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Canto Porto de Moraes, Joana	New York University	
McKenna, Avery	New York University	
Keays Hagerman, Kelsey	New York University	
Allen, LaRue	New York University	

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Abstract

This study uses data from semi-structured interviews conducted with 44 early childhood education (ECE) staff and examines how knowledge dissemination processes operate in ECE centers, including how information from off-site trainings is diffused among staff. Our sample includes administrators, lead teachers, and assistant teachers serving children aged zero to five in a large ethnically-diverse urban district. We find that staff reported exchanging information through formal channels (e.g., scheduled staff meetings) and informal channels (e.g., extemporaneous meetings, advice-seeking interactions); our findings suggest that informal channels may be especially prevalent and consequential to ECE staff's professional learning. ECE professionals explained that they sought certain colleagues for information/advice primarily based on the colleague's expertise but also because of a colleague's job title and their familiarity with that colleague. Lastly, we find that nearly half of staff reported sharing information they received from off-site professional development with colleagues at their ECE center.

Keywords: Knowledge dissemination; Professional development; In-service training; Preschool; Teachers; Social networks

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Introduction

In order for young children to benefit from early childhood education (ECE), ECE staff must create high quality classrooms that can foster learning (Mashburn et al., 2008). Therefore, in order to realize the goals of increasing public investments in ECE, it is essential to strengthen the capacity of the ECE workforce to create these optimal classroom settings (Brown & Englehardt, 2016; IOM and NRC, 2015). Across the United States, there are more than two million adults who are responsible for the education of more than 10 million children from birth to age five (Whitebook et al., 2018). These ECE staff members occupy a range of roles, including lead teachers, assistant teachers, and administrators whose varied tasks and roles support children's growth and learning (Gomez et al., 2015). Importantly, the size and diversity of the ECE workforce has presented considerable challenges for workforce development initiatives.

Traditional workforce development approaches often struggle to produce meaningful improvements in educational practices (e.g., Durlak & DuPre, 2008), highlighting a need to explore additional pathways for strengthening the ECE workforce. The field has typically worked to promote workforce quality through in-service professional development (PD), such as training and individualized coaching. However, these initiatives often focus exclusively on lead teachers, overlooking other roles such as assistant teachers and administrators (IOM and NRC, 2015). Furthermore, given the considerable financial resources required to provide comprehensive in-service PD, additional avenues for strengthening the ECE workforce are needed.

Critically, teachers' professional learning extends beyond more formalized in-service PD; educators also receive meaningful support from their everyday interactions with colleagues (e.g.,

collaboration, advice-seeking). Research in K-12 settings indicates that educators' interactions with their colleagues help them make sense of educational ideas in ways that shape their practices (e.g., Coburn, 2001; Sun et al., 2013). While the general notion that colleagues provide support is intuitive, the education field lacks nuanced understandings regarding how knowledge dissemination processes operate in ECE settings. In addition, considering that the all ECE staff members do not necessarily participate in comprehensive PD, it is important to address research gaps regarding how PD-specific information is diffused within ECE centers in order to understand the extent the full ECE workforce receives this information.

Given that ECE settings are distinct from elementary and secondary schools in terms of their teaching workforce and the settings in which they are embedded (IOM and NRC, 2015), the lack of ECE-specific research makes it unclear how practitioners can best leverage knowledge diffusion processes to strengthen the ECE workforce. The present study advances understandings of how information is disseminated within ECE settings by conducting qualitative content analyses in a sample of ECE staff from a large urban school district (i.e., lead teachers, assistant teachers, and administrators).

Professional Learning via Knowledge Dissemination

Knowledge dissemination has been defined as a transfer of knowledge and perspectives in order to promote idea-sharing, behavioral change, and professional learning (Collinson, 2004; Rismark & Sølvberg, 2011). Diffusion of innovation theory (Rogers, 2003) highlights the importance of knowledge dissemination processes in quality improvement initiatives by illustrating how they enhance the spread of information and the adoption of new practices.

In working to ensure that in-service PD promotes ECE quality, it is critical to consider not only what happens during a training but also what happens once PD is over. It is well

understood that coaching, training, and other forms of in-service PD provide an opportunity for ECE staff to gain new information (Sheridan et al., 2009). However, the education field knows little about how ECE staff process and disseminate the knowledge they acquire during their PD experiences. Studies conducted in K-12 settings show that the ways educators share PD information with each other can influence their enactment of new educational practices (e.g., Coburn, 2001; Sun et al., 2013).

