Outcomes Study

LEVEL OF EVIDENCE
Gold Standard

Effectiveness Study

The Impact of Using a Research-Based Curriculum on Child Outcomes

Executive Summary

The Impact of Using a Research-Based Curriculum on Child Outcomes

The Impact of Using a Research-Based Curriculum on Child Outcomes

Quantitative and qualitative studies have advanced the growing body of literature on the importance of curriculum use in prekindergarten classrooms (Camilli, Vargas, Ryan, & Barnett, 2010; Canning, 2010; Clark, 2015; Presser, Clements, Ginsburg, & Ertle, 2015; Weiland, 2011). Prekindergarten learning activities support children's development, growth, and deep learning. At this stage of development, learning activities and the classroom environment should offer opportunities for children to improve their skills and deepen their understanding of basic content concepts.

The particular tools for instruction offered by a curriculum and the fidelity with which teachers implement these resources have a strong impact on child outcomes and academic readiness. Curriculums serve prekindergarten classrooms by creating specific learning environments and offering resources to navigate those environments. Camilli, Vargas, Ryan, & Barnett (2010) defined *curriculum* as a program that provides cognitive developmental and academic approaches in the classroom and ways to monitor child progress and foster child autonomy and self-regulation. In their analysis of over 100 early childhood intervention options, including commercially-produced curriculums, Camilli and his colleagues (2010) reported multiple gains from teacher-directed instruction and small-group instruction. Their findings ultimately revealed that children who received intentionally planned preschool instruction prior to kindergarten were more successful in elementary school (Camilli, Vargas, Ryan, & Barnett, 2010). Incorporating planned academic experiences into the classroom setting will move children towards greater academic success, with positive impacts on school readiness in the following years.

An effective curriculum will promote literacy, communication, and numeracy skills as well as creative thinking and metacognitive strategies across various classroom activities by using information from formative assessments to meet the needs of diverse learners and individualize scaffolding strategies. Clark (2015) found that the use of formative assessments creates an inclusive learning environment, enabling learners to have the best chance of success. He also demonstrated that prekindergarten learning environments using formative assessment promote "a high degree [of] challenge, enjoyment, personalization, and choice through planned opportunities to explore different activities, materials, and contexts" (pg. 96). Indoor and outdoor learning environments that encourage children to use their imaginations and explore define academically engaging prekindergarten classrooms (Clark, 2015).

A curriculum's strength also lies in its ability to build on previous knowledge so children can make connections across all content areas. Learning and development are scaffolded by using foundational academic knowledge in interactive and constructive ways. According to the US Educational Testing Service (2005), well-designed learning opportunities offer children the chance to understand relationships between new content and their past experiences, allowing them to make connections across content areas. As prekindergarten is the foundational beginning of these relationships, it is important that well-planned, thoughtful instruction take place.

A curriculum can also make play personally meaningful through thoughtfully planned inquiry and investigation. Presser, Clements, Ginsburg, & Ertle (2015) found that developmentally appropriate play-based environments make a significant difference by the end of the kindergarten year. Having a developmentally appropriate curriculum can be particularly effective in areas where children usually perform at a lower average than the national norm. Weiland (2011) noted significant gains in child achievement during a regression discontinuity analysis. While these findings are similar to those reported in other public prekindergarten studies, they make a unique contribution to the literature, as Weiland provided the first study in which a uniform curriculum was in place across all study classrooms. The study demonstrated positive impacts on early numeracy, language, literacy, executive function, and emotional development (Weiland, 2011).

In addition, Canning (2010) found similar outcomes and conclusions in a study of how children responded to various curriculum-based environments. Including open-ended resources and materials in the learning environment provided opportunities for children to create and imagine in their play space, further develop their communication skills, and build relationships with other children and adults (Canning, 2010). Canning's (2010) analysis showed that children found ways to fulfill their curiosity through their motivation to play. Teachers can easily oversee and facilitate play in content-rich environments because children already feel the need to interact with their surroundings.

