

STRING SPROUTS ANNUAL EVALUATION: 2015-2016 AUGUST 2016



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YEAR 2 EVALUATION REPORT 2015-16

About String Sprouts

String Sprouts, a program developed by the Omaha Conservatory of Music (OCM), is a groundbreaking music education program for children starting at age three through age eight. This program was designed to improve kindergarten readiness and enhance neurocognitive and social emotional development. Research has demonstrated that there is a strong correlation between music skills and phonological awareness, working memory, vocabulary, and mathematics (Anyari et al., 2002; Fujioka et al., 2006).



To maximize the benefits to children, String Sprouts is grounded in evidenced-based models of musical instruction, from both the Suzuki and El Sistema method, which emphasize the importance of fostering the learning potential of all students, regardless of their backgrounds or circumstances. Every student was given the use of a free violin or cello and musical training from expert OCM teachers, bridging the gap between String Sprouts and the existing string programs in public schools.

Two models were implemented this year. Unique to the after school program is the requirement of caregiver participation and training. Parents have the opportunity to learn alongside their Sprout and attend all sessions. The school day program is unique because the students' support comes from the classroom teachers, paraprofessionals, as well as any parent volunteers. There was no requirement of caregiver participation or training. Students participating in the after school program had the opportunity to take their instrument home to practice. However, in the school day program instruments remained at school. This report is structured to discuss the program and findings in light of these two models.

Purpose of Evaluation

The evaluation of String Sprouts focused on determining the overall effectiveness of the program in providing early childhood music lessons, improving students' academic, cognitive, and social-emotional outcomes in two different models—one with weekly music lessons and mandatory caregiver participation in lessons (the after school program) and one with daily music lessons and no caregiver participation in lessons (the in-school program). The evaluation plan employed multiple methods to describe and measure the quality of

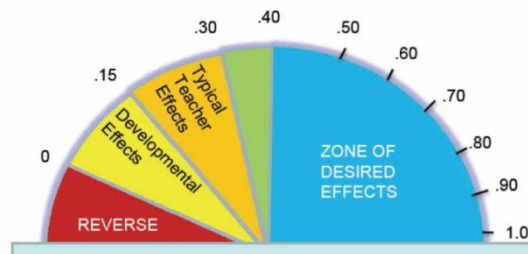
programming and to report student and family outcomes. Measures were chosen that have been in numerous studies, including the Joint Center for Poverty Research, NICHD study of early child care and youth development, Harlem Project, and the national implementation study of Educare.

The evaluation strives to answer the following questions:

- Are students benefiting and achieving positive outcomes?
- Are families benefiting and achieving positive outcomes?
- What are the strengths of the program and how can the program improve?

These questions continue to be answered by collecting data across multiple sources and utilizing mixed methods approaches.

The analyses included comparisons of pre- and post- measures to determine if there was and statistical significance (p value) and the magnitude of the change (i.e., d value or the effect size). John Hattie in *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*, used a concept called “zone of desired effects” that starts at a medium effect size, 0.40 (Hattie, 2009). Effect size is often smaller with infant through kindergarten students because the range of measurement error is larger with these very young children (Burchinal, 2008). Therefore, for the very young child, a smaller effect size (i.e., .20) will be in the zone of desired effects.



Understanding Standard Scores

The assessments for which the standard scores are used are the Peabody Picture Vocabulary Test (PPVT-IV), the Devereaux Early Childhood Assessment (DECA), the Bracken School Readiness Assessment (BSRA), and the Comprehensive Executive Functioning Inventory (CEFI). For in-school students the Woodcock Johnson and CEFI were completed.

Standard scores are used for assessments because they allow teachers, evaluators, and researchers to make comparisons across assessments, grade levels and age groups. Standard scores are scores that have the same meaning no matter the context. For example, a standard score of 100 is always average. The goal is for all students to reach standard scores of 100 or higher on the assessments given.

