle, 2016).

<u>United States versus. Foreign</u>

Table 7. United States versus. Foreign

US or Foreign	Number of Studies	Percent
Foreign	38	62%
US	19	31%
Undetermined	4	7%

Of the sixty one studies that met inclusion criteria thirty eight studies were determined to have been international, or foreign of the United States in origin. Nineteen of the sixty one studies were based out of the United States and four of the sixty one studies were unable to be determined of a country of origin.

<u>Success versus. Failure</u>

Table 8. Success versus. Failure

	Number of Studies	Percent
Undetermined, unknown or not applicable	24	39%
Failure	21	34%
Success	16	26%

<u>Determination of Success versus Failure.</u>

Studies that met inclusion criteria were reviewed for success versus failure values. These values included if the technology discussed was determined to be implemented successfully, if implementation was a failure or is success or failure was undetermined, unknown or not applicable. If the technology discussed was determined to be a partial success it was included in the success values. These

values are determined to be mutually exclusive. Twenty four studies indicated either that success or failure was undeterminable, unknown or the discussion of success or failure was not applicable to the original study.

Twenty one studies indicated that the implementation of the technology discussed was determined to be a failure. The Integrated Children's System (ICS) and Common Assessment Framework (CAF) were largely documented as a failure (Holmes, McDermid, Jones, & Ward, 2009; Mitchell & Sloper, 2008; Parton, 2005; Penna, 2005). The ICS and CAF were cited as a failure due to concerns in privacy and the shift of responsibility away from parents onto the government (Parton, 2005), technical problems and insufficient information for implementation (Mitchell & Sloper, 2008), increase in time spent on indirect database activities compared with direct service activities (Holmes, McDermid, Jones, & Ward, 2009), and piecemeal implementation within the agencies (Penna, 2005).

Sixteen studies were identified as the discussed ICT was implemented successfully. An internet based referral service that was accessible to both social workers and clients in Los Angeles County was determined to be successful (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015). The ICT was determined to be successful when users were active participants in the implementation and refinement of the ICT (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015). There were some marked concerns, such as when users did not have internet access or computer access, however the overall determination

was that when used the program was considered a success (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015). A digital intervention program to provide online social support for foster families was determined to be successful (Finn & Kerman, 2004). This online social support group was deemed a success based off of qualitative interviews with the end user, the foster families.

There were insufficient repetitions in types of technology within the studies that considered the implementation of the technology to be a success to determine if there was any significance. The studies that considered implementation a success types of technology studied included: a time tracking program (Cahill & Feldman, 1993), an internet based referral program (Dellor, Lovato-Herman, Wolf, Curry, & Freisthler, 2015), online support group for foster families (Finn & Kerman, 2004), use of administrative databases for data mining of longitudinal data (Kum, Stewart, Rose, & Duncan, 2015), external service system evaluation for decision support tools and large data bases (Lonne, Brown, Warner, & Gillespie, 2014), kinship support group (Loree, Beliciu, & Ondersma, 2014), organizational and office technologies (Preston, 2015), training blog and forum for child welfare staff (Sage, 2014), creation of case record and documentation system for a child protection agency (Scannapieco & Iannone, 2015), development of ICT by a nongovernmental child welfare agency (Tregeagle, 2016), web-based telecenter for child fatality reviews (Zonfrillo, Kumar, Fortes, & Winston, 2012), computer assisted self-interviewing of foster

youth (Morgan & Fraser, 2010), and geographical desktop mapping of concern for foster youth (Webster, Needell, & Wildfire, 2002).

Summary

The preceding chapter reviewed the results of the study. Of the studies that met inclusion criteria thirty seven percent of the studies were a review of literature, forty nine percent of the studies did not clarify the sample used, sixty two percent of the studies indicated that the ICT being studied were databases, seventy percent of the studies indicated a purpose of data mining and record keeping, fifty two percent indicated a use of gathering and streamlining information, seventy four percent of studies indicated no mention of an implementation plan, sixty two percent of the studies were foreign based and thirty nine percent of the studies were undetermined if the technology implemented was a success or failure. There was insufficient repetition of types of ICT and success to determine any type of relationship between these two variables.

CHAPTER FIVE

DISCUSSION

Introduction

This chapter discusses the implications of this systematic literature review. This systematic literature review indicates that the success of the use, purpose and implementation of ICT in public child welfare is dependent upon the value and ease of use for the end user. Public child welfare would benefit from further qualitative and quantitative research into the implementation of ICT with more input, feedback and collaboration with the end user.

Discussion

Purpose

Largely, majority of the studies that met inclusion criteria indicated data mining, record keeping and administrative functions. Purposes that correlated to data mining, record keeping and administrative functions indicated lower success rates with much of this contributing to line worker perceptions of management and administration utilizing ICT as a method of gathering punitive data via outcomes measurement and loss of professional discretion.

Forty nine percent of the studies included in this systematic literature review conveyed a stated purpose of the ICT being studies was to improve service delivery. ICT to improve service delivery often involved increased input from the end user, however many of these studies were unable to indicate

success or failure due to a requirement of longitudinal data not yet available, or no longer published in empirical data. ICT utilized for the purposes of improving service delivery may also track outcomes for families which is often perceived as negative or punitive.

Use of Information and Communication Technology

This systematic literature review indicated that gathering and streaming information were the highest percentage of noted use of ICT, with communication and mobility of the workforce were the least cited use of the ICT examined in the studies included. The gathering and streaming of information as a use for ICT in public child welfare tended to be in reference to large governmental databases to store electronic record keeping (Gillingham & Humphreys, 2010; Nygren, Hyvon, & Khoo, 2009). The trends in this information show a trend in managerialism and focus on outcomes within public child welfare. These forms of technology were linked to higher rates of failure, or undeterminable for success or failure.

Communication and mobility of the workforce were the least cited use of ICT with mobility of the workforce and communication comprising of only 2 percent of the studies in this systematic literature review each. ICT has the capacity to further enhance communication, which is a vital component of preserving the presence of the narrative in public child welfare. Many forms of ICT would increase availability and modes of communication, however the amount of studies involving ICT and communication are minimal.

