Childcare Directors' Comfort and Interest in Technology and Professional Development

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The training and education of childcare directors is ever more important with the increasing demands of Quality Rating and Improvement Systems (QRIS). QRIS have become the standard method in the United States for evaluating and assigning program-level quality status in early childhood education and the process is almost always managed by the director of a program. Childcare directors need to be prepared to complete their day-to-day work tasks while also guiding the quality improvement journey for their program, which in many ways now requires the use of technology. To better understand how these demands are being met and in what ways existing professional development (PD) is supporting the acquisition of these new skills, this study examined directors' comfort with technology use at work and interest in technology-based professional development resources and supports. The findings indicate directors are interested in technology-mediated PD but the degree to which directors are comfortable with technology is related to the type of program they work in and that existing supports require further individualization beyond what is currently available.

Keywords: *childcare, directors, technology, professional development, quality improvement*

The educational qualifications for the Early Childhood Education (ECE) work force are primarily motivated by state licensing standards which have traditionally required initial trainings in the areas of children's health and well-being, child abuse reporting, and the regulations themselves (Ackerman, 2017). Fewer than half of all United States (U.S.) states require initial staff training on child development and planning learning activities for young children (Child Care Aware, 2013). Many childcare directors enter leadership roles by being promoted from teaching positions and few have training or experience specific to leadership or management (Catron & Groves, 1999; Billman, 1995). Additionally, directors often must seek out professional development (PD) to learn how to improve their skills as they need them on the job. For example, when in the late 1990's Quality Rating and Improvement Systems (QRIS) became a national phenomenon and primary indicator of quality among childcare programs, many directors had to adjust to the new demands participation would require, including but not limited to, the increased use of technology. With this in mind, the goals of this study were to 1) examine the importance of the directors' role in the success of the child care program's quality journey, 2) investigate the relationship between the type of program a director manages and the directors' PD needs, and 3) explore directors' comfort level with and interest in technology-based PD to guide future resources and supports directed toward meeting the needs of directors leading quality improvement.

Leading Quality Improvement

Simply stated, childcare is a necessary system that provides a place for children to go while their parents are at work. Almost 11 million children in the U.S. spend time in childcare settings before transitioning to Kindergarten (Child Care Aware, 2013), with many children spending 35 hours or more weekly in out-of-home care (Capizzano & Adams, 2000). Over the

last few decades, there has been a realization that the early years spent in childcare are much more than just meeting a child's basic needs. In fact, their experiences, guided by teachers and staff, shape the development of early language, math, and social skills (Green, 2014), while their brains, regulatory systems, and other skills develop rapidly (Markowitz, Bassok, & Hamre, 2018). Children at this age are developing the prerequisite skills for how to explore the world around them and negotiating the type of learner they are going to be.

With the increase of school readiness initiatives, the field and the preparation of the ECE workforce have made their way to the national agenda. This can be attributed largely to the expectation that investments in high quality programs will lead to lower cost of remedial education, lower rates of incarceration, and increased rates of high school graduation (Reynolds, Temple, & Ou, 2010). While there have been calls made to require the attainment of a bachelor's degree, 40 U.S. states require only a high school diploma to work with children ages birth to five years old (Ackerman, 2017) and even fewer states require that family child care providers, providing services in their home, have a high school diploma or equivalent (Child Care Aware, 2013).

The director's role is important and, in many ways, critical to the quality rating of a program. While QRIS is generally an "all hands-on deck" process, the program director is responsible for steering the continuous quality improvement journey for their program including general oversight, managing assessment windows, checking PD plans, and other responsibilities, in addition to their day-to-day work. Studies conducted in various settings have repeatedly shown that one of the most salient predictors of program quality is the background, experience, and training of the director (Bloom, 1992). In the early 1990's when QRIS were introduced to the field of early childhood, it was initially done so to direct higher childcare subsidy

reimbursement rates to high-quality programs. As QRIS have expanded significantly in the last 15 years, as a result of the requirements under the federal Race to the Top Early Learning Challenge Grant (RTT-ELC) and in response to the growing body of research on early brain development that highlights the importance of high-quality early learning, more programs across the U.S. have opted in. These systems encourage programs to maintain or improve both structural and process quality to provide better outcomes for the children and families they serve (Ackerman, 2017) and award quality ratings to programs meeting a set of defined program standards. Further, directors are negotiating the changing procedures of QRIS which align program standards to fluctuating field standards, builds infrastructure to support quality improvement, and assesses achievement along a continuum with a lens toward quality improvement rather than compliance.

