

Equitable Education for All: Using a Comprehensive Instructional Model to Improve Preschool Teacher Practices

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Abstract

The current study evaluates the effectiveness of a comprehensive instructional model, (*Every Child Ready*), as a vehicle to provide equitable education experiences for all children by compensating for gaps in teacher knowledge. The ECR instructional model addresses several challenges facing the early childhood landscape. Specifically, the ECR instructional model includes an affordable research based curriculum, differentiated professional development for adult learners (teachers and leaders), and provides educators with a developmentally appropriate robust assessment tool kit to help measure the effectiveness and quality of instruction. The current study utilizes a quasi-experimental design to evaluate the quality of teacher-student interactions in classrooms implementing ECR and classrooms that implemented “business as usual” curriculum and professional development. Models were estimated using Mplus 7 software to account for the nested nature of classrooms in schools. Results indicate that teachers who implement the Every Child Ready instructional model out performed non-ECR classrooms in the CLASS Instructional Support domain ($b = 0.67, p < .001$). This difference was present for all three Instructional Support dimensions (Concept Development, Quality of Feedback, and Language Modeling), but was especially strong in the area of Concept Development ($b = .78, p < .001$). Findings suggest that classrooms who implement the ECR Instructional model are better equipped to encourage higher order thinking skills.

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Introduction

Early childhood educators account for 30 percent of all teachers, totalling over one million adults (Weiss & Brandon, 2010). These educators serve one of the most vulnerable populations, the approximately eight million three- and four-year-old children enrolled in some form of early care (Barnett, 2010; Weiss & Brandon, 2010). Further, the early childhood workforce, in general, experiences instability, with higher rates of turnover, particularly during the regular school year, than other levels of education, such as secondary school or higher education (Bassok, Fitzpatrick, Loeb, & Paglayan, 2013) Yet, despite the large workforce, student enrollment, and general acceptance of the importance of preschool as an early intervention in disrupting the achievement gap (Shonkoff & Phillips, 2000), preschool teachers tend to be less trained, with fewer credentials, than those teachers of older children (Bassok et al., 2013; Early & Winton, 2001). Thus, there is a distinct gap in on-the-job professional development (PD) to support early childhood educators (Barnett, Carolan, Fitzgerald, & Squires, 2012).

Currently there are a variety of resources available around curricula, PD, and assessments available for early childhood teachers and school leaders. Despite wide-scale availability of each, it is challenging to find a comprehensive instructional model that integrates curriculum, PD, and measurement tools in a way that are usable, accessible, and sustainable for teachers. In a review of effective PD practices, Desimone and Garet (2015) identified a series of important factors for successful PD. These factors focus on differentiating support to meet the needs of all adults and include maintaining continuous monitoring student performance and teacher quality, and feedback associated with this monitoring in order to improve teacher practice and capacity.

Additionally, the authors recommend that effective PD be tightly coupled to both curricula and student learning needs. Through this integration, curricula act as professional development, reinforcing content of workshops, literature, and classroom coaching. Further, while teachers are building capacity and knowledge, children are still receiving the quality instruction if curricula and student progress monitoring are aligned and ongoing. Thus, having curricula, PD, and teacher and student measurement tools that speak to each other and provide real-time information is essential to effectively impacting young learners. A key element of teacher improvement and success rests in providing teachers with all of the resources, and all supported by differentiated PD with a variety of delivery methods and touch-points.