Implementation of Information and Communication Technology

Of the studies in this systematic literature review, thirty-nine percent were unable to determine, or determined that success or failure of the implementation of ICT was not applicable. However, thirty four percent of the studies included in this systematic literature review indicated that the implementation of the ICT being studied was determined to be a failure. Many of these studies researched large systemic forms of ICT that were implemented due to changes in legislation, policy or law with little documented contact with the end user. Implementation of ICT via legislative mandates with little input from the end user creates beliefs that ICT is being utilized as a tool of management and administration to control public child welfare practice (Garrett, 2005). When the end user does not find value in the ICT being implemented the degree of success is highly impacted (Munro, 2005).

Contrarily twenty six percent of studies indicated the implementation of the ICT was successful. These studies indicated a variety of types of ICT, however a thematic reoccurrence of high levels of input from the end user were indicated via the implementation process. These forms of technology ranged from computer assisted self-interviewing, electronic communication, and even documentation and data storage systems. The common themes of the successful implementation of these varied technology was the significant input and participation of the end user. The end user in these scenarios varied from foster parents, social workers and clients themselves. This indicates that the type of

technology, purpose, use and end user of the technology is not as important as incorporating the feedback and input of the end user.

There was not significant overlap between types of ICT used, their purpose, and implementation to accurately denote thematic reoccurrences that would indicate success or failure where public child welfare and ICT intersect.

Limitations

There were limitations to this study. This systematic literature review was conducted by a single researcher which increased the likelihood for presentation of bias in the selection of studies included in the systematic literature review. Studies that may have met inclusion criteria, but there was insufficient evidence in the abstract to confirm inclusion criteria were then reviewed in their entirety to determine if inclusion criteria was met. The probability of bias is more likely with one investigator versus multiple investigators.

Another limitation of the study is that inclusion criteria for this systematic review included only empirical, peer reviewed, published studies that were available in English. These criterion excluded data such as public child welfare agency reports, unpublished data and studies that are not published in English.

Recommendations

Social work has a historical reluctance to the adoption of ICT into practice. This systematic literature review sought to identify thematic trends of successful use, purpose, and implementation of ICT in public child welfare. The only identified

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thematic reoccurrence of successful use, purpose and implementation of ICT was that ICT, regardless of type, use, purpose or implementation was that there were more occurrences of success when the end user has increased feedback, input and decision making power in the development and use of the ICT in question. In order to accurately identify themes related to successful use, purpose and implementation of ICT in public child welfare further research is necessary.   Qualitative and quantitative research regarding implementation of ICT in public child welfare is also recommended.

Conclusion

The increased use of ICT in public child welfare is inevitable. Although costs of ICT appear to be falling with further gains in these areas, the cost and benefit of ICT in public child welfare is only as advantageous as the value perceived by the end user of the ICT in questions. Success of use, purpose and implementation of ICT is highly dependent on the input, feedback and collaboration in creation, determination of use, purpose and implementation strategy with the end user. Only with the end user, fully understanding and supportive of the use, purpose and implementation of the ICT will public child welfare see favorable returns on the investment of ICT.

APPENDIX A

TABLE OF INCLUDED STUDIES

Citation	purpose	qualitative or quantitative or review of literature	sample	ICT discussed	ICT purpose	ICT use	implementation plan	success/failure	key findings
Aarons, G., Hurlburt, M., & Horwitz, S. M. (2011). Advancing a conceptual model of evidence-based practice implementation in public service sectors. Administration Policy in Mental Health, 4-23.	study of implementation science, features in the model likely to be important in each phase of implementation	review of data/literature		technology based evidence based practices and interventions using various digital technology			this article discusses how to successful implement technology	undetermined	Four phases of implementation 1. Exploration 2. Adoption decision and preparation 3. Active implementation, 4. sustainment

Breyette, S. K. and Hill, K. (2015 The impact of electronic communication and social media on child welfare practice. Journal of Technology in Human Services33(4) 283-303	discuss impact of electronic communication and social media on child welfare practice	review of data/literature		electronic communication and social media	professional use of digital communication			undetermined	use of social media in child welfare calls for ongoing training and discussion, suggestions include development of a social media policy that matches agency organizational values and goals and addresses benefits and risks of use

Burton, J and van den Broek, D (2009) Accountable and countable: information management systems and the bureaucratization of social work. British Journal of Social Work 39, 1326-1342	examine professional values and identities to organizational and bureaucratic accountabilities	qualitative	social workers in several Australian agencies	Department of Community Services Helpline and service delivery reforms work stress and turnover	various office technologies, databases	gather information, streamline information		undetermined	practice concerns with confidentiality, development of new ICT changes professional expectations and accountability, administrators not social workers have ben influential in designing tech, strong worker and manager relationships important to successful implementation and integration of ICT adoption of ICT fueled by turnover and staff shortages, technology refocuses accountabilities to managers vs clients, technology can decrease worker stress, professional notions of accountability subverted by bureaucratic accountability

Cahill, J. and Feldman, L. (1993) Computers in child welfare: planning for a more serviceable work environment. Child Welfare League of America LXXII(7)	determine risk/benefit of microcomputers were introduced into a child protection agency to improve productivity and work environment	qualitative	social workers	office based technology 'time tracker' employee time sheet program	alleviate stress	reduce worker administrative workload	multipurpose data systems and data entry systems	success	hidden cost of hardware or software is education and support, the process of change is at least as important as the hardware and software purchased however when carefully implemented can provide labor and management with a better way to work

Chan, C and Holosko, M. (2016) A review of information and communication technology enhances social work interventions. Research on Social Work Practice 26(1) 88-100.	systematic review of IT enhances social work interventions, use of audiovisual broadcast systems, telephones, computer networks through ICT	quantitative	specific articles in journals classified under social work research area in the social science citation index	social work interventions using audiovisual broadcast systems, telephones, computer networks etc.				not applicable	studied social work interventions, some of which in child welfare, use of ICT social work interventions rated good or fair and ICT can assist in standardization and control of intervention