Professional Development as a Priority

As QRIS have gained traction, PD systems have proven to be an integral component of their success. PD is a continuum of learning and support activities designed to prepare individuals for work with and on behalf of young children and their families (NAEYC, 2019). Traditional PD systems for ECE directors offer trainings in the community through organizations and agencies qualified to provide topic-based workshops. More recently, college courses, in-service workshops, and other options (e.g. credentials) have been accepted through the quality-assured process, which validates the presenter's credentials and the content of the training. PD systems function as a critical aspect of QRIS largely because one of the four pillars of QRIS is "qualifications and professional development" but there are challenges. First, there are different requirements for PD depending on the types of funding programs receive and varying state structures used to support training and on-going PD efforts. Under these circumstances, the

quality and availability of PD varies. Second, qualifications vary across states, settings, and positions, with a decline in formal education reported recently (Ochshorn, 2011). As fewer directors seek PD through coursework or degree programs from accredited institutions of higher education, the demand for local PD rises. Community-based PD has the potential to be "one size fits all" and many are referred to as "sit and get", meaning if you are in a seat, you get the hours to count toward your PD requirements. While some efforts have been made to individualize PD (credentials, conferences, graduate programs with tracks), community-based options are still lacking. Third, cost is a significant barrier for many childcare providers. Each of these challenges presents opportunities to strengthen and improve the quality of PD in ECE for all ECE professionals (Byington & Tannock, 2011).

A growing body of literature has demonstrated the quality of childcare programs is strongly linked to the quality of the professionals who staff them (Ochshorn, 2011). The childcare director supervises and supports the program's teachers, offering leadership and knowledge that improves the experiences for children and families. While there are underlying areas that all directors need to know (small business management, family engagement, health and safety to name a few), the truth is that directors' responsibilities vary based on the type of program they lead, the staff they have, the environment used for services, and the families they serve. Their PD, to reach maximum effectiveness, should match these responsibilities. Some QRIS have begun to provide targeted technical assistance on-site to address these individual needs, but these experiences are not currently counted toward their required PD hours.

Technology Plays a Critical Role

It is clear technology plays a critical role in the education and training of childcare directors. Although many still believe the field of ECE is behind on adopting technology,

studies have shown that ECE professionals have access to technology (Flanagan & Jacobsen, 2003; Donohue & Schomburg, 2017; Burris & Hallam, 2018; Burris, 2019). The implementation of QRIS has furthered the integration of technology into ECE programs for data entry, flexible family engagement, engaged technical assistance, and tracking and updating PD plans among other things. Many state qualification systems use a computer-based tracking system for data tracking of staff, training, and educational qualifications. That said, many ECE professionals have historically reported that the available PD on technology has not been connected to practice and is often focused solely on technical skills (Bradshaw, 2002; Hinson, LaPrairie, & Heroman, 2006; Kopcha, 2011; Mouza, 2009; Wells, 2007). Furthermore, technology focused PD has targeted short term, rather than deeper skills, which do not lead to sustained practice or long-term use of technology (Mouza, 2011).

Adult learners, such as childcare directors, prefer to learn at their own convenience and pace (Aikens et al., 2016, Donohoe & Fox, 2012; National Center on Child Care Professional Development Systems and Workforce Initiatives 2014; Olsen, Donaldson, & Hudson, 2010). They have busy schedules that now include managing the QRIS responsibilities for their program. Directors of ECE programs are integrating technology tools like computers, tablets, and smartphones to document learning, facilitate teaching, communicate with families, and track attendance and payroll (Burris & Hallam, 2018, Hamilton and Edge 2016; Parette et al. 2013; Parnell and Bartlett 2012; Pasnik and Llorente 2013; Wartella et al. 2013). Additionally, studies have suggested that online classes can be as effective as traditional classroom-based trainings especially if other supports are used (Ackerman, 2017). While recent literature points to the benefits of online or technology-mediated PD, it is vital to have a clearer understanding of the workforce, specifically the directors leading quality improvement and their comforts, interests,

and needs before wide-scale adoption of technology-enhanced PD can be integrated. Further, we need a better understanding of the role that technology plays in meeting their training and PD needs and where barriers exist (Stone-MacDonald & Douglas, 2015).