Children Served

In its first year, over 350 pre-K students participated at four locations: Liberty, Wakonda, Benson West elementary school, and the Salvation Army Omaha Kroc Center. Now, in the program's third year, over 800 Sprouts are learning at various locations (urban and rural) throughout the greater Omaha area, Scottsbluff, Nebraska, and Council Bluffs, Iowa. In addition to serving pre-K through 2nd grade students in after school programs, String Sprouts expanded to serve elementary age students during school at Nelson Mandela Elementary School through an in-school model. About a third of the students have participated over one year. Many of the children live in a zip code designated as having a high concentration of underserved children; however, the specific number of children served who live in poverty was unknown. More specific data on the demographic characteristics of the children will be collected in 2016-2017 school year.

832 preschool and elementary students across Omaha /Council Bluffs (767) and Scottsbluff (65) participated in nine String Sprouts sites.

67% of the students live in zip codes designated as having a high concentration of underserved.

32% have participated for more than one year.

In its third year of implementation, the after school program served 732 children. Children in preK through 2nd grade were served. The school day program is in its first year and began in the fall of 2015. Nelson Mandela Elementary and String Sprouts program served about 100 students with 50% in kindergarten and 1st grades. A total of 85% of the children were African American and 78% were eligible for free/reduced price lunch. A total of 61% were male.

Student Outcomes



Young students, birth through 8, are capable of rapid developmental progress, yet are also susceptible to challenges, which may negatively impact development. Although the mechanisms involved in this delicate interplay are complex, it is clear that development can be positively affected when attention is focused on areas of concern (Shonkoff & Phillips, 2000). String Sprouts is viewed as one strategy that can positively impact students' development.

Multiple assessments were used to explore students' development in a variety of areas as part of the evaluation of String Sprouts. The result is a snapshot of the development of students enrolled in String Sprouts as compared to a norming sample (by tool) representative of the general population and changes in students' development over time.

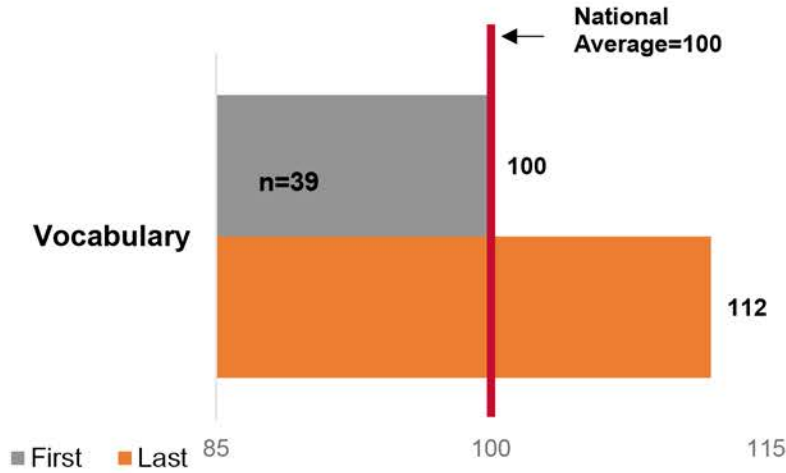
Vocabulary Development

The vocabulary of young children is an important factor to explore when considering how students may fare as they progress through school. Students who have limited vocabularies at a very young age are likely to have more difficulty increasing their vocabulary to a level similar to those with a larger initial vocabulary (Hart & Risley, 1995). Of interest was the extent that participation in String Sprouts would positively influence students' vocabulary.

After School Program

Students' receptive vocabulary development (understanding of language) was assessed using the Peabody Picture Vocabulary Test IV (PPVT-IV). The PPVT involves children listening to a vocabulary word spoken to them by a trained child assessor and then pointing to the picture of that word. A sample of children from each site were assessed over time. For this analyses, their first (pre) and last (post) assessments were used. The results found that preK students' language significantly improved ($p=.002$; $d=0.53$). The findings suggest that the meaningful change occurred within the zone of desired effects.

Student's vocabulary scores significantly improved with participation in String Sprouts.