Overall, existing scholarship highlights the potential for knowledge dissemination processes to enhance ECE staff's learnings from PD, but basic questions about the ways in which ECE staff share information about PD remain largely unexamined. Fundamentally, it is unclear whether ECE staff typically share information about PD with their colleagues or tend to keep the information to themselves. More precise understandings about these matters would clarify the extent to which knowledge dissemination processes are a viable strategy for workforce development initiatives.

Educators can also exchange information with their colleagues about broader topics related to their professional learning. When educators seek advice from their colleagues or initiate discussions, they create learning opportunities that allow teachers to resolve challenges and to enhance their skills and knowledge of their practices (Kwakman, 2003; Lohman, 2006; Parise & Spillane, 2010). Thus, promoting the exchange of information between educators represents a powerful workforce development strategy that is often overlooked in ECE.

Recent evidence suggests that the advice ECE educators receive from their colleagues can contribute to their workplace experiences (Cramer & Cappella, 2019), but the precise ways that knowledge dissemination occurs within ECE settings remains largely unknown. Past scholarship highlights how knowledge can flow on the basis of *formal* "top-down" structures

(e.g., designated meetings, assigned roles) but that it can also flow through *informal* "bottom-up" processes when individuals use their autonomy to seek out information they need (Mueller, 2015). It is unclear whether formal or informal knowledge dissemination processes are more prominent in ECE settings. In addition, past research in K-12 suggests that staff seek particular colleagues for advice based on the colleagues' job title and expertise (Hopkins et al., 2015; Spillane et al., 2018). However, given the unique professional roles and characteristics of the ECE workforce and ECE settings (IOM and NRC, 2015), it is quite possible that existing research about knowledge dissemination processes in K-12 might not generalize to ECE. Consequently, the field knows relatively little about knowledge dissemination among ECE professionals. In particular, we do not know how educators exchange information within ECE settings, what impedes knowledge dissemination within ECE settings, what motivates ECE educators to seek advice from certain colleagues but not others, and how experiences of knowledge dissemination may vary across different roles within the ECE workforce. Addressing these gaps in knowledge would provide the field with insights into how knowledge dissemination processes could be leveraged to strengthen the ECE workforce.

Current Study

Using semi-structured interviews from a sample of ECE staff (i.e., lead teachers, assistant teachers, and administrators) working in a large urban school district, the current study pursues three research questions regarding information dissemination within ECE settings:

1. Through which formal and informal processes is job-related information disseminated within ECE programs?
2. Which factors influence why ECE staff members seek particular colleagues for information?

3. Within ECE centers, to what extent do staff members disseminate information that was received at in-service PD trainings and how does this dissemination occur?

In examining these questions, this study aims to uncover possibilities for utilizing knowledge dissemination processes within ECE settings. As such, this study responds to the ECE field's growing need to identify innovative workforce development approaches.

Method

Setting and Participants

Using a convenience sampling approach, nine programs in the present study were drawn from a pool of ECE programs that had participated in a larger quantitative study. This pool included programs from nine communities that were selected to reflect the diversity within a large urban district, specifically in terms of: (a) levels of community poverty, (b) income-to-needs ratio of families, (c) number of ECE programs and seats in the community, (d) child racial/ethnic composition in ECE centers, and (e) passing rates on public schools' English Language Arts assessment. The programs ultimately included were distributed across the aforementioned criteria, indicating that they reflect a diverse set of programs within the district.

Six of the ECE programs were community-based whereas three were public schools, which aligns with the proportion of ECE settings within the district. In our sample, ECE programs in public schools reflect a downward age expansion within an elementary school to include preschool classrooms and, at times, three-year-old classrooms. In contrast, community-based ECE programs in the district can span birth to age five, but the precise age range varies across sites. All ECE programs in the sample are actively managed by the district office. A key component of the district's support to programs includes providing ECE staff with the opportunity to attend four off-site trainings each year that are organized by the district office;

these trainings included content regarding instructional practices, classroom management, and family engagement. The state mandates nearly 200 hours of professional development for ECE teachers every five years and has comprehensive early learning and development standards.

All lead teachers, assistant teachers, and administrators working at the nine programs were invited to participate in the study. In total, the sample included 44 ECE professionals with varying roles: lead teachers (n = 20), assistant teachers (n = 16), and administrators (n = 8); at the median, four staff members were sampled from each of the nine ECE programs (range = 1 to 9). An informed consent agreement was signed by each participant and each school received a $100 gift card to purchase school supplies as an incentive for participation.