Research Questions

Little empirical research has been conducted to understand the process by which ECE practitioners acquire new knowledge and skills, especially in the age of technology, (Sheridan, 2009) and little is known about the PD needs of directors leading quality improvement in their programs. Childcare directors of all program types (community-based, family child care, and privately owned) need to be prepared to complete not only their day-to-day work tasks but also manage the quality improvement journey for their program, which in many ways requires the use of technology. This study sought to examine these aspects for one state, focusing on directors leading their quality journey and the following questions:

1. How comfortable are administrators in their use of technology at work?
2. What technology-based PD resources are administrators most interested in?
3. What support mechanisms will increase access to technology-based PD?

Method

Participants

Childcare directors leading quality improvement in a Northeastern U.S. state were asked to participate in this study via email. Participants included 153 childcare directors that were primarily female (98%), between the ages of 31-60 years old, who spoke English as their first language (93%). The majority (58%) were Caucasian or black/African American (31%) with the highest number of participants (30%) completing a bachelor's degree, although less than half

completed it in ECE. These demographics were like those found by Toth (2012) although that study included teachers in the sample.

In addition to examining directors as individuals, this study sought to better understand directors' PD needs based on the type of program (referred to as "program type") they were leading. Of the 153 responses, 148 (97%) indicated their program type. From their responses, 69% (N=102) led "Community" programs (private centers and school-age only programs such as those found in Boys and Girls Clubs or YMCA buildings offering mostly before and after school care for elementary aged children), 20% (N=29) led "Family" programs (small and large family child care programs (LFCC) that are often in a person's home or smaller rented space), and 11% (N=17) led "Private" programs including programs in local school district buildings, Early Childhood Assistance Programs (ECAP), and Head Start programs.

Instrument

A custom, exploratory, 24-item survey was designed to collect directors' responses. The initial survey was designed based on information from relevant literature and aligned to collect data on the research questions for this study to collect descriptive statistics to identify general patterns and further examine trends in PD need based on program type. It was not from standardized scales or assessments. It was reviewed by stakeholders in the local ECE community including the QRIS director, technical assistants, the director of the state PD system and staff, childcare directors and teachers, and others for content validity. As a result, minor revision to the wording in the final version of the survey was used. Prior to data collection, the survey was emailed to 51 participants in a college-level childcare administration, leadership, and advocacy course where students were both undergraduate education majors taking the course for undergraduate credit and childcare administrators taking the course for graduate level credit/PD

hours/Director's Credential. This group was considered to be a target population and were surveyed to establish face validity and collect pilot data (Wojton & Lane, 2018). The three-credit course was offered as a blended course where students met in person for one hour weekly and spent the remaining two hours each week learning in an online environment. As a result of their feedback, two edits were made. First, a comment section at the end of the survey was added to allow for any additional comments not captured in the survey questions. Second, a question regarding staff access to technology was added to contextualize how the larger teacher workforce uses available program technology as perceived by the administrators. The data from the staff question was downloaded but not used for further analysis since it did not focus on directors.

The final version of the survey included ten (10) topics, each presented as a separate section of the survey: 1) Demographics, 2) Professional Development Experiences, 3) Access to Technology, 4) Comfort Related to Technology Use, 5) Use of Technology at Work, 6) Technology Interest Related to Professional Development, 7) Technologies Most Likely to Use, 8) Supported Needed to Integrate Technology, 9) Staff Access to Technology, and 10) Other Comments. The first section, Demographics, included 11 questions to collect information about each director including years of employment, qualification, gender (male or female), age (measured in years), race/ethnicity (American Indian/Alaska Native, Asian, Black/African American, White, White/Hispanic, Other), ECE education (CDA, A.A./A.S., ECE credits, ECE B.A./B.S., Graduate ECE credits, Graduate ECE degree), degrees earned in any area (High school/GED, some college, Associate's degree, Bachelor's degree, Graduate credits, Graduate degree), primary and secondary languages spoken (English, non-English), licensing status (active, inactive, on hold), program type (center, family child care, family child care, school age

only, school district, Head Start, ECAP), program size (small or large defined by enrollment), and program location (city, town, suburban, rural). This information was used to identify trends among the directors and patterns across or within program type.