Citation	Purpose	Method	Sample	Concept	Goal	Participants		Outcome	Findings
Dellor, E., Lovato-Herman, K., Wolf, J., Curry, S., Freisthler, B. (2015). Introducing technology in child welfare referrals: a case study. Journal of Technology in Human Services 33(4) 330-344	determine accessibility etc. of Department of Children and Family Services Needs Portal (internet based intervention to improve timing and quality of social service referrals in LA County	review of data/literature	convenience sample of DCFS caseworkers and service providers	Internet based referral service accessible to workers and clients	improve timing and quality of social service referrals in LA County	case workers, service providers and client		success	Lack of technological infrastructure at DCFS offices impacted case workers ability to use the Needs Portal, Participants reported not having internet access or computers, difficult to balance workplace demands with learning another system. "don't have time to learn new technology" when users are active participants implementation and refinement the tech is more likely to be successful

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Duncan, D., Kum, H., Weigensberg, E., Flair, K., and Stewart, C. (2008). Informing child welfare policy and practice using knowledge discovery and data mining technology via a dynamic web site. Child Maltreatment (13)4 383-391	use of knowledge discovery and data mining to create longitudinal data files from administrative data sources	qualitative	child welfare workers in North Carolina	knowledge discovery and data mining web based program	create longitudinal data	workers must enter administrative data sets, data sets are then extrapolated using KDD site			KDD is ongoing process, due to policy changes data collected may evolve over time, data mining to project longitudinal data takes time and information must be entered and collected. Longitudinal data has potential to and been used for research

Finn, J., Kerman, B. (2004) The use of online social support by foster families. Journal of Family Social Work 8(4)	identify the extent to which foster families utilize social support on the internet	qualitative	34 foster families in digital divide intervention program and comparison sample of 30 foster families who were not part of the program	online support groups	provide support for foster families	foster families using online support groups for support and information		success however usage low	child welfare professionals need to educate/inform foster parents and youth about these opportunities/ issues create polices and practices and establish and infrastructure that promotes privacy and access

Foster, K., Stiffman, A. (2010) Child welfare workers' adoption of decision support technology. Journal of Technology and Human Services 27(2). 106-126	determine how child welfare workers adopt and use decision support technology	quantitative and qualitative	child welfare workers and data collected from state child welfare workers	decision support technology	assist child welfare workers to find service providers for families with a searchable database	handheld and desktop		supported but not adopted	child welfare workers develop specific assessment and referral patterns that become embedded and these patterns are difficult to change particularly when asked to conceptualize a central job function

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Garrett, P. (2005) social work's 'electronic turn': notes on the deployment of information and communication technologies in social work with children and families. Critical Social Policy 25(4). 529-553.	discussion on social work perspectives and concerns on use of mass databases top gather/store data on individuals and repercussions	review of data/literature		government mass databases	identify children who may be at risk/ in need of additional services	enter information in mass database		failure	mass databases may be of major concern to civil liberties of children and families, social work is increasingly being ordered, devised and structured by academics, policy makers and e-technicians who are far removed from day to day practice dual strategy is needed to respond constructively to negative consequences of ICT deployment

Gillingham, P. (2011). Computer-based information systems and human service organizations: emerging problems and future possibilities. Australian Social Work 64(3) 299-312.	discuss consequences and concerns with the use of mass databases	review of data/literature		integrated children system	identify children who may be at risk/ in need of additional services	identify children at risk or in need of services		failure	concerns with confidentiality, ethical values, shift away from individual/parental responsibility to government responsibility for children, costly increases work load in terms of administrative tasks and impedes service delivery
Gustavsson, N. MacEachron, A. (2015). Positive youth development and foster care youth: a digital perspective. Journal of Human Behavior in the Social Environment 25(5) 407-415	discussion on possible uses/accessibility/development of techno literacy in digital technology, internet use, forums etc. for foster youth	review of data/literature		internet, online support groups, email, skype etc.	maintain connections of foster youth, create digital and technical literacy			undetermined	further development, policy and practices for foster youth to become literate and wise users of digital technology

Hall, C., Parton, N., Peckover, S., White, S. (2010) Child-centric information and communication technology (ICT) and the fragmentation of child welfare practice in England. Journal of Social Policy 39(3) 393-413	discussion on ICT and the fragmentation of information and knowledge on mass bureaucratic databases	qualitative		integrated children's system/mass databases/looking after children database/common assessment framework	identify at risk children, gather data, referrals for service	to create assessment tools/fill in docs for referrals for services for children identified at need		failure	electronic case records and forms, too long to be read/understood by parents, fragmentation of data, questionable consent, systems need to be designed, current systems lack user centered design and human computer interaction

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Ince, D. and Griffiths, A. (2011) A chronicling system for children's social work: learning from the ICS failure. British Journal of Social Work 41. 1497-1513	discussion on why ICS failed, consequences of mass egovernment databases	review of data/literature		integrated children's system (mass egovernment database)	record keeping and reporting functions	reorganize child welfare in the UK, provide a standard set of processes, standard set of computer programs that support the processes and a common database that holds this data, provide a framework that enabled interchange of information between relevant agencies involved with the interaction with a child in need		failure	atomization of information which leads to social workers unable to see the bigger picture, large amount of form filling leading to major restrictions on time, rigid approach to the processes involved in human centered activity (time lines), questionable legality of consent. failure resulted in political imperatives and technical contributions as the difference in IT jargon and SW jargon

Jabaley, J. Lutzker, J., Whitaker, D. Self-Brown, S. (2011) Using Iphones to enhance and reduce face to face home safety sessions within SafeCare: an evidence based child maltreatment prevention program. Journal of Family Violence 26. 377-385	determine if iPhones, handheld technology, video calls reduce face to face visits with SafeCare intervention	qualitative and quantitative	9 families in metro Atlanta, 4 declined and 4 agreed that had one child 5 or younger	handheld technology with video call capability	reduce face to face visits to ensure safety of the child for homes with hazards that met child abuse/neglect standards in the process of creating child safety, reduce 'home checks'	to complete home checks for safety hazards	success	when the module was enhanced by IPhone there were substantial reductions in household hazards in all rooms across all participants including a 1 month follow up, iPhone was used as intervention and data collection tool, face to face time reduced in current study, enhanced communication between visits and made logistics of intervention easier. Use of technology in reducing attrition and increasing compliance shows potential. although promising depend on availability of handheld devices with high quality video and wireless connectivity

