

**EVALUATING A RESEARCH-PRACTICE PARTNERSHIP TO IMPLEMENT
PROFESSIONAL DEVELOPMENT FOR KINDERGARTEN TEACHERS ON
THE SCIENCE OF LEARNING**

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ABSTRACT

Early childhood educators in the United States and worldwide face the growing challenge of “schoolification,” - the imposition of conventional academic content from later grade levels into their classrooms (e.g., Ring & O’Sullivan, 2018). The science of learning offers a different approach with evidence to support more active, engaging, and inclusive educational environments for all students (e.g., Darling-Hammond et al., 2020, Hirsh-Pasek et al., 2020, Nasir et al., 2021). The Active Playful Learning framework is one promising model that combines principles of how children learn through play, and particularly adult-initiated, child-directed guided play (e.g., Weisberg et al., 2013), with the “6 Cs,” a set of skills for success in the classroom and beyond.

A preliminary, mixed methods evaluation of an intervention to promote guided play in kindergarten classrooms through instructional coaching was conducted by Nesbitt et al. (under review) across New Hampshire. This study builds on the prior research, first by attempting to replicate the positive effects of the intervention for teachers and students, as provided by teacher reports. It then advances beyond the previous study to determine if teacher and student behaviors shaped by guided play and the playful learning principles are detectable through independent classroom observations. Lastly, it incorporates a preliminary comparison between intervention and business as usual control classrooms. Results support a replication of the previous teacher reports. Other results are mixed, but they indicate significant behavior changes consistent with adoption of playful learning, even if not yet guided play. This study represents a considerable advance in our implementation and evaluation of Active Playful Learning for educators and students.

For all students and teachers, whom I strive to serve through my research.

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CHAPTER 1

INTRODUCTION

A few years before COVID-19's unprecedented impact on education, researchers warned of another, pedagogical epidemic in early childhood education (ECE): "schoolification" (Ring & O'Sullivan, 2018, p. 402). In a "schoolified" ECE classroom, young children are taught a limited, conventionally academic curriculum focused on literacy and math and whole-child instruction is reduced (Ring & O'Sullivan, 2018; Woodhead & Moss, 2007). The shift toward "schoolification" is international, present in the United States, England, Denmark, Iceland, Australia, and New Zealand (Clausen, 2015; Simoncini & Lasen, 2021).

The Organization for Economic Cooperation and Development (OECD) warned of the "risk" associated with "schoolification" in a recent report (OECD, 2020, p. 33), noting that "...countries need to ensure that curricula are age-appropriate – balancing play, self-regulation, and pre-academic activities, and encourage pedagogical practices that correspond to children's developmental needs at each stage" (p. 33). A review of ECE research sponsored by the Institute of Education Sciences (IES) similarly highlighted the need to prioritize both academic instruction and emotional support in the classroom to promote students' academic knowledge and social skills (Diamond et al., 2013).

Stipek and colleagues (1995) compared the effects of child-centered ECE programs and didactic, teacher-focused programs on a variety of student outcomes. Participants included 227 preschool and kindergarten students from underserved and

middle-class environments. The child-centered programs particularly supported the students' confidence. While the students from didactic programs outperformed their peers from child-centered programs on a basic literacy task that measured letter and word recognition, as well as symbolic association between words and pictures, there was no significant difference between the programs on their students' basic numeracy skills. However, the child-centered programs consistently produced more confident learners. Compared to their didactic peers, across preschool and kindergarten, child-centered students provided greater ratings of their academic abilities and expectations for success in the classroom. They were also more willing to take on a challenging task, and more likely to demonstrate pride in the tasks they completed. The child-centered students were less likely to worry about school and ask for the experimenter's permission or approval during the study.

The foundation of developmentally appropriate, child-centered practice was also constructed by Burts and colleagues (1990), who determined that kindergarteners in more developmentally inappropriate classrooms (i.e., those with a greater emphasis on worksheets, workbooks, and whole-class instruction) exhibited more frequent stress behaviors (e.g., complaints of feeling sick, fighting, nervous laughter, nail-biting) than their peers in more developmentally appropriate classrooms (i.e., those with centers and group storytime activities).

More recent studies raise questions about the long-term effects of didactic instruction on young children's academic skills related to the "fadeout" in pre-K's benefits after students enter elementary school (e.g., Ansari et al., 2020; Burchinal et al., 2022; McCormick et al., 2021). McCormick and colleagues (2021) distinguished between

“constrained skills” that are teachable and easily assessed (such as recognizing letters and numbers, producing letter sounds, and counting) and broader “unconstrained skills” that are vital in the classroom, but cannot be perfectly mastered to the level of “constrained skills” and are more challenging to assess. These include vocabulary skills, reading comprehension, and algebraic thinking. Researchers found that enrollment in Boston’s public pre-K program better predicted students’ “unconstrained skills” in reading and math through the spring of kindergarten than their “constrained skills” in those subjects. In a direct comparison of pre-K attenders and non-attenders at the end of kindergarten, Ansari et al. (2020) and Burchinal et al. (2022) found the greatest group convergence for relatively “constrained” literacy and math skills. These findings suggest that kindergarten instruction provides sufficient “constrained” academic instruction for non-attenders to “catch up” with their peers, but effects of pre-K instruction on “unconstrained” academics (Ansari et al., 2020) and language and executive function skills (Burchinal et al., 2022) are robust. These results demonstrate the importance of instruction across a wider breadth of skills to achieve success in the classroom, even for the youngest students.

This evidence likely contributed to the decision by the National Association for the Education of Young Children (NAEYC), the leading professional organization for ECE, to adopt a broad, child-centered definition of “developmentally appropriate practice.” This practice describes “methods that promote each child’s optimal development and learning through a strengths-based, play-based approach to joyful, engaged learning” (NAEYC, 2020, p. 5). Educators who align with this approach recognize the knowledge and experiences that each young student brings into the

classroom as valuable, then build on that understanding to support meaningful instruction. The aim is for all students to exhibit growth across all areas of development and all academic subjects (NAEYC, 2020).

Recognizing “Schoolification” in Kindergarten

Although “schoolification” is a general trend across ECE and frequently discussed with respect to the relation between preschool and primary school (e.g., OECD, 2020; Ring & O’Sullivan, 2018; Shuey & Kankaraš, 2018; Stipek, 2006; Woodhead & Moss, 2007), Bassok and colleagues (2016) documented its effects in kindergarten. The researchers compared two nationally-representative datasets of public school kindergarten teachers’ pedagogical philosophies and practices between 1998 and 2010, and identified changes consistent with “schoolification.” In 2010, 80% of the 2,700 teachers surveyed agreed or strongly agreed that children should learn to read in kindergarten, while just 31% provided the same responses in 1998. Yet the teachers’ responses indicated a relatively narrow focus on more “constrained” skills. For example, the percentage of teachers who identified knowing the letters of the alphabet as “very important” or “essential,” increased from 19% to 48% between 1998 and 2010.

This shift in pedagogical philosophy was associated with a change in instruction (Bassok et al., 2016). Although nearly all teachers reported that they engaged in daily reading and language arts instruction in both 1998 and 2010, 91% indicated that they provided daily math instruction in 2010, with just 83% reporting the same in 1998, a significant difference. Greater changes were seen in the frequencies of daily art and music instruction, which declined by 16 and 18%, respectively, marking significant differences from 1998 to 2010. Further analysis of the topics that teachers covered within

subject areas and their instructional methods revealed additional modifications. While overall reading and language arts instruction remained consistent, 76% of kindergarten teachers taught conventional spelling in 2010 compared to 45% in 1998. Teachers also adopted more didactic approaches. For example, the percentage of teachers who reported that their students engaged in at least three hours of teacher-directed activities during a typical day significantly increased from 15% in 1998 to 32% in 2010. The use of textbooks, workbooks, and worksheets during reading and math lessons significantly increased, as well. Together, these results indicate a substantial shift in American kindergarten classrooms towards “schoolification.”

The “Schoolification” Trend in Context

As Bassok and colleagues (2016) review, a leading explanation for “schoolification” focuses on the detrimental effects of the *No Child Left Behind Act* (NCLB; 2002), which prioritized accountability to high-stakes assessments of “constrained” skills. Across the education system, the curriculum narrowed to focus on reading and math to the exclusion of other subjects and skills. Even reading and math instruction was limited to memorization and procedural learning that could easily be assessed using multiple choice questions. This educational approach limited students’ critical thinking and deep understanding of content (Berliner, 2009, 2011), which is inconsistent with best practices identified in the science of learning literature (e.g., Darling-Hammond et al., 2020). Beyond the quality of instruction, NCLB adversely affected the classroom climate. Teachers felt demoralized and reported decreased autonomy in the classroom, as well as increased anxiety regarding high-stakes testing, their job security, and their ability to support their students (Husband & Hunt, 2015;

Reback et al., 2014; Wronowski & Urick, 2019). Students became disengaged at school (Markowitz, 2018).

Despite – and perhaps due to - these shifts in the school environment to boost students' reading and math assessment scores (Berliner, 2009, 2011), the efforts failed to produce the desired gains in those subjects for all students (Darling-Hammond, 2007; Dee & Jacob, 2010, 2011; Fuller et al., 2007; Ladd, 2017; Ravitch, 2010). Research by Dee and Jacob (2010, 2011), for example, found that NCLB generated a statistically significant increase in 4th-grade students' math assessment scores, but not in reading. Eighth-graders did not experience a significant increase in either subject. Additional analyses reported by Ladd (2017) even indicated that the significant increase in 4th-grade math scores did not hold beyond 2003. In fact, Ladd (2017) suggested that any increases in 4th- and 8th-grade students' *National Assessment of Educational Progress* (NAEP) reading and math scores merely represented a continued trend of gradual growth that began in the 1990s.

This trend is not limited to the NCLB era. Data indicate limited growth and persistent opportunity gaps in American students' reading and math assessment scores before (Fuller et al., 2007; Reardon, 2011) the policy's adoption and after its replacement (Klein, 2016) with the *Every Student Succeeds Act* (ESSA) in 2015 (National Center for Education Statistics (NCES), 2021; Organization for Economic Cooperation and Development (OECD), 2019b). Fuller et al. (2007) evaluated students' long-term NAEP scores from 1971 to 2004, revealing limited growth in 4th-graders' average reading scores with virtually no change for 8th- or 12th-graders. While Fuller et al. (2007) found greater average increases in 4th- and 8th-grade students' math scores, the racial opportunity gap in

reading and math persisted in the years immediately following the passage of NCLB. Analyses by Reardon (2011, 2013) evaluated income-related opportunity gaps in student achievement and found a widening of the gap in reading performance between students in high-income (i.e., at the 90th percentile of the income distribution) and low-income (i.e., at the 10th percentile of the income distribution) families between 1970 and 2000, despite a narrowing racial opportunity gap.

More recent publications and data sources reveal continued, and potentially related, challenges pertaining to instructional quality and assessment performance. As in the NCLB era (Berliner, 2009, 2011), Saultz et al. (2019) suggest that teachers and administrators remain concerned about curricular narrowing and pressure to achieve desired assessment results, even as the ESSA ostensibly reduced the emphasis on high-stakes, conventional academic assessments by requiring states to include a more holistic measure of educational quality, such as student engagement (Klein, 2016).

The 2018 *Programme for International Student Assessment* (PISA), a standardized assessment that was administered to 600,000 15-year-olds in 79 countries and economies (OECD, 2019a), indicated that American students performed just above the OECD average in reading, but below average in math. A secondary analysis of PISA 2018 results by OECD focused on students' literacy skills, and specifically, the urgent need to apply critical thinking skills to evaluate a growing volume of information in the 21st century. Although nearly 80% of American students reported that they learned how to identify biased information in school, students in affluent schools were more likely to receive this instruction than their peers in under-served schools (OECD, 2021).

The latest NAEP reading results revealed a significant decline in 4th- and 8th-

graders' average scores between 2019 and 2022 to a level that had not been seen since 1992 (National Center for Education Statistics, 2022b). Average math scores similarly showed a significant decline from 2019 to 2022, dipping to levels not seen in nearly two decades. This shift marked the largest decrease since the NAEP math assessments were introduced in 1990 (National Center for Education Statistics, 2022a). These historic declines are likely the result of unprecedented school closures and remote instruction during the COVID-19 pandemic.

These data further suggest the persistence of racial opportunity gaps, particularly in the elementary grades. White, Black, and Hispanic 4th-graders all exhibited significant declines in their average NAEP reading and math scores from 2019 to 2022, but the losses were greatest for the Black and Hispanic students. Among 8th-graders, average NAEP reading scores remained stable across all racial/ethnic groups, except for a significant decrease among White students. Math scores showed significant decreases for White, Black, and Hispanic students with the greatest decline among the White students (National Center for Education Statistics, 2022a, 2022b).

Additional district-level NAEP results indicate how systemic challenges in urban education may contribute to students' opportunity gaps. Looking first at 4th-grade reading, 32% of 4th-graders met or exceeded NAEP proficiency, compared to 26% of their peers in large city schools, on average. The disparity in math was similar with 35% of students meeting or exceeding proficiency nationwide and 26% of students, on average, achieving that rating in large city schools. Among 8th-graders, 29% of students met or exceeded proficiency in reading and 26% achieved the same standard in math, compared to averages of 26% and 21% among students in large city schools for reading

and math, respectively (National Center for Education Statistics, 2022c, 2022d).

Despite these valuable data on the opportunity gaps faced by America's students, caution is necessary when interpreting these results and considering their implications for classroom instruction. The National Center for Education Statistics (2022e) warns that NAEP proficiency is not equivalent to grade-level proficiency, but a greater academic standard requiring application of knowledge and skills (also see Loveless, 2016). Therefore, if achieving NAEP proficiency is the aim, it is necessary to consider how effectively all students are prepared to achieve that higher standard.

Collectively, these assessment data and findings on adverse changes in the classroom environment following NCLB point to the need for a novel perspective on education reform in the United States that still includes, but goes beyond mastery of “constrained” content. It is necessary to identify a broader set of educational outcomes to ensure that all students are equitably prepared for the 21st century using developmentally appropriate methods. This approach includes the promotion of an inclusive educational environment that enables all students to make connections between their classrooms, homes, and communities (e.g., Cherfas et al., 2021; Love, 2015). Instruction around these outcomes cannot be fit to the “schoolified” pedagogy of the past.

The Science of Learning Offers a Promising Solution

The science of learning represents a potential solution to this challenge by asking how we might align the ways we teach with the ways in which students learn. The science of learning is a relatively new, interdisciplinary field that combines research from psychology, neuroscience, education, machine learning, cognitive science, and sociocultural studies to understand how humans learn (Meltzoff et al., 2009; Sawyer,

2014). Research in this area suggests that using science as a guide to educational pedagogy will foster a more equitable education system that will enable all students to gain key 21st-century skills (e.g., collaboration, communication, and critical thinking; Cantor et al., 2019; Cantor & Osher, 2021; Darling-Hammond et al., 2020; Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek et al., 2020, 2022; Learning Policy Institute & Turnaround for Children, 2021; Nasir et al., 2021; Nesbitt et al., 2023). These are analogous to the “unconstrained” skills described previously and likewise discussed by Durkin and colleagues (2021) in their evaluation of Tennessee’s statewide pre-K program. For example, listening comprehension and problem-solving skills are essential for success in reading and math, respectively. Attention and working memory are considered vital “unconstrained” skills across disciplines. However, the researchers note that these skills are less frequent in pre-K, perhaps because they are more difficult to instruct and assess. Rather, instruction focuses on narrower, subject-specific “constrained” skills that can be perfectly mastered (e.g., appropriately identifying the 26 letters of the alphabet). Durkin and colleagues (2021) highlight the need to target specific “unconstrained” skills and identify the pedagogical factors that support them. Fortunately, three frameworks for implementing this approach have emerged within the past three years with the potential to guide the promotion of 21st-century, or “unconstrained,” skills across the education system (Hirsh-Pasek et al., 2020; Learning Policy Institute & Turnaround for Children, 2021; Nasir et al., 2021).

Exploring “Guiding Principles for Equitable Whole Child Design” and the “RISE Principles”

Learning Policy Institute (LPI) and Turnaround for Children’s (TFC) “Guiding

Principles for Equitable Whole Child Design,” published in June 2021, promote instruction informed by evidence from developmental and learning science for all students (see LPI & TFC, 2021 and Darling-Hammond et al., 2020 for reviews of the underlying research). The “Guiding Principles” are as follows:

1. Positive Developmental Relationships
2. Environments Filled with Safety and Belonging
3. Rich Learning Experiences and Knowledge Development
4. Development of Skills, Habits, and Mindsets
5. Integrated Support Systems

(LPI & TFC, 2021, p. ix)

LPI and TFC (2021) present their principles as a holistic system that can support instruction that is “...greater than the sum of its parts and is transformative, personalized, empowering, and culturally affirming for each student” (p. viii). However, to the author’s knowledge, their use and evaluation in such a holistic educational intervention is not yet established.

Nasir and colleagues similarly drew on interdisciplinary science of learning research from psychology, neuroscience, education, and anthropology to propose the “RISE principles” in November 2021:

1. Learning is rooted in evolutionary, biological, and neurological systems.
2. Learning is integrated with other developmental processes whereby the whole child (emotion, identity, cognition) must be considered.
3. Learning is shaped in culturally organized practice across people’s lives.
4. Learning is experienced as embodied and coordinated through social interaction.

(p. 557)

The “RISE principles” recognize how learning is inherently socio-cultural, rooted in and sensitive to children’s experiences and environments. For example, even the development of neural mechanisms depends on social input (Lee et al., 2020). As with the “Guiding Principles for Equitable Whole Child Design,” each component of Nasir et al.’s (2021) approach is supported by underlying evidence and it offers a valuable theoretical framework. However, its utility as an intervention to change classroom practice is not yet known.

Active Playful Learning: The Principles of How and What Children Need to Learn

As originally developed by Hirsh-Pasek and colleagues (2020), the Active Playful Learning framework includes two complementary strands: How children learn best and what they need to learn for the 21st- century (also see Hirsh-Pasek et al., 2022 and Nesbitt et al., 2023 for reviews of Active Playful Learning and its further evolution).

How Children Learn: The Playful Learning Principles

Regarding the *how* of learning, the framework suggests children learn best when instruction is: *Active*, or “minds-on” (Hirsh-Pasek et al., 2015, p. 8), with opportunities to explore, process, and inquire about information; *engaging* rather than distracting, and supportive of consistent on-task behavior; *meaningful* with connections between new and prior information, as well as the potential for further information transfer to novel tasks; *socially interactive*, involving adult-facilitated peer collaboration; an *iterative* process with room for hypothesis testing; and *joyful* instead of dull (Hirsh-Pasek et al., 2015, 2020; Zosh et al., 2018, 2022). Authentic implementation of these playful learning principles fosters a set of skills that all children need to succeed in the 21st century, the “6 Cs” of *collaboration, communication, content, critical thinking, creative innovation, and*

confidence (Golinkoff & Hirsh-Pasek, 2016).

Exploring How Children Learn Through Guided Play. Four of the playful learning principles – *active, engaged, meaningful, and socially interactive* – were originally applied by Hirsh-Pasek et al. (2015) to inform educational media and app design. Subsequently, Zosh and colleagues (2018) broadened the principles to the six presented here and used them to justify the educational effectiveness of guided play (also see Zosh et al., 2022). It is a form of playful learning in which the child participates in adult-facilitated activities to achieve a learning goal, but maintains agency during the play session (Weisberg et al., 2013, 2015, 2016; Zosh et al., 2018, 2022).

The value of guided play for students' academic outcomes is well-established. A recent meta-analysis by Skene and colleagues (2022) evaluated 17 studies that compared guided play to adult-initiated and adult-led direct instruction, or child-initiated and child-led free play. Guided play was more effective than direct instruction at supporting students' early math skills and shape knowledge, as well as executive function skills with respect to appropriately switching between tasks. Additionally, guided play was better than free play at boosting children's spatial and math vocabulary. In a larger meta-analysis of 164 studies of learning across development, Alfieri and colleagues (2011) found that enhanced discovery learning – similar to guided play – was the most effective pedagogical method when compared to free play and direct instruction across math, science, and verbal and social skills.

Focusing on spatial skills and early mathematics, Weber and Leuchter (2022) found that 5- to 6-year-old children gained an understanding of structural stability from a block-building task when it was presented through guided play, but not free play. Fisher

and colleagues (2013) likewise demonstrated the importance of guided play for children's mathematical and spatial skills. Participating preschool-aged students more accurately transferred their knowledge of shapes to identify both typical and atypical examples after exploring their geometric properties through guided play, compared to both free play and direct instruction.

Guided play also supports children's vocabulary growth. Han and colleagues (2010) used play to bolster vocabulary instruction for preschool students from underserved communities. The researchers found that the addition of a guided play scenario to teach students target vocabulary words generated greater receptive and expressive vocabulary growth, and were more likely to achieve receptive vocabulary proficiency on the Peabody Picture Vocabulary Test (PPVT III) than peers who received explicit instruction on the words. In a similar study, Toub et al. (2018) found that 4- and 5-year-old students in Head Start demonstrated the greatest vocabulary gains following a playful learning intervention when they were engaged in guided play or direct instruction using toys that related to target vocabulary words, but child-initiated, unrestricted free play did not yield this growth (also see Hassinger-Das et al., 2016; Roskos & Burstein, 2011; Zosh et al., 2013 on the association between guided play and vocabulary development).

While direct instruction can support learning in limited circumstances (e.g., memorizing days of the week; see Zosh et al., 2022 for a review), prior research broadly suggests that guided play fosters learning by authentically incorporating the playful learning principles (Hirsh-Pasek et al., 2015; Zosh et al., 2018, 2022). That said, these principles are not exclusive to guided play and can appear in other pedagogies, as in

projects completed by older students (Dintersmith, 2018). Each principle rests on evidence from the science of learning literature (see Hirsh-Pasek et al., 2020, 2022, Nesbitt et al., 2023, and Zosh et al., 2018, 2022 for reviews).

What Children Need to Learn: The “6 Cs”

A range of education stakeholders, including learning and development researchers (e.g., Hirsh-Pasek et al., 2020, 2022; LPI & TFC, 2021; Nasir et al., 2021; Nesbitt et al., 2023), educators (Ferlazzo, 2012; Schwartz, 2020), and employers (Davis, 2020; Wagner, 2008) have reached consensus on the need for a broader, whole-child approach to instruction that considers a wider array of outcomes and shifts away from an exclusive focus on academic achievement in reading and math, or “schoolification” (Ring & O’Sullivan, 2018) in early childhood education. These subjects remain important, but it is necessary to provide all students with a breadth of skills for the 21st century. The “6 Cs” developed by Golinkoff and Hirsh-Pasek (2016) are one such breadth-of-skills framework. Similar sets of skills include the “unconstrained” skills mentioned previously (Durkin et al., 2021), “work-related skills” or “job skills” (e.g., getting along with people, communicating well, and problem-solving; Flouri & Buchanan, 2002), and “non-cognitive skills,” (e.g., openness, conscientiousness, extraversion, agreeableness, and emotional stability), although these final skills are considered predictors of future academic achievement and other measures of success over the lifespan, rather than outcomes themselves (Feng et al., 2022).

The foundation of the “6 Cs” is *collaboration*, which involves learning how to appropriately interact with others and control impulses. *Communication* both builds on collaboration and enables its growth. Fundamental communication skills include

speaking, listening, reading, and writing. *Content* knowledge is acquired through collaboration and communication with others, including teachers and peers. In the “6 Cs” system, content reflects breadth and depth as students ultimately develop expertise. The definition includes the traditional academic subjects of reading, writing, math, science, social studies, and the arts, as well as executive function skills (e.g., working memory, attention, cognitive flexibility; Diamond, 2014). However, adoption of a specific curriculum is not required. *Critical thinking* requires students to analyze content and evaluate its quality, a process that often involves collaboration and communication. *Creative innovation* is a synthesis of content knowledge and critical thinking, in which students reflect on what they learned and apply it through problem-solving. Lastly, students will build *confidence*. Related to the constructs of “grit” (Duckworth et al., 2007) and “growth mindset” (e.g., Haimovitz & Dweck, 2017), students with confidence take reasonable risks in the classroom and persist, even if faced with failure (see Golinkoff & Hirsh-Pasek, 2016, Hirsh-Pasek et al., 2020, 2022, and Nesbitt et al., 2023 for reviews of evidence behind each of the “6 Cs”).

Implementation of the “6 Cs” approach offers educators a checklist of outcomes that are both informed by the science of learning, and the likely result of instruction designed based on the principles of how children learn (Hirsh-Pasek et al., 2020). While the “6 Cs” are measurable - some to a greater and others to a lesser degree - they remain flexible to account for individual and cultural differences, and promote educator agency (Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek et al., 2020). The “6 Cs” scaffold each other from *Collaboration* to *Confidence*. Each “C” includes four levels, but students progress through them at their own pace. Variation may also occur across learning

environments. For example, a student may be a skilled and confident communicator in English class and on the football field, but not in science.

Educator agency is preserved using the “6 Cs.” The “6 Cs” outcomes are sufficiently broad for teachers to target them in the process of engaging students in lessons that align with any required standards or content objectives. Relatedly, educators are encouraged to design lessons that account for their students’ interests and backgrounds, particularly when the “6 Cs” are considered in relation to the playful learning principle of meaningful learning (Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek et al., 2020). This supports culturally responsive teaching, which recognizes the educational value of the knowledge and experiences that students bring from outside the classroom (Gay, 2000).

The Science of Learning and Development in Education: Surveying the New Path

The three frameworks for educational change reviewed here (i.e., LPI & TFC, 2021; Nasir et al., 2021; Hirsh-Pasek et al., 2020) are commonly motivated to reimagine what education can be for all students with emphasis on equity and more holistic outcomes. Each supports this aim with extensive evidence from the science of learning. The frameworks make three consistent recommendations for the future of education based on this evidence:

First, relationship-building is central to learning. LPI and TFC (2021) identify positive developmental relationships as those that prioritize care and respect for students’ identities. These relationships enable students to demonstrate their learning, and even take risks, in a trusting educational environment that prioritizes student agency. This creates a safe learning community for all, and in turn, collaboration among students.