The second section focused on the directors' PD experiences. The aim of this section was to better understand how directors chose PD and whether their selection was impacted in any way by technology. Using five questions, directors were asked to report how many hours of training they attended in the past licensing year (and at what quality assured level) and to indicate how they selected PD for themselves (for example, by cost, proximity to work or home, format, or because it was on their PD plan). Further, directors were asked to report what they liked about current trainings available to them, what they perceived as the biggest limitation to available training, and which delivery mode was of most interest to them (e.g. online, on-site, community-based, conferences, informal networking). This section was followed by section 3 which surveyed the directors' access to technologies to gain understanding regarding what technology directors can employ. A list of 10 common technologies was provided (desktop computer, laptop computer, printer, reliable high-speed Internet (6 months or more), mobile technology (tablet, iPad), Microsoft Word, Excel, and PowerPoint, computer software for administrative tasks (budgeting, attendance, payroll), and a personal device (tablet, smartphone, or computer from home) and directors were asked to choose all technologies that they have access to at work during hours of operation.

The fourth section asked directors about their comfort related to using technology for work-related tasks using a Likert Scale for responses (Very Comfortable, Comfortable, Somewhat Comfortable, Not Comfortable, Never Tried). The aim of this section was to gain an understanding of how comfortable directors were with various technologies that they may or

may not have access to at work. Directors responded to a list of technologies including computer/laptop, Internet, Email, Email attachments, Microsoft Office tools, Video chat (e.g. Skype, Hangouts), Text chat on the computer (not on a mobile device), Social networking sites (Facebook), Search engines, Webinars, Online courses, "How to" websites, and Quick Response (QR) codes which are often used for marketing. The fifth section, Use of Technology, asked directors to report how often they used 10 different technologies to complete work tasks using the following scale: Multiple Times Daily, Daily, Weekly, Monthly or Less, Never. The following were listed: Work Computer, Home Computer, Internet, Email to communicate with families, Emailing Attachments, Microsoft Office, Search Engines, Computer for locating classroom activities, A computer to access PD (courses, webinars, forums), and Email to communicate with staff. This information was collected to examine how often directors were using the technologies they had access to identify patterns in their use.

The next section, Section 6, asked directors to indicate their level of interest in the no-cost resources for PD including 1) Short video clips demonstrating procedures required by QRIS standards (hand washing, diaper changing, transitions), 2) Short video clips demonstrating concepts (room arrangement), 3) Short video clips with commentary from experts and child care providers in the field, 4) Short video clips related to preparing for and implementing practices assessed in the Environment Rating Scales (ERS), 5) Individual, interactive, online PD exercises focused on leadership and planning, 6) Forums organized by topics of importance to ECE professionals, 7) Links to articles related to ECE organized by topic, 8) Electronic resources (e.g. videos) for use with children organized by topic, and 9) Links to websites with ECE focused content. At the time of the survey, these resources were not available to the directors through the state PD system, so this study sought to identify which resources were most valuable to the

directors. The next section asked the directors to identify their "top three" from the list in Section 6 to guide and target efforts in developing PD resources for the group.

In Section 8, directors were surveyed on what supports they thought would increase or enhance their ability to integrate technology into their PD. They were asked to choose from: Desktop Computer, Laptop, Mobile Device, Call-in Support, Year-Round Internet, On-site Assistance, Online Tutorials, and Computer Training. The directors were asked about supports in an effort to prioritize the use of funds to support the directors in their PD and use of QRIS resources. Part 9 asked directors to report what opportunities their staff had to access technology in an effort to examine differences in the two roles. They were asked to report on staff use of technology in order to: 1) Register for training, 2) Create lesson plans for children, 3) Participate in online training or courses, 4) Send email to families, and 5) Post information on a class website for families. The final section, Section 10, provided an open-ended space for directors to add any additional comments.

Procedure

The data collection process targeted directors that had been participating in the QRIS the longest and most of the directors had been working in their current program for two or more years. Childcare directors were recruited to participate in the study via email (with a link to the electronic survey in Qualtrics) or hard copy through the postal service mailing system if an email address was not on file. The final survey was deployed following a moratorium in enrollment in the statewide QRIS just prior to the implementation of major system changes in how quality points were determined. All participants completed a consent form and the study was approved by the University of Delaware Institutional Review Board (IRB).