Jang, K. (2015) Technology could be harmful rather than beneficial: an empirical investigation of caseworker's perceptions using a knowledge management framework. Journal of Social Service Research 41(2) 246-268	study on technology mediated initiatives and how caseworkers perceive these initiatives in regards to knowledge management	Quantitative	2ndary data analysis using data from 2008 Survey of Organizational Excellence	databases	gather administrative data and assist in decision making	gather information and record information to assist in case management decisions		failure	ICT failure to fulfill its intended purposes to information based and technology driven interventions, there is fragmentation of knowledge and little generation of useful knowledge vs information, recommended that administrators and researchers shift their perspective to knowledge based and sociotechnical and understand the effect of ICT on knowledge

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Jonson-Reid, M. and Drake, B. (2016). Child well-being: where is it in our data systems?. Journal of Public Child Welfare 10(4) 457-465	discuss that there is no systematic inclusion of child wellbeing indicators in administrative data	review of data/literature		data systems/information systems/data bases	to create child wellbeing indicators in administrative data that is already being collected			undetermined	current systems focus on negative outcomes, this limits ability to use system data to track child wellbeing, may be possible to integrate more subjective measures of wellbeing into case records to examine real time evidence of functioning to better inform ability to support a child's capacity

Jonson-Reid, M. and Drake, B. (2008). Multisector longitudinal administrative databases as indispensable tool for evidence-based policy for maltreated children and their families. Child Maltreatment. 13(4) 392-399	describes the need for and practicality and utility of longitudinal multisector and multilevel administrative sate to address key issues in child maltreatment prevention and intervention	review of data/literature		Multi-sector databases, data storage	for large linked databases to store data for longitudinal studies	use for study and creation of data to create evidence based policy and advance child welfare policy		undetermined	SW is moving toward default expectation of instantaneous access to information

Kepple, N., Freisthler, B., Johnson-Motoyama, M. (2014) Bias in child maltreatment self reports using interactive voice response (IVR). Child Abuse and Neglect 38 1694-1705	addresses the utility of interactive voice response for child maltreatment behaviors by assessing differences between respondents who completed and did not complete a survey using IVR technology	quantitative	general population survey of 3,023 parents of legal guardians with children 12 years or younger residing in 50 cities in California	interactive voice response technology	assess utility of IVR methods with parent self report of child maltreatment behavior	advance understanding of scope of abuse and neglect experienced by children especially for populations overlooked by current surveillance systems		undetermined	IVR systems give better idea of child maltreatment, increased likelihood to self-report with automated system

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Citation	Description	Method	Location	Tools	Purpose		Implementation	Outcome	Recommendations
Kum, H., Stewart, C., Rose, R., Duncan, D. (2015) Using big data for evidence based governance in child welfare. Children and Youth Services Review 58 127-136	discussion on importance of improving governance of child welfare system and take administrative data and transforming it into knowledge for policy and management actions through information generation process	qualitative and quantitative	north Carolina child welfare	knowledge discovery and data mining for longitudinal data from large administrative data bases	create knowledge and longitudinal data to create and envision best practice and policy for child welfare			successful	Only data used regularly is valid, successful implementation included trust, real support through policies and funding, access to good technical expertise both in content and information technology and training.
Lonne, B., Brown, G., Warner, I., Gillespie, K. (2014). Victoria's child FIRST and IFS differential response system: progress and issues. Child Abuse and Neglect. 39 41-49	examination of external service system evaluation for Child FIRST and IFS	qualitative and quantitative	Victoria DCFS	large databases, decision support tools	gather data, make informed supported decisions for differential response		implemented in stages with worker support and communication, continuously improve system communication	successful	prioritize worker and workload continuously and ongoing development

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Loree, A., Beliciu, D., Ondersma, S. (2014) KinCareTech: interactive, internet-based software to support kinship caregivers	determine effectiveness, usefulness for KinCareTech internet based program	qualitative and quantitative	members of a support group based in Detroit, Michigan for grandparents raising grandchildren	internet support groups	provide support and focused brief intervention for caregivers	use is for specifically clients who are kinship caregivers	implemented in one year conducting focus group and development of two internet based modules and deliver of modules using volunteers from focus groups	successful	caregivers found modules helpful, information easily accessible can be applied further described as easy to use, developed with user in mind

Mucro, E. (2007). The dangers of information sharing. Social Policy Journal of New Zealand. 31	critique of the policy being implemented in England with particular focus on the role given to professionals collecting and sharing information about families as a means of screening children and deciding which ones to target	review of data/literature		mass government databases	gather data, assess and determine which children require further intervention or services	professionals, social workers, children's services, education services, health services, clients and mental health providers		failure	concerns that this policy and databases undermine the responsibility and power of parents, inaccuracy of risk predictions, surveillance and impact on relationship between clients and professionals, confidentiality is concerning creation of a professional network monitoring all children's development reduces responsibilities of parents and redefining relationship of the state

Naccarato, T. (2010) child welfare informatics: a proposed subspecialty for social work. Children and Youth Services Review. 32, 1729-1734	proposal of subspecialty in child welfare in informatics	review of data/literature		data collection, analysis and information and communication technology to create knowledge, and analyze longitudinal data	development of universal communications medium and study of design, application and use of information technology in disciplines,		undetermined	CWI would integrate child welfare, computer science and information science to manage and communicate the data, information and knowledge that child welfare collects already however the child welfare workforce often has inadequate computer skill, lack of motivation of users of the technology and hardware and network barriers

Nguyen, L. (2007) Child welfare informatics: a new definition for an established practice. Social Work 52(4)361-363	proposal on child welfare informatics	review of data/literature		data collection, analysis and information and communication technology to create knowledge, and analyze longitudinal data	create information and knowledge more readily available to better understand how to improve			undetermined	CWI would identify and analyze the data needed to develop more effective tools for practice, assist in modifying policy and best practice but there are few analysts equipped to do this