The academic literature involving curriculum in prekindergarten classrooms strongly suggests that a research-based curriculum is an effective tool for impacting children's academic readiness (Camilli, Vargas, Ryan, & Barnett, 2010; Canning, 2010; Clark, 2015; Presser, Clements, Ginsburg, & Ertle, 2015; Weiland, 2011). It helps teachers and administrators create an appropriate educational environment for children and introduces children to the thinking tools and strategies that they will use in elementary school. A detailed scope and sequence provides teachers with the tools they need to make decisions that meet the needs of diverse learners.

Research Plan

In the 2015–2016 program year, Teaching Strategies recruited preschool programs serving 3- or 4-year-old children to implement *The Creative Curriculum® for Preschool, Sixth Edition*. A majority of the recruited sites were already using *GOLD®*, a formative, ongoing assessment tool developed by Teaching Strategies, but none of the sites had experience using *The Creative Curriculum® for Preschool* prior to joining the study.

Research has proven that a comprehensive curriculum focused on teacher–child interactions, a positive learning environment, and developmentally appropriate assessment lead to positive child outcomes. *The Creative Curriculum® for Preschool, Sixth Edition* and *GOLD®* provide teachers with the tools necessary to make this possible. At the start of the study, experienced trainers delivered curriculum implementation training to the study participants (pilot teachers). The study encompassed the 2015–2016 school year and continued through the end of the 2016–2017 school year. This 2-year implementation design made it possible to examine the impact of proper training and coaching on child outcomes and teachers' ability to implement the curriculum with fidelity by comparing assessments conducted at the end of each school year.

A total of seven programs participated in the study. Within the seven programs, more than 30 classrooms implemented *The Creative Curriculum® for Preschool, Sixth Edition*. The preschool programs were selected from different parts of the country and, as a group, served a diverse child population. Data was collected on children's demographic characteristics, and trained study staff assessed teacher–child interactions using the Classroom Assessment Scoring System® (CLASS®). The CLASS® observation scoring system includes structured observations across the following measures: positive climate, negative climate, teacher sensitivity, regard for child perspective, behavior management, productivity, instructional learning format, concept development, quality of feedback, and language modeling. Structured observations were also used to assess the fidelity with which pilot teachers were implementing *The Creative Curriculum® for Preschool* in order to compare the quality of the instructional environments in the study classrooms.

Teacher Training for the Study

Experienced Teaching Strategies trainers delivered training on *The Creative Curriculum® for Preschool* to teachers at each pilot site. Each training session met the scheduling needs of the pilot site. Training was held on-site and provided teachers with the skills and resources needed to implement *The Creative Curriculum® for Preschool* in the fall. Pilot teachers completed 12 total hours of training over 2 consecutive days to explore *The Creative Curriculum® for Preschool* as a resource to use in their classrooms.

Study Design and Implementation

This section describes *The Creative Curriculum® for Preschool*'s impact on child outcomes as a result of using the curriculum for two years. It includes a discussion of (1) research questions and the overall study design, (2) the training and coaching plan, (3) data collection measures and procedures, and (4) a summary of the findings.

Research Questions

The study was designed to answer two primary research questions.

- How are CLASS® scores impacted by a program using the curriculum for two years?
- Does child outcome data, collected in *GOLD®* by Teaching Strategies, improve over the course of the two years?

To answer these questions, teachers in preschool programs serving 3- or 4-year-old children were asked to use *The Creative Curriculum® for Preschool* for two consecutive program years, have CLASS® observations taken twice a year, use *GOLD®*, and be measured against *The Fidelity Tool for Administrators* twice a year. Study implementation began prior to the 2015–2016 school year and continued through the 2016–2017 school year.