The survey was sent to a total of 275 directors yielding a response rate of 56% (n=153). Following a two-week data collection period, the data were downloaded and analyzed. After the data were downloaded into a spreadsheet for analysis, they were examined for descriptive statistics and a One-way Analysis of Variance (ANOVA) was used to examine differences among directors based on their program type. Additionally, Levene's Test for Equality of Variances was used revealing a violation of the homogeneity of variance assumption and therefore a Welch ANOVA was used with a Games-Howell post hoc test to determine where significance occurred between groups.

Results

Experiences

Table 1 illustrates how directors in this study selected their PD, responses gathered in section 2 of the survey. The most common reason the directors selected their PD was it is "on the professional development plan" followed by the response "it was required". While cost does also seem to be a factor, interest in the topic was not with only 5% of the total responses. Further, directors prioritized location and proximity to work/home over selecting PD because someone they know is attending or delivering the session.

Table 1
PD Experiences

Criterion for choosing professional development	Number	Percent
On professional development plan	74	23
It is required	56	17
Recommended to me	53	16
Close to work/home	52	16
Low/No cost	43	13
I know the trainer or participants taking it	18	6
Interest in the topic	15	5
Licensing visit soon	10	3
Open seats in training	1	<1

Note. Participants were able to select multiple responses within each section.

Also, in section 2 of the survey, directors indicated several limitations of current PD by selecting "the biggest limitation" from the provided list. Many (21%) revealed that the current options "will not advance me professionally" or "are offered at an inconvenient time". Additionally, 14% of directors said the current PD is "not challenging" while 13% agreed that the sites for face-to-face PD are "too far from home/work". Additional barriers included "boring topics", "impractical to implement", or "instructors not knowledgeable". Further, 22% responded there were additional limitations of the current PD that did not fall into the provided categories.

Comfort

The data for comfort (survey section 4) and interest (survey section 6) were limited to 117 responses (76% of the total sample) because some of the directors did not report their program type (N=5) or their entries for these groups of items were incomplete (N=31). Of the 117 directors to respond, most (71%, N=83) reflected community-based programs, many (17%, N=20) were managing family childcare programs, and some (12%, N=14) were from private programs. These sample sizes were representative of the program participation in QRIS at the time (mostly centers with fewer family childcare and private programs). Comfort was rated on a Likert-Scale consisting of "1=Very Comfortable", "2=Comfortable", "3=Somewhat Comfortable", "4=Not Comfortable", and "5=Never Tried". The results are displayed in Table 2 below.

Table 2
Comfort with Technology by Program Type

Technology	Community N=102	Family N=29	Private N=17
	Mean (SD)	Mean (SD)	Mean (SD)
Computers	1.27 (0.57)	1.45 (0.76)	1.21 (0.43)
Internet tools	1.24 (0.48)	1.45 (0.76)	1.21 (0.43)

Email	1.18 (0.42)	1.50 (0.88)	1.14 (0.36)
Microsoft Office	1.23 (0.48)	1.65 (0.93)	1.21 (0.43)
Social Networking	2.42 (1.54)	2.30 (1.56)	2.64 (1.59)
Search Engines	1.34 (0.61)	1.45 (0.60)	1.28 (0.47)
Webinars	2.30 (1.43)	2.65 (1.63)	1.86 (1.17)
Online Courses	1.93 (1.23)	2.25 (1.51)	1.86 (0.86)

Interest

Directors were surveyed about their interest in technology-mediated PD in section 6 of the survey. The directors were asked to indicate their level of interest in each of the listed technology-mediated PD resources using the following ratings: "1=Very Interested", "2=Interested", "3=Somewhat Interested", and "4=Not Interested". The results are reported in Table 3. The data showed that the directors were between "very interested" and "interested" for each of the options.