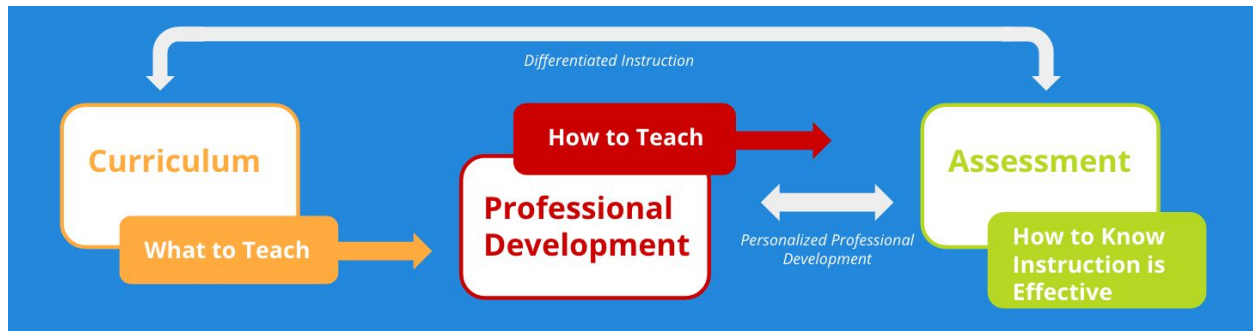
Every Child Ready Instructional Model

The current study utilizes a quasi-experimental design to evaluate the impact of *Every Child Ready* (ECR) - a preschool instructional model - on teacher performance. This model addresses the need to have an integrated system of content, PD, and assessment to support early childhood educators in their day-to-day practice and ongoing on-the-job training. ECR aims to solve the following challenges commonly faced in early childhood:

1. What to teach: a lack of affordable, comprehensive, research-based curricula.
2. How to teach: a lack of access to comprehensive, differentiated professional development.
3. How to know instruction is effective: a lack of developmentally appropriate student assessments that teachers can use to inform instruction.

ECR integrates three key elements (see Figure 1) described in greater detail below.

Figure 1
The Every Child Ready Instructional Model



First, the ECR curriculum aims to provide equitable education experiences for all children by compensating for gaps in teacher knowledge. It is designed to support teacher success, regardless of years of teaching experience or formal training. The curriculum is play-based and includes 10 thematic units. Unlike most early childhood curricula, the ECR curriculum includes a two-year scope and sequence that differentiates instruction for three- and four-year-olds, and provides targeted but flexible lesson plans for multiple instructional components. A goal of the ECR curriculum is providing supports for teachers to ensure the quality of information delivered to students, while also allowing teachers to bring their unique skills and knowledge to the classroom.

Second, the ECR professional development program provides teachers and school leaders with targeted, differentiated professional development that trains and supports them in curriculum implementation and early childhood pedagogical best practices. ECR's PD model includes: (a) in-person workshops; b) online courses; and (c) targeted virtual and in-class coaching with feedback. ECR Curriculum Specialists work with school instructional leaders

on-site to analyze data and develop differentiated professional development plans for teachers. In person site-based professional development workshops are created to support targeted areas of need based on classroom quality and student achievement data. These in-person workshops are also tied to in-classroom coaching areas of need. This allows for coaching activities to build off of workshops, which has been found to be a more effective approach than workshops by themselves (Neuman & Cunningham, 2009). Coaching activities are conducted using a coaching cycle: a pre-observation, reflection and goal setting, and a follow-up observation. Video is used in the classroom to support self-reflection and goal setting, a practice that has previously proven effective for early childhood educators (Downer et al., 2011; Hamre, Pianta, Mashburn, & Downer, 2012).

Figure 2
The Every Child Ready Professional Development Model



Finally, ECR includes a robust system to support low-cost, valid and reliable teacher and student assessments. ECR incorporates observational tools that measure teacher quality to help support targeted PD. These include formal and informal observations of classroom quality. ECR

also incorporates formal direct student assessments, as well as daily structured checks for understanding during small group instruction. Associated student and teacher reporting is designed to support differentiated instruction for students and differentiated coaching and support for teachers.

Classroom Quality Observations

The interactions that take place in the classroom environment are a primary source of learning for children (Bronfenbrenner & Morris, 1998). Researchers increasingly have turned to quantifying the quality of these interactions as a way to understand program quality. Such research has linked these interactions to children's academic readiness (Burchinal et al., 2002; Curby, Brock, & Hamre, 2013; Curby & Chavez, 2013). Given their influential role in the classroom, teachers possess the unique ability to bolster student success in the many components of academic readiness. This type of information is useful in planning targeted professional development sessions for educators.