Nasir et al. (2021) likewise describes how learning occurs through social interaction and receiving input from others within a cultural context. Hirsh-Pasek et al. (2020) similarly prioritizes social interaction and collaboration.

A second commonality across the frameworks is that effective learning is active (Hirsh-Pasek et al., 2020; LPI & TFC, 2021; Nasir et al., 2021). LPI and TFC (2021) suggest that students who are engaged in inquiry and problem-solving receive opportunities to test, and likely transfer, their knowledge to new situations. Nasir et al. (2021) advocate for active learning as “authentic explorations” (p. 559) and suggest the implementation of projects that invite students to apply their knowledge and methods of learning from out-of-school in the classroom. Hirsh-Pasek et al. (2020) present clear evidence on the value of active learning across development, identifying the approach as their first playful learning principle.

The third area of overlap is that all three frameworks seriously consider how educational equity can emerge by applying the science of learning (Hirsh-Pasek et al., 2020; LPI & TFC, 2021; Nasir et al., 2021). This is fundamentally inherent in the structure of each model. Rather than presenting educators with a scripted unit to implement, LPI and TFC (2021), Nasir et al. (2021), and Hirsh-Pasek et al. (2020) all present flexible frameworks for educators to reflect on and adapt to their students’ backgrounds, interests, and experiences. This allows educators to meet their students where they are in the moment, departing from the deficit-oriented pedagogy that has traditionally sought to “correct” perceived “deficiencies” of students from diverse backgrounds (Nasir et al., 2021). Building on this flexibility, the models explicitly emphasize the importance of meaningful learning. LPI and TFC (2021) describe how

culturally responsive instruction is a rich pedagogical practice that allows students to construct new knowledge based on all their prior experiences. At a more rudimentary level, this approach demonstrates how respect is a central classroom value and supports positive teacher-student relationships. Similarly, Nasir et al. (2021) emphasizes how learning is directly influenced by cultural practices. Therefore, ideal educational experiences should build on students' existing interests and skills, allowing them to employ multiple ways of demonstrating knowledge and skills. Lastly, Hirsh-Pasek et al. (2020) considers meaningful learning a key principle of how children learn and describes how the adoption of their model opens the door for educators to implement the methods of culturally responsive instruction that are best suited to their students, a point that is further emphasized in Zosh and colleagues' (2022) recent review.

Despite these areas of consistency, the frameworks presented here differ in their readiness for classroom implementation as cohesive systems informed by the science of learning. All of Nasir et al.'s (2021) principles are evidence-based and applicable to the classroom, but the researchers' recommendations for implementation are relatively broad. For example, acting on their call for whole-child education "...would involve centering belonging and identity and focusing on creating identity-affirming spaces... It would also require valuing all students as learners and attending to and eschewing the presence and power of racial and gender stereotypes in school spaces, while providing access to rigorous learning experiences" (Nasir et al., 2021, p. 560). This task is critically important, and Nasir et al.'s (2021) framing preserves educator agency and discretion, but additional guidelines for implementation may be necessary. The recommendations by LPI and TFC (2021) are individually practical and presented to support implementation,

yet there are multiple suggestions for how to implement each “guiding principle.” Relatedly, some suggestions are linked to distinct principles. For example, “looping” with the same cohort of students from one grade to the next is a recommended method for fostering positive relationships. This framing could lead educators to believe that numerous adjustments to their instruction are required to fully implement LPI and TFC’s (2021) principles to fidelity.

However, Hirsh-Pasek and colleagues’ (2020) Active Playful Learning framework differs from LPI and TFC (2021) and Nasir et al. (2021) because it offers a limited set of evidence-based instructional principles to support playful learning alongside a complementary set of student outcomes in the “6 Cs.” This design theoretically permits its classroom implementation as a system with the ability to evaluate both how the playful learning principles are incorporated into pedagogy and how student outcomes (i.e., the “6 Cs”) change, alongside teachers’ behaviors and perspectives on their instruction. It is particularly important to consider teacher opinions on the approach because Active Playful Learning prioritizes teacher agency, allowing them to harness their professional expertise as they align the playful learning principles with their curriculum and account for their knowledge and experiences of their students. These qualities of the framework raise the question of whether Active Playful Learning is empirically testable.

Preliminary Efficacy of the Playful Learning Principles and the “6 Cs”

Two mixed-methods studies that are currently under review show preliminary efficacy of Hirsh-Pasek and colleagues’ (2020) Active Playful Learning model. The results appeared across different school settings and when collaborating with educators

on different implementation strategies.

In Blinkoff et al. (under review), researchers partnered with teachers and administrators in a small school district in the Midwestern United States, beginning in the 2017-18 school year and continuing through 2018-19, to implement interdisciplinary thematic instruction district-wide that targeted the “6 Cs” outcomes. The district was located in an under-served community, where 78% of students identified as Hispanic or Latino, 95% qualified for free or reduced-price lunch, and 48% were English learners. This permitted investigation of whether the intervention was effective with students who were demographically more likely to face an opportunity gap with respect to reading and math assessment performance (Fuller et al., 2007; Reardon, 2011, 2013) and classroom instructional disparities relative to their affluent peers (Anyon, 1980). Administrators identified kindergarten through 2nd-grade students as in either “6 Cs” or business as usual classrooms with varied enthusiasm for the “6 Cs” approach among intervention teachers.

Results broadly supported the intervention’s effectiveness. Qualitative results from nine semi-structured interviews conducted with educators and education stakeholders (e.g., local policymakers) across the district indicated that the intervention was feasible and a new approach to education reform. Other themes revealed that educators experienced professional development through the “6 Cs” approach with gains in student collaboration and agency. A series of multi-level models suggested that the “6 Cs” approach positively impacted students’ math and reading scores on a standardized assessment. The “6 Cs” 1st-graders achieved significantly higher reading and math scores than their non-intervention peers in Spring 2019. They also demonstrated greater growth over the school year compared to their non-intervention peers, though not to a significant

degree (Blinkoff et al., under review).

Nesbitt et al. (under review), which directly informed the development of this study, scaled up Hirsh-Pasek and colleagues' (2020) Active Playful Learning model with kindergarten teachers across the State of New Hampshire. The intervention was implemented in direct response to a 2018 amendment of the state's *Substantive Educational Content of an Adequate Education* law to mandate play-based kindergarten (RSA 193-E:2-a). The passage of this law demonstrated the potential for state education policy to align with the science of learning, in contrast to the "schoolification" trend (Ring & O'Sullivan, 2018) attributed to NCLB and detailed previously. More importantly for research purposes, the law established a novel educational context in which to evaluate the Active Playful Learning approach (Hirsh-Pasek et al., 2020) with a focus on guided play, since teachers were required to implement a play-based pedagogy. The study also explored a new implementation method using embedded, practice-based coaching of kindergarten teachers by instructional coaches on the research team.

Key Principles of Instructional Coaching in Prior Research. During the 2019-20 school year, 31 teachers received coaching on adult-facilitated, child-directed guided play (Weisberg et al., 2016). Unlike in Blinkoff et al. (under review), this professional development was not fully initiated by the participating school districts, but implemented in collaboration with schools through a university research-practice partnership.

The use of embedded coaching to promote guided play was consistent with general best practices for teacher professional development. Reviews and meta-analyses of professional development programs (Darling-Hammond et al., 2009; 2017; Desimone, 2009; Garet et al., 2001; Hill et al., 2013; Lynch et al., 2019; Wei et al., 2010; Zaslow et

al., 2010) identified five elements that were reflected in New Hampshire's coaching program:

1. intense and sustained training over weeks and months;
 2. coherent connections to teachers' own practice;
 3. embedded supports provided in teachers' work environments that allow for active, hands-on learning;
 4. deep focus on specific, discrete skills and content aligned with how students learn; and
 5. collective participation among a community of teachers that allow for peer learning.
- (Hirsh-Pasek et al., 2022, p. 75)

Focusing on best practices for instructional coaching, Kraft et al.'s (2018) meta-analysis found coaching more effective when paired with training workshops, allowing the sessions to build on a common foundation of knowledge, and that it was important for the coaching to target specific skills. Studies on the appropriate quantity of coaching have generated mixed results (Dunst et al., 2015; Kennedy, 2016; Kraft et al., 2018; Yoon et al., 2007), but identified 14 contact hours with a coach as a minimum threshold required for positive effects to appear (Dunst et al., 2015; Yoon et al., 2007). The National Professional Development Center on Inclusion (2008) and Neufeld and Roper (2002) further suggested three key components for each coaching session: 1) goal-setting, including identifying the steps necessary to meet those goals, 2) focused observations of teachers' practices aligned with established goals, and 3) coach feedback and modeling to refine teaching practices, which includes joint reflection between the teacher and coach. The coaching program in Nesbitt et al. (under review) aligned with these practices when supporting teachers to implement guided play and the playful learning principles.

Preliminary Results from a Mixed Methods Study of the Coaching Program.

As in Blinkoff et al. (under review), Nesbitt and colleagues (under review) employed a mixed-methods approach to investigate: 1) teachers' views on the coaching experience, 2) their opinions about playful learning, 3) teachers' perceptions of the impact of the intervention on their classroom climate and students' learning experiences, and 4) to a limited degree, teachers' estimations of the intervention's effects on students' "6 Cs." Data were collected from three teacher surveys (pre-coaching, mid-year, and post-coaching).

Survey results first indicated that the coaching was a positive experience for teachers. Nearly all teachers reported that their coaches were "highly involved" and "highly responsive" with all teachers stating that they would recommend the experience to a colleague. Teachers' qualitative survey responses provided further evidence of their professional development through the coaching program and highlighted their appreciation for their coach's observations and feedback.

In response to the second research objective, teachers retrospectively reported a significant increase in their knowledge of play-based learning, and their ability to engage students in it, from pre-coaching to the midpoint in the intervention. Teachers also reported significant growth from pre- to post-coaching in their views on the importance and practicality of play-based learning, as well as their comfort with the approach (Cohen's d 's all ≥ 0.42 SD). Teachers reported in their qualitative responses on how the coaching program changed their teaching philosophy and recognized how they could integrate play-based learning and content.

Addressing the classroom climate and students' experiences, quantitative data

were limited, but the percentage of teachers who identified their classroom as “play-based” significantly increased from pre- (38%) to post-coaching (89%). Qualitative survey responses referencing student agency and active learning were particularly frequent, suggesting the implementation of playful learning principles (Hirsh-Pasek et al., 2020) in the classroom.

Lastly, teachers’ retrospective reports on the post-coaching survey revealed significant growth across all of their students “6 Cs.” Effect sizes ranged from at least $d = 0.85$ standard deviations for content items to at least 1.39 standard deviations for collaboration items. These effect sizes are all considered large by Cohen’s (1969) original benchmarks. They also exceed the benchmark of 0.20 standard deviations that Kraft (2020) identified for a “large” effect for experimental educational interventions. However, establishing a pattern of standardized normative growth on the “6 Cs” over the school year is necessary to fully demonstrate the added benefit of the coaching intervention for students’ skills (Bloom et al., 2008). Qualitative survey data included frequent references to students’ collaboration and critical thinking, demonstrating how students developed their “6 Cs” skills (Golinkoff & Hirsh-Pasek, 2016) through playful learning.

Dissertation Research Questions and Hypotheses

These studies offer initial evidence supporting the practical feasibility and effectiveness of Active Playful Learning for students and educators in different school settings when using different approaches to implement the intervention framework. Despite the promising results shown by Nesbitt et al. (under review), their initial feasibility study had several limitations. Instructional coaching only occurred every 3-4

weeks. It also focused on guided play and the playful learning principles, rather than linking guided play to the “6 Cs.” It faced a substantial methodological limitation in that all student and teacher behaviors and student outcomes were documented through teacher reports. Lastly, evaluation of student’ “6 Cs” skills was retrospective, preventing analysis of growth in students’ “6 Cs” over the course of the intervention.

This study went beyond Nesbitt et al. (under review) with respect to the design of the instructional coaching program and the evaluation of the program’s potential impacts on teachers and students. It sought to address limitations of the prior coaching program by incorporating classroom visits by instructional coaches every 2-3 weeks, rather than every 3-4 weeks. The teachers also received greater guidance on the “6 Cs” and were encouraged to reference them in class. The methodological limitation of reliance on teacher-reported measures was reduced through the addition of full-day classroom observations at the beginning and end of the school year by a neutral, third-party observer who was blind to hypotheses, but not to condition. Observations focused on student and teacher behaviors consistent with Active Playful Learning. Rather than evaluating students’ “6 Cs” retrospectively, teachers completed a survey that was administered pre- and post-coaching to track changes in students’ skills over the school year. Lastly, the addition of a business as usual control group exclusively for the year-end surveys and classroom observations allowed preliminary investigation of the intervention’s causal effects on students and teachers. This design allowed the study to explore three research aims with corresponding research questions and hypotheses:

Aim 1: Investigate Teacher-Reported Perceptions of the Coaching Experience and Intervention

Research Question 1: How Do Teachers Perceive the Intervention? How Do They Respond to Specific Elements of the Intervention Program? These results were hypothesized to replicate Nesbitt et al. (under review). Quantitative survey results were expected to indicate that teachers felt their coaches were highly involved and responsive, and that they would recommend the experience to a colleague. At the conclusion of the school year, participating teachers in the coaching program were likely to indicate that they were still “excited about teaching.” Qualitative data from teachers’ post-coaching surveys were expected to reference changes in teachers’ educational philosophies to align with Active Playful Learning, professional collaboration among teachers, and the joy of teaching.

While this research question primarily investigated the effects of the coaching program on intervention teachers, control teachers were also asked to rate how they felt about the school year on a scale from “exhausted and burnt out” to “excited about teaching.” Intervention teachers were expected to provide a higher average rating on this item than the control teachers.

Research Question 2: Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles? Focusing first on the intervention group, it was hypothesized that a significantly greater percentage of teachers would identify guided play as typically occurring in their classroom from pre- to post-coaching. Related Likert

ratings on several survey items investigating teachers' opinions of guided play were hypothesized to increase, as well. Intervention teachers were predicted to report a greater comfort level with implementing guided play in their classroom over time. They were also likely to show an increased understanding of the importance of guided play, as measured by two respective Likert ratings on the benefits of guided play for student learning and the development of teaching practices in kindergarten. Lastly, teachers were expected to rate guided play strategies as increasingly practical to implement over time.

Beyond these initial ratings on guided play, a novel correlation was hypothesized to show a positive association between intervention teachers' increasingly positive opinions about guided play over the course of the intervention and an increasingly constructivist teaching philosophy. Here, constructivist teaching was operationalized based on Woolley et al.'s (2004) *Teacher Beliefs Survey* and its identification of teaching practices that require students to work together when engaging in and evaluating their learning. A definition based on Hyson et al.'s (1990) *Classroom Practices Inventory* was also considered, in which teachers rate the likelihood of specific constructivist or rote activities occurring in their classroom.

Qualitative post-coaching survey responses were hypothesized to describe the intervention teachers' implementation of guided play activities that incorporated the playful learning principles and promoted the "6 Cs."

Turning to between-groups hypotheses, the implementation rate of guided play was hypothesized to be significantly greater in intervention classrooms than control classrooms. Intervention teachers were also expected to report more positive opinions on guided play (e.g., level of comfort, practicality, etc.) than their control colleagues.

Qualitative responses from intervention teachers were more likely to describe implementation of the playful learning principles and “6 Cs” than control group responses.

Research Question 3: How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention? Intervention teachers’ qualitative post-coaching survey responses were hypothesized to reference student agency based on its importance in guided play (e.g., Weisberg et al., 2013). Given the intervention’s focus, teachers were likely to refer to students practicing the playful learning principles and developing their “6 Cs.”

Aim 2: Conduct Independent Observations of Teacher and Student Behaviors

Research Question 1: Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles? Novel post-coaching classroom observations used versions of the *Teacher Observation Protocol* (TOP; Farran et al., 2019b; Farran & Nesbitt., 2021b) and *Child Observation Protocol* (COP; Farran et al., 2019a; Farran & Nesbitt., 2021a) that were adapted to focus on guided play and the components of Active Playful Learning in this study. Observations were hypothesized to show an increase in the facilitation of guided play activities and a decrease in passive, teacher-directed instruction and individual work. It was further hypothesized that the intervention would promote more frequent use of centers and open-ended questions from the teacher, as well as higher quality, inferential instruction (e.g., asking a student “What do you think would happen if we put this heavier block on top?”) and encouraging hypothesis-testing, rather

than simply stating “I see you’re using the triangle block for your roof.”). Classroom climate was also likely to change, as demonstrated by teachers’ positive affect. In this changing classroom environment, teachers were more likely to observe their students.

Regarding between-group differences, intervention teachers were hypothesized to provide greater guided play and center use than their control colleagues. They were also expected to demonstrate a more positive affect and observe their students more frequently. However, direct instruction and individual work were hypothesized to favor the control group.

Research Question 2: How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention? Classroom observations conducted in intervention classrooms using the adapted COP (Farran & Nesbitt, 2021a) were hypothesized to show changes in student behaviors over time consistent with the intervention’s emphasis on guided play and the playful learning principles. Specifically, students were predicted to show increased engagement in guided play activities and more frequent instances of students speaking and interacting with each other. Students were also likely to become more involved, or engaged, with their learning, practice self-regulation, and show greater use of hands-on manipulatives during lessons. These same behaviors were hypothesized to be greater in the intervention group than the control group.

Aim 3: Evaluate Differences in Students’ “6 Cs” Skills

Research Question 1: Does the Intervention Influence Students’ “6 Cs” Skills? It was hypothesized that intervention teachers would report significant gains in students’ “6 Cs” from pre- to post-coaching, replicating the retrospective “6 Cs” survey

results from Nesbitt et al. (under review). Beyond the researcher-developed “6 Cs” survey used in Nesbitt et al. (under review), the intervention teachers were predicted to report their students’ “6 Cs” growth on several related domains of the Early Development Instrument (EDI; McMaster University, 2000) corresponding to language and cognitive skills, social skills, and content knowledge. Pre- to post-coaching gains were also likely to appear on several teacher-reported items from the New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) pertaining to content knowledge in all major academic subjects. Intervention teachers’ qualitative responses to the post-coaching survey were hypothesized to include references to students developing “6 Cs” skills. All survey responses pertaining to students’ “6 Cs” skills were hypothesized to be greater in the intervention group than the control group.

CHAPTER 2

METHODS

Participants

This study recruited 30 kindergarten teachers from across the State of New Hampshire to serve in the 2021-22 cohort of the instructional coaching program, including 20 teachers who received coaching in an intervention group and 10 teachers in a business as usual control group. Teacher recruitment occurred in two phases. The first phase invited kindergarten teachers from across New Hampshire to join the coaching program. This group was self-selected, although no teachers from prior cohorts of the coaching program were permitted to enroll and schools with greater rates of free and reduced-price lunch eligibility among their students were prioritized. The second phase invited control teachers to join at the end of the 2021-22 school year. These teachers were excluded if they participated in a prior cohort of the coaching program, but they were recruited from the same schools as their colleagues in the intervention group, enabling them to be matched on school characteristics.

The analytic sample in this study consisted of 19 intervention teachers and 9 control teachers, since one intervention teacher resigned from teaching during the study and one control teacher ultimately did not consent to classroom observations or surveys. The intervention teachers all identified as White and female with 16 years of average teaching experience (SD = 8.86, Min. = 3 years, Max. = 34 years) and an average of 11 years of experience teaching kindergarten (SD = 8.90, Min. = < 1 year, Max. = 34 years). Additionally, 68% of these teachers held a Master's degree. The control teachers were

similarly all White with eight females and one male. They had 11 years of teaching experience, on average ($SD = 8.37$), with 5 years of average kindergarten experience ($SD = 3.71$). Among the control teachers, 67% held a Master's degree.

Although students did not participate directly in this study, the intervention group's average class size was 15 students ($SD = 2.97$), as measured by a teacher survey. Students in these classes were, on average, 34% female ($SD = 20.18$), 5% English learners ($SD = 11.12$), 14% recipients of special education accommodations ($SD = 9.41$), 83% White ($SD = 24.96$), 5% Asian ($SD = 10.79$), 4% Latinx ($SD = 5.60$), and 3% Black ($SD = 5.28$). The control group had an average class size of 15 ($SD = 2.06$) and classes that were, on average, 50% female ($SD = 6.76$), 4% English learners ($SD = 5.61$), 21% recipients of special education accommodations ($SD = 7.52$), 88% White ($SD = 7.60$), 4% Black ($SD = 6.34$), 3% Asian ($SD = 5.26$), and 1% Latinx ($SD = 3.28$). Free and reduced-price lunch (FRPL) eligibility was not a valid measure of student socio-economic status during the 2021-22 school year, since many teachers reported that free lunch was universally provided due to COVID-19. However, New Hampshire Department of Education data indicate reasonably equivalent FRPL-eligibility at the school level between the intervention ($M = 23.88\%$, $SD = 18.56$) and control ($M = 28.49\%$, $SD = 17.84$) groups. The intervention and control groups were similarly matched on reading ($M_I = 45.28\%$, $SD_I = 12.60$; $M_C = 44.39\%$, $SD_C = 17.12$) and math ($M_I = 40.35\%$, $SD_I = 13.44$; $M_C = 40.00\%$, $SD_C = 17.92$) proficiency based on New Hampshire Department of Education data.

Instructional Coaching Approach

The 2021-22 coaching program largely replicated Nesbitt et al. (under review)

with individualized embedded coaching on guided play and playful learning principles from August 2021 through February 2022. Classroom visits between teachers and their coaches took place over six months September 2021 and February 2022. Data collection occurred before, during, and after this six-month period (Table 1). All study protocols were approved by the University of New Hampshire Institutional Review Board.

Although it was not a requirement, all teachers were encouraged to incorporate 75 minutes of guided play into each school day, including time to instructionally scaffold the play (e.g., explain the learning goal and set limited parameters for student agency) and for students to engage in post-play reflections.

Table 1

Implementation Timeline for the 2021-22 Coaching Program

Time Period	Key Events
August 2021	<ul style="list-style-type: none"> • Pre-coaching survey administered to intervention teachers • Introductory workshop with intervention teachers, coaches, and researchers
September 2021	<ul style="list-style-type: none"> • Coaching visits begin
October 2021	<ul style="list-style-type: none"> • Initial classroom observations of intervention teachers using the adapted <i>Child Observation Protocol</i> and <i>Teacher Observation Protocol</i> (Farran & Nesbitt, 2021a, 2021b) • Pre-coaching survey of students' "6 Cs" administered to intervention teachers
November 2021	<ul style="list-style-type: none"> • Second "check-in" workshop with intervention teachers and coaches
February 2022	<ul style="list-style-type: none"> • Coaching visits end
April 2022	<ul style="list-style-type: none"> • Year-end classroom observations of intervention and control teachers using the adapted <i>Child Observation Protocol</i> and <i>Teacher Observation Protocol</i> (Farran & Nesbitt, 2021a, 2021b)
May 2022	<ul style="list-style-type: none"> • Year-end survey administered to intervention and control teachers • Year-end survey of students' "6 Cs" administered to intervention and control teachers

Coaching sessions occurred every 2-3 weeks for the duration of the six-month coaching period. The content of the coaching broadened to cover guided play and principles of playful learning, in addition to the “6 Cs” and how those skills are promoted through guided play activities. Teachers were encouraged to reference the “6 Cs” skills in their classrooms.

Instructional coaches were full-time University of New Hampshire employees who met several criteria demonstrating their skill in education. They held Master’s degrees in the field and satisfied the minimum practice-based coaching qualifications and competency standards under development by the New Hampshire Departments of Health and Human Services and Education. These practice-based coaching qualifications include 1) A Bachelor’s degree in education, social work, human/child development, or a related field and 2) Five years of educational experience. The competency standards include a demonstration of 1) Ethical standards; 2) Communication skills; 3) Evidence-based coaching skills; and 4) Commitment to ongoing professional development.

The coaches received initial training before the first cohort of teachers described in Nesbitt et al. (under review) began in 2019-20. Although the coaches were already experienced kindergarten teachers, they reviewed articles on play-based learning and completed a two-day training program on practice-based coaching through the National Center for Pyramid Model Innovations. They also joined in-person trainings on instructional coaching with the director of the University of New Hampshire’s lab school. Prior to this study, the coaches met with the principal investigator at the University of New Hampshire to review the “6 Cs.”

Instructional Coaching Implementation

All teachers completed a Teacher-Coach-Administrator agreement specifying the expectations of the coaching program and provided informed consent prior to participation. The 2021-22 coaching program then began in August 2021 with a full-day, in-person and interactive workshop at a local children's museum designed to introduce teachers to the playful learning principles, the features of guided play, and the "6 Cs" (Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek et al., 2020; Weisberg et al., 2016). Teachers listened to a talk by a developer of the playful learning principles and "6 Cs," but also engaged in active learning themselves by observing how the museum facilitated guided play in its exhibits. This prepared the teachers for later sessions, in which they participated in a model post-play meeting to share what they learned, then discussed implementing guided play, the playful learning principles and the "6 Cs" with their own curricula. The experience readied them to facilitate subsequent activities in their own classrooms that featured instructional scaffolding, a guided play activity, and post-play reflection. This model of implementing guided play and the "6 Cs" remained areas of emphasis throughout the intervention.

Intervention teachers received visits (12 total) from their instructional coaches every two-to-three weeks between September 2021 and February 2022. The first visit was designed to establish a collaborative partnership between teacher and coach and typically occurred before students arrived. It aimed to accomplish four goals: 1) Discuss the teacher's identified areas of strength, areas for growth, and goals for coaching experience; 2) Review the cyclical coaching process of observation, reflection and feedback, goal setting, and action planning; 3) Ensure that goals are SMART (Specific,

Measurable, Achievable, Relevant, and Time-Bound); and 4) Create an action plan with specific observable steps and supports needed to achieve identified goals. This approach prioritized teacher agency from the outset, though the coaches often suggested that teachers think about how they facilitate guided play through the physical classroom environment, giving the teachers a relatively tangible starting point for future goal-setting. Each subsequent visit followed a fixed routine: An hour of classroom observation by the coach, and then a 45-minute debriefing meeting between the coach and teacher. Critically, the coach's focus during a given observation and the level of coach engagement with students were collaboratively identified by the coach and teacher during a prior coaching session. Each coaching session was tailored to the teacher's needs and goals. The debriefing meeting was intended as a conversation to allow the coach to share feedback with the teacher and facilitate teacher reflection. The teacher then worked with the coach to collaboratively identify goals for the next coaching session. All feedback that the coach offered was rooted not only in the fundamentals of guided play, the playful learning principles, and the "6 Cs," but aligned with the components of the Active Playful Learning framework that the teacher wanted to advance in their classroom. In this way, the meetings targeted key elements of the intervention, but were not scripted. For example, coaches often began their debriefings by recognizing a positive event that occurred during the observation. Each classroom visit was logged by the instructional coach, who recorded their direct observations from the observation period, reflections on that observation, notes from the debriefing meeting, and the teacher's next steps to achieve their goals. A copy of this log was shared with the teacher after each visit.