Quinn, A., Sage, K. and Turnseth, P. (2015) AN exploration of child welfare workers opinions of using video assisted visitation VAV in the family reunification process. Journal of Technology in Human Services 33(1) 5-15	analysis of parents using video assisted technology to visit with child during family reunification	qualitative	40 social workers	video assisted technology for parents to visit with their children during family reunification process	increase frequency of visits using VAV during reunification process		VAV was implemented as an experimental procedure to identify benefits or concerns with using it as a means of visitation during reunification	undetermined	concerns noted where young children who were unable to benefit from pure video assisted visitation and required more interaction, concern with monitoring and supervising visits, concern parents would believe that VAV could replace face to face visits

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Pammer, W., Haney, M. Wood, B. Brooks, R., Morse, K. Hicks, P. Handler, E. Rogers, H. and Jennett, P. (2001) Use of telehealth technology to extend child protection team services. Journal of Pediatrics 108(3) 584-590	Florida's department of health established telemedicine project to facilitate immediate expert medical evaluation of alleged child abuse or neglect, baseline examination of the project	qualitative and quantitative	interviews of key staff and concept mapping	telehealth technology including video calls, transport facilities, dedicated lines, integrated services digital networks, wireless technologies	allow for immediate medical evaluation of alleged child abuse	child protection staff and medical staff to use to evaluate child abuse/neglect	implemented in multiple stages	unsuccessful	technology use was affected by unforeseen variables such as physical space limitations and examination room availability, concerns about privacy issues were rare however consumer friendly equipment is necessary, staff engagement early in the process will result in greater likelihood of use of said technology

Parton, N. (2009). Challenges to practice and knowledge in child welfare social work: from the 'social' to the 'informational'? Children and Youth Services Review 31 p 715-721	discussion on the possible impact of new information and communication technology systems and reflects on the shift from the narrative to a database ways of thinking and operating	review of data/literature		databases	identify at risk children, gather data, referrals for service	to record and create referrals for service for at risk children who may need further intervention or services			concern that majority of child welfare workers report that new technology systems increase administrative work and decrease time available for direct practice, "database expression" vs "narrative expression" becoming more prevalent and an increase focus on surface information and the holistic view is lost. Databases created to increase managerialism and accountability

Parton, N. (2010) From dangerousness to risk: the growing importance of screening and surveillance systems for safeguarding and promoting the wellbeing of children in England. Health, Risk and Society 12 (1) 51-64	critical analysis of the changes and argues that there is a significant shift in responsibilities and relationships between children, parents, professionals and the state due to mass e governance databases	review of data/literature		Common Assessment Framework, Integrated Children's Services data bases	identify at risk children, gather data, referrals for service	to record and create referrals for service for at risk children who may need further intervention or services		failure	challenges arising from rationale, organization and focus of needs due to growing reliance on new systems of screening and surveillance, increase in managerialism control, reliance on ICT reduced discretion of the practioner

Peckover, S., and Hall, C. From policy to practice the implementation and negotiation of technologies in everyday child welfare. Children and Society 23pp 136-148	review of findings regarding introduction of children's database and Common Assessment Framework In the UK	review of data/literature		children's database, Common Assessment Framework	identify at risk children, gather data, referrals for service	to record and create referrals for service for at risk children who may need further intervention or services	national policy did not take into consideration local contextual interpretation, implementation not planned well due to mass enforcement and implementation	failure	concerns regarding trends to e-government, differences in translation and implementation of national policy to local contacts, prisoners faced difficulties deciding how and when to use ICT

Peckover, S., White, S., Hall, C. (2008) Making and managing electronic children: e-assessment in child welfare. Information, Communication and Society. 11(3) 375-394	critical analysis of the proposal for using information and communication technology in egovernance	review of data/literature, qualitative and quantitative	interviews, focus groups, non-participant observations of meetings, training sessions and professionals	Common Assessment Framework, Integrated Children's Services data bases	identify at risk children, gather data, referrals for service	to record and create referrals for service for at risk children who may need further intervention or services		failure	functionality dependent upon being used, difficulties with security features, malfunctions in searches when it is unable to accurately identify a child's e-record, ethnographic engagement with the population of professionals intended to use the program so design can be user centered and complexities and priorities of day to day job understood in the design

| Pithouse, A., Broadhurst, K., Hall, C., Peckover, S., Wastell, D., White, S. (2011) Trust, risk and the (mis)management of contingency and discretion through new information technologies in children's services. Journal of Social Work 12(2) 158-178 | critical analysis of information technology in children's services | review of data/literature | | integrated children's system (mass egovernment database) | to record and create referrals for service for at risk children who may need further intervention or services | identify children who may need further intervention and create referrals for services | | failure | ICS inadequately engages and assess risk in day to day practice, the databases are invasive and the temporal restrictions and dimensions of the E-Systems are difficult to manage with increasing workload and time constraints create difficulties in engaging with clients |

Pithouse, A., Hall, C., Peckover, S. White, S. (2009) A tale of to two CAF's: the impact of the electronic common assessment framework. British Journal of Social Work 39, 599-612	critical analysis of the Common Assessment Framework data base	review of data/literature		Common Assessment Framework database	to record and create referrals for service for at risk children who may need further intervention or services	identify children who may need further intervention and create referrals for services		failure	view of child welfare professionals as having both the skills and resources of an electronic office, CAF challenges professional discretion, SW must manage unpredictable events when ICT fails to find new solutions, if professional finds the technology flawed they create 'work arounds' recommended hybrid versions

Preston, M. (2015). Case manager job strain in public child welfare agencies: job demands and job controls additive effects and instrumental feedbacks mediating role	analyze perceived job strain and control in public child welfare	quantitative	public child welfare case managers	organizational technologies, office technology, mobile technology	document data, assessment tools			success	technology may reduce perceived job strain and increase perceived control alleviating stress
Sage, M. (2014) Use of web 2.0 to train facilitators in fidelity: a case study	use of computer training and blog and technology fidelity tools to see if these improved model fidelity to family group decision making	qualitative and quantitative	North Dakota nonprofit agency	computer based training, blog, forum, internet surveys tools, cloud storage, video logs,	use of internet and blogs to increase fidelity to evidence based practice model of family group decision making meetings	allow facilitators to train and have communication/information provided to them via digital technology	research blog was created and disseminated to participants	success	Blog and video logs became living manual for the intervention, employees were likely to use and once comfortable seek out own information but check the blog to maintain fidelity to the practice model.