Classroom Observation Data

To measure the proximal impacts of *The Creative Curriculum® for Preschool* on the preschool classroom environment, observers used the CLASS® observation instrument (Pianta, et. al, 2008). This widely used instrument is designed to assess the quality of interactions between teachers and children in preschool programs and is well-aligned with the principles and operational aspects of *The Creative Curriculum® for Preschool.* CLASS® has been validated in early childhood educational settings and has been found to produce reliable data under a variety of operational conditions (La Paro, Pianta, & Stuhlman, 2004; Raver et al., 2008). CLASS® uses 7-point Likert scales to measure three broad domains of classroom quality, each comprising three to four subdomains. The emotional support domain includes measures of positive climate, negative climate, teacher sensitivity, and regard for child perspectives. The classroom organization domain includes measures of behavior management, productivity, and instructional learning formats. Finally, the domain of instructional support includes measures of concept development, quality of feedback, and language modeling. Guided by detailed descriptions of expectations in each category, trained observers assessed teachers in each domain along a continuum from low (1, 2), to mid (3, 4, 5), to high (6, 7) implementation quality.

The developers of CLASS® have conducted extensive reliability studies of their instrument and have repeatedly found an average interrater agreement of 87 percent using paired observations and that ratings are generally stable across time.

Implementation and Fidelity Data

Teaching Strategies conducted an assessment of the extent to which the study sites were able to effectively implement *The Creative Curriculum® for Preschool, Sixth Edition* using *The Fidelity Tool for Administrators.* Ratings of each pilot teacher were made in Fall 2015 and in Spring 2016 for Year 1, and then again in Fall 2016 and Spring 2017 for Year 2.

Assessors used the rating instrument after completing both a classroom observation and a teacher interview to record individual item ratings, summarize ratings by category, and calculate an overall fidelity score. The tool is organized into the following parts and sections.

- Part I: Implementation of *The Creative Curriculum® for Preschool, Daily Resources*: Use (5 items)
- Part II: Implementation of *The Creative Curriculum® for Preschool, Foundation:* Physical Environment (5 items), Classroom Structure (3 items), Teacher–Child Interactions (9 items), Families (1 item), and Assessment (1 item)

For each section in *The Fidelity Tool*—Use, Physical Environment, Structure, Teacher–Child Interactions, and Families and Assessment—the assessors calculated the number of indicators present during the observations to provide a percentage score for that section. They then determined if the scores indicated a low, medium, or high level of fidelity. To generate the overall fidelity score, the assessors took the scores from each section to obtain the score for the part. Adding together the scores for the two parts (Part I: Daily Resources and Part II: Foundation) provided the overall fidelity score for each classroom. The level of fidelity is determined by the score that each section received, with 70% and below indicating low fidelity, 70% to 89% indicating medium fidelity, and 90% and above indicating high fidelity.

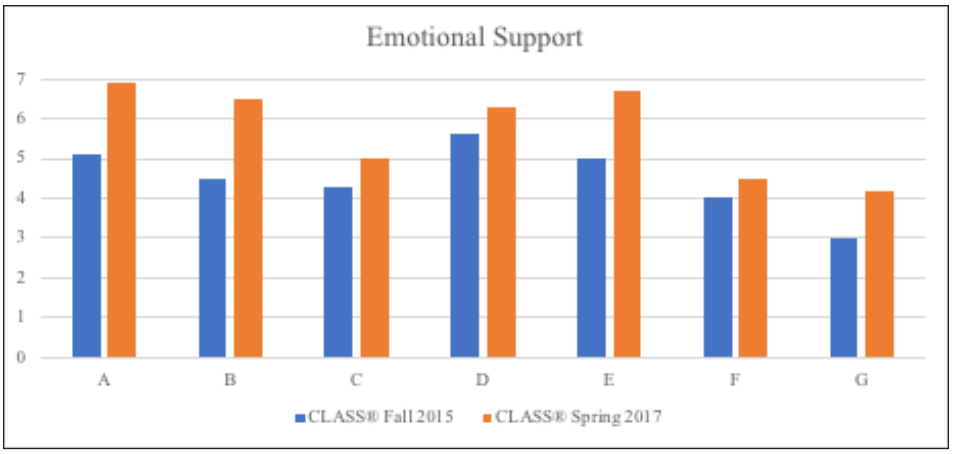
Three experienced Teaching Strategies assessors conducted *The Creative Curriculum® for Preschool* fidelity assessments. The assessors were selected based on their extensive knowledge of *The Creative Curriculum® for Preschool*. Each assessor received 6 hours of reliability training that included conducting practice assessments.