Beyond the biweekly visits from their coaches, teachers participated in a second

full-day, in-person workshop in November 2021. Teachers shared their experiences with the intervention thus far, addressing both successes and challenges. Discussion focused on the structure of the guided play sessions and the “6 Cs” with opportunities for collaborative troubleshooting and guidance from coaches. Monthly virtual meetings supplemented this professional development experience and gave teachers another opportunity for reflection and collaboration in a community of practice.

Teachers in the business as usual control condition, who were recruited from the same schools as the intervention teachers, continued their typical instruction until the end of the school year, when they completed relevant items from the teacher surveys (i.e., those that do not pertain to experiencing the coaching program) and the year-end classroom observation detailed below. A business as usual control is consistent with how educational intervention studies are often designed, in which a passive control group requiring a subset of students and teachers to opt out of their typical educational practices, is unrealistic. Therefore, researchers explore how an intervention changes educational practices and/or outcomes in comparison to typical pedagogy and/or prior results (Jacob et al., 2019).

Based on feedback from the 2019-20 cohort, school administrators were considered valuable partners in the 2021-22 coaching program. In addition to signing the Coach-Teacher-Administrator agreement, they attended an introductory meeting explaining the coaching model and the planned evaluation of the coaching program. Administrators were also introduced to guided play and the “6 Cs” during the meeting to ensure basic familiarity with the concepts.

Data Sources

This study adopted a mixed methods approach, using quantitative and qualitative analyses to examine the effects of the Active Playful Learning coaching program on teachers' and students' outcomes across the study's three research aims and underlying research questions, summarized here as: 1) Teacher-reported perceptions of the coaching experience and intervention, 2) Independent observations of teacher and student behaviors, and 3) Differences in students' "6 Cs." Data sources are presented below organized by research aim and question.

Teacher-Reported Perceptions of the Coaching Experience and Intervention

How Do Teachers Perceive the Intervention? How Do They Respond to Specific Elements of the Intervention Program? This question was investigated using quantitative and qualitative items on a researcher-developed post-coaching survey administered to intervention teachers in May 2022 (see Appendix B for the intervention version and Appendix C for the control version). Teachers were asked Likert-type questions about their coach's involvement, responsiveness, and connection on a four-point scale (e.g., "Please rate your **coach's level of involvement**" followed by a scale from "Not Involved" to "Highly Involved." Another four-point, Likert-type question asked teachers to rate how they have "...benefitted from the opportunity to work with a play-based learning coach?" from "Not at all" to "Slightly" to "Significantly" and, lastly, "Very Significantly." A subsequent question asked teachers whether they would recommend the experience to a colleague.

Open-ended responses on the intervention teachers' post-coaching survey were also applicable. Key items asked teachers what they "liked/enjoyed most about your class

and teaching this year” and about “a challenge...that your coach has supported you through.” The final item provided an opportunity for general feedback.

A comparison between the intervention and control teachers evaluated their respective levels of professional satisfaction at the end of the school year. Two sliding scales asked teachers about their feelings on the current school year (i.e., “On a scale of 1-10, how are you feeling about the school year?” from “exhausted and burnt out” to “excited about teaching”), and upcoming school year (i.e., “On a scale of 1-10, how are you feeling looking ahead to the next school year?” from “not looking forward to it” to “excited and energized.”

Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

Intervention teachers’ self-reported changes in pedagogical practices were measured using quantitative and qualitative items that appeared on a pre-coaching survey administered in August 2021 (Appendix A) and a May 2022 post-coaching survey (Appendix B). Most items on both surveys were developed by the research team. The pre-coaching survey was administered prior to the interactive workshop that began the study in August 2021. Across both surveys, a multiple-choice question asked teachers if they “...typically incorporate guided play into [their] schedule” with “Yes,” “No,” and “Not sure” responses. If teachers responded “Yes,” they provided an estimate for the percentage of their school day spent on guided play. A series of five-point, Likert-type questions then asked teachers about their comfort level implementing guided play, if it benefits their students and their own teaching practice, and whether guided play strategies

are practical to implement. The survey also asked intervention teachers to rate their own “...knowledge of and ability to engage children in guided play” before and after participating in coaching on a four-point, Likert scale from “Not Knowledgeable” to “Very Highly Knowledgeable.” All the survey items described thus far were originally developed by the research team for this study, since no standardized measures of teachers’ views on these topics are available.

However, two standardized measures of teachers’ pedagogical practices were included in the pre-coaching (Appendix A) and post-coaching surveys (Appendix B). The Teacher Beliefs Survey (TBS) adapted by Woolley et al. (2004) measured teachers’ alignment with constructivist educational philosophy over the course of the intervention. Woolley et al. (2004) determined that 21 items of the TBS loaded onto three factors addressing traditional classroom management (e.g., it is important to establish control over students first), traditional teaching (e.g., basing grades on homework, quizzes, and tests), and constructivist teaching (e.g., involving students in evaluating their own work and goal-setting). Each item is presented on a six-point scale from “Strongly Disagree” to “Strongly Agree.” Measures of internal consistency are .52 for traditional classroom management, .78 for traditional teaching, and .73 for constructivist teaching. This study included two additional items from the 34-item TBS that were potentially related to the teacher’s facilitation of guided play: One addressing how the teacher decorated their classroom “primarily with posters, pictures, or teaching charts” and another on how the teacher “take[-s] care of the learning materials and set[-s] them out for students when they need them.” These items were included to capture how the student agency of guided play can be facilitated by the teacher setting up the learning environment with all the

resources that a student may require to pursue an established learning goal (e.g., Weisberg et al., 2016). The Classroom Practices Inventory (CPI) was developed based on the National Association for the Education of Young Children's Guidelines for Developmentally Appropriate Practice among 4- and 5-year-olds. It asks teachers to rate the likelihood of different instructional practices in their classroom (e.g., "Children use a variety of art media, including easel and finger painting, and clay, in ways of their choosing") on a five-point scale from "Not at all like my classroom" to "Very much like my classroom." Reliability was measured with Cronbach's alpha and generated values of .88 at minimum across four subscales and the entire instrument. Factor analysis to evaluate construct validity determined that a four-factor solution accounted for 69% of the variance. A "choice, concreteness, [and] creativity" factor accounted for 53% of the variance and included items such as "Teachers ask questions that encourage children to give more than one answer" and "Children use a variety of art media, including easel and finger painting, and clay, in ways of their choosing" (Hyson et al., 1990). The intervention group's pre- and post-coaching surveys all included eight items from the CPI to measure practices that are consistent with guided play, or passive, direct instruction, but not captured in other measures.

Several qualitative items from the intervention teachers' pre- and post-coaching surveys also addressed changes in teachers' pedagogy and understanding of guided play. One key item asked teachers to describe their "role as a facilitator of guided play" and "how [it] changed through the coaching process." Another item prompted teachers to provide an example of "typical" guided play in their classroom, permitting evaluation of the teacher's conceptual understanding of the pedagogy in relation to Hirsh-Pasek et al.'s

(2020) framework.

Control teachers also completed the above items on the implementation of guided play and their opinions about the approach on their year-end survey administered in May 2022 (Appendix C), although the item on “knowledge and ability to engage children in guided play” was modified to remove references to coaching. Additionally, they completed the TBS (Woolley et al., 2004) and CPI (Hyson et al., 1990) and described how they implemented guided play, if applicable.

How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention? Teachers’ perceptions regarding this question were investigated through qualitative survey items collected on the intervention group’s pre-coaching (Appendix A) and post-coaching (Appendix B) surveys. Across both surveys, the qualitative item on “typical” guided play implementation was coded for possible references to different student behaviors. The year-end survey asked teachers to report on what they liked most about teaching during the school year, address any barriers to guided play that they faced, and give open-ended feedback on their experience with play-based coaching, all of which could generate references to student behavior. These items all appeared on the control group’s year-end survey (Appendix C), with the exception of the open-ended question about general feedback on coaching.

Independent Observations of Teacher and Student Behaviors

Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

This study included two observations of intervention classrooms to document possible

pedagogical changes. Both observations were conducted by third-party, trained educational consultants blind to study hypotheses, although they were not necessarily blind to condition after the first observation of the intervention teachers. Initial observations occurred in October 2021 and year-end observations occurred in April 2022. Both observations used a revised version of the Child Observation Protocol (COP; Farran et al., 2019a; Farran & Nesbitt, 2021a) and Teacher Observation Protocol (TOP; Farran et al., 2019b; Farran & Nesbitt, 2021b). The observational manuals are available upon request.

Observations occurred during entire school days, using repeated “sweeps” to capture snapshots of teacher and student behavior across a wide array of lessons and educational settings. Each individual observation cycle consisted of two halves to capture teacher behavior and the behavior of all students. The first “sweeps” focused on the teacher and any assistant teachers, respectively, followed by “sweeps” observing half the children in the classroom individually. The teacher was then “swept” again, starting the second half of the observation cycle, followed by observations of the remaining students in the second half of the class. This yielded up to 40 “sweeps” of the teacher and up to 20 “sweeps” for each student for a day of observations. Each “sweep” lasted three seconds. During a “sweep,” the observer categorized behaviors across multiple, mutually exclusive categories. COP and TOP observational data were aggregated up to the classroom level to determine the proportion of “sweeps” that contained a given behavior across all total “sweeps” conducted during the school day (Nesbitt & Farran, 2021a).

Prior research indicates that the COP and TOP exhibit high interrater reliability with Cohen’s kappa estimates for behavior counts ranging from .86 to .93 and intraclass

coefficient estimates for the rating scales ranging from .79 to .91 (Farran et al., 2017; Fuhs et al., 2013; Nesbitt & Farran, 2021a). Additionally, prior research has found little to no variance in children's behaviors on the COP (Nesbitt & Farran, 2021b), or the quantity or quality of teachers' instruction on the TOP (Farran & Nesbitt, 2021c), over the school year.

In this study, kappa estimates ranged from .71 (for the "interactions" variable from the COP) to .94 (for the "activity type" variable from the TOP) with intraclass coefficients from .82 (for the "teacher tone" variable from the TOP) to .92 (for the "level of instruction" variable from the TOP). Classroom observations were completed by two third-party observers on the same school day. Twelve observations (25% of the total number of observations completed over the course of the intervention) were double-coded for inter-rater reliability. Therefore, any observed changes in classroom behaviors were likely attributable to the coaching intervention. The same observation protocol was applied at year-end for both the intervention and control teachers.

Several TOP variables were collected and analyzed for this study, including the teacher's use of open-ended questions and their level of inferential instruction (e.g., asking a student "What do you think would happen if we put this heavier block on top?" and encouraging hypothesis-testing, rather than simply stating "I see you're using the triangle block for your roof."), their tone or affect (rated on a five-point scale from "extreme negative" to "vibrant"), and their observation and approval or disapproval of student behavior. However, two COP variables were also evaluated as measures of the teacher's implementation of guided play pedagogy, given the COP's higher rate of student "sweeps" across the classroom relative to the TOP's teacher "sweeps." First, the

“type of task” variable described how a student engaged with classroom resources and participated in an educational activity. It was broadened from direct instruction, being disruptive, being in time-out, and sleeping, among other categories, to measure free play, guided play, and playful instruction (an activity in which students complete a task, but with minimal agency, such as building a tower according to step-by-step directions). Second, the “activity type” variable tracked student participation in different centers and forms of individual work.

How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention? The COP was most relevant for answering this research question. Within the COP, it was important to consider the student’s “Interaction State” (i.e., with whom they engaged during a “sweep” when they were seen by the observer). As indicators of student social interaction and collaboration in the context of guided play, the “interaction states” of associative and cooperative engagement were measured for anticipated increases. In an associative task, the student “co-construct[s] a learning experience by interacting with other individuals in the context of an activity or task that does not have predetermined rules” (Farran & Nesbitt, 2021a, p. 21). In contrast, a cooperative task involves a group working towards a shared goal with set rules (Farran & Nesbitt, 2021a). Students’ “interaction states” were coded in conjunction with the “type of task” variable described above. Related changes in the materials that students used were considered, namely the use of hands-on manipulatives, instead of worksheets.

Student engagement was evaluated directly, with high engagement operationalized as when the child is “intensely focused on the activity and displays genuine involvement in learning” and distraction is unlikely due to intense concentration

(Farran & Nesbitt, 2021a, p. 32). Student talking and the use of open-ended questions by students (e.g., “What might happen next?”) were also tracked as measures of active and engaged learning, although a hypothesis about students’ open-ended questions was not proposed.

After the final COP and TOP observation, the classroom observer rated different aspects of the classroom environment using an accompanying post-observation tool that is also available upon request. For example, the observer rated “**the teacher’s verbal or nonverbal responsiveness** to children’s questions or requests for attention (including social interaction)” on a five-point scale from “poor or absent” to “exemplary.” Most importantly for this study, the observer rated “**children’s emotional and behavioral self-regulation**” on a five-point scale from “poor” to “excellent.”

Differences in Students’ “6 Cs”

Does the Intervention Influence Students’ “6 Cs” Skills? The most direct evaluation of students’ “6 Cs” skills occurred through another pair of teacher-reported surveys. The pre-coaching “6 Cs” measure was administered in October 2021, then replicated in May 2022 for both the intervention and control groups (Appendices D and E).

The first set of items in the survey was developed by the researchers based on descriptions of the “6 Cs” in Golinkoff and Hirsh-Pasek (2016) to measure students’ “6 Cs” skills, on average, at the classroom level. For example, under *collaboration*, teachers were prompted “Overall, students work/study effectively with other students” and a response on a five-point, Likert scale from “Strongly Disagree” to “Strongly Agree” was required. These items demonstrate strong internal consistency at the beginning

(Cronbach's $\alpha = .89$) and end ($\alpha = .92$) of kindergarten, justifying the computation of an average "6 Cs" item to accompany those measuring students' individual skills.

The second set of survey items was derived from subscales of the Early Development Instrument (EDI; McMaster University, 2000) and the New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014). Many prior studies demonstrate the strong psychometric properties of the EDI, including its between-group reliability and construct, predictive, and cross-cultural validity, as well as internal consistency (Early Development Instrument, 2019). The initial psychometric evaluation of the EDI (Janus & Offord, 2007) evaluated construct validity through factor analysis and ultimately grouped the items into five domains: *Physical Health and Well-Being*, *Social Competence*, *Emotional Maturity*, *Language and Cognitive Development*, and *Communication Skills and General Knowledge*. Teachers reliably completed the EDI with low variability (intraclass correlations ranged from 0.017 to 0.4). The EDI also demonstrated strong internal consistency with Cronbach's alpha values of 0.84 at a minimum across the sub-scales. Lastly, the EDI was sufficiently sensitive to child age and gender.

This study investigated student performance on established EDI domains and sub-domains at the classroom level, which is a novel application of the EDI. However, it was necessary to maintain consistency with other classroom-level surveys and observational measures. Within the *Language and Cognitive Development* domain, EDI (2019) identifies the sub-domains of "basic literacy," "interest literacy/numeracy and memory," and "advanced literacy." These sub-domains contain key items pertaining to students' early literacy and math skills that were evaluated in this study. However, an additional

section of the EDI about whether students are especially skilled in literacy, math, athletics, problem-solving, or the arts (McMaster University, 2000, p. 4) was excluded, since this study was not investigating Active Playful Learning in gifted education. The entire *Social Competence* domain was implemented, including items on how students collaborate with others and demonstrate responsibility. Items under the *Prosocial and Helping Behaviour* sub-domain of *Emotional Maturity* were included, but sub-domains on anxiety, aggression, and hyperactivity and inattention were excluded because Active Playful Learning does not target those behaviors. The *Physical Health and Well-Being* domain and section for *Special Concerns* section were likewise excluded respectively because the intervention did not make any hypotheses related to changes in students' physical well-being, and teachers were given the opportunity to mention any barriers, or concerns, that may have impacted the intervention's effectiveness on their year-end survey. All EDI items required either a Likert rating (e.g., "How would you rate your class, on average, when considering the following skills: is able to play with various children" on a three-point scale from "never or not true" to "often or very true") or an estimated percentage of students in a teacher's class who demonstrate the stated skill (e.g., "What percentage of students in your class are able to use one-to-one correspondence?").

Items measuring classroom level performance on New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) supplemented the EDI with subject area outcomes that are developmentally appropriate and valued by state policymakers. For example, teachers were asked to estimate the percentage of students in their class who "engage in conversations with multiple

exchanges” (p. 4) or “begin to appropriately use positional words indicating location, direction, and distance” (p. 6).

While the “6 Cs” and EDI survey was the primary measure of students’ “6 Cs,” several qualitative items from the post-coaching survey administered to intervention teachers provided opportunities to reference students’ development of their “6 Cs,” including the questions on what teachers liked most about the year and how they facilitated guided play, as well as the item at the end of the survey that permitted general feedback about the coaching experience. These items were also provided to the control teachers on their year-end survey, except for the question regarding general coaching-related feedback.

Analytic Approach

Quantitative Approach

Quantitative analyses initially provided descriptive statistics on all variables of interest from the pre- and post-coaching surveys, the “6 Cs” and EDI survey, and the COP and TOP, including both pre-coaching and year-end administrations. Subsequent analyses evaluated changes in teachers’ responses and students’ observed behaviors from pre- to post-coaching, comparing mean responses to identical survey items (e.g., “Please rate your comfort level with implementing guided play in your kindergarten classroom” on the pre- and post-coaching survey). This study employed bootstrapped paired *t*-tests for these comparisons to account for both small sample size and potential non-normality of the survey responses (Efron, 1981, 1988; Kulesa et al., 2015). Since the COP and TOP (Farran et al., 2019a, 2019b) report average proportions of behavior demonstrated across the same categories from the initial to year-end observations (e.g., engagement in guided

play), the same analysis applied to the observational data, which were all scaled and continuous. This parsimonious analysis was justified because the study implemented a within-subjects design with repeated responses to identical items by the same teachers. Furthermore, all variables were aggregated to the classroom level, so it was not necessary to account for the nesting of students in schools. Additionally, the nesting of classrooms in schools was not a concern because all participating teachers were from different schools.

Analyses of the Teacher Beliefs Survey (Woolley et al., 2004) and Classroom Practices Inventory (Hyson et al., 1990) examined whether the difference in average constructivism from pre- to post-coaching, as measured by these instruments, was correlated with changes in teachers' self-reported implementation of guided play and their opinions about the approach, as measured by the pre- and post-coaching surveys. Constructivism was first operationalized as an average of those items Woolley et al.'s (2004) factor analysis identified as "constructivist teaching." This average was calculated for the pre-coaching and post-coaching survey, respectively, then recalculated with the addition of two items that the coaches in this study prioritized: Decorating the classroom to make learning "visible" and setting out materials for students. The difference between these pre- and post-coaching averages represented the change in constructivism. This approach was replicated with the Classroom Practices Inventory (Hyson et al., 1990), averaging those items consistent with constructivism based on the author's differentiation between descriptions of rote, teacher-centered activities and those that involved students in their own learning. These differences in constructivism were evaluated against pre- to post-coaching changes in teachers' reported implementation of guided play, their comfort

with it, and their views on whether it is beneficial and practical.

Items in the researcher-developed “6 Cs” Survey were evaluated from pre- to post-coaching at the item level with an additional analysis of pre-post differences in the teacher-reported average “6 Cs” score after Cronbach’s alpha indicated sufficiently high internal consistency to average the items.

Analyses of the EDI were conducted at the domain, or sub-domain, level based on the domains and sub-domains established by the instrument’s developers (EDI, 2019). Cronbach’s alpha values were calculated as measures of internal consistency both pre- and post-coaching among items EDI (2019) identified as belonging to the same domain, or sub-domain in the case of *Prosocial and Helping Behavior*, where the entire *Emotional Maturity* domain was not included based on its limited relevance to the Active Playful Learning framework. If the alpha values were sufficiently high both pre- and post-coaching, then the items were averaged according to the EDI’s (2019) design and a bootstrapped paired *t*-test of the composite item from pre- to post-coaching was conducted. In instances where reliability at both time points was low, the domain, or sub-domain, was excluded from analysis. All items from the New Hampshire Kindergarten Readiness Standards (New Hampshire Department of Education et al., 2014) were evaluated independently using bootstrapped paired *t*-tests from pre- to post-coaching.

Despite the strengths of the within-subjects design following intervention teachers from pre-to-post-coaching, this study evaluated the need to control for three variables: Coach assignment (since teachers are assigned to one of two coaches for the intervention), administrative support received by the teacher, and the level of engagement with resources on play-based learning before the intervention. The administrative support

variable was measured using a Likert item on the post-coaching survey that asked teachers to "...rate how supportive your school administration is in regards to the implementation of **guided play**" on a four-point scale from "Not Supportive" to "Very Supportive." Pre-intervention resource use was evaluated through a multiple choice question on the pre-coaching survey that asked teachers to check off the resources they "accessed over the past two years in an effort to support your own professional development related to play-based learning." The professional development options included workshops hosted by the University of New Hampshire or other organizations, other coaching programs, materials from NAEYC, a "kindergarten toolkit" offered by the New Hampshire Department of Education, and books or other publications. Teachers could also indicate that "no resources were accessed."

The coach assignment, administrative support, and pre-coaching resource use variables were first visually inspected for variability. A sensitivity test for possible effects of coach assignment on intervention group post-coaching survey results was conducted with a bootstrapped independent sample *t*-test to identify any impact of coach assignment on a variable of interest. Potential effects of variation in school administrative support on post-coaching survey responses were examined by evaluating bootstrapped correlations between intervention teachers' ratings of administrative support from the post-coaching survey and survey variables of interest. Evaluation of the pre-coaching survey was not required, since coaches were not assigned at the time the survey was administered. These sensitivity tests were replicated with survey items evaluating students' "6 Cs" skills and again focused on post-coaching effects, given that the pre-coaching evaluation of the "6 Cs" occurred early in the year. Impacts of these potential covariates on COP and TOP

observation variables were examined using the same procedure. Any significant, or marginally significant, t -test or correlation was followed by a univariate ANOVA to investigate effects of the possible covariate on the variable of interest post-coaching, controlling for that variable pre-coaching.

Differences between the intervention and control teachers were evaluated using bootstrapped independent samples t -tests, since the analyses compared the difference between two groups on the same item, or a reliable item composite.

All analyses produced effect sizes to indicate the educational significance of results, going beyond statistical significance.

Qualitative Approach

Qualitative analyses generally replicated the procedure in Nesbitt et al. (under review), adopting an inductive strategy of theory development, or emergent design, in which patterns and themes emerge from the data (Lincoln & Guba, 1985). Coding followed an iterative process based on qualitative content analysis procedures described by Zhang and Wildemuth (2009) to promote an in-depth understanding of the data, coding consistency, and credibility of inferences.

Two coders, including the author, completed the qualitative analyses, led by the author of this study. The coder assisting the author was an undergraduate research assistant pursuing a degree in psychology. The author trained the coder on the playful learning principles, guided play, the “6 Cs,” and the process of constant comparative analysis (Lincoln & Guba, 1985) detailed below.

Each coder, including the author, independently coded the relevant short-response items from the pre- and post-coaching surveys. The coders then applied the inductive

model, enabling patterns in responses to emerge from the data (Lincoln & Guba, 1985). The coders met regularly to review progress and apply the constant comparative method (Lincoln & Guba, 1985), discussing any concerns regarding the emergence and applicability of codes. An expert coder with a Ph.D. in educational psychology and experience with qualitative educational research was consulted periodically to review the developing codes and offer feedback on how they could be refined. Categories and themes for all documents were revised on an iterative basis until all coders agreed that no further revisions were required, then all coded documents were reviewed for appropriate code assignment. This process enabled 100% inter-coder agreement (Creswell and Miller 2000; Zhang & Wildemuth, 2009). Frequency tables of qualitative data codes identified the most common themes and sub-categories that emerged from the data with sample quotes from teachers included to document their individual experiences.

CHAPTER 3

RESULTS

Teacher-Reported Perceptions of the Coaching Experience and Intervention

How Do Teachers Perceive the Intervention? How Do They Respond to Specific Elements of the Intervention Program?

Several items on the post-coaching survey evaluated how teachers who participated in the Active Playful Learning intervention responded to their instructional coaches. All intervention teachers ($n = 19$) rated their coaches between “involved” and “highly involved” ($M = 3.89$, $SD = 0.32$), “responsive” and “highly responsive” ($M = 3.95$, $SD = 0.23$), and “connected” and “highly connected” ($M = 3.89$, $SD = 0.32$). They likewise derived a “significant” or “very significant” benefit from working with their coach ($M = 3.79$, $SD = 0.42$). Every intervention teacher indicated that they would recommend the experience to a colleague.

Perhaps related to their positive experiences with their coaches, teachers reported relatively high levels of professional satisfaction at the end of the school year. At that time, intervention teachers provided an average response of 6.95 ($SD = 2.78$) on a ten-point scale asking how teachers were “feeling about the school year,” which was consistent with being “excited about teaching,” rather than “exhausted and burnt out.” However, this was a marginally significant decline ($t(18) = -1.88$, bootstrapped $p = .08$, $g = -0.41$) from how teachers felt about the school year on the pre-coaching survey ($M = 8.05$, $SD = 1.51$). That said, intervention teachers remained “excited and energized” at the end of the school year when reporting on their feelings about the next year ($M = 7.27$, SD

= 2.43).