“This is a fabulous program to help my musical child grow and help me support him.”



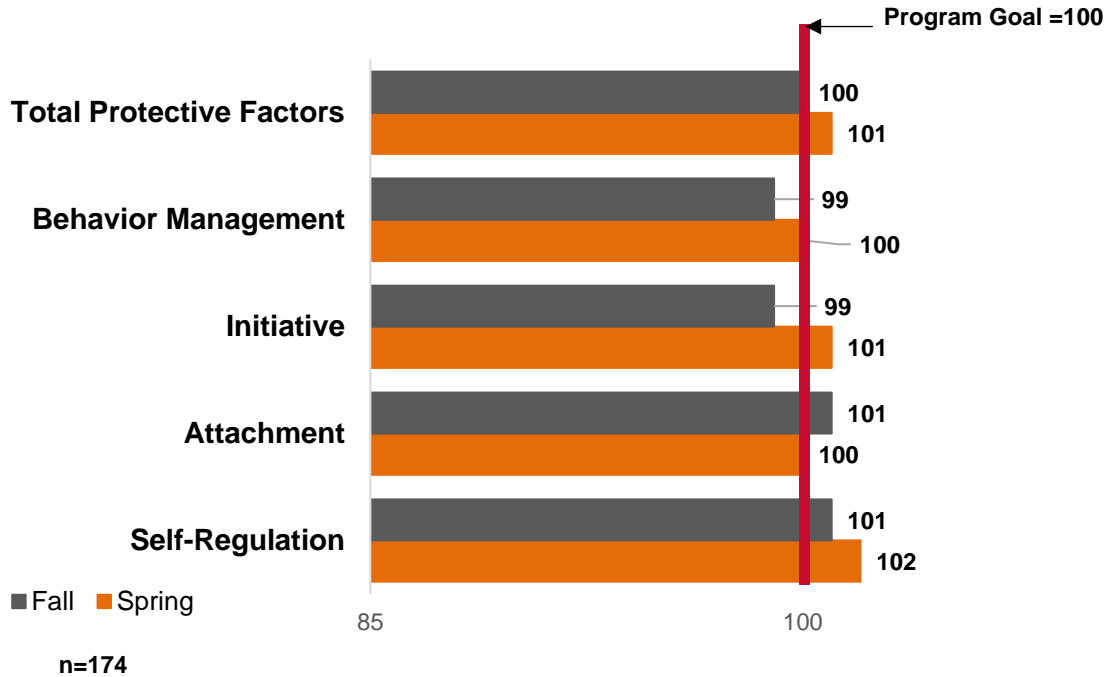
Social and Emotional Development

After School Program

The social and emotional development of preschool-aged students in the String Sprouts program was assessed using the Devereaux Early Childhood Assessment (DECA). This questionnaire assesses young children’s social-emotional development by identifying social-emotional protective factors overall and in the areas of initiative, self-control, attachment and behavior. Parents in the String Sprouts program complete this assessment in the fall and spring of each year. Of interest was the extent that student social emotional skills change over time. A goal of String Sprouts was to increase their student’s self-control and behavior as part of their participation.

Results indicated that students’ social-emotional skills were within the average range and were stable over time. There were significant positive changes over time in two areas: Initiative ($p=.048$; $d=0.18$); Self-Control ($p=.009$; $d=0.20$). There was a significant decrease in attachment ($p=.017$; $d=0.15$). These results suggest that participation met the program goal as children improved in self-control.

PreK students were on target for social-emotional competencies.
 Children showed significant improvement from pre to post assessment in self-control and initiative with significant decreases in attachment.



In-School Program

There were no measures of social emotional skills used. Rather, executive functioning was measured at one point in time and will be discussed later in this report.