Instruments, such as the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008) have been designed to quantify the quality of the interactions that teachers provide to children. Originally a research instrument, the CLASS has been increasingly been used in high-stakes testing and professional development. Research has shown that the three main domains of teacher-child interaction quality measured by this tool - Emotional Support, Classroom Organization, and Instructional Support - are predictive of children's development (Mashburn et al., 2008). The Emotional Support domain describes the presence positive and supportive relationships in a classroom. The Classroom Organization domain describes the behavior management strategies and student engagement practices employed by classroom

teachers. The Instructional Support domain describes teacher behaviors that support students' higher level thinking and language skills. Each domain is comprised of dimensions. For example, Instructional Support is composed of Concept Development, Quality of Feedback, and Language Modeling. Dimensions are further distinguished by indicators. For example, the Concept Development dimension has four indicators: Analysis and reasoning, creating, integration, and connections to the real world.

The Present Study

The purpose of the present study was to determine the extent to which classrooms using ECR have different levels of quality than non-ECR (i.e., business-as-usual) classrooms based on the CLASS. Utilizing a quasi-experimental design, we asked the following questions:

1. Do teachers in ECR classrooms demonstrate stronger performance in observed emotional support than teachers in non-ECR classrooms?
2. Do teachers in ECR classrooms demonstrate stronger performance in observed behavior management and productivity than teachers in non-ECR classrooms?
3. Do teachers in ECR classrooms demonstrate stronger performance in observed instructional support than teachers in non-ECR classrooms?

Method

Participants

In the current study, data from 67 classrooms was used to determine the impact of the ECR instructional model on teachers' observed levels of quality. The treatment sample was comprised of 59 classrooms across 17 schools implementing the full ECR model. The non-ECR sample was comprised of 8 classrooms in 2 schools that did not use the ECR model. The

non-ECR group was comprised of teachers in schools that did the same formal baseline and outcome classroom quality observations, but did not use the ECR curriculum, PD, or informal assessments.

Measures & Procedure

Live CLASS observations were conducted by trained observer using the Classroom Assessment Scoring System for pre-K (CLASS; Pianta, La Paro, & Hamre, 2008) near the beginning and end of the 2015-2016 academic year. The CLASS has three domains of interactions: Emotional Support, Classroom Organization, and Instructional Support. Each domain has a corresponding set of dimensions.

Usually, observers score at the dimension level, with each of the ten dimensions described above scored by observers. However, to enhance opportunities to use the data for professional development, the treatment and control schools in the current study received scores at the level of the individual indicators underneath each dimension. Additionally, as opposed to traditional pencil-and-paper note taking, observers “scripted” observations on a computer while observing. Teachers are able to reference these scripts so that they are better able to understand their scores. Observers also use this process when completing their reliability certification so as to mirror scoring behaviors in the field.

All observers attended a standardized training and passed rigorous reliability standards for the tool. The training consisted of reviewing the CLASS manual, watching video clips of real classrooms while discussing each dimension, and ultimately culminates in a reliability test. The test involves scoring 5 20-minute videos. Indicators were averaged to dimension level. Dimensions were compared to the gold-standard scores provided by the publisher. 80% of

raters' scores are expected to be within plus or minus 1 scale point. All raters met or exceeded this level of reliability. Any observers who participated in multiple observation windows had to view and score a drift video to re-establish reliability before observing in the field.

Results

Baseline Equivalence

Teachers at ECR and non-ECR schools were expected to be different at baseline with respect to their initial CLASS scores. ECR schools had implemented the curriculum for more than one year and, thus, teachers at ECR schools would have already had different scores if the ECR program is effective in changing how teachers interact with students. Nonetheless, it is worth noting that baseline equivalence was tested for children in these classrooms (Carlson, Curby, Brown, & Truong, 2017). Analyses suggested that the differences between the groups was small ($d < 0.25$) for all baseline measures except name writing, whereby children in the ECR group scored lower in their ability to fully write their name.