Qualitative items from the same post-coaching survey described how intervention teachers generally responded positively to their coaches and recognized specific ways in which their coaches supported them during the intervention (see Tables 9 through 11 in Appendix F for all qualitative themes and sub-categories with example quotes). The theme of “teacher benefits” emerged 124 times when coding intervention teachers’ responses to open-ended questions on the post-coaching survey. Under this theme, five references described how teachers benefitted from their relationship with their coach. As one teacher stated, “I cannot express enough how vital it was for me to have Karen’s [a coach] unwavering and dynamic support this year.”

Another key item on the post-coaching survey specifically asked intervention teachers how their coach supported them through a challenge. The theme of “coach support” was identified primarily through teachers’ responses to this question with 44 references. Under this theme, the most frequent sub-category was “reflection and teaching philosophy,” which was referenced seven times and referred to how coaches supported teachers’ introspection of their own pedagogy as they came to recognize the potential benefits of Active Playful Learning. For example, one teacher noted, “My coach helped me realize that I need to ‘listen’ more than I talk. I need to let the children lead the way. WOW...amazing things do happen.” The related sub-category of “student-teacher relationship” was also referenced seven times and typically addressed how teachers reflected on their instruction and realized the value of promoting student agency through Active Playful Learning. One teacher stated the following:

Karen [a coach] helped me see that letting students choose their own pieces, putting out loose parts, NOT having a sample encourages their creativity, problem solving, and learning. It took me a long time to finally let that go. I am so thankful that Karen continued to gently encourage me to do so.

The third-most frequent sub-category was “personal,” which was referenced six times and described how teachers appreciated the compassion and professional validation that the coaches provided. One teacher commented:

Jen [a coach] was so supportive and understanding. I have had life events happen this year and times when I have been overwhelmed. She was always there and very understanding and kind. Thank goodness for her support!

Qualitative survey responses offered more direct documentation of Active Playful Learning and teacher affect, among other positive outcomes for teachers. The “teacher benefits” theme, referenced 124 times by the intervention teachers, included 21 instances of the “joy” sub-category. This sub-category described teachers deriving satisfaction from their experience with the intervention. For example, one teacher stated how she “...enjoyed trying to implement play-based learning and doing art and science projects in my class.” Another declared, “I have felt more relaxed and joyful in the day to day workings of my classroom.” The related benefits of professional development and “reflection and teaching philosophy” were among the three most commonly cited sub-categories with 22 and 21 references, respectively. Many quotes fell into both sub-categories, since teachers reflected both on the experience of professional development and how that growth specifically pertained to their teaching philosophy. For example, one teacher expressed, “I love that I worked through the tough stuff and now [I] love my class

and understand the importance of play based learning. Karen [a coach] was integral to my growth as a professional.” As predicted, teachers also made three references to the value of professional collaboration. One teacher clearly stated, “This process was very helpful in my journey of play based learning. It was great to reflect with other teachers as well.”

That said, teachers’ perceptions of the intervention were not entirely positive. The theme of “challenges,” which included 43 references, primarily emerged in response to the item about barriers to guided play on the post-coaching survey. The sub-category of “scheduling,” referenced 10 times, was most frequent. Several teachers simply stated “time” or “schedules” when asked about barriers. One teacher provided further context for how the lack of time, among other challenges, impacted her class, noting, “Time, space, and ‘push down’ curriculum & testing/assessments. There is never enough time. The kids and I are always bummed when centers are over...” The second- and third-most frequent sub-categories were “standards and curriculum” and “administrative support,” referenced six and five times, respectively. For example, the following quote shows how a teacher identified both barriers, “A strong focus on curriculum in our building, with little interest from above to hear how play is incorporated in our day.”

Comparison with Control Classrooms. Results indicate a positive association between teachers’ participation in the intervention and their professional satisfaction at the end of year, as measured by an item on the intervention and control teachers’ year-end surveys that asked teachers to rate how they felt about the school year on a ten-point scale from “exhausted and burnt out” to “excited about teaching.” The intervention teachers provided a significantly more positive response than their control colleagues ($t(26) = 2.25, p = .03$, bootstrapped 95% CI: [0.57, 3.87], $g = 0.88, M_{\text{Intervention (I)}} = 6.95$,

$SD_I = 2.78$, $M_{\text{Control (C)}} = 4.67$, $SD_C = 1.73$). The intervention and control teachers did not significantly differ in their views on next school year ($t(22) = 0.63$, $p = .53$, bootstrapped 95% CI: [-1.22, 2.24], $g = 0.26$, $M_I = 7.27$, $SD_I = 2.43$, $M_C = 6.67$, $SD_C = 1.87$), but both groups provided average ratings on a ten-point scale consistent with feeling “excited and energized.”

Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

A series of items on the pre- and post-coaching survey investigated teacher-reported implementation of guided play and their opinions on the pedagogy. In August 2021, 13 teachers in the intervention group indicated that they typically implemented guided play, with four stating that they did not and three who were unsure. All 18 intervention group respondents reported that they typically implemented guided play on the post-coaching survey. This was a significant shift towards the approach over the course of the intervention ($t(17) = 2.56$, bootstrapped $p = .02$, $g = 0.58$). Intervention teachers also made significant gains in their support for the practicality of guided play ($t(16) = 2.79$, bootstrapped $p = .02$, $g = 0.64$) from pre- ($M = 4.18$, $SD = 0.81$) to post-coaching ($M = 4.76$, $SD = 0.44$) with a marginally significant increase in their comfort with the approach ($t(17) = 2.30$, bootstrapped $p = .06$, $g = 0.52$, $M_{\text{Pre}} = 3.28$, $SD_{\text{Pre}} = 0.46$, $M_{\text{Post}} = 4.06$, $SD_{\text{Post}} = 1.31$). A unique retrospective item asking about teachers’ “knowledge of and ability to engage children in” guided play before and after coaching indicated significant pre- to post-coaching growth ($t(18) = 7.64$, bootstrapped $p < .001$, $g = 1.68$, $M_{\text{Pre}} = 1.89$, $SD_{\text{Pre}} = 0.66$, $M_{\text{Post}} = 3.37$, $SD_{\text{Post}} = 0.60$). However, intervention

teachers did not report significant changes in the percentage of their day dedicated to guided play ($t(12) = 1.04$, bootstrapped $p = .30$, $g = 0.27$, $M_{Pre} = 27.38\%$, $SD_{Pre} = 13.46$, $M_{Post} = 33.00\%$, $SD_{Post} = 20.65$), or their views on the importance of guided play as measured by its benefits for student learning in kindergarten ($t(17) = 1.00$, bootstrapped $p = .35$, $g = 0.23$, $M_{Pre} = 4.78$, $SD_{Pre} = 0.43$, $M_{Post} = 4.89$, $SD_{Post} = 0.32$) and their own teaching practices ($t(17) = 0.00$, bootstrapped $p = 1.00$, $g = 0.00$, $M_{Pre} = 4.83$, $SD_{Pre} = 0.38$, $M_{Post} = 4.83$, $SD_{Post} = 0.51$).

A secondary analysis using pre- and post-coaching survey data examined potential associations between changes in intervention teachers' implementation of, and opinions about, guided play over the school year and their constructivist educational philosophies. Correlations were initially assessed between the average pre- to post-coaching difference in constructivism as defined by the constructivist items on Woolley et al.'s (2004) *Teacher Beliefs Survey* and pre- to post-coaching differences in teachers' implementation of guided play and their views about its comfort, practicality, and benefits. However, none of these correlations with constructivism were significant. A second set of correlations operationalized constructivism with the constructivist *Teacher Beliefs Survey* items established by Woolley et al. (2004) plus two additional items on decorating the classroom and setting out materials for students, reflecting activities that were emphasized in this coaching program. Again, none of these constructivism correlations were significant (Table 2).

Table 2

Bivariate Correlations Between Changes in Teacher-Reported Views on Guided Play and Differences in Constructivism Based on the Teacher Beliefs Survey (TBS)

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Difference in guided play implementation	18	0.28	0.46	—						
2. Difference in comfort with guided play	18	0.78	1.44	.19	—					
3. Difference in the benefit of guided play for learning	18	0.11	0.47	.66**	.04	—				
4. Difference in the benefit of guided play for teaching	18	0.00	0.59	.43	-.07	.84**	—			
5. Difference in the practicality of guided play	17	0.59	0.87	.62**	.09	.71**	.59*	—		
6. Difference in average TBS constructivism	17	0.26	0.33	-.04	.29	.19	.06	.30	—	
7. Difference in average TBS constructivism with additional items	17	0.06	0.34	-.03	.25	.11	.03	.19	.90**	—

* $p < .05$. ** $p < .01$.

Lastly, a third set of correlations was based on the pre- to post-coaching difference in average constructivism derived from scores on five items in the *Classroom Practices Inventory* (Hyson et al., 1990) that described constructivist activities (Table 3).

Table 3

Bivariate Correlations Between Changes in Teacher-Reported Views on Guided Play and Differences in Constructivism Based on the Classroom Practices Inventory (CPI)

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Difference in guided play implementation	18	0.28	0.46	—					
2. Difference in comfort with guided play	18	0.78	1.44	.19	—				
3. Difference in the benefit of guided play for learning	18	0.11	0.47	.66**	.04	—			
4. Difference in the benefit of guided play for teaching	18	0.00	0.59	.43	-.07	.84**	—		
5. Difference in the practicality of guided play	17	0.59	0.87	.62**	.09	.71**	.59*	—	
6. Difference in average CPI constructivism	17	0.51	0.59	.29	.13	.39	.42	.60*	—

* $p < .05$. ** $p < .01$.

This analysis indicated a significant, positive correlation between the difference in average constructivism as measured by the *Classroom Practices Inventory* (Hyson et al., 1990) pre- to post-coaching and the average change in teachers' views on the practicality of guided play over that same time period ($r(15) = .60, p = .02$). However, this finding should be interpreted with caution. Hyson et al. (1990) reported high reliability for the subscale measuring developmentally appropriate practices in an ECE classroom ($\alpha = .92$), to which all items selected from the CPI to evaluate constructivism belonged. Yet the reliability of the subset of items selected here ranged from $\alpha = .66$ at pre-coaching to $\alpha = .86$ post-coaching.

Despite the methodological strengths of this within-subjects design, sensitivity analyses were conducted to identify possible effects of coach assignment and administrative support on teachers' implementation of, and opinions about, guided play. Potential impacts of coach assignment and administrative support on the correlations between average differences in constructivism and differences in teachers' implementation of, and opinions about, guided play were also considered. A planned analysis on the effects of teachers using resources on play-based learning before participating in this study was unnecessary due to limited variability (i.e., all but two teachers consulted resources). A bootstrapped independent samples *t*-test indicated a significant difference by coach in the percentage of the day teachers dedicated to guided play ($t(16) = 2.24$, bootstrapped $p = .046$, $g = 1.01$, $M_{\text{Coach1}} = 46.00\%$, $SD_{\text{Coach1}} = 20.53$, $M_{\text{Coach2}} = 24.89\%$, $SD_{\text{Coach2}} = 19.41$). A univariate ANOVA then determined that coach assignment marginally predicted the percentage of time dedicated to guided play at the alpha level of .05 when controlling for the percentage of guided play time pre-coaching,

$F(1, 10) = 5.32$, bootstrapped $p = .06$, $\eta^2 = .35$. However, these tests were not significant for incorporation of guided play (in which all teachers indicated that they implemented the approach, so the means were equivalent between the coaches), or teachers' views on its comfort ($t(16) = 0.53$, $p = .60$, bootstrapped 95% CI: [-1.00, 1.58], $g = 0.24$, $M_{\text{Coach1}} = 4.22$, $SD_{\text{Coach1}} = 1.30$, $M_{\text{Coach2}} = 3.89$, $SD_{\text{Coach2}} = 1.36$), benefits for teaching ($t(8) = 1.41$, bootstrapped $p = .15$, $g = 0.64$, $M_{\text{Coach1}} = 5.00$, $SD_{\text{Coach1}} = 0.00$, $M_{\text{Coach2}} = 4.67$, $SD_{\text{Coach2}} = 0.71$) or learning ($t(8) = 1.51$, $p = .17$, bootstrapped 95% CI: [0.08, 0.57], $g = 0.68$, $M_{\text{Coach1}} = 5.00$, $SD_{\text{Coach1}} = 0.00$, $M_{\text{Coach2}} = 4.78$, $SD_{\text{Coach2}} = 0.44$), or practicality ($t(15) = 0.13$, $p = .90$, bootstrapped 95% CI: [-0.40, 0.45], $g = 0.06$, $M_{\text{Coach1}} = 4.78$, $SD_{\text{Coach1}} = 0.44$, $M_{\text{Coach2}} = 4.75$, $SD_{\text{Coach2}} = 0.46$). The level of administrative support provided likewise did not significantly correlate with any of these variables, looking across all participating teachers (Table 4).

Table 4*Bivariate Correlations Between Administrative Support and Teachers' Views on Guided**Play at Year-End*

Variable	<i>n</i>	1
1. Administrative support for guided play	23	—
2. Incorporation of guided play	23	^a
3. Percentage of school day dedicated to guided play	23	.16
4. Comfort with guided play	23	.04
5. Benefit of guided play for learning	23	.23
6. Benefit of guided play for teaching	23	.28
7. Practicality of guided play	23	.26

Note. ^a indicates that the incorporation of guided play was constant, so the correlations could not be computed

Applying the same sensitivity analysis to examine effects of coach assignment and administrative support on constructivism did not generate any significant results, regardless of how constructivism was operationalized. Details on the results of this secondary sensitivity analysis are available on request.

Two key qualitative items on the post-coaching survey explored teachers' understanding of guided play and their implementation of the approach. Specifically, teachers were asked to "describe their role as a facilitator of guided play" and provide examples of guided play activities from their classrooms. The theme of "guided play implementation" was referenced 228 times out of 521 total references that emerged across the post-coaching survey. The three most frequent sub-categories reflect instruction aligned with the principles of how children learn (Hirsh-Pasek et al., 2020) and the "6 Cs" (Golinkoff & Hirsh-Pasek, 2016). "Communication" was referenced 20 times. For example, one teacher offered the following reflection:

My role has changed drastically, because now I am engaging more with children and asking extending questions. "Oh, I see those round blocks. What are they for? What else can you do with them? How does that help your helicopter? What else do you know about helicopters? Have you seen a helicopter before?" etc... I am now providing much more meaningful materials and extending based on what they do with these materials.

The sub-category of "student agency" was also referenced 20 times. As one teacher described:

I take more of an active observer role, [*sic*] I allow children time to problem solve and try to work things out with each other or with their materials before I intervene. I ask questions rather than provide suggestions.

Lastly, teachers made 19 references to active learning, in which students were expected to engage in inquiry and think carefully about the lessons they completed. The following response illustrates how active learning was supported across multiple activities in one teacher's classroom:

Guided play is specifically incorporated during choice time and in literacy and math centers. During guided play at choice time I make it a point to sit with each student as much as I can throughout that hour of play. It may mean asking open ended questions at the block area to help guide students to stack the blocks, make shapes, problem solve. It may mean I might give children shape materials to explore and play with, while maybe setting them little challenges in an open ended manner. Having children as "detectives" discovering the secrets of shapes. They had to try to work out for themselves what all of the different triangles had in common, and what the other shapes had in common, the target being that they would learn to categorise [*sic*] the shapes for themselves.

Beyond the references that teachers provided on the post-coaching survey, it is possible to identify changes in the sub-categories that occurred between the pre-coaching and post-coaching surveys, suggesting possible advances in teachers' implementation and understanding of guided play. Despite the caveat that the post-coaching survey introduced a second open-ended item that asked how teachers facilitated guided play, several "guided play implementation" sub-categories related to the intervention only emerged when coding the post-coaching survey, including "engagement," "socially interactive," "iterative," and "communication."

Comparison with Control Classrooms. Between-subjects analyses on key items from the year-end survey indicated differences between intervention and control teachers on their use of guided play and views on the approach. At the most fundamental level, all 19 of the intervention teachers remaining at year-end reported that they typically

implemented guided play, while only six of the nine control teachers gave the same response, a marginally significant difference ($t(25) = 2.89, p = .08$, bootstrapped 95% CI: [0.10, 0.67], $g = 1.14$). Similarly, the intervention teachers who indicated that they implemented guided play dedicated 35% of their day to the approach on average ($SD_I = 22.2$). By comparison, the control teachers who implemented the pedagogy spent 29% of the day on it ($SD_C = 14.5$). However, this was not a significant difference ($t(22) = 0.71, p = .49$, bootstrapped 95% CI: [-8.62, 22.3], $g = 0.32$).

Regarding teachers' opinions about guided play, the intervention teachers provided a significantly greater rating than the control teachers for their knowledge of the pedagogy and ability to engage students in it ($t(26) = 5.19$, bootstrapped $p < .001$, $g = 2.04$, $M_I = 3.37$, $SD_I = 0.60$, $M_C = 2.11$, $SD_C = 0.60$). The intervention teachers also rated guided play as significantly more practical than their control peers ($t(11.2) = 4.99$, bootstrapped $p = .02$, $g = 2.32$, $M_I = 4.76$, $SD_I = 0.44$, $M_C = 3.44$, $SD_C = 0.73$). Additionally, the intervention teachers were marginally more comfortable with guided play ($t(25) = 1.79, p = .09$, bootstrapped 95% CI: [0.06, 1.56], $g = 0.71$, $M_I = 4.06$, $SD_I = 1.31$, $M_C = 3.22$, $SD_C = 0.67$). However, the groups did not significantly differ in their views on the benefits of guided play for student learning ($t(11.1) = 1.74, p = .11$, bootstrapped 95% CI: [-0.06, 0.70], $g = 0.81$, $M_I = 4.89$, $SD_I = 0.32$, $M_C = 4.56$, $SD_C = 0.53$) or their own teaching practices ($t(25) = 1.61, p = .12$, bootstrapped 95% CI: [-0.11, 0.94], $g = 0.64$, $M_I = 4.83$, $SD_I = 0.51$, $M_C = 4.44$, $SD_C = 0.73$).

The qualitative survey responses collected from the intervention and control teachers revealed differences in their implementation of lessons that incorporated the playful learning principles and promoted the "6 Cs." For example, active learning was

referenced 19 times by the intervention group, but the control responses only generated three references. Other playful learning principles, namely the concepts of meaningful, socially interactive, iterative, and joyful learning, did not appear under the theme of “guided play implementation” for the control group, though they were referenced multiple times by intervention teachers.

How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention?

The qualitative references presented in the preceding section demonstrate how teachers facilitated instruction based on the principles of how children learn, which are often implemented through guided play and aligned with the “6 Cs.” References describing student agency and the playful learning principles were frequent. The sub-categories of “active” (19 references), “engagement” (2), “meaningful” (3), “socially interactive” (8), “iterative” (4), and “joy” (4) all appeared under the theme of “guided play implementation.” Additionally, the development of new sub-categories for coding the post-survey, as listed previously, may reflect practical changes in students’ classroom experiences over time that were increasingly consistent with guided play and the Active Playful Learning model.

Independent Observations of Teacher and Student Behaviors

Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

Initial analyses of classroom observation data from the intervention group focused on the implementation of different pedagogical approaches over the course of the school

year that varied in their support of Active Playful Learning. Rates of teacher-centered direct instruction, playful instruction (a category in which the student demonstrates minimal active learning and agency, such as being asked to follow step-to-step directions to complete a puzzle), guided play, and free play were all evaluated. Notably, the teachers' implementation of these approaches was tracked indirectly by observing student engagement in these pedagogies via the COP (Farran & Nesbitt, 2021a). Despite the intervention's focus on guided play, no significant change occurred in the observed rate of that pedagogy ($t(18) = -1.63$, bootstrapped $p = .12$, $g = -0.36$) from pre- ($M = 0.09$, $SD = 0.08$) to post-coaching ($M = 0.06$, $SD = 0.06$) with a slight decrease in the mean rate of the approach, as measured by the percentages of observational "sweeps" that contained guided play. However, playful instruction significantly increased ($t(18) = 3.27$, bootstrapped $p = .004$, $g = 0.72$) from pre- ($M = 0.23$, $SD = 0.07$) to post-coaching ($M = 0.35$, $SD = 0.15$) and direct instruction significantly decreased ($t(18) = -2.93$, bootstrapped $p = .01$, $g = -0.64$, $M_{Pre} = 0.21$, $SD_{Pre} = 0.07$, $M_{Post} = 0.14$, $SD_{Post} = 0.07$). There was no significant change in the rate of free play ($t(18) = 1.09$, bootstrapped $p = .29$, $g = 0.24$) from pre- ($M = 0.16$, $SD = 0.10$) to post-coaching ($M = 0.19$, $SD = 0.14$).

Further within-subjects analyses focused on teacher behavior variables from the revised COP (Farran & Nesbitt, 2021a) and TOP (Farran & Nesbitt, 2021b) predicted to change with the implementation of guided play, including the facilitation of lessons in centers (derived from COP; $t(18) = 0.22$, bootstrapped $p = .84$, $g = 0.05$, $M_{Pre} = 0.19$, $SD_{Pre} = 0.12$, $M_{Post} = 0.20$, $SD_{Post} = 0.14$), individual student work (derived from COP; $t(18) = 0.79$, bootstrapped $p = .45$, $g = 0.17$, $M_{Pre} = 0.07$, $SD_{Pre} = 0.09$, $M_{Post} = 0.01$, $SD_{Post} = 0.11$), open-ended questions from the teacher ($t(18) = -0.13$, bootstrapped $p = .90$, $g = -$

0.03, $M_{Pre} = 0.03$, $SD_{Pre} = 0.06$, $M_{Post} = 0.03$, $SD_{Post} = 0.05$), and higher-quality, more inferential instruction ($t(18) = 0.62$, bootstrapped $p = .54$, $g = 0.14$, $M_{Pre} = 0.80$, $SD_{Pre} = 0.20$, $M_{Post} = 0.88$, $SD_{Post} = 0.19$, as well as the observation, or monitoring, of student learning in action ($t(18) = -0.01$, bootstrapped $p = .99$, $g = -0.02$, $M_{Pre} = 0.06$, $SD_{Pre} = 0.06$, $M_{Post} = 0.06$, $SD_{Post} = 0.07$). None of these behaviors significantly changed, nor did the rates of teacher approval ($t(18) = 0.79$, bootstrapped $p = .44$, $g = -0.26$, $M_{Pre} = 0.03$, $SD_{Pre} = 0.04$, $M_{Post} = 0.04$, $SD_{Post} = 0.04$) or disapproval ($t(18) = 1.52$, bootstrapped $p = .16$, $g = 0.33$, $M_{Pre} = 0.04$, $SD_{Pre} = 0.04$, $M_{Post} = 0.06$, $SD_{Post} = 0.04$) of student behavior, two variables related to student observation. A final analysis investigated whether there was a change from pre- to post-coaching on classroom climate, as measured by changes in the teacher's tone (i.e., affect), but this was also not significant ($t(18) = -1.28$, bootstrapped $p = .22$, $g = -0.28$, $M_{Pre} = 3.71$, $SD_{Pre} = 0.17$, $M_{Post} = 3.60$, $SD_{Post} = 0.33$).

A sensitivity analysis was again conducted to identify any effects of coach assignment or administrative support on the variables of interest. An independent samples t -test generated a marginally significant difference by coach in post-coaching behavior disapproval ($t(11.6) = 2.39$, bootstrapped $p = .05$, $g = 1.01$, $M_{Coach1} = 0.08$, $SD_{Coach1} = 0.05$, $M_{Coach2} = 0.04$, $SD_{Coach2} = 0.02$). A univariate ANOVA further indicated that coach assignment marginally predicted post-coaching behavior disapproval at the alpha level of .05 when controlling for pre-coaching behavior disapproval, $F(1, 16) = 4.60$, bootstrapped $p = .05$, $\eta^2 = .22$. Administrative support was only significantly correlated with the overall use of instructional centers post-coaching ($r(25) = .39$, $p = .04$). The effect of administrative support on post-coaching center use remained significant when controlling for pre-coaching center use, $F(1, 15) = 7.43$, $p = .02$. No other correlations

between administrative support and post-coaching observation variables of interest were significant (Appendix G, Table 12).

Comparison with Control Classrooms. As presented in the within-subjects results above, these classroom observation data offered the ability to identify the types of Active Playful Learning that were potentially implemented in the classroom with a particular focus on guided play. While there was a marginally significant difference in the implementation of guided play, it favored the control classrooms ($t(9.65) = -2.34$, bootstrapped $p = .06$, $g = -1.18$, $M_I = 0.06$, $SD_I = 0.06$, $M_C = 0.16$, $SD_C = 0.13$). Rates of direct instruction ($t(26) = 0.46$, bootstrapped $p = .67$, $g = 0.18$, $M_I = 0.14$, $SD_I = 0.07$, $M_C = 0.13$, $SD_C = 0.07$), free play ($t(26) = 0.51$, bootstrapped $p = .52$, $g = 0.20$, $M_I = 0.19$, $SD_I = 0.14$, $M_C = 0.16$, $SD_C = 0.08$), and playful instruction ($t(26) = 0.53$, bootstrapped $p = .51$, $g = 0.21$, $M_I = 0.35$, $SD_I = 0.15$, $M_C = 0.32$, $SD_C = 0.09$) did not significantly differ by condition.