Sage, M. and Sage, T. (2016) Social media and e-professionalism in child welfare: policy and practice	discussion/analysis of social media use in child welfare	review of data/literature		social media	social media can create cost effective opportunities for support interventions, maintain contact with clients and stakeholders, assist in public outreach, improvement for government transparency and aid in assessment of child safety			undetermined	use of social media calls for ongoing training and discussion, employers and employees will likely benefit if policy and practice are created with ethics and agency goals in mind, possible to expand types and sources of information available to child welfare workers.

Scannapieco, M., and Iannone, M. (2014) Native American Indian child welfare system change: virtual implementation of a data system based on practice models	implementation of data system for Native American child welfare agency	qualitative	three Native American child protection agency	data system/processing system	create/record data from Native American child protection agency where none was in place prior	record and store data, documentation create reports	four phase implementation: development of the practice model which was accomplished by each tribal child welfare agency, several strategic planning sessions project management reviewed scope, resources and schedule, implementation to	successful	limitation in the design was the lack of incorporation if the information systems literature on cultural aspects of design, however successful implementation due to meetings with the product users and working meetings with the IT team via video assisted communication so that questions and issues could be worked out in real time

							go live for the working system		

Sen, R. (2010) Managing contact in Scotland for children in non-permanent out of home placement. Child Abuse Review 19 423-437	research on social workers views and experiences of managing contact for children in public care	qualitative	Scotland social work staff	email, Skype, internet video calls	use of email or internet video chat for contact with relatives, siblings or parents	contact with relatives/siblings or parents for children in foster care		undetermined	contact via internet can be positive and allows for foster youth to remain in contact with family even in placement, or when placement disrupts however there is general absence of practice experience and possibility of children and families using this technology without worker knowledge

Shaw, I. and Clayden, J. (2009) Technology, evidence and professional practice: reflections on the Integrated Children's System. Journal of Children's Services 4(4) 15-27	critical analysis of the Integrated Children's System and consequences of this technology	review of literature/data, qualitative		egovernance database, Integrated Children's Services	to record and create referrals for service for at risk children who may need further intervention or services	identify and create referrals of at risk children, monitor children at risk, and gather administrative data		failure	ICS is difficult to use and difficult to see the entire story, uses database language vs narrative language and professionals must decide what is important or serious and the is concern for data integrity, certain spaces have limited characters, and there is a shift in language for, further it pushes SW into a performance culture, distances the service user but does allow focus and clarity. there is a depersonalization and lower morale, don't feel professional and loss or professional autonomy and increase in routines

									intentions of the programs were not realized, insufficient IT expertise and staff to support social work staff, early stages of implementation were preoccupied with gaining technical knowledge and learning rules regarding policy, service users had little knowledge of the policy or systems, management requirement in introducing substantial technology/policy innovations are the same as introducing any large project, likely to be difficult to distinguish problems that are associated with implementation period and those that are endemic, policy innovations that involve organizations where knowledge workers are the agents of service delivery are likely to raise substantial and relatively enduring challenges, personal experience in context
Shaw, I., Morris, K., Edwards, A. (2009) Technology, social services and organizational innovation or how great expectations in London and Cardiff are dashed in Lowestoft and Cymtyrch. Journal of Social Work Practice 23(4). 383-400	critical analysis of policy implementation of the Integrated Children's System and the Children's Fund	review of data/literature, qualitative and quantitative	ICS: four pilot authorities, focus groups, survey of team leaders, interviews with social workers children, families, Children's Fund: three evaluations on large scale data sets and secondary data analysis	egovernance database, Integrated Children's Services, children's fund database	to identify at risk children, record documentation, identify early stage children at risk of social exclusion and make sure receive help and support needed	documentation, assist with services		failure	

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Touche-Manley, L., Dietzen, L., Nankin, J., Beigel, A. (2013) Revolutionizing child welfare with outcomes management. Journal of Behavioral Health Services and Research p317-329	analysis of outcomes management technology and barriers to it	review of literature/data, quantitative	youth ages 10-19 who were receiving services through child welfare systems due to abuse or neglect	use of clinical data and administrative data collected in databases to create outcome management data	use data as a means to translate research into practice		data collected and analyzed through tool by researchers	undetermined	necessary to change organizational culture to accept measurement as a valuable tool to the care that they need, create a predictive model of resilience that can be translated into effective case management reports, allows social workers to see real time results

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							practice led, practice development center established in the agency, this completed staff training, integrated the system into the professional and administrative life of the agency and improved the usability of the guided practice system, SW staff ran this in partne		
Tregeagle, S. (2016) Heads in the cloud: an example of practice-based information and communication technology in child welfare. Journal of Technology in Human Services 34(2) 224-239	development of ICT by a nongovernmental child welfare agency	qualitative	nongovernm ental child welfare agency	development of ICT	standardized guided practice system	locally adapted and standardized evidence passed guided practice to lead to higher and more uniform professional standards and better outcomes for children and families		successful	technology must be shaped by input of uses, interest will continue, communicati on between developers and social workers is necessary and critical long term process and intensive and uses extensive resources

							rship with ICT develo pers and tech suppo rt		

Tregeagle, S., Darcy, M. (2008) Child welfare and information and communication technology: today's challenge. British Journal of Social Work 38 p1481-1498	critical analysis of ICT in contemporary child welfare	review of literature/data		Use of information and communication technology such as data bases, computers and the internet.	documentation, data collection etc.	outcomes management, efficiency, accountability		failure		ICT developed for management and accountability but has the potential to deepen social worker/client relationship in time efficient ways, ICT has limitations and risk, and there is a competition between managerialism vs. professionalism vs community vs. market. Current use is dominated my managerial interests, ICT allowed a focus on efficiency and hierarchical care, coalition between management and ICT developers for profitable software however could be used to expand client and worker access to information, current use is in stark contrast to creative uses of ICT in private sector