Procedures

Six members of the research team were trained to implement an interview protocol consisting of predetermined questions while also allowing for targeted followup questions (Rubin & Rubin, 2011). The protocol consisted of questions about staff members' experiences with professional development and their experiences with how information is shared in ECE centers: "How often do you have time to meet with your co-workers in more spontaneous ways, outside of the regular meeting times?" and "Think of a time when you reached out to a co-worker for job-related advice or support. What made you reach out to a co-worker at that time?" Interviews took place at the schools where the interviewee worked and typically lasted approximately 40 minutes. All interviews were audio recorded, transcribed, and checked for accuracy to produce transcripts that were used for qualitative coding.

Qualitative Analytic Strategy

A directed approach to qualitative content analysis was used (Hsieh & Shannon, 2005), wherein a set of codes was created a priori based on the existing scholarship on teacher

professional development and knowledge dissemination processes. Specifically, overarching codes were created related to the research aims (e.g., professional development, information sharing) as well as more granular sub-codes (e.g., turn-keying). Codes were also created to describe ECE staff's collaborative interactions with colleagues, including the frequency of the interactions, the number of people involved in the interactions, the content of the interactions, and the professional roles of staff involved in the interactions.

Researchers were then trained on the codebook and each transcript was coded and reviewed by at least three of the six members of the coding team using Dedoose Version 8 (2018); within the software, sections of the interview transcripts were selected and assigned to codes corresponding to the content of the text. Across the transcripts, more than 80 percent of the codes were consistently applied by members of the coding team. Any discrepancies from the first round of coding were discussed with the entire coding team and resolved by reaching consensus.

Findings

Channels of Information Dissemination within ECE Programs

Formal Exchanges

Participants described how information related to their work was spread through regularly scheduled meetings involving school colleagues. Over 60 percent of ECE staff in our sample reported having participated in either scheduled small meetings (e.g., classroom teaching team) or large meetings (e.g., full staff). Staff noted that the frequency and content of these meetings varied as a function of the size of the meeting; smaller sized meetings often took place weekly, whereas larger meetings took place monthly. Oftentimes, participants reported that smaller meetings covered relevant classroom dynamics within their own classrooms, such as planning classroom activities, discussing improvements to classroom activities, and sharing ideas

to address challenging child behaviors. In contrast, larger meetings were typically led by administrators and covered staff-wide information, including technical topics (e.g., renewing licenses) and educational practices (e.g., CPR, behavior management).

Overall, participants reported how formal exchanges can create a platform for ECE workforce members to discuss school practices on a consistent basis. However, administrators in our sample remarked on the benefits of formal exchanges more frequently than lead teachers and assistant teachers. Teachers shared how administrators often took the lead during these formal exchanges, at times leaving little room for teachers and assistant teachers to use the meetings to address their needs. For example, one teacher described formal meetings as follows: “The director gives us an agenda, and she follows that agenda. She goes step-by-step on the agenda, and most of the things are kind of the same every month.” Similarly, another teacher noted that during these meetings teachers “don’t talk to each other because we’re listening to what [the administrator] is saying.” Teachers only discuss matters with their peers “back in the classroom.”

Informal Exchanges

Nearly all of our participants (>90%) mentioned engaging in informal exchanges of information. In fact, participants noted that "most of our conversations happen informally around the classroom.” Educators described participating in “meetings on the run,” which were defined by their spontaneity, often occurring with no preparation due to time constraints. Typically these meetings were initiated when there was a shared desire for staff members to find a time to debrief about events occuring in the classroom (e.g., checking in about a child’s mood, impromptu activity changes) or to coordinate how they would implement teaching strategies moving forward (e.g., lesson planning, how to deal with difficult student behavior). Meetings on the run usually occurred between two ECE workforce members, however, participants also

shared that a larger teaching team (e.g. a lead teacher and multiple assistant teachers) may quickly convene in order to finalize a lesson plan or relay information. These informal exchanges ranged between a few minutes to a half-hour and took place during any free time that participants had throughout the day (e.g., lunch breaks, naptime). As one teacher explained, “we barely have time to actually sit down together to do lesson planning, so [we have discussions] whenever we have time in the classroom...normally during nap time when the kids are sleeping.” In general, meetings on the run gave ECE workforce members the opportunity to convene in order to share updates, develop strategies, and coordinate their work on an immediate, as-needed basis.