However, observations of several teacher behaviors that were predicted to change with the coaching program favored the intervention group, at least as indicated by effect sizes and mean differences between the intervention and control groups. Although the rate of the behavior did not significantly differ, teachers were more likely to provide higher-quality, more inferential instruction ($t(26) = 1.90$, bootstrapped $p = .12$, $g = 0.75$ in intervention classrooms ($M_I = 0.88$, $SD_I = 0.19$) over control classrooms ($M_C = 0.70$, $SD_C = 0.29$) and exhibit a more positive tone ($t(26) = 1.55$, bootstrapped $p = .13$, $g = 0.61$, $M_I = 3.60$, $SD_I = 0.33$, $M_C = 3.40$, $SD_C = 0.31$). Regarding the form of instruction provided, students in intervention classrooms were more likely to complete work in centers ($t(26) = 1.64$, bootstrapped $p = .11$, $g = 0.65$, $M_I = 0.19$, $SD_I = 0.13$, $M_C = 0.10$,

$SD_C = 0.13$), although these center activities were not facilitated with small groups of students to maximize active, socially interactive learning. While the rate of providing individual student work did not significantly differ by condition (bootstrapped $p = .25$), the effect size was medium ($g = -0.59$) based on Cohen (1988) and the work was more commonly assigned in the control condition ($M_I = 0.10$, $SD_I = 0.11$, $M_C = 0.18$, $SD_C = 0.20$). Similarly, disapproval of student behavior was more common, though not significantly greater, in control classrooms ($t(26) = -1.66$, bootstrapped $p = .18$, $g = -0.65$, $M_I = 0.06$, $SD_I = 0.04$, $M_C = 0.10$, $SD_C = 0.07$). Across these behaviors, effect sizes were consistently medium-to-large (Cohen, 1988). Other teacher behaviors, including the use of open-ended questions ($t(26) = 0.59$, bootstrapped $p = .48$, $g = 0.23$, $M_I = 0.03$, $SD_I = 0.05$, $M_C = 0.02$, $SD_C = 0.03$), and monitoring ($t(26) = -0.18$, bootstrapped $p = .85$, $g = -0.07$, $M_I = 0.06$, $SD_I = 0.07$, $M_C = 0.07$, $SD_C = 0.06$) and approval of student behavior ($t(26) = -0.95$, bootstrapped $p = .39$, $g = -0.37$, $M_I = 0.04$, $SD_I = 0.04$, $M_C = 0.06$, $SD_C = 0.06$) did not significantly differ between groups with smaller effect sizes.

How Do Students' Classroom Behaviors and Interactions Change Over the Intervention?

The revised COP (Farran & Nesbitt, 2021a) offered an array of relevant student behaviors for evaluation over the course of the intervention. Students were significantly more talkative from pre- to post-coaching when open- and closed-ended questions were excluded from the observer's frequency count ($t(18) = 2.35$, bootstrapped $p = .04$, $g = 0.52$, $M_{Pre} = 0.16$, $SD_{Pre} = 0.04$, $M_{Post} = 0.18$, $SD_{Post} = 0.04$), though the difference remained marginally significant when all forms of student talk were evaluated ($t(18) = 2.19$, bootstrapped $p = .06$, $g = 0.48$, $M_{Pre} = 0.18$, $SD_{Pre} = 0.05$, $M_{Post} = 0.20$, $SD_{Post} =$

0.05). Observers also found students significantly more involved in their instruction (i.e., engaged) from pre- to post-coaching ($t(18) = 2.35$, bootstrapped $p = .04$, $g = 0.52$, $M_{Pre} = 2.53$, $SD_{Pre} = 0.14$, $M_{Post} = 2.69$, $SD_{Post} = 0.30$) and marginally more likely to use manipulatives over the course of the intervention ($t(18) = 2.19$, bootstrapped $p = .06$, $g = 0.48$, $M_{Pre} = 0.27$, $SD_{Pre} = 0.08$, $M_{Post} = 0.34$, $SD_{Post} = 0.12$). However, other student behaviors from the adapted COP (Farran & Nesbitt, 2021a) that were predicted to increase with the intervention did not significantly change, including participation in guided play ($t(18) = -1.63$, bootstrapped $p = .12$, $g = -0.36$, $M_{Pre} = 0.09$, $SD_{Pre} = 0.08$, $M_{Post} = 0.06$, $SD_{Post} = 0.06$), associative activities ($t(18) = 1.12$, bootstrapped $p = .31$, $g = 0.25$, $M_{Pre} = 0.16$, $SD_{Pre} = 0.08$, $M_{Post} = 0.19$, $SD_{Post} = 0.10$), and cooperative activities ($t(18) = 1.57$, bootstrapped $p = .13$, $g = 0.35$, $M_{Pre} = 0.01$, $SD_{Pre} = 0.02$, $M_{Post} = 0.02$, $SD_{Post} = 0.03$). An additional evaluation of student self-regulation derived from an item on the post-observation summary tool that observers completed did not find any significant change in self-regulation over the intervention ($t(17) = 0.25$, bootstrapped $p = .82$, $g = 0.06$, $M_{Pre} = 4.17$, $SD_{Pre} = 0.71$, $M_{Post} = 4.22$, $SD_{Post} = 0.81$).

Sensitivity tests of coach assignment and administrative support on all COP and TOP variables of interest were previously evaluated following the within-subjects analyses of teachers' pedagogical practices. See pages 72-73 of this dissertation for a summary of those results.

Comparison with Control Classrooms. The primary behavioral differences between the intervention and control students concerned their social interaction. Students in the intervention group were marginally more likely to be observed socially interacting and collaborating with each other than their control group peers ($t(26) = 1.63$,

bootstrapped $p = .10$, $g = 0.64$, $M_I = 0.21$, $SD_I = 0.11$, $M_C = 0.14$, $SD_C = 0.09$). This was particularly likely to occur through associative activities, which were co-constructed through interaction with other individuals, but lacked pre-established rules (Farran & Nesbitt, 2021a). These activities were marginally more common in the intervention classrooms than the control classrooms ($t(26) = 1.59$, bootstrapped $p = .10$, $g = 0.63$, $M_I = 0.19$, $SD_I = 0.10$, $M_C = 0.13$, $SD_C = 0.08$). Other student behaviors that were predicted to differ by condition did not do so, including talking ($t(26) = 0.80$, bootstrapped $p = .40$, $g = 0.31$, $M_I = 0.20$, $SD_I = 0.05$, $M_C = 0.18$, $SD_C = 0.05$), manipulative use ($t(26) = 0.57$, bootstrapped $p = .60$, $g = 0.22$, $M_I = 0.34$, $SD_I = 0.12$, $M_C = 0.31$, $SD_C = 0.12$), involvement ($t(26) = -0.21$, bootstrapped $p = .85$, $g = -0.08$, $M_I = 2.69$, $SD_I = 0.30$, $M_C = 2.72$, $SD_C = 0.44$), and self-regulation ($t(25) = 0.62$, $p = .54$, bootstrapped 95% CI: [-0.48, 0.96], $g = 0.25$, $M_I = 4.22$, $SD_I = 0.81$, $M_C = 4.00$, $SD_C = 1.00$).

Differences in Students' "6 Cs"

Does the Intervention Influence Students' "6 Cs" Skills?

"6 Cs" Survey Outcomes. The researcher-developed "6 Cs" survey was initially identified as a reliable measure of students' "6 Cs" with high internal consistency across all items both pre- (Cronbach's $\alpha = .89$) and post-coaching ($\alpha = .92$). However, construction of a composite variable for students' skills in different content areas was not possible due to lower internal consistency pre-coaching ($\alpha = .65$) among those six items, though Cronbach's alpha was sufficiently high post-coaching ($\alpha = .88$).

Bootstrapped paired t -tests indicated that students made significant gains across the "6 Cs" from pre- to post-coaching, despite mixed results on the item level. First evaluating the foundational "C" of collaboration, students became more effective at

working with others ($t(18) = 2.72$, bootstrapped $p = .01$, $g = 0.60$, $M_{Pre} = 3.79$, $SD_{Pre} = 0.79$, $M_{Post} = 4.32$, $SD_{Post} = 0.82$), though their enjoyment of collaboration did not significantly change from the start of the school year ($t(17) = 0.33$, bootstrapped $p = .76$, $g = 0.07$, $M_{Pre} = 4.39$, $SD_{Pre} = 0.61$, $M_{Post} = 4.44$, $SD_{Post} = 0.78$). Analysis of the related “C” of communication indicated significant gains in students’ written ($t(17) = 6.02$, bootstrapped $p < .001$, $g = 1.15$, $M_{Pre} = 2.00$, $SD_{Pre} = 0.97$, $M_{Post} = 3.56$, $SD_{Post} = 0.78$) and verbal ($t(18) = 3.24$, bootstrapped $p = .004$, $g = 0.71$, $M_{Pre} = 3.47$, $SD_{Pre} = 0.84$, $M_{Post} = 4.21$, $SD_{Post} = 0.54$) communication skills.

The “6 Cs” survey examined changes in students’ overall content mastery, as well as any differences by subject area. Here, intervention teachers reported that their students’ liking of content ($t(18) = 1.14$, bootstrapped $p = .28$, $g = 0.25$, $M_{Pre} = 4.26$, $SD_{Pre} = 0.45$, $M_{Post} = 4.42$, $SD_{Post} = 0.61$) and understanding of its importance and relevance ($t(18) = 0.62$, bootstrapped $p = .55$, $g = 0.14$, $M_{Pre} = 4.00$, $SD_{Pre} = 0.58$, $M_{Post} = 4.11$, $SD_{Post} = 0.57$) did not significantly change from pre- to post-coaching. However, students made significant gains in their teacher-reported understanding of literacy ($t(18) = 3.98$, bootstrapped $p = .002$, $g = 0.87$, $M_{Pre} = 3.58$, $SD_{Pre} = 0.61$, $M_{Post} = 4.26$, $SD_{Post} = 0.65$), math ($t(18) = 3.31$, bootstrapped $p = .006$, $g = 0.73$, $M_{Pre} = 3.63$, $SD_{Pre} = 0.60$, $M_{Post} = 4.26$, $SD_{Post} = 0.56$), science ($t(18) = 3.31$, bootstrapped $p = .005$, $g = 0.73$, $M_{Pre} = 3.47$, $SD_{Pre} = 0.61$, $M_{Post} = 4.11$, $SD_{Post} = 0.74$), and social studies ($t(18) = 3.64$, bootstrapped $p = .009$, $g = 0.80$, $M_{Pre} = 3.58$, $SD_{Pre} = 0.61$, $M_{Post} = 4.16$, $SD_{Post} = 0.69$).

Building on their content mastery, intervention teachers indicated that students made significant gains in critical thinking, as they analyzed and evaluated what they were learning ($t(18) = 5.93$, bootstrapped $p < .001$, $g = 1.30$, $M_{Pre} = 3.16$, $SD_{Pre} = 0.83$, $M_{Post} =$

4.05, $SD_{\text{Post}} = 0.85$). They also became significantly more comfortable asking questions in class ($t(18) = 2.88$, bootstrapped $p = .01$, $g = 0.63$, $M_{\text{Pre}} = 3.79$, $SD_{\text{Pre}} = 0.79$, $M_{\text{Post}} = 4.42$, $SD_{\text{Post}} = 0.61$). Intervention teachers further suggested that their students gained the ability to creatively apply what they learned. Over the course of the intervention, teachers reported significant gains in students' generation and application of new ideas ($t(18) = 4.80$, bootstrapped $p = .002$, $g = 1.06$, $M_{\text{Pre}} = 3.58$, $SD_{\text{Pre}} = 0.90$, $M_{\text{Post}} = 4.42$, $SD_{\text{Post}} = 0.61$) and their ability to identify new, or different, solutions to a problem ($t(18) = 2.38$, bootstrapped $p = .03$, $g = 0.52$, $M_{\text{Pre}} = 3.53$, $SD_{\text{Pre}} = 0.77$, $M_{\text{Post}} = 4.05$, $SD_{\text{Post}} = 0.91$). Lastly, intervention teachers identified their students as more confident learners, as they made significant gains in their persistence to fix a difficult problem ($t(18) = 4.16$, bootstrapped $p < .001$, $g = 0.92$, $M_{\text{Pre}} = 3.26$, $SD_{\text{Pre}} = 0.87$, $M_{\text{Post}} = 4.16$, $SD_{\text{Post}} = 0.83$) and learn difficult content ($t(18) = 4.87$, bootstrapped $p < .001$, $g = 1.07$, $M_{\text{Pre}} = 3.11$, $SD_{\text{Pre}} = 0.94$, $M_{\text{Post}} = 4.05$, $SD_{\text{Post}} = 0.91$).

Given the internal consistency of the "6 Cs" survey items, average "6 Cs" scores were calculated pre- and post-coaching. Intervention teachers' responses showed that student made significant gains across the "6 Cs," from collaboration to confidence ($t(16) = 6.96$, bootstrapped $p < .001$, $g = 1.61$, $M_{\text{Pre}} = 3.52$, $SD_{\text{Pre}} = 0.46$, $M_{\text{Post}} = 4.14$, $SD_{\text{Post}} = 0.43$).

Outcomes from the Early Development Instrument (EDI) and New Hampshire Kindergarten Readiness Indicators. Additional data on students' "6 Cs" outcomes were collected from teachers using an adapted version of the EDI (McMaster University, 2000) and supplemental items from the New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014). Although

these outcomes were primarily focused on evaluating students' content knowledge with greater specificity, skills that would be associated with other "Cs" were also included.

Given the adaptations made to the EDI for use at the classroom level in this dissertation, an initial evaluation of reliability was conducted with survey items grouped according to the domains, or sub-domains, identified by EDI's publisher (EDI, 2019). This analysis found that the items from the *Language and Cognitive Development* ($\alpha_{Pre} = .91$, $\alpha_{Post} = .98$) and *Social Competence* ($\alpha_{Pre} = .89$, $\alpha_{Post} = .95$) domains, as well as the *Prosocial and Helping Behaviour* sub-domain ($\alpha_{Pre} = .90$, $\alpha_{Post} = .90$), all had high internal consistency on the pre- and post-versions of the survey. The "Communication Skills and General Knowledge" domain lacked sufficient internal consistency on the pre-coaching survey ($\alpha_{Pre} = .58$, $\alpha_{Post} = .80$), so it was excluded from further analyses.

Bootstrapped paired *t*-tests were conducted on the average pre- and post-coaching responses from each reliable domain, or sub-domain in the case of *Prosocial and Helping Behaviour*. Looking first at *Language and Cognitive Development*, teachers estimated that a significantly greater percentage of students demonstrated those skills from pre- to post-coaching ($t(16) = 13.2$, bootstrapped $p < .001$, $g = 3.06$, $M_{Pre} = 71.6\%$, $SD_{Pre} = 8.62$, $M_{Post} = 91.0\%$, $SD_{Post} = 5.14$). In the *Social Competence* domain, teachers ratings showed significant growth from pre- to post-coaching ($t(17) = 4.01$, bootstrapped $p < .001$, $g = 0.90$, $M_{Pre} = 2.42$, $SD_{Pre} = 0.24$, $M_{Post} = 2.64$, $SD_{Post} = 0.31$). Teachers' responses to items in the *Prosocial and Helping Behavior* sub-domain showed significant average growth in their students' skills, as well ($t(18) = 2.94$, bootstrapped $p < .01$, $g = 0.65$, $M_{Pre} = 2.30$, $SD_{Pre} = 0.46$, $M_{Post} = 2.59$, $SD_{Post} = 0.40$).

Teachers were surveyed on seven items from the New Hampshire Kindergarten

Readiness Indicators (New Hampshire Department of Education et al., 2014) and asked to estimate the percentage of students in their class who demonstrated the stated skill. These questions primarily addressed foundational content knowledge from different subject areas that was not otherwise assessed through the “6 Cs” survey or EDI (McMaster University, 2000). Teachers first reported significant growth in their students’ participation in conversations with multiple exchanges from pre- to post-coaching ($t(18) = 5.41$, bootstrapped $p = .002$, $g = 1.19$, $M_{Pre} = 77.3\%$, $SD_{Pre} = 19.2$, $M_{Post} = 89.8\%$, $SD_{Post} = 19.5$). The next item indicated that students became significantly more likely to attempt problem-solving through trial and error ($t(18) = 6.09$, bootstrapped $p < .001$, $g = 1.34$, $M_{Pre} = 61.2\%$, $SD_{Pre} = 23.4$, $M_{Post} = 81.2\%$, $SD_{Post} = 21.8$). A pair of items related to early numeracy and spatial skills found that students were significantly more likely to use position words ($t(18) = 4.92$, bootstrapped $p < .001$, $g = 1.08$, $M_{Pre} = 71.5\%$, $SD_{Pre} = 22.4$, $M_{Post} = 87.4\%$, $SD_{Post} = 22.4$) and create patterns ($t(18) = 3.14$, bootstrapped $p = .01$, $g = 0.69$, $M_{Pre} = 82.3\%$, $SD_{Pre} = 21.0$, $M_{Post} = 90.9\%$, $SD_{Post} = 20.0$) over the course of the intervention. An item focused on social studies indicated that students made significant growth in their understanding of how members of a community relate to each other ($t(18) = 2.74$, bootstrapped $p < .01$, $g = 0.60$, $M_{Pre} = 82.0\%$, $SD_{Pre} = 21.9$, $M_{Post} = 90.8\%$, $SD_{Post} = 19.2$). Lastly, teachers reported significant gains in their students’ arts education, as measured by their participation in creative artistic expression ($t(18) = 4.13$, bootstrapped $p = .003$, $g = 0.91$, $M_{Pre} = 88.4\%$, $SD_{Pre} = 19.2$, $M_{Post} = 94.7\%$, $SD_{Post} = 19.5$) and their responses to artistic creations or events ($t(18) = 4.01$, bootstrapped $p = .006$, $g = 0.88$, $M_{Pre} = 83.79\%$, $SD_{Pre} = 20.8$, $M_{Post} = 93.3\%$, $SD_{Post} = 19.7$).

Secondary Analyses of Coach Assignment and Administrative Support

Effects. A sensitivity test was again conducted to identify possible effects of coach assignment and administrative support on the “6 Cs” outcomes. An initial evaluation of the average “6 Cs” rating on the post-coaching survey found no significant differences by coach ($t(17) = -0.48$, bootstrapped $p = .66$, $g = -0.21$, $M_{Coach1} = 4.15$, $SD_{Coach1} = 0.43$, $M_{Coach2} = 4.24$, $SD_{Coach2} = 0.46$), and no significant correlation with administrative support ($r(25) = .23$, $p = .24$). The EDI (McMaster University, 2000) domains and sub-domains analyzed above likewise did not differ by coach (Table 5).

Table 5

Differences by Coach Assignment on Early Development Instrument Domains and Sub-Domains

Domain or Sub-Domain	Coach 1		Coach 2		t	df	Bootstrapped p	Hedges' g
	M	SD	M	SD				
	Language and Cognitive Development	91.79	5.23	81.52				
Social Competence	2.63	0.31	2.68	0.32	-0.36	17	.731	-0.16
Prosocial and Helping Behaviour	2.66	0.28	2.50	0.51	0.87	17	.412 ^a	0.38

Note. The mean ratings by coach for the “Language and Cognitive Development” domain represent averages of the percentages that teachers reported when asked to estimate the percentage of students in their class who have demonstrated skills in that domain. The means for the “Social Competence” domain and “Prosocial and Helping Behavior” sub-domain are derived from averages of teacher-reported ratings of students’ skills in those areas, using items collected at the classroom level on a three-point scale.

^aReporting the p -value without bootstrapping; the bootstrapped 95% confidence interval indicates non-significance [-0.19, 0.56].

Similarly, administrative support was not significantly correlated with any of the EDI domains and sub-domains evaluated here, including *Language and Cognitive Development* ($r(24) = -.12, p = .56$), *Social Competence* ($r(25) = .09, p = .64$), and *Prosocial and Helping Behaviour* ($r(24) = .31, p = .12$). None of the responses to the supplemental items from the New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) were significantly related to coach assignment (Table 6) or administrative support (Table 7).

Table 6

Differences by Coach Assignment on New Hampshire Kindergarten Readiness Indicators at Year-End

Indicator Item	Coach 1		Coach 2		<i>t</i>	<i>df</i>	<i>Bootstrapped</i> <i>p</i>	<i>Hedges'</i> <i>g</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Multiple exchanges	95.80	8.15	83.11	26.12	1.46	17	.162 ^a	0.64
Trial and error	86.70	16.18	75.11	26.46	1.17	17	.260 ^a	0.51
Position words	96.90	6.71	76.78	28.98	2.04	8.77	.135	0.94
Patterns	96.20	7.86	85.00	27.51	1.24	17	.233 ^a	0.54
Understand community relationships	97.70	3.68	83.11	26.25	1.74	17	.099 ^b	0.77
Creative expression	99.90	0.32	88.89	27.93	1.18	8.00	.406	0.55
Respond to art	97.40	6.31	88.67	27.92	0.97	17	.348 ^a	0.42

Note. The mean ratings by coach for these items represent average percentages that teachers reported when asked to estimate the percentage of students in their class who exhibited the stated behavior. The prompts that corresponded to the variables above were as follows: “Multiple exchanges”: “Engage in conversations with multiple exchanges”; “Trial and error”: “Attempt trial and error responses”; “Position words”: “Begin to appropriately use positional words indicating location, direction, and distance”; “Patterns”: “Extend and create simple repeating patterns”; “Understand community relationships”: “Show emergent understanding of relationships among community members (e.g., family, school, and community services)”; “Creative expression”: “Participate in creative art expression (movement, singing, performance, painting, etc.)”; “Respond to art”: “Respond to artistic creations or events”

^a Reporting the *p*-value without bootstrapping; the bootstrapped 95% confidence interval indicates non-significance

^b Reporting the *p*-value without bootstrapping; however, the bootstrapped 95% confidence interval indicates significance [1.56, 33.36]

Table 7*Bivariate Correlations Between Administrative Support and New Hampshire**Kindergarten Readiness Indicators at Year-End*

Variable	<i>n</i>	1
1. Administrative support for guided play	27	—
2. Multiple exchanges	27	-.08
3. Trial and error	27	-.15
4. Position words	27	-.13
5. Patterns	27	-.28
6. Understand community relationships	27	-.20
7. Creative expression	27	-.15
8. Respond to art	27	-.26

Note. The prompts that corresponded to variables 2-8 above were as follows: “Multiple exchanges”: “Engage in conversations with multiple exchanges”; “Trial and error”: “Attempt trial and error responses”; “Position words”: “Begin to appropriately use positional words indicating location, direction, and distance”; “Patterns”: “Extend and create simple repeating patterns”; “Understand community relationships”: “Show emergent understanding of relationships among community members (e.g., family, school, and community services)”; “Creative expression”: “Participate in creative art expression (movement, singing, performance, painting, etc.)”; “Respond to art”: “Respond to artistic creations or events.” Teachers were prompted to estimate the percentage of students in their class who exhibited these behaviors.

Qualitative Coaching Survey Outcomes. The theme of “student benefits” emerged when coding the post-coaching survey 75 times. Out of that total, two of the four most frequent sub-categories were “content” and “creative innovation,” which were both referenced eight times and suggested that the students honed those skills through the intervention. One teacher remarked on how her students mastered content through guided play activities across the disciplines:

The students don't even realize the math skills they are using until a teacher casually points out how impressed they are “with their tall tower made of 27 blocks!” When the class uses the story retelling basket at the puppet theater they are reinforcing their literacy skills. I have seen the class call upon their science skills and vocabulary when building incline planes (ramps) for their cars, then figuring out that a taller ramp makes their car go faster and the heaviest car goes the fastest of all.

Regarding creative innovation, another teacher remarked, “I have really seen growth in my students’ (and my) creativity.”

Changes in the emergent themes and sub-categories from the pre-coaching to post-coaching survey also suggest advances in the “6 Cs” over the course of the intervention. The theme of “student benefits” was not generated from the pre-survey, yet teachers still described implementing lessons to promote some of the “6 Cs.” Content was mentioned most frequently with six references. However, the foundational “Cs” of collaboration and communication were not mentioned at all.

Comparison with Control Classrooms.

“6 Cs” Survey Outcomes. An independent samples *t*-test compared the average “6 Cs” scores reported by intervention and control teachers at the end of the school year. It revealed a significant difference by group favoring the intervention condition ($t(26) =$

2.73, bootstrapped $p = .02$, $g = 1.07$, $M_I = 4.19$, $SD_I = 0.44$, $M_C = 3.69$, $SD_C = 0.50$).

Outcomes from the EDI and New Hampshire Kindergarten Readiness

Indicators. These analyses first focused on the EDI domains and *Prosocial and Helping Behaviour* sub-domain previously found to be reliable with high internal consistency.

However, neither the *Language and Cognitive Development* domain ($t(25) = -0.02$,

bootstrapped $p = .99$, $g = -0.01$, $M_I = 86.66\%$, $SD_I = 19.20$, $M_C = 86.79\%$, $SD_C = 7.54$),

Social Competence domain ($t(26) = 1.67$, bootstrapped $p = .13$, $g = 0.66$, $M_I = 2.66$, $SD_I =$

0.31 , $M_C = 2.44$, $SD_C = 0.34$), nor the *Prosocial and Helping Behaviour* sub-domain

($t(25) = 1.39$, $p = .18$, bootstrapped 95% CI: [-0.15, 0.58], $g = 0.57$, $M_I = 2.59$, $SD_I =$

0.40 , $M_C = 2.34$, $SD_C = 0.44$) significantly differed between the intervention and control

groups. Group differences similarly did not appear between intervention and control for

any of the selected New Hampshire Kindergarten Readiness Indicators (Table 8).

Table 8

Between-Group Differences on New Hampshire Kindergarten Readiness Indicators at Year-End

Indicator Item	Intervention		Control		<i>t</i>	<i>df</i>	<i>Bootstrapped</i> <i>p</i>	<i>Hedges'</i> <i>g</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Multiple exchanges	89.79	19.46	97.78	4.41	-1.21	26	.233	-0.47
Trial and error	81.21	21.85	75.56	17.04	0.68	26	.501 ^a	0.27
Position words	87.37	22.41	85.56	16.48	0.22	26	.831 ^a	0.09
Patterns	90.89	20.01	88.33	9.68	0.36	26	.644	0.14
Understand community relationships	90.79	19.21	91.67	9.01	-0.13	26	.898 ^a	-0.05
Creative expression	94.68	19.46	92.22	7.95	0.36	26	.670	0.14
Respond to art	93.26	19.66	90.56	9.50	0.39	26	.700 ^a	0.15

Note. The mean ratings for these items represent average percentages that teachers reported when asked to estimate the percentage of students in their class who exhibited the stated behavior. The prompts that corresponded to the variables above were as follows: “Multiple exchanges”: “Engage in conversations with multiple exchanges”; “Trial and error”: “Attempt trial and error responses”; “Position words”: “Begin to appropriately use positional words indicating location, direction, and distance”; “Patterns”: “Extend and create simple repeating patterns”; “Understand community relationships”: “Show emergent understanding of relationships among community members (e.g., family, school, and community services)”; “Creative expression”: “Participate in creative art expression (movement, singing, performance, painting, etc.)”; “Respond to art”: “Respond to artistic creations or events”

^a Reporting the *p*-value without bootstrapping; the bootstrapped 95% confidence interval indicates non-significance

CHAPTER 4

DISCUSSION

This mixed methods study built on the preliminary findings of Nesbitt and colleagues (under review) by piloting novel measures, and applications of existing measures, to better understand associations between kindergarten teachers' participation in an embedded instructional coaching program and related teacher and student outcomes. The program focused on the principles of how children learn (Hirsh-Pasek et al., 2015, 2020, 2022; Zosh et al., 2018, 2022) through teacher-initiated, student-led guided play (e.g., Weisberg et al., 2013), and promoting students' "6 Cs" skills (Golinkoff & Hirsh-Pasek, 2016). The study had three research aims: 1) Investigate teacher-reported perceptions of the coaching experience and intervention; 2) Conduct independent observations of teacher and student behaviors, and 3) Evaluate differences in students "6 Cs" skills. These aims and the results pertaining to their underlying research questions are discussed here, in turn, followed by a general discussion of this study's impacts.