Table 3
Interest in Technology-Mediated PD by Program Type

Technology	Community N=102	Family N=29	Private N=17
	Mean (SD)	Mean (SD)	Mean (SD)
Procedures Video	1.65 (0.90)	1.80 (0.83)	1.71 (0.91)
Concept Videos	1.49 (0.77)	1.50 (0.69)	1.43 (0.65)
Expert Video Clips	1.59 (0.87)	1.65 (0.67)	1.50 (0.65)
ERS Prep Videos	1.36 (0.65)	1.65 (0.75)	1.64 (0.74)
Online PD	1.44 (0.75)	1.75 (0.79)	1.29 (0.61)
Forums	1.69 (0.87)	1.85 (0.75)	1.86 (1.03)
Articles	1.48 (0.79)	1.80 (0.83)	1.50 (0.52)
Resources	1.42 (0.73)	1.60 (0.59)	1.29 (0.61)
Websites	1.48 (0.67)	1.55 (0.60)	1.29 (0.47)

A separate question in section 2 of the survey asked directors about their preferences for professional development delivery methods. Directors were asked to select all methods they considered to be of "most interest". Their responses are displayed in Table 4. Most of the directors' responses indicated they preferred on-site workshops, conferences, and face-to-face college courses to methods like off-site workshops and online courses. Among the least

preferred methods were mentoring/coaching, onsite technical assistance, and cohort meetings with a mentor.

Table 4.
Preferred PD Delivery Methods

	Number	Percent
Workshops on-site	67	21
Conferences	50	16
College courses	44	14
Workshops off-site	36	11
Online courses	34	11
Online/Webinars	26	8
Mentoring/Coaching	24	8
Onsite technical assistance	22	7
Informal networking	13	4
Cohort meetings with a mentor	1	<1

Supports

To gain a better understanding about what supports directors needed to take advantage of technology-mediated PD like those in Table 3, the directors were asked about the resources they would request that they did not currently have. The directors were given the opportunity to select as many supports as they wanted. The majority (53%) of the responses reflected hardware supports such as mobile technology (tablet) while 18% requested a laptop specifically. Further, 16% selected online tutorials and 14% selected basic computer training. Only 8% selected coaching even though coaching is one of the most well-known supports for ECE professionals.

Discussion

Experiences and Comfort

PD is a valuable tool that not only impacts the director, but it also affects the staff and the outcomes for children and families (Bylington & Tannock, 2011; Chen & Chang, 2006). It offers strategies to increase knowledge, beliefs, and practices when paired with active learning methods (Piasta et al., 2017) but should consider, and be reflective of, the type of program the individual

works in or directs. We know that there are differences between directors' experiences and comfort levels related to PD and technology use depending on the type of program (community, family, or private) they work in. ECE directors need more administration and early childhood content (Ryan, Whitebook, Kipnis, & Kakai, 2011) and better technology-mediated options that are supported by the QRIS education and professional development standards, with the ability to count it for credit toward their state requirements for education and training.

According to the data, this group of directors is pursuing the PD that is mapped to their PD plans because it is required or recommended. Using a PD plan is a requirement of QRIS participation which prevents or discourages last minute attendance in a training outside of the needed content area to meet licensing's annual PD requirement. Directors selected several limitations of current PD which have been well documented in the literature (Flanagan & Jacobsen, 2003). We need to ensure PD is appropriate for each individual and their technology proficiency, not just the position they hold. Despite greater access to technology, there is limited access to appropriate on-going PD that addresses the challenge that computer skills that are learned in isolation are quickly lost (Bradshaw, 2002; Flanagan & Jacobsen, 2003; Hinson, LaPrairie, & Heroman, 2006; Wells, 2007; Mouza, 2009; Kopcha, 2011).

Interpretation of the data on comfort level with technology showed that overall the directors are comfortable with technology. The data showed that the directors were very comfortable with hardware (computer/laptop), software (email, Microsoft Office), and tools (Internet, search engines) and that they were reasonably to somewhat comfortable with online courses. Studies have suggested that online courses can be as effective as traditional classroom-based trainings (Ackerman, 2017) with potential to be more effective when paired with coaching or targeted technical assistance. Finally, the directors were least comfortable with the use of

webinars and social networking with the data showing the greatest variability in responses in these two categories. There were also some differences between the groups. In general, the community-based and private program directors appeared to be more comfortable overall with technology compared to family childcare directors. Additionally, family childcare programs were not as comfortable with online courses as directors in the other two groups.