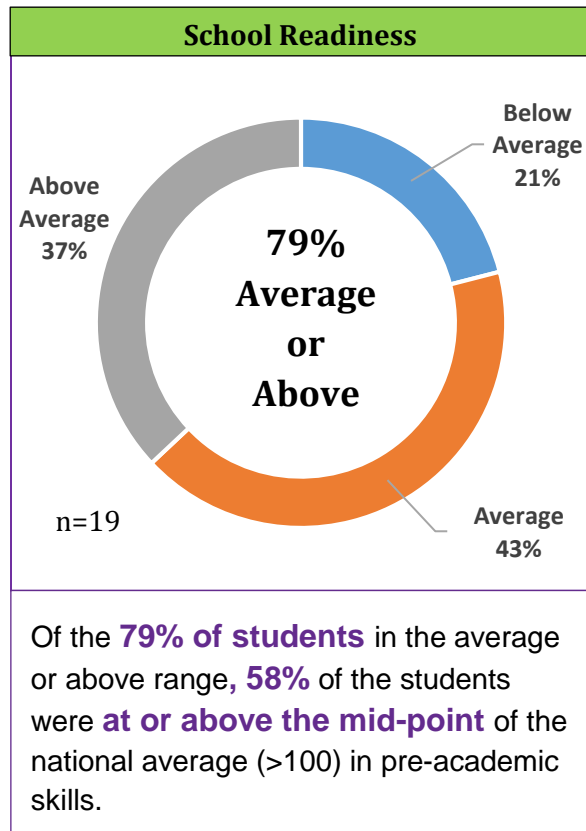
School Readiness

After School Program

The importance of concept development to students’ future success in school, particularly for students from diverse cultural and linguistic backgrounds, has been demonstrated in numerous articles (Neuman, 2006; Panter and Bracken, 2009). Some researchers have found that basic concepts are a better means of predicting both reading and mathematics than are traditional vocabulary tests such as the PPVT-IV (Larrabee, 2007). A key evaluation question was the extent that preschool students’ school readiness was influenced by participation in String Sprouts.

School readiness was assessed using the Bracken School Readiness Assessment in the spring prior to their kindergarten entrance. The Bracken examines children’s knowledge of basic

concepts necessary for successful entry into kindergarten. Specifically, it was used to measure the academic school readiness skills of young students in the areas of colors, letters, numbers/counting, sizes/comparisons, and shapes.



The results of the assessment found that on average the students scored a 103.0 (ranged from 67 to 133). An analysis of variance was completed to determine if time in program influenced student performance. Students who were in the program two years on average had higher scores (mean=117.5) compared to those in their first year (m=102.9). These differences were not significant. However, these results may have been impacted by the small numbers of children assessed (n=19). The majority of the children were in the average range. A total of 58% of the children scored at the mid-point of average or above.

PreK students who had been in the program longer demonstrated higher school readiness scores.

In-School Program

Multiple studies have examined the relationship between socio-economic status and academic achievement (Jensen, 2009). Children living in poverty experience multiple environmental risk factors that can and often do adversely affect their academic skills (Lacour & Tissington, 2011). Therefore, the evaluation called for a broad measure of academic achievement. The Woodcock Johnson was the most widely used in research studies in education. The most recent version was selected, the Woodcock Johnson IV.

The WJ-IV serves to measure academic achievement in reading, mathematics, and written language in the following areas:

- Letter-Word Identification - Measures word identification skills. Initially identifying letters, then read aloud individual words correctly;
- Applied Problems - Analyze and solve math problems (in Word-Picture / Story-Problem Format);
- Spelling - Writing of words that are presented orally;
- Passage Comprehension - Measures the ability to use syntactic and semantic cues to identify a missing word in text. Initially, items involve symbolic learning (rebus-matching);
- Calculation - Performance of mathematical calculations;
- Writing Samples - Measures the examinee's skill in writing responses to a variety of demands / prompts. Evaluation is based upon their quality of expression;
- Word Attack - Measures the ability to apply phonic and structural analysis skills to the pronunciation of unfamiliar words.