Teacher-Reported Perceptions of the Coaching Experience and Intervention

How Do Teachers Perceive the Intervention? How Do They Respond to Specific Elements of the Intervention Program?

As hypothesized, all intervention teachers responded positively to items asking about their experience receiving instructional coaching. Replicating Nesbitt et al. (under review), teachers generally felt their coaches were appropriately "involved," "responsive," and "connected" in their work. They all would recommend the experience

to a colleague. A novel level of qualitative analysis documented numerous ways in which the coaches supported the teachers, most frequently by facilitating reflection on the teachers' educational philosophies.

Beyond the quality of the teacher-coach relationship, teachers broadly benefitted from the intervention, as predicted. Qualitative results indicated that they appreciated the professional development and reflection on their teaching philosophy that it provided, as they collaborated with their colleagues to implement changes in the classroom.

Ultimately, the teachers derived joy and professional satisfaction from the experience and they were excited for the next school year. While there was a marginally significant decline in how intervention teachers felt about the current school year from pre- to post-coaching, this could be attributable to the extensive demands of their profession impacting teachers over the course of the year, rather than the intervention. That said, it is important to recognize the systemic challenges that teachers identified in their open-ended survey responses. Scheduling issues, imposing standards and curricula, and limited administrative support were the most commonly identified barriers to implementing guided play. These issues similarly emerged in Nesbitt et al. (under review).

Despite these challenges, intervention teachers retained a significantly more positive outlook on the school year than their control peers who continued with business as usual instruction. This demonstrates the potential for Active Playful Learning to broadly support teacher well-being and professional satisfaction, a critical result when teachers are faced with "schoolification" (Ring & O'Sullivan, 2018) and documented anxiety across their profession (Husband & Hunt, 2015; Reback et al., 2014; Wronowski & Urick, 2019).

Do Intervention Group Teachers' Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from "Schoolification"? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

Based on their survey responses, as hypothesized, intervention teachers made a significant shift towards implementation of guided play, with all teachers indicating that they adopted the pedagogy by the end of the school year. Likewise, intervention teachers came to hold more positive opinions about guided play, particularly in terms of its practicality and their comfort with the approach. While their views on the benefits of guided play for teaching and learning did not significantly change, mean responses to these items remained at ceiling on a five-point scale, indicating that teachers believed the approach was "very beneficial" from pre- to post-coaching. This suggested that as kindergarten teachers, and particularly as kindergarten teachers in a state where play-based learning was mandated, they already understood the theoretical value of the approach. Yet the coaching program still offered guidance to put the theory into practice. Teachers' qualitative survey responses provided further support for their understanding of guided play and the related playful learning principles. In particular, activities that promoted student agency and active learning were frequently referenced when teachers described how guided play was implemented in their classrooms.

Further evaluating associations between teachers' educational philosophies and practices, the hypothesis that gains in teachers' positive opinions about guided play would be linked with increasingly constructivist teaching received very limited support. A significant, positive correlation was observed between teachers' pre- to post-coaching gains on the practicality of guided play and their increased constructivism, as measured

by a sub-set of items in the *Classroom Practices Inventory* (Hyson et al., 1990). No other correlations between differences in teachers' opinions on guided play, or implementation of the approach, significantly related to their changes in constructivism. This may be explained by the operationalization of constructivism using the CPI. The instrument asks teachers to consider a set of activities (e.g., "Children are involved in concrete, three-dimensional learning activities, with materials closely related to children's daily life experiences") and rate how much the activity is "like [their] classroom" on a five-point scale. By comparison, the constructivist teaching items identified by Woolley et al. (2004) on the *Teacher Beliefs Survey* ask about teachers' views on educational practices (e.g., "I believe that expanding on students' ideas is an effective way to build my curriculum"). Teachers then rate their level of agreement on a six-point scale. Given that the CPI prompts teachers to consider whether relatively specific classroom practices are part of their own instruction, it seems reasonable for changes in those practices to align with the view that guided play is practical. However, the reliability of the CPI, as implemented in this study, must be considered. Hyson et al. (1990) found that the sub-scale to which these items belonged, which described developmentally appropriate classroom practices in ECE, generated a Cronbach's alpha value of .92. However, the subset of items from this sub-scale that were used to evaluate constructivism in this study yielded an alpha of .66 on the pre-coaching survey before increasing to a value of .86 on the year-end survey. Therefore, this significant correlation should be interpreted with caution.

Considering this question between the intervention and control groups, intervention teachers reported that they more frequently implemented guided play and

had more favorable opinions about it than their control colleagues. The only non-significant findings concerned the percentage of the school day dedicated to guided play and the benefits of the approach, which reflects a similar finding in unpublished data from Nesbitt et al. (under review). There, the percentage of the day that involved guided play did not significantly increase over the course of the intervention. However, this result may be explained by systemic challenges to instruction (e.g., scheduling issues) that limited the intervention teachers. Since guided play was uniformly seen as beneficial across both groups, it likely indicated a common understanding of effective pedagogy, especially in the context of New Hampshire’s play-based kindergarten mandate.

How Do Students’ Classroom Behaviors and Interactions Change Over the Intervention?

Qualitative post-coaching survey results indicated that, as hypothesized, students participated in activities that were intended to promote agency. Additionally, the theme of “guided play implementation,” which described classroom activities, included references to all playful learning principles as sub-categories. This suggests that, as hypothesized, students across the intervention engaged in instruction that was implemented with attention to all the elements of how children learn that were identified by Hirsh-Pasek et al. (2015, 2020, 2022) and Zosh et al., (2018, 2022).

Independent Observations of Teacher and Student Behaviors

Do Intervention Group Teachers’ Reported Pedagogical Practices Shift Towards Active Playful Learning and Away from “Schoolification”? Do They Understand the Concept of Guided Play Through the Playful Learning Principles?

Despite universal self-reported implementation of guided play, the third-party

observers who administered the adapted COP and TOP (Farran & Nesbitt, 2021a, 2021b) did not see a significant increase in facilitation of guided play, so the hypothesis that observed guided play would increase with the intervention was not supported. However, as predicted, teacher-directed instruction significantly decreased. At the same time, the rate of playful instruction, which involved students participating in activities with limited agency, significantly increased. No other student behaviors that were predicted to be impacted by the intervention significantly changed.

While these results do not show the anticipated shift towards broad implementation of guided play, they can be explained by existing literature. The observed decrease in direct instruction and increase in playful instruction aligns with Zosh et al.'s (2018) theoretical representation of play as a spectrum from adult-initiated and -led direct instruction to child-initiated and -led free play. Playful instruction may offer a limited degree of active, engaging, and even meaningful learning, depending on how the activity is facilitated (e.g., a lesson in which each student follows step-by-step instructions to build a model of their school out of five blocks). However, it lacks the inherent student agency of guided play (e.g., Weisberg et al., 2016) that readily enables that pedagogy to exhibit the full breadth of playful learning principles (Zosh et al., 2018, 2022). Granting student agency and shifting towards guided play, which lies in the middle of the spectrum, may be a gradual process. The results of this study may reflect how that movement along the spectrum occurs in practice.

Looking between the intervention and control groups, the primary observation was a marginally significant difference in guided play implementation that unexpectedly favored the control group. There are several possible explanations for this finding. First,

awareness of guided play, as reflected in the teacher survey data, does not necessarily equate to implementation at a level that is observable by a third-party. The definition of guided play in the revised COP (Farran & Nesbitt, 2021a) highlights the pursuit of a learning goal and student agency when meeting that objective. Both of these components may not yet be consistently observable in the intervention group. The second explanation is methodological. The COP captures brief snapshots of student behaviors (Farran & Nesbitt, 2021a). It is possible that an observation of a control classroom captured an isolated episode of guided play that influenced the results here due to the control group's small sample size. Lastly, this result could be explained by the unique education policy context of New Hampshire, where the play-based kindergarten mandate and associated professional development potentially increased awareness and implementation of guided play for all teachers beyond what is typical for the population of American kindergarten teachers.

However, it is notable that rates of several other behaviors (e.g., the use of center work, inferential instruction) were marginally greater in the intervention classrooms over the control classrooms. Even behaviors that were not significantly different exhibited robust effect sizes favoring the intervention or control classrooms as hypothesized. It is critical to consider the interpretation of these marginally significant results and their implications for similar research-practice partnerships in classroom settings. Cohen's (1969) well-established benchmarks for effect size state that an effect of 0.2 SD is small, 0.5 SD is medium, and 0.8 SD is large. However, Kraft (2020) proposed new benchmarks for causal studies in pre-K-12 education: Less than 0.05 SD as small, 0.05 through 0.19 SDs as medium, and ≥ 0.20 SD as large. The minimum Hedges' g effect size for the

marginally significant between-subject behaviors reported here was 0.61 for positive teacher tone. Additional behaviors that were not significant between groups still maintained large effect sizes based on Kraft's (2020) guidelines favoring the intervention. For example, as referenced above, assignment of individual work generated an effect size of $g = -0.59$, indicating that it was more common in the control group. These results demonstrate the importance of attending to effect sizes when evaluating complex educational interventions.

How Do Students' Classroom Behaviors and Interactions Change Over the Intervention?

While students did not engage in guided play more frequently, results from the adapted COP observation tool (Farran & Nesbitt, 2021a) revealed behavior changes that were consistent with hypotheses. In particular, students became significantly more talkative in the classroom, which may have reflected social interaction in practice. Observers also rated students as significantly more involved in their instruction over time, which is synonymous with the definition of focused, undistracted engagement established in the playful learning principles (Farran & Nesbitt, 2021a; Hirsh-Pasek et al., 2015, 2020; Zosh et al., 2018, 2022). Lastly, students showed greater use of manipulatives over the course of the intervention. This could reflect active learning, depending on how the material was used. While self-regulation did not improve with the intervention, the result may be explained by a ceiling effect at the beginning of the school year, when the average rating was over four on a five-point scale.

However, other behavioral variables did not change as predicted. Returning to the construct of social interaction, student participation in socially interactive educational

activities that were either associative (i.e., collaboratively developed by students without pre-established rules) or cooperative (i.e., collaboratively completed by students with to achieve a learning goal with established rules) did not significantly change. Therefore, students in this intervention may have been taking early steps towards socially interactive learning by simply talking with each other.

Differences in Students' "6 Cs"

Does the Intervention Influence Students' "6 Cs" Skills?

The general hypothesis that students' "6 Cs" skills would improve through the intervention was supported, replicating the results that Nesbitt et al. (under review) found with a retrospective analysis of teacher-reported "6 Cs" using a researcher-developed survey. Pre- and post-coaching administration of that same survey revealed a significant increase in students' average "6 Cs" scores. Looking at each of the "6 Cs" from collaboration through confidence pre- to post-coaching, teachers indicated that their students made significant gains on nearly all items. The few exceptions were items addressing student enjoyment of collaboration, liking of content, and understanding of content's relevance and importance. Average ratings on these three items were already high pre-coaching (i.e., at least four on a five-point scale). More substantively, it is important to consider whether these items were particularly challenging for kindergarten teachers to rate about their young students.

The inclusion of the EDI (McMaster University, 2000) and New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) offered a deeper evaluation of students' "6 Cs," particularly with respect to content mastery in specific subject areas. Significant gains were reported across the EDI domains

and readiness indicators, supporting the hypothesis that growth in students' content knowledge would occur with the intervention.

Teachers' qualitative survey responses offered still further support for the intervention benefitting students' "6 Cs," as hypothesized. References to students developing content knowledge and building their critical thinking skills were frequent.

Between-group survey data yielded mixed results. While the average "6 Cs" survey score was significantly greater for the intervention group, ratings on the EDI (McMaster University, 2000) and New Hampshire Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) did not significantly differ between the intervention and control groups. This may be explained by differences in the level of specificity between the measures. The researcher-developed "6 Cs" survey broadly asked teachers' to rate their students' proficiency on each of the "Cs" (e.g., "Overall, students are able to generate new ideas and apply them in creative ways" on a five-point Likert scale from "Strongly Disagree" to "Strongly Agree"). By comparison, the EDI (McMaster University, 2000) and the Kindergarten Readiness Indicators (New Hampshire Department of Education et al., 2014) focus on more discrete and fundamental skills (e.g., letter-sound correspondence), that while related to the "6 Cs," may be challenging to shift through the intervention, even when the EDI was evaluated on the domain level.

General Discussion

This study built on the initial feasibility study conducted by Nesbitt et al. (under review) to test the effects of an instructional coaching program about guided play and the "6 Cs" on kindergarten teachers and students across New Hampshire using several novel

measures and applications of existing measures.

A series of mixed method surveys administered pre- and post-coaching confirmed teachers' positive responses to the coaching program itself, even as it became more intensive than in Nesbitt et al. (under review) and targeted both guided play and the "6 Cs." These surveys further indicated that intervention teachers both increased their implementation of guided play over time and adopted positive opinions about the approach. Additional surveys offered more refined evaluation of students' "6 Cs" over time than in previous studies. These instruments demonstrated significant gains in students' "6 Cs" over time. Importantly, this growth included, but was not limited to, mastery of content knowledge.

Classroom observations, which were conducted at the beginning and end of the school year by third-party observers who were blind to hypotheses, revealed significant shifts in teacher and student behaviors that are likely associated with, or precede, the eventual implementation of guided play, though a gain in guided play frequency itself was not observed. For example, students were more talkative, more involved in their instruction, and marginally more likely to use manipulatives from pre- to post-coaching. Zosh et al. (2018, 2022) suggest that guided play is a particularly effective pedagogy because it enables educators to implement the playful learning principles. Therefore, these demonstrations of social interaction, engagement, and active learning may be indicators of guided play development.

Lastly, the addition of a control group at the end of school year piloted between-subjects comparisons between intervention and business as usual classrooms that may be scaled up in a future iteration of the intervention. While results did not uniformly

demonstrate the intervention's effectiveness, teachers in the intervention group were significantly more likely to adopt guided play and hold positive opinions about it. Classroom observations indicated marginally greater rates of a few student and teacher behaviors that may be related to the implementation of the playful learning principles (e.g., Hirsh-Pasek et al., 2020) and guided play.

In addition to these primary teacher and student outcomes, this study made four methodological advances. First, it established the reliability of the researcher-developed "6 Cs" survey as a measure of those skills. Second, it demonstrated the reliability of several domains of the EDI (McMaster University, 2000) as a measure of students' "6 Cs" skills at the classroom level, a departure from how the EDI is typically used to evaluate individual students. Third, the original COP (Farran et al., 2019a) and TOP (Farran et al., 2019b) observation tools were adapted to focus on the playful learning principles (Farran & Nesbitt, 2021a, 2021b) and found to be practically feasible for that task. Fourth, building on Nesbitt et al. (under review), this study demonstrated the importance of qualitative research in the evaluation of educational interventions. The collection of qualitative data from participating teachers enabled a deeper understanding of their views on the intervention and a clearer understanding of how they implemented lessons focused on guided play and the "6 Cs."

Limitations

Despite its educational and methodological contributions, this study faced several limitations that must be acknowledged. Although the teacher-reported surveys offered valuable insights on the implementation and effects of the intervention from a key stakeholder group, responses may have been influenced by expectancy effects, given the

intervention's focus on guided play. The independent classroom observations sought to counteract these effects and offer more objective reports on teacher and student behavior. While it was valuable to include a control group, data from that group could only be collected at the end of the school year, following later recruitment of those control teachers. A future study should collect baseline data from both intervention and control teachers, then follow them through the end of the school year.

The related issues of small sample size and running multiple comparisons are also important considerations. While the full sample was originally 30 teachers, 20 of those individuals were in the intervention group and 10 were in the control group. Two teachers then withdrew from the study, or resigned from teaching. Based on Nesbitt et al. (under review), a future study may include 30 teachers per condition, who are also randomly assigned and do not self-select into their groups. That said, the intensive nature of the coaching program and its evaluation must be considered in this future study to ensure that all participating teachers receive an equivalent level of quality engagement with the research team. Additionally, the qualitative methods used here allowed an in-depth evaluation of teachers' and students' experiences with the intervention, despite the small sample size. While this study did not implement a post-hoc correction for multiple comparisons, it employed statistical bootstrapping to adjust standard errors and p -values for small sample size and potential non-normality, adding precision to each test (Efron, 1981, 1988; Kulesa et al., 2015). One option for a future study is to adopt the procedure established by the Institute of Education Sciences What Works Clearinghouse and apply the Benjamini-Hochberg correction when multiple tests are conducted on a similar construct, such as teachers' opinions of guided play, and adjust p -values based on the

number of significant findings produced in tests involving that construct (What Works Clearinghouse, 2017).

In addition to these limitations in study design, the mixed results from the between-subjects analyses raise vital questions for future iterations of this coaching program. Survey results demonstrated that teachers in the intervention group had a greater, or more positive, understanding of the program content at year-end. However, this recognition did not consistently translate into observed classroom behaviors. This challenge of translation from theory to practice is reflected in the Active Playful Learning literature. For example, Lee et al. (2023) recently identified an inconsistency in the South Korean education system between their desire to promote playful, holistic instruction and their implementation of effective, complementary pedagogies. Therefore, a future study may provide more intensive training on the elements of guided play, the playful learning principles, and the “6 Cs” to ensure they are all targeted in the classroom. Based on the pre- to post-coaching observation results, teachers could also benefit from coaching that is focused on the transition from playful instruction to guided play.

Alterations to the administration and use of the adapted COP and TOP (Farran & Nesbitt, 2021a, 2021b) could be respectively valuable for data collection and coaching. Teachers are currently observed at the beginning of an observation cycle and then again after half the children are observed (Nesbitt & Farran, 2021a). More frequent observations of the teacher, both within a school day and across multiple days, may capture guided play facilitation that was missed in this study during student observations. Regarding training, it may be reasonable to conduct an initial adapted COP and TOP (Farran & Nesbitt, 2021a, 2021b) observation that is shared with the teacher by their

instructional coach (e.g., Farran et al., 2017), so they can identify the intervention-related behaviors that they are already demonstrating and develop others throughout the year. However, as shown by Farran and colleagues (2017), it will be important to provide targeted data that are most informative for changing practices.

Looking beyond the analyses presented here and the design of the coaching program, it is essential to consider the unique context of New Hampshire regarding education policy and demographics. All teachers in this study were expected to comply with the statewide mandate for play-based kindergarten (RSA 193-E:2-a), which may have increased the control teachers' familiarity with guided play and their implementation of related behaviors. Exploring between-subjects differences in another educational policy environment without a similar mandate is critical. Regarding demographics, all intervention teachers were White women and the majority of students were White. A future study should evaluate how this coaching program generalizes cross-culturally for both students and teachers and whether deliberate attention from the outset to meaningful learning (e.g., Zosh et al., 2022), and particularly culturally responsive instruction (Gay, 2000), increases intervention efficacy.

Future Directions

A large-scale, Active Playful Learning study is currently being developed to address many of the limitations above. It will partner with schools in four states, conducting a randomized controlled trial (RCT) of a similar instructional coaching program with hundreds of teachers and thousands of students from kindergarten through 4th-grade. Importantly, it incorporates the latest version of the Active Playful Learning model, which was developed after this study was underway. It now advocates for an

approach that begins with understanding all educational stakeholders' values and experiences, then using that foundational knowledge to inform the implementation of the playful learning principles to target the "6 Cs" (Blinkoff et al., in press; Nesbitt et al., 2023). Following the planned Active Playful Learning RCT, a further study may investigate how outcomes from a coaching program differ from those achieved through an active control form of professional development, such as participation in a professional learning community. However, this would be exploratory, given the limited effectiveness of professional development workshops relative to coaching (Kraft et al., 2018).

Conclusion

This study amplifies a growing call in the science of learning and development literature to bridge evidence on how children learn and the skills they need for success in the classroom and beyond with current educational practices (e.g., Darling-Hammond et al., 2020; Hirsh-Pasek et al., 2020, 2022; LPI & TFC, 2021; Nasir et al., 2021). It is crucial to take this step when early childhood educators worldwide face an opposing push towards "schoolification" (Ring & O'Sullivan, 2018; Simoncini & Lasen, 2021). The findings presented here identify the Active Playful Learning model, with its emphasis on students achieving a breadth of skills through guided play (e.g., Hirsh-Pasek et al., 2020), as a theoretical framework that is already showing promising results in the kindergarten classroom when delivered through instructional coaching. Following a model of iterative developmental science (Schindler et al., 2017), this study offers valuable initial testing of an intervention using novel methods to evaluate an evidence-based theory of education.

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APPENDIX A**PRE-COACHING GUIDED PLAY SURVEY FOR INTERVENTION TEACHERS****2021-2022 PBL K Pre-survey (Aug.
'21)**

Start of Block: Intro & Demographics

Directions We cannot begin to express our admiration for your dedication to your students. Your desire to collaborate with us to help you enhance your teaching practice even in these unprecedented times of uncertainty, is inspiring. To help us best prepare for your coaching, as well as understand how coaching has impacted your teaching practices over the year, we have a survey we would like you to complete. Thank you so much for your time and consideration!

Page Break

Q1

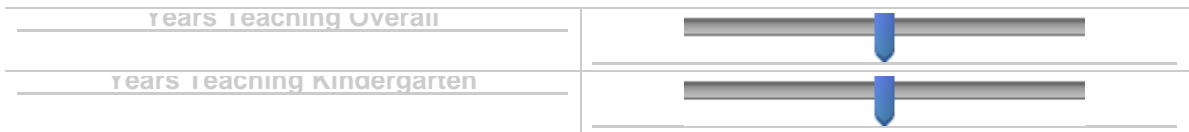
Please provide us your **first name and the first initial of your last name.**

First Name _____

Last Name Initial _____

Q2 & Q2B How many years have you been teaching?

0 5 10 15 20 25 30 35 40 45 50



Q3 What NH Credentialing Endorsement do you currently hold? (Check all that apply)

- Early Childhood Education (N-3)
- Early Childhood Special Education (N-3)
- Elementary Education (K-6)
- Elementary Education (K-8)
- General Special Education
- None
- Other (Please specify)

Q4 Please check the statement below that applies to you regarding a Master's degree. Specify the program area or degree obtained, if applicable.

- I do not hold a Master's degree
- I am currently working on my Master's degree
- I have a Master's degree

Display This Question:

If Please check the statement below that applies to you regarding a Master's degree. Specify the pro... = I am currently working on my Master's degree

Or Please check the statement below that applies to you regarding a Master's degree. Specify the pro... = I have a Master's degree

Q4B Please specify the program area in which you obtained, or plan to obtain, your Master's degree (e.g., Elementary Education).

Q5 Do you identify as Hispanic or Latinx?

- Yes
- No
-

Q6 What best describes your race? Select all that apply.

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Self-described, please describe:
-

Q7 With which gender do you identify?

- Male
- Female
- Non-binary
- Self-described, please describe:
-

Q8 On a scale of 1-10, how you are feeling about the school year?

Not looking forward to
it.

Excited and
energized.

0 1 2 3 4 5 6 7 8 9 10



Page Break

The next questions are about the demographics of your students. If you are unable to answer at this time, please leave blank these items blank and we will ask these questions of you after the start of the school year.

Q9 & Q9B Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as male?
Provide your response in the box to the right.

Approximately what percentage of students in your class identify as female?
Provide your response in the box to the right.

Q10 Approximately what percentage of students in your class are eligible for free or reduced-price lunch? Provide your response in the space below:

Q11 Approximately what percentage of students in your class are considered English learners, or English language learners? Provide your response in the space below:

Q12 Approximately what percentage of students in your class receive special education accommodations? Provide your response in the space below:

Q13 Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as American Indian or Alaska Native? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Asian? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Black or African American? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Hispanic or Latinx? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Native Hawaiian or Other Pacific Islander? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as White? Provide your response in the box to the right.

End of Block: Intro & Demographics

Start of Block: Play-based Learning

The intent of these questions is to gain insight into your perceptions and understandings of play-based learning. Your responses will be used to better inform our coaching and our program, and also serve as documentation of your professional growth throughout this process. Play-based learning is the language used within the New Hampshire state mandate passed in 2018. Play-based learning encompasses different types of play, but we focus on guided play.

Q14 Which resources have you accessed over the past two years in an effort to support your own professional development related to play-based learning? (Please check all that apply)

- UNH Preschool Development Grant Workshop/Training/Professional Development Opportunity
- Other Workshop related to play-based learning and/or guided play (e.g., webinar, attending a conference)
- Other Coaching/Classroom-Based Professional Development related to play-based learning and/or guided play
- National Association for the Education of Young Children (NAEYC) resources
- NH DOE Kindergarten Toolkit
- Books or other publications
- No resources were accessed

Display This Question:

If Which resources have you accessed over the past two years in an effort to support your own profes... = UNH Preschool Development Grant Workshop/Training/Professional Development Opportunity

Or Which resources have you accessed over the past two years in an effort to support your own profes... = Other Workshop related to play-based learning and/or guided play (e.g., webinar, attending a conference)

Or Which resources have you accessed over the past two years in an effort to support your own profes... = Other Coaching/Classroom-Based Professional Development related to play-based learning and/or guided play

Q14B Please describe the specific workshops, trainings, or professional development opportunities you attended in more detail.

Display This Question:

If Which resources have you accessed over the past two years in an effort to support your own profes... = Books or other publications

Q14C Which specific books, articles, or publications have you accessed in the past two years related to play-based learning?