Assessment

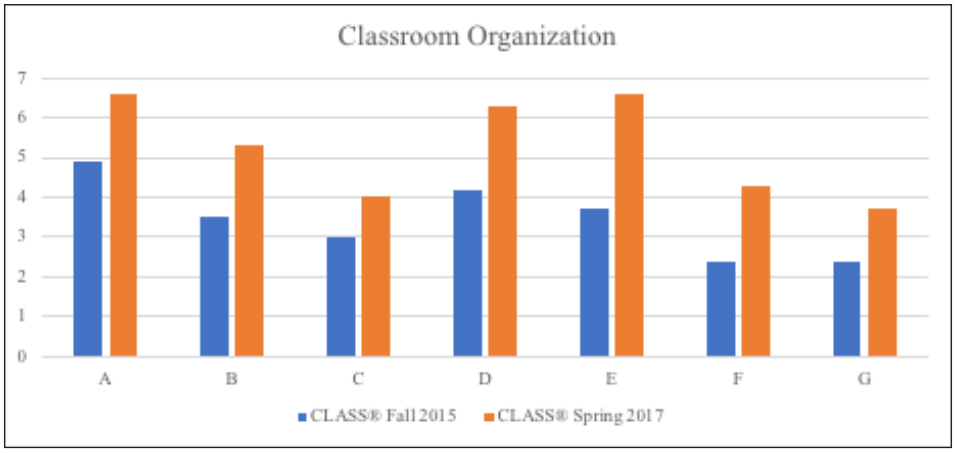
Teachers were asked to collect child observations and submit checkpoint data three times a year using *GOLD®*. The child outcomes data was used to examine overall growth over the course of each academic year and from the start to the end of the pilot.

Summary of Results

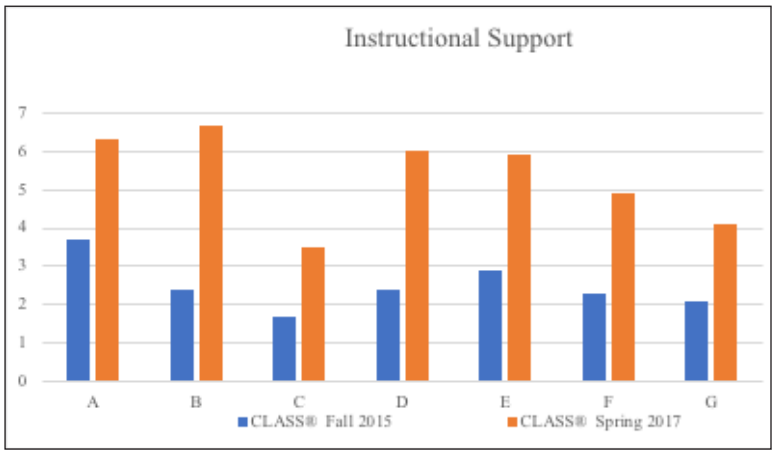
At the time of baseline CLASS® observations in Fall 2015, pilot classrooms had been implementing the resources for a month. Low implementation scores were expected during the first few months of implementation and could be a result of first-year implementation of new classroom curriculum resources. Teachers reported through quarterly surveys that, the more time they spent with the curriculum, the more comfortable they felt with it. Over the course of the two-year period, teachers in the study, on average, improved their by CLASS® scores by 1.2 levels in emotional support, 1.8 levels in classroom organization, and 2.8 levels in instructional support. The charts below further detail the growth achieved over the two years.



Note: The sites are represented by the letters on the x-axis. The CLASS® scores on a scale of 1–7 are represented on the y-axis.



Note: The sites are represented by the letters on the *x*-axis. The CLASS® scores on a scale of 1–7 are represented on the *y*-axis.



Note: The sites are represented by letters on the *x*-axis. The CLASS® scores on a scale of 1–7 are represented on the *y*-axis.