Wastell, D., White, S., Broadhurst, K., Peckover, S., and Pithouse, A. (2010) Children's services in the iron cage of performance management: street level bureaucracy and the specter of Svejkism. Journal of International Social Welfare 19 310-320	critical analysis on consequences of outcome management technology in regards to massive egovernance databases	review of literature/data, qualitative	children's social workers/ma nagers	Integrated Children's Services, Common Assessment Framework, outcome management technologies	identify at risk children, gather data, referrals for service	identify and create referrals for at risk children, monitor children at risk, and gather administrative state		failure	increase in administrative tasks in child protection work, databases holding incorrect information, and the creation of work arounds and 'faux' compliance, strict temporal standards equated with disservice to clients and pressure when engaging families and attempting to safeguard children

Wastell, D., and White, S. (2014) Making sense of complex electronic records: socio-technical design in social care. Applied Ergonomics 45, 143-149	critical analysis of electronic records and work spaces	qualitative	human service, social service and child protection staff in the UK	Integrated Children's Services and the Common Assessment Framework mass egovernance data bases	identify at risk children, gather data, referrals for service	identify and create referrals for at risk children, monitor children at risk, and gather administrative state		failure	design is difficult to use, users cited tangible components of case files as necessary, design needs to come from users vs. IT, computer display has limitations and the importance of professional sense-making is lost

Zonfrillo, M., Kumar, M., Fortes, J., and Winston, F. (2012) Telecenter for secure, remote, collaborative child fatality review. Injury Prevention 18, 399-404	review of child fatality review data collection, use of telecenter, web based appliance for remote/secure collaborative review	qualitative	child fatality team leaders	remote/secure web based telecenter	assist in interviews/collaborate regarding child fatality reviews	allow for improvement of efficiency of reviews and access to participants using this technology	Pilot testing and implementation of an adapted telecenter, the pilot designed for suburban CFR and implemented immediately to review how it would work with team leaders and designed with the end user in mind	success	telecenter can overcome most challenges with use friendly multi user tools and that only basic training is necessary

White, S. Wastell, D., Broadhurst, K., and Hall, C. (2010) When policy o'erleaps itself: the 'tragic tale' of the Integrated Children's System. Critical Social Policy 30(3) 405-429	findings from 2 year ethnographic study on the impact and origin of the Integrated Children's System	quantitative and qualitative	child protection workers, managers and families in the UK	Integrated Children's Services egovernance data base	created to streamline information, gather information, documentation etc., create accountability and better system	document case work, create timelines, accountability and common practice model	implemented in mass scale due to government policy	failure	format does not encourage good communication, necessary data gathering is time consuming, timescales that do not factor in human interaction, suggestions that principles of design these tools calls for ethnographic study

Morgan, A., and Fraser, F. (2010) Looked after young people and their social work managers: a study of contrasting experiences of using computer assisted self interviewing. The British Journal of Social Work 40(2) 445-461	study of contrasting experience of social workers and children/young people when using audio computer self interviewing	quantitative	foster youth using audio computer assisted self interviewing and case managers	audio computer assisted self interviewing	used for foster youth to participate in their individual care planning	foster youth answer questions about their wellbeing by a computer using audio computer assisted self interviewing		success	children and youth believed that A-CASI is useful, relatively risk free and efficient to register their opinions regarding their own wellbeing, case managers reported usage had diminished and is was being used principally for youth to record their views in statutory reviews of their care, concerned that data collected is patchy and not sufficiently supported organizationally and requests made via A-CASI not followed up on

Nese, R., Anderson, C., Ruppert, T. and Fisher, P. (2016) Effects of a video feedback parent training program during child welfare visitation. Children and Youth Services Review 71, 266-276	study of effects/success of video feedback coaching for parents visiting with children in the child welfare system	quantitative	four mother child dyads	video feedback technology	for parents to receive coaching while/after visitation with their child(ren) to facilitate healthy visitation and reunification	used during visits and coaching session for feedback on how visits, how to improve, direct client service to facilitate reunification and safety		undetermined	FIND intervention resulted in systematic increases in the four targeted parenting behaviors and they were maintained for one week post intervention, possible positive uses, further research necessary

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Parton, N. (2005) 'Every child matters' the shift to prevention whilst strengthening protection in children's services in England. Children and Youth Services Review 28, 976-992	critical analysis of the changes in policy to the integrated children's services, common assessment regarding mass egovernance databases and surveillance	review of literature/data		egovernance mass data bases such as integrated children's services and Common Assessment Framework	document , create common child protection practice model, identify at risk children and create referrals for service across disciplines	used by social service professionals to assess and create referrals for children in need of services, mass egovernance data base capturing information and creation of common practice model		failure	dangerous in risk factors included in the technical analysis are broad and ill-defined concept of what is a cause for concern', concerns with privacy and the shift of responsibility away from parents onto the state for children

Mitchell, W., and Sloper, P. (2008) The Integrated Children's System and disabled children. Child and Family Social Work 13, 274-285	study regarding effectiveness of ICS with disabled children as they do not meet standardized examples and do not follow normative patterns	qualitative and quantitative	social workers, and families experiencing assessment reviews under ICS with disabled children	integrated children's services egovernance database	single approach to assessment/review, ideally provide a more coherent comprehensive and efficient system of electronic information and record keeping and sharing among different groups of practitioners	used by social service professionals to assess and create referrals for children in need of services, mass egovernance data base capturing information and creation of common practice model	four pilot authorities were selected and comprised of rural southern English authority and a welsh authority serving urban and rural communities, relatively small rural welsh community and urban English northern authority, purchase	failure	introductory training was provided on how to access and retrieve stat, none of the pilot authorities had organized their own specific disability training for social workers, discussion was limited due to early stage of implementation and limited due to problems already experienced, possibilities in reducing time, gaining efficiency, technical problems were the key disadvantage however implementation was new and there was insufficient information

							and authority to run ICS and introduced exemplars in a phased manner		

Holmes, L. McDermid, S. Jones, A., and Ward, H. (2009) How social workers spend their time: an analysis of the key issues that impact on practice pre-and post implementation of the Integrated Children's System.	comparison of data collected from two series of focus groups to identify what do social workers spend their time on and address concerns with an increasing administrative burden is deflecting social workers working directly with families	qualitative	focus groups of social workers from 6 different authorities in England	integrated children's services egovernance database	single approach to assessment/review, ideally provide a more coherent comprehensive and efficient system of electronic information and record keeping and sharing among different groups of practitioners	used by social service professionals to assess and create referrals for children in need of services, mass egovernance data base capturing information and creation of common practice model		failure	concerns with time spent on indirect activities compared with direct activities, workers consistently reported that the time they spent on administrative and indirect work was between 80-90 percent, difficulties associated with implementation of ICS and electronic systems in general and the environment of continued change made it difficult