Display This Question:

If Which resources have you accessed over the past two years in an effort to support your own profes... = Books or other publications

Q14D How did you access the books or other publications related to play-based learning (e.g., looked them up yourself, given by a coach, etc.)?

Q15 How would you define **play-based learning**?

Q16 How would you define **guided play**?

Page Break

Q17 Do you typically incorporate **guided play** experiences into your schedule?

- Yes
- No
- Not sure

Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q17B What percentage of your day would you say is typically focused around **guided play** experiences for your students?

0 10 20 30 40 50 60 70 80 90 100



Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q17C In what specific ways do **guided play** experiences typically occur in your classroom (i.e., describe how you incorporate guided play into your lessons)?

Page Break

Q18 Please rate your comfort level with implementing **guided play** in your kindergarten classroom.

- Very Uncomfortable
 - Uncomfortable
 - Moderately Comfortable
 - Comfortable
 - Very Comfortable
-

Q19 How beneficial do you think **guided play** is in Kindergarten for helping students learn?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q20 How beneficial do you think **guided play** is in Kindergarten for the development of your teaching practice?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q21 How practical do you consider the implementation of **guided play** strategies with your students to be?

- Very Impractical
 - Impractical
 - Moderately Practical
 - Practical
 - Very Practical
-

Q21B What specific observations can you recall from your classroom to support the practicality rating you gave in response to the previous question?

Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = No

And How practical do you consider the implementation of guided play strategies with your students to... = Moderately Practical

Or Do you typically incorporate guided play experiences into your schedule? = No

And How practical do you consider the implementation of guided play strategies with your students to... = Practical

Or Do you typically incorporate guided play experiences into your schedule? = No

And How practical do you consider the implementation of guided play strategies with your students to... = Very Practical

Or Do you typically incorporate guided play experiences into your schedule? = Not sure

And How practical do you consider the implementation of guided play strategies with your students to... = Moderately Practical

Or Do you typically incorporate guided play experiences into your schedule? = Not sure

And How practical do you consider the implementation of guided play strategies with your students to... = Practical

Or Do you typically incorporate guided play experiences into your schedule? = Not sure

And How practical do you consider the implementation of guided play strategies with your students to... = Very Practical

Q22 Please explain why you believe guided play is practical, although you have not implemented it yet.

Q23 What do you believe are the barriers to implementing **guided play** in your classroom?

Q24 Please rate how supportive your school administration is in regards to the implementation of guided play.

- Not Supportive
- Moderately Supportive
- Supportive
- Very Supportive

Page Break

Q25 How important are guided play opportunities to supporting your students' development of the following skills?

	Not Important	Important	Somewhat Important	Very Important
Vocabulary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Literacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivation to Learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q26 How important is guided play implementation to supporting your development of the following teaching practices?

	Not Important	Important	Somewhat Important	Very Important
Adhering to standards/curricula	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting student agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive student-teacher relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Routinely observing your students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offering differentiated instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implementing thematic learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive classroom environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflecting on your teaching philosophy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engaging in organized professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting active learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting engaged learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting meaningful learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting socially interactive learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting iterative learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Supporting joyful learning for my students

Finding joy in teaching practices

Other (specify):

Other (specify):

Page Break

End of Block: Play-based Learning

Start of Block: Teacher Beliefs (TBS)

Please reflect on how you teach and key features of your classroom. Imagine how you set up your classroom as you read each of the following survey statements. As you think about your classroom, select a number to indicate how much you disagree or agree with the statement on a scale ranging from 1 (strongly disagree) to 6 (strongly agree).

6. I base student grades primarily on homework, quizzes, and tests.
7. An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning.
8. To be sure that I teach students all necessary content and skills, I follow a textbook or workbook.
9. I teach subjects separately, although I am aware of the overlap of content and skills.
10. I involve students in evaluating their own work and setting their own goals.
11. When there is a dispute between students in my

classroom, I
try to
intervene
immediately
to resolve
the problem.

Page Break

informally
through
observations
and
conferences.

19. I find that
textbooks and
other
published
materials are
the best
sources for
creating my
curriculum.

20. I decorate
my classroom
primarily with
posters,
pictures, or
teaching
charts.

21. In my
classroom I
take care of
the learning
materials and
set them out
for students
when they
need them.

22. It is more
important for
students to
learn to obey
rules than to
make their
own
decisions.

23. I often
create
thematic units
based on the
students'
interests and
ideas.

End of Block: Teacher Beliefs (TBS)

Start of Block: Classroom Practices Inventory

Q28 Please rate the following items according to the scale provided in relation to your typical practices.

	Not at all like my classroom	Very little like my classroom	Somewhat like my classroom	Much like my classroom	Very much like my classroom
1.Children are involved in concrete, three-dimensional learning activities, with materials closely related to children's daily life experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Teachers ask questions that encourage children to give more than one right answer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Reading and writing instruction emphasizes direct teaching of letter recognition, reciting the alphabet, coloring within the lines, and being instructed in the correct formation of letters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Teachers use activities, such as block building, measuring ingredients for cooking, woodworking, and drawing to help children learn concepts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

in math,
science, and
social studies.

5. Children
use a variety
of art media,
including easel
and finger
painting, and
clay, in ways
of their
choosing.



6. Teachers
expect
children to
respond
correctly with
one right
answer.
Memorization
and drill are
emphasized.



7. The
classroom
environment
encourages
children to
listen to and
read stories,
dictate stories,
notice print in
use in the
classroom,
engage in
dramatic play,
experiment
with writing by
drawing,
copying, and
inventing their
own spelling.



8. Art projects
involve
copying an
adult-made
model,
coloring
predrawn
forms,
finishing a
project the
teacher has



started, or
following other
adult
directions.

Page Break

Q29 If you have any further comments you would like us to know to help you prepare for coaching, please let us know.

End of Block: Classroom Practices Inventory

APPENDIX B

POST-COACHING GUIDED PLAY SURVEY FOR INTERVENTION

TEACHERS

2021-2022 PBL K Post-survey (May '22) Treatment

Start of Block: Demographics

Directions We cannot begin to express our admiration for your dedication to your students. Your desire to collaborate with us, even in these unprecedented times of uncertainty, is inspiring. To help us better understand the impacts of coaching on your teaching practices over the year, we have a survey we would like you to complete. Thank you so much for your time and consideration!

Q1

Please provide us your **first name and the first initial of your last name.**

First Name _____

Last Name Initial _____

The next questions are about the demographics of your students. If you are unable to answer any question at this time, please leave that item blank.

Q2 How many students are there in your classroom?

Q3 & Q3B Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as male?
Provide your response in the box to the right.

Approximately what percentage of students in your class identify as female?
Provide your response in the box to the right.

Q4 Approximately what percentage of students in your class are eligible for free or reduced-price lunch? Provide your response in the space below:

Q5 Approximately what percentage of students in your class are considered English learners, or English language learners? Provide your response in the space below:

Q6 Approximately what percentage of students in your class receive special education accommodations? Provide your response in the space below:

Q7 Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as American Indian or Alaska Native? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Asian? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Black or African American? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Hispanic or Latinx? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Native Hawaiian or Other Pacific Islander? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as White? Provide your response in the box to the right.

End of Block: Demographics

Start of Block: Part 2: Professional Satisfaction

Q8A On a scale of 1-10, how you are feeling about the school year?

Exhausted and Burnt Out Excited about Teaching

0 1 2 3 4 5 6 7 8 9 10



Q8B On a scale of 1-10, how you are feeling looking ahead to the next school year?

Not looking forward to
it

Excited and
Energized

0 1 2 3 4 5 6 7 8 9 10



Q9 What have you liked/enjoyed most about your class and teaching this year?

Q10 What was most challenging about your class and teaching for you this year?

End of Block: Part 2: Professional Satisfaction

Start of Block: Part 3: Evaluation of Coaching

Page Break

CoachingInstr The intent of these questions is to understand your thoughts on the effectiveness of the coaching you received.

Q11 Please rate your **coach's level of involvement**

- Highly Involved
 - Involved
 - Fairly Involved
 - Not Involved
-

Q12 Please rate your **coach's level of responsiveness**

- Highly Responsive
 - Responsive
 - Fairly Responsive
 - Not Responsive
-

Q13 Please rate your **coach's level of connection**

- Highly Connected
 - Connected
 - Fairly Connected
 - Not Connected
-

Q14 & Q14B Please rate the following:

	Not Knowledgeable	Fairly Knowledgeable	Highly Knowledgeable	Very Highly Knowledgeable
Prior to the coaching experience how would you describe your knowledge of and ability to engage children in, guided play?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At this time in the coaching process, how would you describe your knowledge of, and ability to engage children in, guided play?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q15 How have you benefited from the opportunity to work with a play-based learning coach?

- Very Significantly
 - Significantly
 - Slightly
 - Not at all
-

Q16 Please share a challenge you have encountered that your coach has supported you through.

Q17 Describe your role as a facilitator of guided play. How has your role changed through the coaching process?

Q18 Would you recommend this experience to a colleague?

Yes

No

Display This Question:

If Would you recommend this experience to a colleague? = No

Q18B Why would you not recommend this experience to a colleague?

Display This Question:

If Would you recommend this experience to a colleague? = Yes

Q18C Why would you recommend this experience to a colleague?

End of Block: Part 3: Evaluation of Coaching

Start of Block: Part 4: Play-based Learning

PBLIntro The intent of these questions is to gain insight into your perceptions and understandings of play-based learning. Your responses will be used to better inform our coaching and our program, and also serve as documentation of your professional growth

throughout this process. Play-based learning is the language used within the New Hampshire state mandate passed in 2018. Play-based learning encompasses different types of play, but we focus on guided play.

Q19 How would you define **play-based learning**?

Q20 How would you define **guided play**?

Q21 Do you typically incorporate **guided play** experiences into your schedule?

- Yes
- No
- Not sure
-

Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q21B What percentage of your day would you say is typically focused around **guided play** experiences for your students?

0 10 20 30 40 50 60 70 80 90 100

percentage of your day in guided play experiences



Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q21C In what specific ways do **guided play** experiences typically occur in your classroom (i.e., describe how you incorporate guided play into your lessons)?

Q22 Please rate your comfort level with implementing **guided play** in your kindergarten classroom.

- Very Uncomfortable
- Uncomfortable
- Moderately Comfortable
- Comfortable
- Very Comfortable

Q23 How beneficial do you think **guided play** is in Kindergarten for helping students learn?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q24 How beneficial do you think **guided play** is in Kindergarten for the development of your teaching practice?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q25 How practical do you consider the implementation of **guided play** strategies with your students to be?

- Very Impractical
 - Impractical
 - Moderately Practical
 - Practical
 - Very Practical
-

Q26 What do you believe are the barriers to implementing **guided play** in your classroom?

Q27 Please rate how supportive your school administration is in regards to the implementation of **guided play**.

- Not Supportive
 - Moderately supportive
 - Supportive
 - Very Supportive
-

Q28 How important are **guided play** opportunities to supporting your students' development of the following skills?

	Not Important	Moderately Important	Important	Very Important
Vocabulary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Literacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivation to Learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29 How important is guided play implementation to supporting your development of the following teaching practices?

	Not Important	Important	Somewhat Important	Very Important
Adhering to standards/curricula	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting student agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive student-teacher relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Routinely observing your students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offering differentiated instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implementing thematic learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive classroom environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflecting on your teaching philosophy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engaging in organized professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting active learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting engaged learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting meaningful learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting socially interactive learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting iterative learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Supporting joyful learning for my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding joy in teaching practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q30 Have you sought out additional resources about playful learning or guided play this school year beyond those we provided?

- Yes
- No

Display This Question:
 If Have you sought out additional resources about playful learning or guided play this school year b... = Yes

Q30B Please list the resources you have obtained about playful learning or guided play this school year in the space below.

End of Block: Part 4: Play-based Learning

Start of Block: Part 5: Teacher Beliefs

TBSI Please reflect on how you teach and key features of your classroom. Imagine how you set up your classroom as you read each of the following survey statements. As you think about your classroom, select a number to indicate how much you disagree or agree with the statement on a scale ranging from 1 (strongly disagree) to 6 (strongly agree).

6. I base student grades primarily on homework, quizzes, and tests.

7. An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning.

8. To be sure that I teach students all necessary content and skills, I follow a textbook or workbook.

9. I teach subjects separately, although I am aware of the overlap of content and skills.

10. I involve students in evaluating their own work and setting their own goals.

11. When there is a dispute between students in my

classroom, I
try to
intervene
immediately
to resolve
the problem.

informally
through
observations
and
conferences.

19. I find that
textbooks and
other
published
materials are
the best
sources for
creating my
curriculum.

20. I decorate
my classroom
primarily with
posters,
pictures, or
teaching
charts.

21. In my
classroom I
take care of
the learning
materials and
set them out
for students
when they
need them.

22. It is more
important for
students to
learn to obey
rules than to
make their
own
decisions.

23. I often
create
thematic units
based on the
students'
interests and
ideas.

End of Block: Part 5: Teacher Beliefs

Start of Block: Part 6: Classroom Practices Inventory

Q32 Please rate the following items according to the scale provided in relation to your typical practices.

	Not at all like my classroom	Very little like my classroom	Somewhat like my classroom	Much like my classroom	Very much like my classroom
1.Children are involved in concrete, three-dimensional learning activities, with materials closely related to children's daily life experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Teachers ask questions that encourage children to give more than one right answer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Reading and writing instruction emphasizes direct teaching of letter recognition, reciting the alphabet, coloring within the lines, and being instructed in the correct formation of letters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Teachers use activities, such as block building, measuring ingredients for cooking, woodworking, and drawing to help children learn concepts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

in math,
science, and
social studies.

5. Children
use a variety
of art media,
including easel
and finger
painting, and
clay, in ways
of their
choosing.



6. Teachers
expect
children to
respond
correctly with
one right
answer.
Memorization
and drill are
emphasized.



7. The
classroom
environment
encourages
children to
listen to and
read stories,
dictate stories,
notice print in
use in the
classroom,
engage in
dramatic play,
experiment
with writing by
drawing,
copying, and
inventing their
own spelling.



8. Art projects
involve
copying an
adult-made
model,
coloring
predrawn
forms,
finishing a
project the
teacher has



started, or
following other
adult
directions.

End of Block: Part 6: Classroom Practices Inventory

Start of Block: Closing

Q33 Is there anything else you would like to tell us about your experience with the play-based coaching?

End of Block: Closing

APPENDIX C

YEAR-END GUIDED PLAY SURVEY FOR CONTROL TEACHERS

2021-2022 PBL K Post-survey (May '22) Control

Start of Block: Demographics

Directions We cannot begin to express our admiration for your dedication to your students. Your desire to collaborate with us, even in these unprecedented times of uncertainty, is inspiring. To help us better understand your teaching practices over the year, we have a survey we would like you to complete. Thank you so much for your time and consideration!

Q1

Please provide us your **first name and the first initial of your last name.**

First Name _____

Last Name Initial _____

Q2 & Q2B How many years have you been teaching?

0 5 10 15 20 25 30 35 40 45 50

Years Teaching Overall	
Years Teaching Kindergarten	

Q3 What NH Credentialing Endorsement do you currently hold? (Check all that apply)

- Early Childhood Education (N-3)
- Early Childhood Special Education (N-3)
- Elementary Education (K-6)
- Elementary Education (K-8)
- General Special Education
- None
- Other (Please specify)
-

Q4 Please check the statement below that applies to you regarding a Master's degree. Specify the program area or degree obtained, if applicable.

- I do not hold a Master's degree
- I am currently working on my Master's degree
- I have a Master's degree

Display This Question:

If Please check the statement below that applies to you regarding a Master's degree. Specify the pro... = I am currently working on my Master's degree

Or Please check the statement below that applies to you regarding a Master's degree. Specify the pro... = I have a Master's degree

Q4B Please specify the program area in which you obtained, or plan to obtain, your Master's degree (e.g., Elementary Education).

Q5 Do you identify as Hispanic or Latinx?

Yes

No

Q6 What best describes your race? Select all that apply.

American Indian or Alaska Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

Self-described, please describe:

Q7 With which gender do you identify?

Male

Female

Non-binary

Self-described, please describe:

InstrDemo2 The next questions are about the demographics of your students. If you are unable to answer any question at this time, please leave that item blank.

Q8 How many students are there in your classroom?

Q9 & Q9B Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as male? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as female? Provide your response in the box to the right.

Q10 Approximately what percentage of students in your class are eligible for free or reduced-price lunch? Provide your response in the space below:

Q11 Approximately what percentage of students in your class are considered English learners, or English language learners? Provide your response in the space below:

Q12 Approximately what percentage of students in your class receive special education accommodations? Provide your response in the space below:

Q13 Provide your best estimates in response to the following prompts about your class composition:

Approximately what percentage of students in your class identify as American Indian or Alaska Native? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Asian? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Black or African American? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Hispanic or Latinx? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as Native Hawaiian or Other Pacific Islander? Provide your response in the box to the right.

Approximately what percentage of students in your class identify as White? Provide your response in the box to the right.

End of Block: Demographics

Start of Block: Part 2: Professional Satisfaction

Q14A On a scale of 1-10, how you are feeling about the school year?

Exhausted and Burnt Out Excited about Teaching

0 1 2 3 4 5 6 7 8 9 10



Q14B On a scale of 1-10, how you are feeling looking ahead to the next school year?

Not looking forward to
it

Excited and
Energized

0 1 2 3 4 5 6 7 8 9 10



Q15 What have you liked/enjoyed most about your class and teaching this year?

Q16 What was most challenging about your class and teaching for you this year?

End of Block: Part 2: Professional Satisfaction

Start of Block: Part 3: Play-based Learning

PBLIntro The intent of these questions is to gain insight into your perceptions and understandings of play-based learning. Play-based learning is the language used within the New Hampshire state mandate passed in 2018. Play-based learning encompasses different types of play, including guided play.

Q17 How would you define **play-based learning**?

Q18 How would you define **guided play**?

Q19 Do you typically incorporate **guided play** experiences into your schedule?

- Yes
- No
- Not sure
-

Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q19B What percentage of your day would you say is typically focused around **guided play** experiences for your students?

0 10 20 30 40 50 60 70 80 90 100

percentage of your day in guided play experiences.



Display This Question:

If Do you typically incorporate guided play experiences into your schedule? = Yes

Q19C In what specific ways do **guided play** experiences typically occur in your classroom (i.e., describe how you incorporate guided play into your lessons)?

Q20 Please rate your comfort level with implementing **guided play** in your kindergarten classroom.

- Very Uncomfortable
- Uncomfortable
- Moderately Comfortable
- Comfortable
- Very Comfortable

Q21 How beneficial do you think **guided play** is in Kindergarten for helping students learn?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q22 How beneficial do you think **guided play** is in Kindergarten for the development of your teaching practice?

- Not Beneficial
 - Slightly Beneficial
 - Moderately Beneficial
 - Beneficial
 - Very Beneficial
-

Q26 Please rate how supportive your school administration is in regards to the implementation of **guided play**.

- Not Supportive
- Moderately supportive
- Supportive
- Very Supportive

Page Break

Q27 How important are **guided play** opportunities to supporting your students' development of the following skills?

	Not Important	Moderately Important	Important	Very Important
Vocabulary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Literacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivation to Learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q28 How important is guided play implementation to supporting your development of the following teaching practices?

	Not Important	Important	Somewhat Important	Very Important
Adhering to standards/curricula	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting student agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive student-teacher relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Routinely observing your students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offering differentiated instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implementing thematic learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a positive classroom environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflecting on your teaching philosophy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engaging in organized professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting active learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting engaged learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting meaningful learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting socially interactive learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting iterative learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Supporting joyful learning for my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding joy in teaching practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29 Have you sought out additional resources about playful learning or guided play this school year beyond those we provided?

- Yes
- No

Display This Question:

If Have you sought out additional resources about playful learning or guided play this school year b... = Yes

Q29B Please list the resources you have obtained about playful learning or guided play this school year in the space below.

End of Block: Part 3: Play-based Learning

Start of Block: Part 4: Teacher Beliefs

TBSI Please reflect on how you teach and key features of your classroom. Imagine how you set up your classroom as you read each of the following survey statements. As you think about your classroom, select a number to indicate how much you disagree or

they can't know what they need to learn.

6. I base student grades primarily on homework, quizzes, and tests.

7. An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning.

8. To be sure that I teach students all necessary content and skills, I follow a textbook or workbook.

9. I teach subjects separately, although I am aware of the overlap of content and skills.

10. I involve students in evaluating their own work and setting their own goals.

11. When there is a dispute between students in my classroom, I try to intervene immediately to resolve the problem.



informally
through
observations
and
conferences.

19. I find that
textbooks and
other
published
materials are
the best
sources for
creating my
curriculum.

20. I decorate
my classroom
primarily with
posters,
pictures, or
teaching
charts.

21. In my
classroom I
take care of
the learning
materials and
set them out
for students
when they
need them.

22. It is more
important for
students to
learn to obey
rules than to
make their
own
decisions.

23. I often
create
thematic units
based on the
students'
interests and
ideas.

End of Block: Part 4: Teacher Beliefs

Start of Block: Part 5: Classroom Practices Inventory

Q31 Please rate the following items according to the scale provided in relation to your typical practices.

	Not at all like my classroom	Very little like my classroom	Somewhat like my classroom	Much like my classroom	Very much like my classroom
1. Children are involved in concrete, three-dimensional learning activities, with materials closely related to children's daily life experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Teachers ask questions that encourage children to give more than one right answer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Reading and writing instruction emphasizes direct teaching of letter recognition, reciting the alphabet, coloring within the lines, and being instructed in the correct formation of letters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Teachers use activities, such as block building, measuring ingredients for cooking, woodworking, and drawing to help children learn concepts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

in math,
science, and
social studies.

5. Children
use a variety
of art media,
including easel
and finger
painting, and
clay, in ways
of their
choosing.



6. Teachers
expect
children to
respond
correctly with
one right
answer.
Memorization
and drill are
emphasized.



7. The
classroom
environment
encourages
children to
listen to and
read stories,
dictate stories,
notice print in
use in the
classroom,
engage in
dramatic play,
experiment
with writing by
drawing,
copying, and
inventing their
own spelling.



8. Art projects
involve
copying an
adult-made
model,
coloring
predrawn
forms,
finishing a
project the
teacher has



started, or
following other
adult
directions.

End of Block: Part 5: Classroom Practices Inventory

APPENDIX D**PRE-COACHING “6 Cs” AND EARLY DEVELOPMENT INSTRUMENT****(EDI) SURVEY FOR INTERVENTION TEACHERS****2021-2022 PBL K 6Cs (Sept./Oct. '21)**

Start of Block: Demographics

Thank you for taking the time to let us know about your current class of kindergarteners. This survey should take about 30 to 40 minutes. Know that the survey will automatically save and you can come back to complete it later.

Page Break

Name
First Name and the Initial of your Last Name

Q1 How many students are there in your classroom?

Number of Students _____

End of Block: Demographics

Start of Block: 6 Cs Skills Survey

Q2_6 Cs 6 Cs Skills in Your Classroom

Directions: Select the rating on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree) that most closely aligns with your opinion of your students' skills described below. **For each response, provide an average for all the students in your class.**

	Strongly Disagree 1	Disagree 2	Neither Agree/Nor Disagree 3	Agree 4	Strongly Agree 5
COLLABORATION: Overall, students work/study effectively with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COLLABORATION: Overall, students enjoy working with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COMMUNICATION: Overall, students have good written communication skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COMMUNICATION: Overall, students have good verbal communication skills. They ask questions clearly and communicate with others effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students like the content they are learning in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students feel the content is important and they feel connected to it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding of literacy content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

of math content.					
CONTENT: Overall, students have a good understanding of science content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding of social studies content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CRITICAL THINKING: Overall, students engage in critical thinking effectively (e.g., analyzing, criticizing, evaluating, organizing, and comparing information).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CRITICAL THINKING: Overall, students are comfortable questioning information in the class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CREATIVE INNOVATION: Overall, students are able to generate new ideas and apply them in creative ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CREATIVE INNOVATION: Overall, students are able to find new or different solutions to one problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONFIDENCE: Overall, when students find something difficult they try to fix the issue and try different solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CONFIDENCE:
Overall, when
students find
something difficult,
they persevere and
still try to learn it.



End of Block: 6 Cs Skills Survey

Start of Block: 6 Cs to EDI

Note:

The Early Development Instrument (EDI) is a copyrighted measure held by McMaster University (2000). Therefore, the section of the survey that included EDI items is excluded from this document. Additional information on the EDI is available at the following link: <https://edi.offordcentre.com/>

APPENDIX E**POST-COACHING “6 Cs” AND EARLY DEVELOPMENT INSTRUMENT (EDI)****SURVEY FOR INTERVENTION TEACHERS****2021-2022 PBL K 6Cs (May '22)
Treatment**

Start of Block: Demographics

I1 Thank you for taking the time to let us know about your current class of kindergarteners. This survey should take about 30 to 40 minutes. Know that the survey will automatically save and you can come back to complete it later.

Page Break

Name
First Name and the Initial of your Last Name

Q1 How many students are there in your classroom?

Number of Students _____

End of Block: Demographics

Start of Block: 6 Cs Skills Survey

Q2_6 Cs 6 Cs Skills in Your Classroom

Directions: Select the rating on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree) that most closely aligns with your opinion of your students' skills described below. **For each response, provide an average for all the students in your class.**

	Strongly Disagree 1	Disagree 2	Neither Agree/Nor Disagree 3	Agree 4	Strongly Agree 5
COLLABORATION: Overall, students work/study effectively with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COLLABORATION: Overall, students enjoy working with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COMMUNICATION: Overall, students have good written communication skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COMMUNICATION: Overall, students have good verbal communication skills. They ask questions clearly and communicate with others effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students like the content they are learning in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students feel the content is important and they feel connected to it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding of literacy content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

of math content.					
CONTENT: Overall, students have a good understanding of science content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONTENT: Overall, students have a good understanding of social studies content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CRITICAL THINKING: Overall, students engage in critical thinking effectively (e.g., analyzing, criticizing, evaluating, organizing, and comparing information).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CRITICAL THINKING: Overall, students are comfortable questioning information in the class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CREATIVE INNOVATION: Overall, students are able to generate new ideas and apply them in creative ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CREATIVE INNOVATION: Overall, students are able to find new or different solutions to one problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CONFIDENCE: Overall, when students find something difficult they try to fix the issue and try different solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CONFIDENCE:
Overall, when
students find
something difficult,
they persevere and
still try to learn it.