While the directors reported they are mostly comfortable with technology for their own PD, these options are far and few and usually limited to online college course work which can be expensive and intimidating. PD must be need responsive and flexible, focusing on technology integration for purpose (Flanagan & Jacobson, 2003). Many directors did report they are comfortable with face-to-face college coursework although family childcare directors were less comfortable (and probably less experienced). Research comparing the effectiveness of online training compared to traditional classroom training for non-degreed childcare professionals is limited, but a growing body of research suggests that a combination of online training and other supports can be effective (Zepeda, Parylo, & Bengtson, 2014). More options, like on-site workshops but offered online, paired with technical assistance would ensure directors avoid barriers like those reported (e.g. offered at inconvenient times). It would also provide exposure, and over time, improve comfort levels, especially if the trainings/courses were designed similarly and built using high-quality content.

Interests and Supports

The interest data showed that the responses from directors across program type were more consistent, although family programs were less interested overall. All the groups reported that they were least interested in forums as a tool for PD, which may be attributed to their unfamiliarity with forums in general. Very few directors identified coaching as a desired method

of PD although it is one of the most common methods currently used in ECE PD. This may be because in their experiences, the directors are not establishing a positive relationship with their coach or due to challenges related to time, scheduling, or difficulty applying the demonstrated strategies (Knoche, Kuhn, &Eum, 2013). The data also showed that the directors did not prefer onsite technical assistance or cohort meetings which may be because these methods do not currently count for PD credit. Further, the directors in this study were both interested in and indicated comfort with online PD. These findings are consistent with recent research which has documented an increase in ECE professionals seeking out online courses and fully online degree programs (Clark, 2004; Burris & Prudhoe, 2019).

In a study of 262 ECE teachers in four states, Landry, Anthony, Swank, & Monseque-Bailey (2009) found that the effectiveness of on-site coaching on overall teaching quality was dependent on the teachers' baseline teaching quality and that PD benefitted those who began with lower teaching quality. Perhaps one approach is to tier technology-mediated PD with coaching or on-site workshops, based on the directors' baseline technology skills allowing for more individualized attention to the abilities and needs of each director. Additionally, there is a need for further support to help ECE directors purchase, organize, and integrate technology into their PD effectively. These supports are necessary because ECE professionals are depending more on technology tools like computers, tablets, and smart phones to document learning, facilitate teaching, enter quality systems data, and communicate with families (Burris & Hallam, 2018, Hamilton and Edge 2016; Parette et al. 2013; Parnell and Bartlett 2012; Pasnik and Llorente 2013; Wartella et al. 2013).

Limitations

The main limitation of this study was that data was gathered from a survey where the directors self-reported the data. In their responses, the childcare directors may have unknowingly overestimated their comfort level with technology. Additionally, the survey was primarily distributed electronically, and this format may have been a barrier to response rate (e.g. some may not have replied because they were not familiar with electronic surveys). While the survey was anonymous, the directors may have been concerned about their anonymity or they may have had difficulty accessing/completing the survey online. Another limitation of this study was that for three of the program types, the sample sizes were low (school district (1), ECAP (3), and LFCC (4)) and therefore their responses may not be representative. Finally, the directors that were surveyed in the pilot study were resurveyed for this data set. If they completed the second survey, there is a possibility that these directors may have altered their responses. Despite these limitations, the study gleaned important information about directors' comfort and PD supports that can be applied in the design and development of PD for directors in the future.

Conclusion

The necessity for ECE directors to have access to and effectively use technology in their work is increasing as the demands and stakes for leading QRIS grow. As professionals, they depend on technology more than ever and it is only a matter of time before there is an urgent need for PD on more advanced topics, including those that utilize technology. Technology-mediated PD is one method for providing individualized and flexible training options for busy directors with little time to travel for face-to-face training and as this study found, directors are eager for more exposure and training.

We know there is more support for PD than there has been in decades past and that early childhood educators are more familiar with the integration of technology in their work (Blackwell, Wartella, Lauricella, & Robb, 2015). Few studies though have explored the effectiveness of alternative strategies for director's PD during a time where personal, portable, and wireless technologies are ubiquitous in our everyday lives. We need to understand more about the individual PD needs of directors in addition to gaining further understanding of the barriers and rewards of integrating technology into PD. It was evident in this study that directors are comfortable with technology and given the necessary supports, will aim to use it for just-in-time and long-term learning in their quality improvement journey.

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