Informal exchanges were also described as advice-seeking interactions. In contrast to “meetings on the run,” advice-seeking interactions were more one-sided in nature. Specifically, advice-seeking involved an educator seeking a colleague for guidance regarding a matter that was of concern to that educator. In this way, advice-seeking interactions aimed to address individually-held matters (e.g., struggling to work effectively with a particular child) whereas meetings on the run aimed to address collectively-held matters (e.g., lesson planning for the entire classroom). Participants reported seeking advice on a range of topics, including the curriculum, engaging families, child assessments, and managing children’s behavior.

Why ECE Staff Seek Particular Colleagues for Information

Participants commented at length on the reasons why they sought particular colleagues for information and why they believe they were sought by others. An ECE professional’s expertise - whether it be a specific content area or more general knowledge - was most frequently cited as a reason s/he was sought out. For example, one participant stated that other teachers frequently reached out to her because she had extensive experience with paperwork requirements for child assessments: "Since that's something that I've studied in school, I've had a lot of people

come to me about helping them throughout that process." Another participant described how she sought her supervisor for advice because, in general, "she knows everything, so she's the one person that I will go to no matter what."

In addition, an individual's formal job title (e.g., assistant teacher, administrator) appeared to influence educators' decisions about whom to seek for advice. For example, individuals with certain job titles (e.g., family workers) were expected to have specific content knowledge (e.g., family engagement), which caused individuals to seek them for advice in that domain. In describing why she sought a particular colleague for advice, one participant explained, "it's just the job title, so their job title covers certain responsibilities, so I would go directly to them." Participants also explained that formal job titles can signal that a colleague has greater knowledge in general - not just specialized knowledge. For example, one teacher explained that she would seek the program administrator's advice because "she is the director - she's a little bit more knowledgeable than everybody else here, and I think that's why."

Lastly, familiarity was cited as an important contributor to advice-seeking dynamics within ECE programs. Participants often invoked notions of trust and camaraderie when describing advice-seeking. For example, one participant described how the social bonds she developed with a coworker over the years encouraged her to seek advice from that colleague: "She was a head teacher with me for two years, so I am just comfortable with her. She just gets me, so the information she gives me is really helpful and insightful." Another participant explained that after consistently sharing and receiving advice with certain colleagues, a level of collegiality is created whereby educators develop a shared expectation that colleagues will offer whatever support they can whenever it is needed.

Overall, perceived expertise was mentioned most frequently when participants explained why they sought particular colleagues for advice and/or why they believed they were sought for advice. Approximately 60 percent of participants reported expertise as a main reason, whereas an individual's job title and familiarity were reported by approximately 30 percent of educators.

Dissemination of Off-site PD Content within ECE Programs

Approximately 46 percent of participants reported sharing information they received from an off-site PD with colleagues at their ECE center. They described disseminating information in two ways. First, knowledge was shared through structured (i.e., formal) channels, such as being asked by an administrator to share PD content during a meeting for colleagues who were unable to attend the training. Second, information was disseminated through extemporaneous (i.e., informal) channels, such as sharing information with a coworker who asked a question about PD content. For example, one participant described seeking a coworker when she was struggling with the implementation of the information shared during a PD; the participant described "A lot of the newer PD and things that are coming in, and [my coworker] is on that front line, so when I'm going to implement something new or I'm struggling, she is somebody that I can go to if I can't figure something out on my own." At times, staff even reported sharing PD content through both informal and formal channels in short succession:

> "Initially I shared the [PD content] with [my assistant teacher] and our coach. And then after that, when we met as a grade as the four of us, I was able to share it out with everybody else. [Another teacher] was able to say, "I want to try it this way in our classroom" and she and [her assistant teacher] were able to talk about it. Where [my assistant teacher] and I might use the same concept, but it might just be a little bit different."

ECE professionals reported disseminating PD content relatively equally across formal and informal channels (45% and 55%, respectively of staff who reported disseminating PD content). In general, discussions regarding PD content typically occurred shortly after staff

attended the training; staff did not report continually discussing PD content across time. For example, one participant stated that, "Once the training is over, we normally come together as teachers and discuss what particular areas were beneficial, what could we actually utilize in the classroom, what can we implement for, according to the age group that you're working with." Overall, respondents described how sharing and receiving information about PD presented an opportunity for teachers to strengthen their understanding and usage of PD content.

Most often, ECE staff described sharing PD content with ECE teachers and administrators who were unable to attend off-site trainings. However, in public schools within our sample, ECE staff also work in the same building as staff who are traditionally outside the realm of ECE (e.g., K-5 teachers), and teachers in our sample also reported sharing PD content with these colleagues. For example, after attending an off-site training, a teacher thought that the content she learned had "a lot of things that the kindergarten teachers could use." As a result, that teacher "was able to share the [PD content] with them, and that was just conversations in the morning I was like 'you know, I was at this really great PD and they were saying that this is something you can do in kindergarten to make play more purposeful.'"