Dodsworth, J. Bailey, S. Schofield, G., Cooper, N., Fleming, P., and Young, J. (2013) Internet technology: an empowering or alienating tool for communication between foster carers and social workers?. British Journal of Social Work 43, 775-795	reports on the introduction in English fostering services a purpose designed internet service which aims to improve information flow to foster carers, enhance interaction and information exchange between foster carers and social workers and provide a social networking facility for communication between carers within a secure environment	qualitative and quantitative	foster parents in England	internet based forum, communication and networking for foster parents to facilitate easier and improved communication	purpose designed internet based service for communication and networking for foster parents	to facilitate easier flow of information to foster parents, create connections between foster parents	in some districts computers were supplied to the foster families, in rural areas this did not happen	partial success	The internet service had potential to improve services and communication but improvements to the website, ongoing administrative support and training for all professionals involved are necessary. Technology can appear impersonal and alienating to some and there is a need for a range of communication methods

Penna, Sue (2005) The children act 2004: child protection and social surveillance. Journal of Social Welfare and Family Law 27(2) p. 143-157	large scale egovenrance data bases, common assessment framework, integrated children's services	critical analysis of literature and data		integrated children's services egovernance database	single approach to assessment/review, ideally provide a more coherent comprehensive and efficient system of electronic information and record keeping and sharing among different groups of practitioners	used by social service professionals to assess and create referrals for children in need of services, mass egovernance data base capturing information and creation of common practice model		failure	piecemeal implementation of large systems and documenting all children on all databases violates ethics and privacy and holds further concern for parental responsibility vs. state assuming responsibility

Nygren, L., Hyvon, U. Khoo, E. (2009) The traveling idea of looking after children: conditions for moulding a systematic approach in child welfare in three national contexts-Australia, Canada and Sweden	Looking After Children approach an standardized assessment tools	qualitative	caseworkers and managers in child welfare in Canada, Sweden and Australia	Looking After Children which is an assessment, case planning and review system and designed to promote positive development in foster children	to assess, document and standardized child welfare practice	child welfare staff to develop/document and assess foster children		successful in principle	fundamental ideology successful, however it is stressed that there is no universal system as cultural contexts and linguistics and the end use must be taken into consideration
Munro, E (2005) What tools do we need to improve identification of child abuse. Child Abuse Review 14. 374-388.	assessment tools	critical analysis of literature and data		standardized assessment tools, large governmental data bases	assist in assessment and decision making			undetermined	Concern with a 'tool' approach versus a 'user centered' approach. ICT cost usually not projected correctly. ICT systems are only as good as data entered into it.

Citation	Concept/Tool	Methodology	Location	Tool/Database	Purpose	Decision making		Success	Limitations/Concerns
Gillingham, P., and Humphreys, C. (2010) Child protection practitioners and decision making tools: observations from the front line. British Journal of social work 40. pp 2598-2616	risk assessment/decision making tools Structured Decision Making	qualitative	child welfare professionals in Queensland, Australia	standardized risk and safety assessment tools	assist in standardization of safety and risk decisions and create consistency and target the children in the most need	use in child welfare professionals decision making		partial success	overestimation of risk, restricted practice, oversimplification, shift in focus (administrative task), accountability, undermined in the development expertise
Lechuize, I., Penders, F., Horstman, K. (2013) Constructing infrastructures, constructing children and professionals 'at risk': ICT implementation in Dutch child welfare	ICT infrastructure, the Child Index	critical analysis of literature and data		Child Index ICT infrastructure, mass database	determine at risk children, and improve early detection and improve professional collaboration			undetermined	Implementation of the child index causes concern for privacy and confidentiality as well as cost and labor in creating and managing such an infrastructure.

Webster, D. Needell, B., Wildfire, J. (2002) Data are your friends: child welfare agency self-evaluation in Los Angeles County with the Family to Family Initiative. Children and youth services review 24(67) 471-484	desktop mapping	qualitative and quantitative		geographical information	mapping to identify data on areas of higher concern, foster youth population, create community based resources		use of teams and task forces as well as pilot programs to get the system running quickly	success	reform for child welfare self-evaluation, overcoming initial resistance and pilot programs

Kaonga, N., Batavia, H. Philbrisk, W., Mechael, P. Information and communication technology for child protection case management in emergencies: an overview of the existing evidence base. (2016) Humanitarian Technology: Science, Systems and Global Impact 2016	ICT	qualitative and quantitative/literature review	key informant interviews, literature review for child protection + ICT, child protection + mobile technology, Child protection + information management	ICT for child protection case management in emergencies	examine possibilities for timely, quality data and information during global emergencies			undetermined	growing need for further studies to identify and generate evidence supporting ICT for CPCME to improve operations and outcomes for case management there is potential association between using ICT and children's vulnerabilities during a global emergency

DeWitte, J., Declercq, A. Hermans, K (2015) Street-level strategies of child welfare social workers in Flanders: the use of electronic client records in practice. British Journal of Social work 46 pp 1249-1265	ICT, data recording, electronic client data and case records	qualitative, literature review, case study approach	case Study of Charlotte system in Flanders	electronic case management	electronic client records	accountability		undetermined	SW try at street level to preserve the narrative of social work versus the data base integration, high workload makes it difficult to use, work arounds, is this public accountability versus client registration, loss of professional discretion, systems not deemed essential for optimal care

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