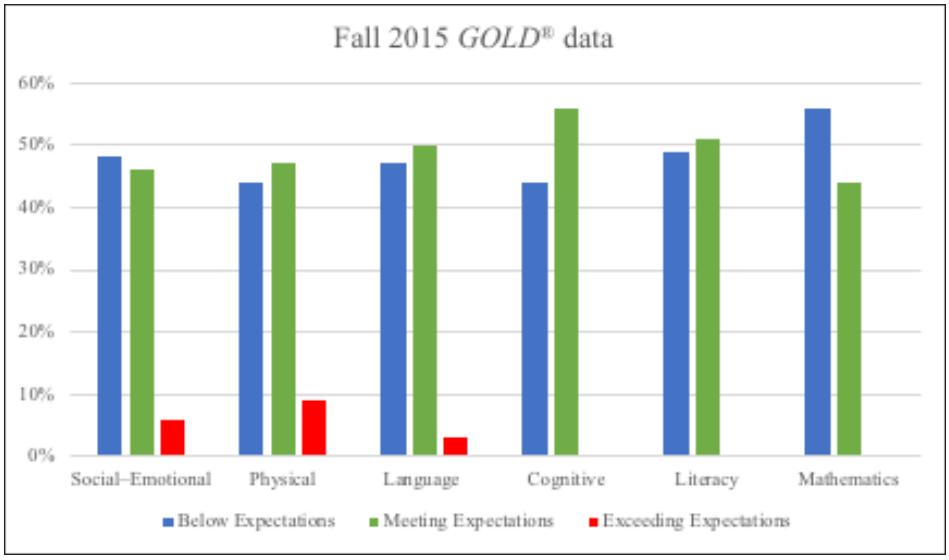
When the teachers first started using the curriculum in Fall 2015, many struggled with understanding how to use it with fidelity. Simply picking and choosing various parts of the curriculum that they were comfortable with did not result in the child outcomes they expected to see, and baseline fidelity scores showed that none of the sites were yet implementing the curriculum with total fidelity. After receiving ongoing coaching and professional development opportunities as part of the study, the teachers demonstrated great improvement in using the curriculum with fidelity. The chart below illustrates how many of the sites progressed significantly in using the curriculum with fidelity from the time baseline scores were taken in Fall 2015 to the end of Year 2 in Spring 2017. Administrators shared with our trainers that teachers felt like they had been freed of the "trap" of not knowing what they were supposed to "really" be doing and that they could use the tool confidently knowing they would see the results they expected. The administrators also reported that this new confidence in their knowledge of the tool made the teachers more open to trying new approaches in their classroom and sharing their struggles and successes with their administrators. One of the sites showed minimal movement in its total fidelity scores, but this can be largely attributed to teacher attrition in the program and having to train new teachers in the middle of the study.

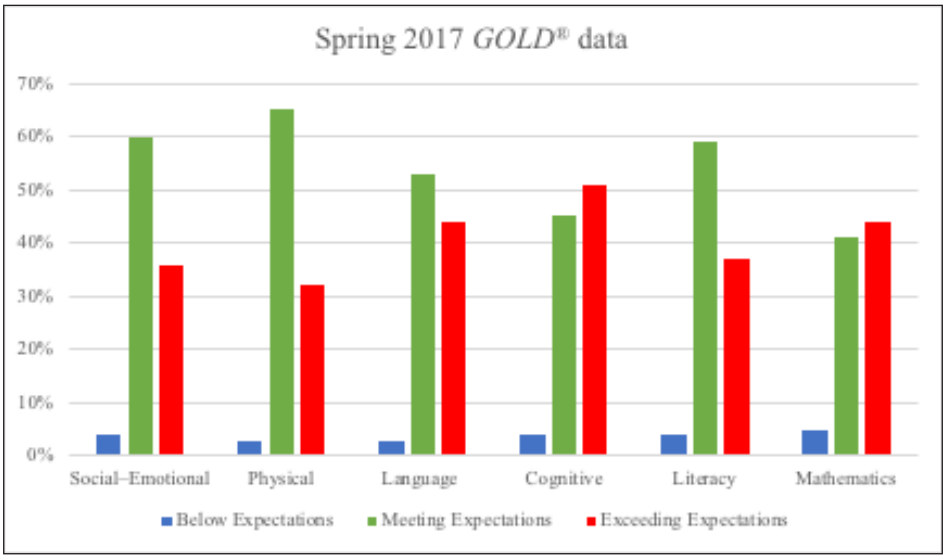
Combined Fidelity Scores for All Teachers at Each Pilot Site