Notably, teachers also described how off-site PD provided a valuable setting for information dissemination among ECE staff who worked at different programs. Trainings were described not only as a time to learn from an instructor but also as an opportunity to engage in productive conversations with other ECE professionals and share varying perspectives on teaching practices. One participant explained how "other teachers come together and say what they do in that area that helps them best, so it's a whole collaboration of teachers coming together to help each other out, to make their job easier." Teachers stated that these collective learning processes occurred when teachers were working to understand PD content.

Discussion

Using a sample of lead teachers, assistant teachers, and administrators, working in a large urban school district, the present study aimed to examine a set of foundational questions related to knowledge dissemination processes in ECE settings. With respect to the channels of knowledge dissemination, ECE professionals described exchanging information through formal and informal processes. Approximately half of our sample also described using these channels to share information about PD trainings that they attended. Lastly, ECE professionals explained that they sought certain colleagues for information/advice based on the colleague's expertise and job title as well as their familiarity with that colleague. We discuss how these findings may help strengthen the ECE workforce.

Participants provided extensive details about the pathways through which they shared and received information within their ECE centers. For example, educators described receiving information in the context of regular scheduled meetings at their schools, which provided modest opportunities for receiving relevant professional information. Importantly, administrator-led meetings tended to be unidirectional in nature, thereby limiting teachers' ability to discuss their needs during these meetings. When formal exchanges are limiting and controlling, they are less effective in facilitating professional learning (Hoy & Miskel, 2007). Thus, administrators' centralized approach to leading formal meetings is likely suboptimal for supporting teachers' professional needs. By implementing more decentralized and democratic meeting structures that create space for teachers' perspectives, administrators can likely improve teachers' professional growth as well as the quality of decisionmaking at the program more broadly (Ho, 2010). Practically speaking, this could be accomplished using a distributed leadership approach

whereby the administrators' different responsibilities are shared with other staff members who possess relevant expertise (Spillane, 2012).

Participants also reported sharing and receiving information through informal channels, such as advice-seeking interactions and "meetings on the run" that smaller groups of coworkers convened on an as-needed basis. Compared to formal meetings, informal exchanges focused on a broader set of topics regarding educational practices (e.g., instructional curriculum, engaging parents, managing child behavior) as well as other professional topics (e.g., retirement plans, attending university classes). Notably, at ECE centers in our sample, educators appear to rely on informal exchanges to gain information that addressed their own professional needs across a range of topics. In offering these insights, our research study illustrates the reasons that informal channels may be especially critical for disseminating information within ECE centers. Informal channels are likely so important because they reflect teachers' efforts to acquire information that they value from colleagues that they trust; depending on the context, staff may not receive such information by relying exclusively on schools' formal information-sharing structures (Moolenaar, 2012).

Despite the importance of informal exchanges for sharing information, teachers described difficulties in finding adequate time to collaborate with their colleagues. For example, meetings on the run often occurred when teachers were in the midst of their job responsibilities (e.g., while students were napping). These findings point to the limited time ECE educators have for initiating interactions during a typical school day (Collison, 2004). Given the potential importance of informal exchanges, it may be prudent for future research to investigate how to create greater opportunities for informal collaboration to occur within ECE settings. For example, education leaders could support staff development by creating structures that facilitate

information dissemination through informal channels (e.g., scheduling shared break times for staff, placing educators who teach similar age groups in adjacent classrooms).

Our study offers novel insights into how ECE staff decide from whom to seek advice. From the perspective of ECE staff, the primary driver of why educators sought certain individuals for professional advice was whether a colleague possessed expertise on a matter; approximately two-thirds of ECE staff referenced expertise, which was nearly twice the next referenced factor. This finding aligns with research in K-12 settings that found expertise is a major consideration when teachers are deciding whom to seek for advice (Spillane et al., 2018; Wilhelm et al., 2016).

However, it is important to acknowledge that our results are reflective of staff's *perceived* expertise of their colleagues, which may not correspond to *actual* expertise. This distinction is important because research has only found that seeking advice from colleagues with actual expertise will strengthen teachers' practices (Sun et al., 2017). While it is promising that most ECE staff indicate that they seek colleagues for advice on the basis of their expertise, future research should examine whether this corresponds to actual expertise. If this is not the case, advice networks may be suboptimal in strengthening the practices of ECE professionals, indicating a need for intervention.