End of Block: 6 Cs Skills Survey

Start of Block: 6 Cs to EDI

Note:

The Early Development Instrument (EDI) is a copyrighted measure held by McMaster University (2000). Therefore, the section of the survey that included EDI items is excluded from this document. Additional information on the EDI is available at the following link: <https://edi.offordcentre.com/>

APPENDIX F

**TABLES OF QUALITATIVE RESPONSES FROM INTERVENTION AND
CONTROL TEACHERS**

Table 9

Themes, Subcategories, Frequencies, and Sample Quotes from the Pre-Coaching Survey of Intervention Teachers

Challenges		
Subcategory	Reference count	Example quote
Insufficient training on guided play	1	“Right now I still have so much to learn.”
Personnel	1	“I have been fortunate enough to always have an assistant who can take on one of the centers as well. She observed how I had done it and followed suite. This year, I do not think I will have a full day assistant though.”
Standards and curriculum	1	“I try to incorporate it as much as I can, however it can be challenging with all of the curriculum demands.”
Guided play implementation		
Subcategory	Reference count	Example quote
Centers	6	“Setting up dramatic play centers, open ended art center, block center, science observation center.”
Content	6	“During my math block, students have the opportunity to explore our math tools in a multitude of ways during independent play time. They are also able to use pre-selected toys and materials during our literacy center time. While I also have free choice, literacy and math are times when the play is more guided.”

Table 9 (continued)

Facilitation of the classroom environment and materials	5	“During Discovery....students enter the classroom and find areas intentionally set up for the students based on their feedback during reflection. There is usually an inquiry area, dramatic play, blocks, Magna Tiles, loose parts and a variety of art supplies.”
Scheduling	5	“I try and allow 1 hour a day for the children to choose and play. The past two years, this has been first thing in the morning. I will go around and observe and interact with them. I feel I need to do more with the pre- and post times and documenting. I also want to get the kids to expand on their own documenting. They also get 1/2 hour of recess and I try to give them another 1/2 at the end of the day. End of the day does not always happen.”
Student agency	5	“I recently started letting students all go to choose a spot to play at the same time. It went much smoother than I thought, but there are still a couple of students that need support with the process.”
Active	4	“During my math block, students have the opportunity to explore our math tools in a multitude of ways during independent play time.”
Plan for future guided play	3	“I am looking forward to learning how to incorporate it [guided play] more often throughout the day.”

Table 9 (continued)

Critical thinking	2	“We have an hour long guided play block in the morning. Students can play, eat snack and reflect on our time at the end.”
General facilitation of guided play	2	“I try and allow 1 hour a day for the children to choose and play. The past two years, this has been first thing in the morning. I will go around and observe and interact with them.”
Community	1	“[Guided play typically occurs through] reinforcement of foundation skills in all areas (phonics, numbers, letters, social emotional learning, first and last community circle).”
Creative innovation	1	“Recently my students have been engaged in creating their own games and writing stories.”
Limited implementation of guided play	1	“I have not done this [guided play] so much in the past years, as I plan to truly implement it this year. My percentage above is based on this year.”
Meaningful	1	“[Guided play is implemented] mostly during math and centers time. If we are working on one to one correspondence in Math I will give student A, who loves dinosaurs, several dinos I will then play how many dinos by saying or writing a number then student A matches the number with the correct amount of dinos.”

Table 9 (continued)

Observation of students	1	“I will go around and observe and interact with them.”
Personnel	1	“I have been fortunate enough to always have an assistant who can take on one of the centers as well. She observed how I had done it and followed suite.”
Socio-emotional learning	1	“[Guided play typically occurs through] reinforcement of foundation skills in all areas (phonics, numbers, letters, social emotional learning, first and last community circle).”
<hr/>		
Positive perception of guided play		
Ease of implementation	1	“I recently started letting students all go to choose a spot to play at the same time. It went much smoother than I thought, but there are still a couple of students that need support with the process.”
<hr/>		

Table 10

Themes, Subcategories, Frequencies, and Sample Quotes from the Post-Coaching Survey of Intervention Teachers

Challenges		
Subcategory	Reference count	Example quote
Scheduling	10	“Time and support [are challenges to guided play]. I always seem to run out of time to do any after play reflection. Our schedule this year, we are cleaning up and running off to unified arts...Always feeling rushed this year.”
Standards and curriculum	6	“The two biggest barriers this year have been the overwhelming amount of curriculum to get to, and the large amount of student needs/behaviors.”
Administrative support	5	“I just wish I had more time and more support from administration.”
Personnel	4	“Time and staff are what I believe to be the main issues. Although my class is small, I cannot always get to each student during choice time. It was be extremely helpful to have another adult (who is knowledgeable) but my school just does not have that as an option.”
Assessment	3	“testing/assessments [are barriers to guided play]... I would love to never formally assess a kindergartener again and I would love for the kindergarteners to have the time to develop at their pace rather than the curriculums.”

Table 10 (continued)		
Classroom environment and materials	3	“Space [is a barrier to guided play]... I would love to have an enormous room to store all of the class' creations and all of the supplies to create them.”
No challenges	3	“I feel fortunate because other than wishing I actually had more students, I have only 10, I do not see any barriers.”
Teaching philosophy	3	“Honestly, the only barriers are teachers themselves. I had to let go of some things and trust that students would grow and learn. Now, at the end of the year, I feel they are more ready than they ever were in years past. They have learned to negotiate, problem solve and plan. They have higher level thinking skills. I think if teachers could trust in the process, then there would be no barrier.”
Other burdens on teachers	2	“[Among other barriers to guided play, one is] the endless checklist of things teachers need to do while students are being independent.”
COVID-19	1	“COVID [is one barrier to implementing guided play].”
General challenges	1	“It has been an extremely difficult year. My most challenging in my career.”
Insufficient training on guided play	1	“Some years and days it [a barrier to guided play] is lack of time. Not in my case, but others can be lack of admin support, lack of materials, lack of training”

Table 10 (continued)

Student behavior	1	“The two biggest barriers this year have been the overwhelming amount of curriculum to get to, and the large amount of student needs/behaviors.”
<hr/>		
Coach support		
Subcategory	Reference count	Example quote
Reflection and teaching philosophy	7	“My biggest challenge was putting out closed ended activities! Previously, I would have a sample as to how their project/activity should turn out at the end and thought each child needed a tangible product. I was sucked into the "Pinterest Perfect" work. Karen [a coach] helped me see that letting students choose their own pieces, putting out loose parts, NOT having a sample encourages their creativity, problem solving, and learning. It took me a long time to finally let that go. I am so thankful that Karen continued to gently encourage me to do so. Her ideas and suggestions were so simple yet so effective. I am forever thankful for her guidance.”
Student-teacher relationship	7	“My coach helped me reflect on my willingness to let the children decide where to join play. She helped me be more flexible and use high level language to engage and teach expectations.”
Personal	6	“My coach was wonderfully supportive and friendly. One [on] one of her visits, we had to evacuate the classroom. She listened to me talk about the situation and about safety challenges with a student. I felt very supported and understood.”

Table 10 (continued)

General support	5	“I really enjoyed and benefited from the coaching sessions and other meetings.”
Student agency	5	“I was not confident in giving the class true agency over their choices. I thought it would be pure chaos. I was so wrong, my coach taught me how to plan, communicate and model Play-Based learning. Now my class is so cooperative, imaginative, inspired and inspiring. They can create and problem solve with little to no adult intervention. There is excitement and creativity with almost no chaos-amazing!”
Structure of guided play	3	“I struggled to ensure that I was engaging students in valuable learning during their play. My coach helped me develop a routine with my students that consistently highlights the value of a pre-play gathering, play, and share time each day.”
Plan for increased play	3	“She helped me figure out some strategies for engaging my students in other activities besides drawing/art which is the one thing that they really want to do.”
Facilitation of student inquiry	2	“Karen [a coach] taught me so much. In observing her, I learned how to get messy with children and how to ask probing questions. Before coaching, I would look at 'play' as a time to target to meet with reading groups, etc. Now, I know the critical importance of getting on the floor and doing the 'work' of play.”

Table 10 (continued)

Student behavior	1	“[My coach helped me with] making their choice time safe from explosive students!”
Content integration with play	1	“With curriculum and academics being a very high priority at my school, my coach was able to help me navigate my schedule and implement a self guided math time. This gave my students choice and a longer opportunity to play at the end of the day. It has helped so much in the moral of my students and the energy in our classroom.”
Family engagement	1	“She [the coach] was very helpful in keeping me grounded during challenges with families.”
Observation of students	1	“I wanted to make sure to make connections to all of my students on a regular basis so that I made sure I reached each student and could highlight their work and progress during guided play. Karen [a coach] gave me a check-in sheet template which made it really easy to keep track. It was easy and quick to write down notes about each of the students.”
Scheduling	1	“I had to amend my schedule to comply with school wide scheduling expectations but it required me to shift when our guided play time would be. This was very disruptive to our classroom community but Karen [a coach] helped me walk through how to shift the schedule and then how to guide children in adjusting to the new schedule...”

Table 10 (continued)

Theoretical understanding of guided play	1	“In the beginning of the program, I wasn't sure exactly what guided play was. I have always believed in learning through play, but was more comfortable and knowledgeable about free play and teacher directed play.”
Guided play implementation		
Subcategory	Reference count	Example quote
Communication	20	“My role changed by giving the student a chance to become the expert and share their excitement with the class.”
Student agency	20	“I take more of an active observer role, I allow children time to problem solve and try to work things out with each other or with their materials before I intervene. I ask questions rather than provide suggestions.”
Active	19	“For a science unit, I brought in a pumpkin and let the kids observe it, draw it, label it, touch it...It was just put out as an option. I still look back today and think about some students choosing to be at the pumpkin and draw it every day. I now know that they were working to become experts.”
Content	17	“Before the coaching process, I saw my role as just providing the time and materials for play. Now I see my role as a coach and observer, which is critical to supporting students to make academic connections through their play...”

Table 10 (continued)

Scheduling	16	“We have an hour long play block during the day.”
Student-teacher relationship	16	“As the year progressed my role as a facilitator went from being very involved in the facilitation, to guiding my students to facilitate.”
General facilitation of guided play	14	“As a facilitator of guided play, I see myself as an observer and a listening ear—almost a play coach for the students themselves, if you will.”
Critical thinking	12	“My role has changed drastically, because now I am engaging more with children and asking extending questions. "Oh, I see those round blocks. What are they for? What else can you do with them? How does that help your helicopter? What else do you know about helicopters? Have you seen a helicopter before?" etc... I am now providing much more meaningful materials and extending based on what they do with these materials.”
Facilitation of classroom environment and materials	10	“My role as a facilitator of guided play has changed greatly. In the past during guided play I was more engaged with the students, almost leading and steering them towards a path or goal I had in mind rather than having the students lead me. I may physically set the stage in the morning with the loose parts or materials they have requested but what goes on in those area's is more child directed than it has ever been...”

Table 10 (continued)

Observation of students	10	“I have shifted from occasional participant to full guide on the side - planner, observer and documenter.”
Facilitation of student inquiry	9	“I have become more able to sit back and see where the play goes and when needed ask better questions that lead the children to their own discoveries.”
Collaboration	8	“I take more of an active observer role, I allow children time to problem solve and try to work things out with each other...”
Socially interactive	8	“I try to include things we are learning about into guided play. At the beginning of the year we were really building community, so it was facilitating a lot of behaviors, emotions and how to interact and communicate with each other.”
Centers	5	“I would bring in literacy and math often with certain centers such as store, building, legos, puppets.”
Creative innovation	5	“Building with blocks, painting, writing books, the florist shop and many other "invitations" allow children to use their imagination, writing skills, language skills, math skills, engineering skills and interpersonal skills to grow and learn.”

Table 10 (continued)

Future implementation of guided play	5	“Guided play is possible and will always be part of my classroom learning going forward. My goal is to continue to find ways to tie standards to guided play opportunities and document them to show my students learning. As well as incorporate more project based learning opportunities.”
Guided play structure	4	“We begin with a pre play discussion, move into the guided play invitation time and then have a debrief after play.”
Iterative	4	“It may mean asking open ended questions at the block area to help guide students to stack the blocks, make shapes, problem solve. It may mean I might give children shape materials to explore and play with, while maybe setting them little challenges in an open ended manner. Having children as "detectives" discovering the secrets of shapes. They had to try to work out for themselves what all of the different triangles had in common, and what the other shapes had in common, the target being that they would learn to categorise the shapes for themselves.”
Joy	4	“My role changed by giving the student a chance to become the expert and share their excitement with the class.”

Table 10 (continued)

Socio-emotional learning	4	“I try to include things we are learning about into guided play. At the beginning of the year we were really building community, so it was facilitating a lot of behaviors, emotions and how to interact and communicate with each other.”
Community	3	“It [guided play] ends with a share reflection meeting. At the end of the day, I do a pre play gathering to introduce any new choices for the next morning and for students to pick their play options.”
Meaningful	3	“My role has changed drastically, because now I am engaging more with children and asking extending questions... ‘What else do you know about helicopters? Have you seen a helicopter before?’”
Guided play as developmentally appropriate	2	“Welcomed the acceptable time to give 5yr olds what they needed to learn, explore and grow.”
Engaging	2	“I still look back today and think about some students choosing to be at the pumpkin and draw it every day. I now know that they were working to become experts.”
Interest	2	“I use guided play to support our writing and math goals. Students love to create in our classroom this year and it has been a great opportunity for me to guide them in their interests and academics.”

Table 10 (continued)

Professional collaboration	2	“My colleague is also a PBL believer and between the two of us, we have been able to bounce ideas off of one another and plan engaging activities for our students.”
Modeling guided play	1	“With class wide conversations and modeling expectations, the new play time worked better developmentally for children (beginning of the school day instead of the end).”
Recognition of play types (e.g., free play, guided play)	1	“I will also extend their thinking during free play or teacher directed play, when appropriate.”
Student risk-taking	1	“I am taking more risks when it comes to our guided play block.”
Transfer	1	“Also, what we are learning at this time of day, we will use or reference throughout other times/lessons.”
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Student benefits		
Subcategory	Reference count	Example quote
General growth of knowledge and skills	9	“The PBL [play-based learning] experience has been great! The children in my class and I have created a wonderful community and we all have grown together and love each other and learning. It has been wonderful to try new things and reflect on the experience.”
Community	8	“It [guided play] has helped so much in the moral[-e] of my students and the energy in our classroom.”

Table 10 (continued)

Content	8	“The interesting thing I noticed was the children brought the "direct teaching " into their play. One day a child was drawing number bonds for the puppets.”
Creative innovation	8	“I have really seen growth in my students' (and my) creativity.”
Collaboration	6	“I have had a lovely class this year and children are very comfortable with each other and are able to openly share their conflicts they have with peers. They have been very successful with making safe and responsible choices both during play, as well as throughout their day.”
Communication	6	“Learning how to phrase things to the students as open-ended questions in a habitual ‘normal’ flow of conversation with the class has been a small semantic change that has had a huge impact on the class's ability to share their learning.”
Joy	6	“Although my class has its challenges, I love their enthusiasm, creativity and excitement. I often hear, ‘Hey, Mrs. C that was fun!’”
Social interaction	6	“Now my class is so cooperative, imaginative, inspired and inspiring. The [<i>sic</i>] can create and problem solve with little to no adult intervention.”

Table 10 (continued)

Critical thinking	4	“When filling a large tube teddy bear counters students wanted to figure out how many the large tube held and they brainstormed on how to sort and count all the bears. They then went on to write the numbers and used mathematical symbols when adding.”
Socio-emotional learning	4	“[This year, I liked] that they [students] finally have developed into a wonderfully compassionate and caring crew!!”
Active	2	“The students don’t even realize the math skills they are using until a teacher casually points out how impressed they are “with their tall tower made of 27 blocks!” When the class uses the story retelling basket at the puppet theater they are reinforcing their literacy skills. I have seen the class call upon their science skills and vocabulary when building incline planes (ramps) for their cars, then figuring out that a taller ramp makes their car go faster and the heaviest car goes the fastest of all.”
Engagement	2	“I feel when I did this [implemented guided play with a pre-play gathering facilitated by the teacher], the play to learn time went smoother and the children were more engaged.”
Student agency	2	“I need to let the children lead the way. WOW...amazing things do happen.”

Table 10 (continued)

Guided play as developmentally appropriate	1	“With class wide conversations and modeling expectations, the new play time worked better developmentally for children (beginning of the school day instead of the end).”
Iterative	1	“The students don’t even realize the math skills they are using until a teacher casually points out how impressed they are “with their tall tower made of 27 blocks!” When the class uses the story retelling basket at the puppet theater they are reinforcing their literacy skills. I have seen the class call upon their science skills and vocabulary when building incline planes (ramps) for their cars, then figuring out that a taller ramp makes their car go faster and the heaviest car goes the fastest of all.”
Meaningful	1	“I have seen the class call upon their science skills and vocabulary when building incline planes (ramps) for their cars...”
Motivation or passion for learning	1	“They have become more curious and inquisitive thanks to this [guided play with teacher facilitation].”
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Teacher background		
Subcategory	Reference count	Example quote
Teacher background	4	“This was my first year teaching kindergarten in-person after several years teaching first grade.”

Table 10 (continued)

Teacher benefits		
Subcategory	Reference count	Example quote
Professional development	22	“I used to be the "LARGE AND IN CHARGE" Leader of the class. My students could barely make a decision with out [<i>sic</i>] me or my approval. Now I am a guide and participant in the learning process.”
Joy	21	“I have enjoyed trying to implement play-based learning and doing art and science projects with my class.”
Reflection and teaching philosophy	21	“I am always aware, almost hyper aware of what I am doing while children are playing. I am looking for ways to document and share information. I am no longer just an observer. I also feel that I have learned how to let go and let kids take ownership!”
General benefits	19	“GUIDED PLAY! this has been an incredible year for us implementing guided play. The learning, social skills and experiences that I have observed and they have shared with me have been simply amazing!”
Student-teacher relationship	16	“I have planned more engaging play "invitations", been more involved in pre and post play conversations that have been huge contributions to PBL success and I have become more able to sit back and see where the play goes and when needed ask better questions that lead the children to their own discoveries.”

Table 10 (continued)

Facilitation of guided play	8	“This year, I enjoyed taking a step back and feeling more relaxed in the classroom. This was my first year teaching kindergarten in-person after several years teaching first grade. I found the focus on student-led play as a part of my day made teaching much more manageable, because I had to take a break from delivering content!”
Observation of students	5	“The learning, social skills and experiences that I have observed and they have shared with me have been simply amazing!”
Positive relationship with coaches	5	“I cannot express enough how vital it was for me to have Karen's unwavering and dynamic support this year!”
Community	3	“I only wish it was longer. I am so excited for the learning that occurred in my classroom this year. I only want to grow this practice and become a better facilitator. My students are kind and caring with a strong desire to create. I have been inspired every day by their vocabulary, creativity, stories, wonderings...they are just amazing. I have seen shy children shine and develop, children with complicated home lives have play as the most successful part of their day as they learn to negotiate and work cooperatively with peers. All of this happened through one hour of play. One hour of guided play offered my students agency and engagement beyond my wildest dreams! So proud of this experience.”

Table 10 (continued)

Professional collaboration	3	“It was great to be able to reflect with other teachers as well.”
Content integration with play	1	“I have enjoyed trying to implement play-based learning and doing art and science projects with my class.”
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Teacher suggestions		
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Subcategory	Reference count	Example quote
Intervention content	1	“I would like to add a component about how to integrate the standards and look at the whole school day and a proposed schedule.”
Professional collaboration	1	“I wish it could have been year long and our whole kindergarten team learning at the same time so we could collaborate and have discussions along the way.”
Intervention timing	1	“I wish it could have been year long...”
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Table 11

Themes, Subcategories, Frequencies, and Sample Quotes from the Year-End Survey of Control Teachers

Challenges		
Subcategory	Reference count	Example quote
Personnel	4	“I think my biggest barrier is support. I think kindergarten classrooms require two sets of hands and I don’t always have someone there to help me.”
Scheduling	4	“Time to plan it [guided play]”
Standards and curriculum	3	“There is always some concern that we not get to all of our curriculum and/or standards for that day/week/month.”
Classroom environment and materials	2	“Not a lot of space [is a barrier to guided play].”
Insufficient training on guided play	1	“[Not knowing] how to do it [guided play]”
Student behavior	1	“They [students] get carried away easily”
Guided play implementation		
Subcategory	Reference count	Example quote
Content	4	“I try to incorporate guided play through themes and our science lessons. Currently we are learning about plants so we are learning about gardens by creating our own. The kids actively engaged and curious about this unit as they are given freedom and responsibility in this project.”

Table 11 (continued)

Facilitation of classroom environment and materials	4	“Guided play is typically incorporated during independent center tasks, allowing students to use hands-on manipulative or tools that reinforce the whole-group or small-group learning that is taking place through direct instruction.”
Active	3	“Hands on learning experiences and activities such as giving students objects that roll and don't roll and asking them to figure out which ones roll/ don't roll.”
Student agency	3	“I give students scheduled time within the day to ‘explore’ the classroom.”
Centers	2	“Guided play is typically incorporated during independent center tasks, allowing students to use hands-on manipulative or tools that reinforce the whole-group or small-group learning that is taking place through direct instruction.”
Student-teacher relationship	2	“Currently we are learning about plants so we are learning about gardens by creating our own. The kids actively engaged and curious about this unit as they are given freedom and responsibility in this project.”
Critical thinking	1	“Hands on learning experiences and activities such as giving students objects that roll and don't roll and asking them to figure out which ones roll/ don't roll.”

Table 11 (continued)

Engaging	1	“I have loved my class size this year, it has given me so much more freedom and flexibility to do more engaging and hands-on activities.”
Facilitation of student inquiry	1	“Hands on learning experiences and activities such as giving students objects that roll and don't roll and asking them to figure out which ones roll/ don't roll.”
General facilitation of instruction	1	“With the current class size (13) I am able to differentiate a lot easier and cater to each of my students needs.”
Iterative	1	“Hands on learning experiences and activities such as giving students objects that roll and don't roll and asking them to figure out which ones roll/ don't roll.”
Playful instruction only	1	“I make centers for the students and explain to them what they need to do with the materials and then show them the expectation of that center.”
Scheduling	1	“I give students scheduled time within the day to ‘explore’ the classroom.”
Socio-emotional learning	1	“Currently, we are starting by incorporating a variety of lesson/learning targets into a Discovery/play time - the focus has been largely social/emotional given where our students were at developmentally.”
Themes	1	“I try to incorporate guided play through themes and our science lessons.”

Table 11 (continued)

Student benefits		
Subcategory	Reference count	Example quote
Socio-emotional learning	3	“I enjoy building relationships with my students, and seeing all their growth both socially and academically!”
Collaboration	2	“They are always willing to help out others and myself. They love to play and have learned how to play well with each other.”
Content	2	“As with most years, I enjoy building relationships with my students, and seeing all their growth both socially and academically!”
General growth of knowledge and skills	2	“I enjoy seeing the progress that kids make, I enjoy seeing how far they have come socially and academically and as overall humans.”
Social interaction	2	“They love to play and have learned how to play well with each other.”
Active	1	“I try to incorporate guided play through themes and our science lessons... The kids actively engaged and curious about this unit as they are given freedom and responsibility in this project.”
Engagement	1	“I try to incorporate guided play through themes and our science lessons... The kids actively engaged and curious about this unit as they are given freedom and responsibility in this project.”

Table 11 (continued)

Teacher benefits		
Subcategory	Reference count	Example quote
General student appreciation	4	“I have the sweetest group this year! They are so enthusiastic to learn and try so hard!”
Observation of students	3	“[I have enjoyed] watching kids play together and show improved social/emotional skills...”
Student-teacher relationship	3	“As with most years, I enjoy building relationships with my students...”
Class size	2	“I have loved my class size this year, it has given me so much more freedom and flexibility to do more engaging and hands-on activities. With the current class size (13) I am able to differentiate a lot easier and cater to each of my students needs.”
Additional student support	1	“[I have liked that] WIN/intervention groupings [are] available for kindergarten...”
Administration change	1	“[I have liked the] new administration.”
Facilitation		“I enjoy what I teach and bringing hands out activities into the classroom.”
Value of in-person learning	1	“It has also been SO nice being in person teaching this year. Remote with K was hard.”
Joy	1	“[I enjoy] helping students find strategies for emotional regulation.”

APPENDIX G

**CORRELATIONS BETWEEN ADMINISTRATIVE SUPPORT AND
CLASSROOM OBSERVATION VARIABLES OF INTEREST
AT YEAR-END**

Table 12

Bivariate Correlations Between Administrative Support and Classroom Observation

Variables of Interest at Year-End

Variable	<i>n</i>	<i>r</i>
1. Administrative support for guided play	27	—
2. Guided play	27	.06
3. Direct instruction	27	.09
4. Free play	27	.34
5. Playful instruction	27	-.28
6. Centers	27	.37
7. Small-group centers	27	.12
8. All center types (with and without small group activities)	27	.39*
9. Individual classwork	27	-.20
10. Teacher's open-ended questions	27	.02
11. Level of instruction (instructional sweeps)	27	.01

Table 12 (continued)

Variable	<i>n</i>	<i>r</i>
12. Level of instruction (all sweeps)	27	.09
13. Teacher tone/affect	27	-.08
14. Teacher approving student behavior	27	-.05
15. Teacher disapproving student behavior	27	-.30
16. Teacher monitoring of students	27	-.15
17. Student talk (excluding questions)	27	.01
18. Student open-ended questions	27	.20
19. All student talk	27	-.01
20. Associative activities	27	.05
21. Cooperative activities	27	-.16
22. Student collaboration	27	.00
23. Manipulative use	27	.26
24. Student involvement	27	.15

* $p < .05$