Data Analysis

Our model was estimated using Mplus 7 software. A structural model was set up such that the ECR status variable was used to predict averages for Emotional Support, Classroom Organization, and Instructional Support. The three outcomes were allowed to correlate. The model was estimated using full information maximum likelihood estimation with robust standard errors. Standard errors were adjusted for the fact that teachers were nested within the school campus (the unit at which ECR is assigned) using the TYPE = COMPLEX command.

Classroom Quality

Classroom Organization was correlated with Emotional Support ($r = .84, p < .001$) and Instructional Support ($r = .54, p < .001$). Emotional Support and Instructional Support were also correlated ($r = .60, p < .001$). Based on the model, non-ECR teachers were estimated as having an Emotional Support mean of 5.86, a Classroom Organization mean of 5.66, and an Instructional Support mean of 2.70.

With respect to ECR as a predictor, results indicated that there were no significant differences between teachers in ECR and non-ECR classrooms on emotional support ($b = 0.00, p = .99$) or classroom organization ($b = -0.08, p = .62$). However, the difference between ECR and non-ECR classrooms on Instructional Support was significant ($b = 0.67, p < .001$). Given that the standard deviation for Instructional Support was 0.67, this difference is a full standard deviation higher in ECR classrooms than non-ECR classrooms ($b = 0.67$).

To explore if the differences in Instructional Support between ECR and non-ECR classrooms were seen across the dimensions that make up Instructional Support, additional analyses were done with Concept Development, Quality of Feedback, and Language Modeling as outcomes. Based on the model, non-ECR classrooms were estimated as having a Concept Development mean of 2.12, a Quality of Feedback mean of 2.94, and a Language Modeling mean of 3.03. ECR classrooms were found to have significantly higher levels of Concept Development ($b = .78, p < .001$), Quality of Feedback ($b = 0.61, p < .001$), and Language Modeling ($b = .61, p < .001$).

Summary and Conclusions

Effective early education programs depend on high quality, prepared teachers (Berry, 2004). Specifically, high quality teacher-child interactions have repeatedly been cited as key

levers for students' academic and social-emotional success (Burchinal et al., 2002; Curby et al., 2009). Due to the importance of these interactions, an effective preschool instructional model should result in increased levels of observable teacher quality. *Every Child Ready* (ECR) was designed to improve teachers' instructional practices and pedagogical understanding to better meet the needs of students as well as enhancing the skills of early childhood educators.

Teachers in ECR and non-ECR classrooms did not significantly differ on Emotional Support or Classroom Organization. Both groups had strong average scores in the high-mid range. The non-significant differences between the two groups in Emotional Support and Classroom Organization were not especially surprising given that the national averages for these domains typically pull toward the higher range of the tool (Pianta, La Paro, & Hamre, 2008). Historically these two domains yield higher scores than Instructional Support.

Teachers in classrooms implementing the full ECR instructional model had significantly higher observed instructional support than teachers in non-ECR classrooms. This difference was substantial, amounting to a full standard deviation difference. Importantly, previous research has found that gains of just one quarter of a point in instructional support are associated with increased student outcomes (Burchinal, Vandergrift, Pianta, & Mashburn, 2010). This finding highlights the importance of an impact of this magnitude. Further analysis of this outcome found that these group differences in performance were present for all three dimensions of the CLASS Instructional Support domain: Concept Development, Quality of Feedback, and Language Modeling. This suggests that use of the ECR model helps teachers improve their practice in multiple areas of instructional support. Additionally, previous research has identified Concept Development as an especially high leverage dimension for supporting student's academic

performance (Curby & Chavez, 2013) so it's especially promising to see the higher performance on this dimension for ECR teachers.

These results are likely due to the comprehensive nature of the ECR model. Increased teacher performance likely results from: (a) access to high quality curriculum content that can guide complex instruction for teachers at many experience levels, (b) intensive and differentiated professional development designed to support teachers where they most need it, and (c) an assessment and reporting framework that helps teachers differentiate instruction and helps leaders differentiate teacher support. These three elements of ECR work together to help teachers improve their instructional practice.

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