In addition to expertise, about one-third of ECE staff referenced their colleagues' formal job title as influencing from whom they sought advice, which aligns with past quantitative research that found certain job titles (e.g., administrators) were sought for advice considerably more than others (e.g., assistant teachers) within ECE settings (Cramer et al., 2023). In agreement with findings in K-12 settings (Hopkins et al., 2015), staff in our sample indicated that job titles can signal expertise in specialized content areas (e.g., family engagement) as well as

general expertise across ECE topics. On the one hand, this finding may suggest that, rather than utilizing empirical information to identify expertise (e.g., classroom observations where expertise has been demonstrated), some ECE staff members may use job titles as a convenient proxy for expertise – a proxy that could be unreliable. On the other hand, the fact that twice the number of staff referenced expertise compared to job title may reflect that ECE staff use other criteria to evaluate expertise, criteria that may reflect actual expertise.

Approximately one-third of staff also referenced their familiarity with colleagues as being important when deciding whether to seek that person's advice. Notably, this finding signals the importance of interpersonal factors in ECE professionals' decisions regarding whom to seek for advice; past empirical studies of advice-seeking have not examined the facilitative role that interpersonal bonds may play in knowledge diffusion processes. Staff members stated that they were more likely to seek out individuals whom they felt comfortable with and who understood their professional needs. These results raise the possibility that even if an ECE professional has expertise, her colleagues may not seek her advice if they do not have an interpersonal relationship with her. Given that interpersonal bonds take time to develop, it is concerning that annual ECE teacher turnover is approximately 25 percent because a revolving door of colleagues may disrupt the social bonds that encourage advice-seeking (U.S. Department of Health and Human Services, 2013). Relatedly, if educators are unfamiliar with their colleagues, they may struggle to identify those who possess relevant expertise and may thus rely on rough proxies for expertise (e.g., job titles). Overall, efforts to encourage advice-seeking and knowledge diffusion within ECE centers should consider the broader interpersonal dynamics between colleagues.

Our study also reveals that ECE staff find meaningful support from professionals outside of their centers. Specifically, participants described how external PD training experiences provided an opportunity for teachers to connect with other teachers in order to advance their professional development. According to social network theory (Granovetter, 1973), such trainings enable teachers to augment their professional networks beyond their center colleagues, thus allowing them to access new sources of information. Altogether, these findings raise the possibility that encouraging teachers to interact with other educators at PDs might strengthen their professional learning.

Lastly, participants described sharing content from PDs with colleagues at their schools, particularly staff members who were unable to attend off-site PD. Overall, about half of the participants mentioned disseminating information from a PD and that this occurred evenly across formal channels (e.g., a teacher being asked to share PD information during a staff meeting) and informal channels (e.g., a teacher being asked for advice about PD). Past scholarship suggests that knowledge dissemination processes can bring new information to schools without requiring the entire staff to attend trainings (Pennell & Firestone, 1998). Our research study extends this work by providing evidence regarding the frequency with which this occurs within ECE settings (i.e., with about half of participants). In addition, we find that ECE teachers share PD content with a range of roles, including other ECE teachers, administrators, and non-ECE teachers (e.g., kindergarten teachers). These findings are encouraging in that they suggest PD content may be diffused somewhat broadly throughout ECE programs, meaning that knowledge dissemination processes can offer a source of professional learning for a meaningful segment of staff.

Although intervention may be warranted to increase the prevalence of knowledge dissemination even further, it may be more important to examine the *quality* of dissemination of

PD content (Collinson, 2004). Participants varied in the extent to which they commented on these dissemination processes supporting teacher practice – perhaps in part because certain educators are more effective at teaching their colleagues than others. Our data indicate that educators frequently share PD content with their colleagues, and they may even be solely responsible for teaching their colleagues the PD content. To maximize the effectiveness of this workforce development strategy, it is important to ensure that ECE educators have the necessary skills and knowledge to teach their colleagues; the ability to implement PD content may not be equivalent to being able to teach that content to one's colleagues.

It is important to acknowledge that findings from our study may not generalize to other ECE settings. Our study examined ECE educators working in an urban district that offered a particular set of professional supports to a particular workforce; other findings may emerge in a different context or with a different sample of educators. Future research should examine whether our findings are replicated in other contexts, especially on topics where there had been a dearth of research in ECE (e.g., informal vs. formal knowledge dissemination).