Pilot Site	***The Creative Curriculum®* *for Preschool* Fidelity Fall 2015**	***The Creative Curriculum®* *for Preschool* Fidelity Spring 2017**
Site A	**92%**	**100%**
Site B	**97%**	**97%**
Site C	**68%**	**85%**
Site D	**41%**	**93%**
Site E	**73%**	**99%**
Site F	**46%**	**72%**
Site G	**38%**	**42%**

The *GOLD®* assessment data collected during the study showed the impact of the curriculum on child outcomes over two years. The chart below demonstrates that the curriculum had a significant impact on child outcomes data across all sites and all learning areas: in Spring 2017, assessment data showed a higher percentage of all children demonstrating skills above widely held expectations for their age-group and a lower percentage of all children demonstrating skills below widely held expectations for their age-group than in Fall 2015.

Teachers reported via quarterly surveys that, prior to using the curriculum, they often struggled with finding developmentally appropriate experiences for each item in the *GOLD®* assessment system. Many initially reported that they typically taught some of the items in the spring and did not know how to measure them in the fall. However, after using the curriculum, many commented that those skills were still relevant in the fall and that many children were already exhibiting some of those skills in the fall and winter. Having a curriculum with developmentally appropriate activities enabled teachers to more accurately assess children's skills, knowledge, and abilities, and with an assessment system based on the same foundation and objectives for development and learning, teachers could individualize instruction for children and improve their learning outcomes.


Fall 2015 GOLD® data
60%
50%
40%
30%
20%
10%
0%
Social–Emotional
Physical
Language
Cognitive
Literacy
Mathematics
Below Expectations
Meeting Expectations
Exceeding Expectations


Spring 2017 GOLD® data
70%
60%
50%
40%
30%
20%
10%
0%
Social–Emotional
Physical
Language
Cognitive
Literacy
Mathematics
Below Expectations
Meeting Expectations
Exceeding Expectations

Conclusion

This study demonstrates the importance of a high-quality, research-based curriculum in the prekindergarten classroom. Additionally, it provides further evidence that a comprehensive curriculum focused on teacher–child interactions, a positive learning environment, and developmentally appropriate assessment leads to positive child outcomes. Further, in the case of this study, the curriculum also improved the teacher's ability to provide meaningful instructional support for the children in her classroom. Teachers participating in the study received on-going professional development, which they reported as useful in implementing the curriculum resources effectively in ways that they had not previously realized were possible. This led to all teachers participating in the study achieving higher CLASS® scores and recording improved child outcomes over the course of the 2-year period. However, it is more telling that, at the end of the two-year study, teachers asked to continue using the curriculum in their classrooms. Future studies will continue to explore the impact of child outcomes and the importance of ongoing professional development.

References

Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. Teachers College Record, 112 (3).

Canning, N. (2010). The influence of the outdoor environment: den-making in three different contexts. *European Early Childhood Education Research Journal*, *18*(4), 555–566.

Clark, I. (2015). Formative assessment: translating high-level curriculum principles into classroom practice. *Curriculum Journal*, *26*(1), 91.

Educational Testing Service. (2005). Ready for the real world? Americans speak on high school reform. Princeton, NJ: Author.

Presser, A. L., Clements, M., Ginsburg, H., & Ertle, B. (2015). Big math for little kids: The effectiveness of a preschool and kindergarten mathematics curriculum. *Early Education and Development, 26*(3), 399.

Weiland, C. (2011). *Impacts of a prekindergarten program on children's cognitive, executive function, and emotional skills* (Order No. 3515908). Available from ProQuest Central; ProQuest Dissertations & Theses A&I; ProQuest Dissertations & Theses Global; Social Science Premium Collection. (1027235765).

TeachingStrategies.com | 800.637.3652