Recommendations for Policy and Practice

Findings from the present study raise notable possibilities for strengthening ECE policy and practice. First, our study offers suggestions for how school administrators can improve knowledge dissemination and professional learning within their ECE centers. For example, our findings suggest that administrators could better support teachers' professional needs by moving away from prescriptive meeting formats, and instead, allowing teachers opportunities to co-construct meeting agendas and engage in discussions. In addition, we find that informal exchanges of information (e.g., advice-seeking) are critical channels of knowledge dissemination, yet educators have difficulty finding sufficient time to collaborate with their

colleagues. As such, lifting barriers to collaboration by creating greater opportunities for ECE staff to meet and converse would improve educators' ability to exchange information in ways that support professional learning.

Second, our study offers exciting possibilities for school districts' workforce development initiatives. Given the considerable frequency with which educators disseminate PD content within ECE centers, our findings suggest that center-wide learning could be augmented by actively equipping ECE educators with the strategies to teach their colleagues PD content. Considering school districts' growing role in ECE workforce development, their trainings could dedicate time or provide materials with the expressed purpose of knowledge dissemination. In our sample, only a subset of ECE staff were able to attend district-wide trainings, and certain roles were frequently excluded (e.g., assistant teachers, administrators). Therefore, in order to promote the professional development of the full ECE workforce, it may be prudent for districts to have an explicit strategy for supporting knowledge dissemination. Overall, the present research study offers a number of important implications for strengthening the ECE workforce, particularly in localities where professional development initiatives have become large-scale undertakings.

References

Barrera-Pedemonte, F. (2016). High-Quality Teacher Professional Development and Classroom Teaching Practices: Evidence from talis 2013, *OECD Education Working Papers*, No. 141, OECD Publishing, Paris. https://doi.org/10.1787/5jlpszw26rvd-en

Brown, C. P., & Englehardt, J. (2016). Conceptions of and early childhood educators' experiences in early childhood professional development programs: A qualitative metasynthesis. *Journal of Early Childhood Teacher Education*, *37*(3), 216-244. https://doi.org/10.1080/10901027.2016.1204574

Bubnys, R., & Kauneckienė, N. (2018). Personal professional development as a premise for teacher's leadership. *Social Welfare: Interdisciplinary approach, 2*(7), 71-85. http://dx.doi.org/10.21277/sw.v2i7.310

Coburn, C. E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis*, *23*(2), 145-170. https://doi.org/10.3102/01623737023002145

Collinson, V. (2004). Learning to share, sharing to learn: Fostering organizational learning through teachers' dissemination of knowledge. *Journal of Educational Administration*, *42*(3), 312-332. https://doi.org/10.1108/09578230410534658

Cramer, T., & Cappella, E. (2019). Who are they and what do they need: Characterizing and supporting the early childhood assistant teacher workforce in a large urban district. *American Journal of Community Psychology, 63*(3–4), 312–323. https://doi.org/10.1002/ajcp.12338.

Cramer, T., Cappella, E., & Raver, C. C. (2023). Advice networks in early childhood education:

Predicting teachers' workplace experiences over time. *Early Childhood Research Quarterly*, *65*, 129-138. https://doi.org/10.1016/j.ecresq.2023.06.004

Dedoose (2018). Dedoose (Version 8.0.35), web application for managing, analyzing, and presenting qualitative and mixed method research data. Los Angeles, CA: SocioCultural Research Consultants, LLC.

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, *41*(3-4), 327-350. https://doi.org/10.1007/s10464-008-9165-0

Gomez, R. E., Kagan, S. L., & Fox, E. A. (2015). Professional development of the early childhood education teaching workforce in the United States: An overview. *Professional Development in Education*, *41*(2), 169-186. https://doi.org/10.1080/19415257.2014.986820

Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology, 78*(6): 1360-1380. https://doi.org/10.1086/225469

Ho, D. C. W. (2010). Teacher participation in curriculum and pedagogical decisions: Insights into curriculum leadership. *Educational Management Administration & Leadership*, *38*(5), 613-624. https://doi.org/10.1177/1741143210373739

Hoy, W. K., & Miskel, C. G. (2007). Educational administration: Theory practice, and practice.

Hopkins, M., Lowenhaupt, R., & Sweet, T. M. (2015). Organizing English learner instruction in

new immigrant destinations: District infrastructure and subject-specific school practice. *American Educational Research Journal, 52*(3), 408-439. https://doi.org/10.3102/0002831215584780

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. https://doi.org/10.1177/1049732305276687

Institute of Medicine and National Research Council. (2015). *Transforming the workforce for children birth through age 8: A unifying foundation*. Washington, DC: National Academies Press.

Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education*, *19*(2), 149-170. https://doi.org/10.1016/S0742-051X(02)00101-4

Little, J. W. (1990). The persistence of privacy: Autonomy and initiative in teachers' professional relations. *Teachers College Record*, *91*(4), 509-536.

Lohman, M. C. (2006). Factors influencing teachers' engagement in informal learning activities. *Journal of Workplace Learning*, *18*(3), 141-156. https://doi.org/10.1108/13665620610654577

Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., ... & Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development*, *79*(3), 732-749. https://doi.org/10.1111/j.1467-8624.2008.01154.x

Mueller, J. (2015). Formal and informal practices of knowledge sharing between project teams

and enacted cultural characteristics. *Project Management Journal*, *46*(1), 53-68. https://doi.org/10.1002/pmj.21471

Pennell, J. R., & Firestone, W. A. (1998). Teacher-to-teacher professional development through state-sponsored networks. *Phi Delta Kappan*, *79*(5), 354.

Parise, L. M., & Spillane, J. P. (2010). Teacher learning and instructional change: How formal and on-the-job learning opportunities predict change in elementary school teachers' practice. *The Elementary School Journal*, *110*(3), 323-346. https://doi.org/10.1086/648981

Quick, H. E., Holtzman, D. J., & Chaney, K. R. (2009). Professional development and instructional practice: Conceptions and evidence of effectiveness. *Journal of Education for Students Placed at Risk, 14*(1), 45-71. https://doi.org/10.1080/10824660802715429

Rismark, M., & Sølvberg, A. M. (2011). Knowledge Sharing in Schools: A Key to Developing Professional Learning Communities. *World Journal of Education, 1*(2), 150-160. http://dx.doi.org/10.5430/wje.v1n2p150

Rogers, E. M. (2003). *Diffusion of Innovations*. Fifth edition. Free Press.

Rosenholtz, S. J. (1989). Workplace conditions that affect teacher quality and commitment: Implications for teacher induction programs. *The Elementary School Journal*, *89*(4), 421-439. https://doi.org/10.1086/461584

Rubin, H. J., & Rubin, I. S. (2011). Qualitat*ive interviewing: The art of hearing data*. Sage.

Sheridan, S. M., Edwards, C. P., Marvin, C. A., & Knoche, L. L. (2009). Professional development in early childhood programs: Process issues and research needs. *Early Education and Development*, *20*(3), 377-401. https://doi.org/10.1080/10409280802582795

Spies, T. G., Lyons, C., Huerta, M., Garza, T., & Reding, C. (2017). Beyond Professional Development: Factors Influencing Early Childhood Educators' Beliefs and Practices Working with Dual Language Learners. *Catesol Journal*, *29*(1), 23-50. Spies, T. G., Lyons, C., Huerta, M., Garza, T., & Reding, C. (2017). Retrieved from: https://eric.ed.gov/?id=EJ1144338

Spillane, J. P. (2012). *Distributed leadership* (Vol. 4). John Wiley & Sons.

Spillane, J. P., Shirrell, M., & Adhikari, S. (2018). Constructing "Experts" among peers: Educational infrastructure, test data, and teachers' interactions about teaching. *Educational Evaluation and Policy Analysis*, *40*(4), 586-612. https://doi.org/10.3102/0162373718785764

Sun, M., Loeb, S., & Grissom, J. A. (2017). Building teacher teams: Evidence of positive spillovers from more effective colleagues. *Educational Evaluation and Policy Analysis*, *39*(1), 104-125. https://doi.org/10.3102/0162373716665698

Sun, M., Penuel, W. R., Frank, K. A., Gallagher, H. A., & Youngs, P. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis*, *35*(3), 344-369. https://doi.org/10.3102/0162373713482763

U.S. Department of Health and Human Services (2013). *Number and Characteristics of Early Care and Education (ECE) Teachers and Caregivers: Initial Findings from the National Survey of Early Care and Education (NSECE)*. Retrieved from: https://www.acf.hhs.gov/sites/default/files/opre/nsece_wf_brief_102913_0.pdf

Whitebook, M., McLean, C., Austin, L.J.E., & Edwards, B. (2018). *Early Childhood*

Workforce Index – 2018. Berkeley, CA: Center for the Study of Child Care Employment, University of California, Berkeley. Retrieved from: https://eric.ed.gov/?id=ED585491

Wilhelm, A. G., Chen, I. C., Smith, T. M., & Frank, K. A. (2016). Selecting expertise in context: Middle school mathematics teachers' selection of new sources of instructional advice. *American Educational Research Journal*, *53*(3), 456-491. https://doi.org/10.3102/0002831216637351