The methodological approach used to measure student outcomes was to match fall and spring Woodcock-Johnson IV Tests of Achievement (WJIV). This means that data represented in pre and post or fall and spring data were exactly matched by student and if a student did not have a match in the fall or spring, their data were not included in the outcomes analyses.

2015-16—Nelson Mandela (n=84)

Scale	Fall Mean	Spring Mean	Significant improvement (p<.05)	Effect Size (Cohen's d)
Reading and Written Language				
Letter Word ID	89.25	91.99	Yes (p=.007)	0.30
Spelling	92.69	98.18	Yes (p<.001)	0.63

Scale	Fall Mean	Spring Mean	Significant improvement (p<.05)	Effect Size (Cohen's d)
Passage Comp	95.54	92.57	Significant decline (p=.028)	0.24
Writing Samples	90.30	99.28	Yes (p<.001)	0.62
Word Attack	90.18	95.44	Yes (p=.001)	0.39
Reading ¹	91.00	92.39	No	
Reading Basic ²	89.80	93.16	Yes (p=.003)	0.35
Written Lang ³	89.07	99.21	Yes (p<.001)	0.84
Math				
Applied Problems	94.83	95.24	No	
Calculations	91.67	93.70	No	
Math ⁴	91.17	93.62	Yes (p=.013)	0.28
Broad Composite Scores				
Achieve Brief ⁵	91.23	94.35	Yes (p<.001)	0.44
Acad Skills ⁶	87.60	93.54	Yes (p<.001)	0.65
Acad Applic ⁷	92.01	95.58	Yes (p<.001)	0.42

Students showed significant improvement across most areas of academic achievement.

¹ Reading is comprised of Letter Word Identification and Passage Comprehension

² Reading Basic is comprised of Letter Word Identification and Word Attack

³ Written Language is comprised of Spelling and Writing Samples

⁴ Math is comprised of Applied Problems and Calculations

⁵ Achievement Brief is comprised of Letter Word Identification, Applied Problems, and Spelling

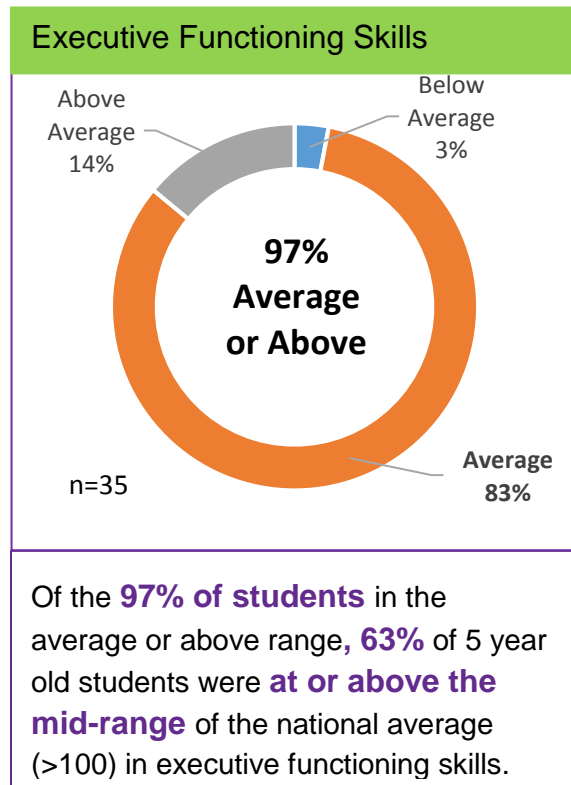
⁶ Academic Skills is comprised of Letter Word Identification, Spelling, and Calculations

⁷ Academic Applications is comprised of Applied Problems, Passage Comprehension, and Writing Samples

Executive Functioning

Students' executive functioning was assessed using the Comprehensive Executive Functioning Inventory Parent Form (CEFI). This measure assesses a child's level of executive functioning in the following areas: attention, emotion regulation, flexibility, inhibitory control, and initiation, organization, planning, self-monitoring, and working memory. Parents completed this assessment just after their child's 5th birthday.

After School Program



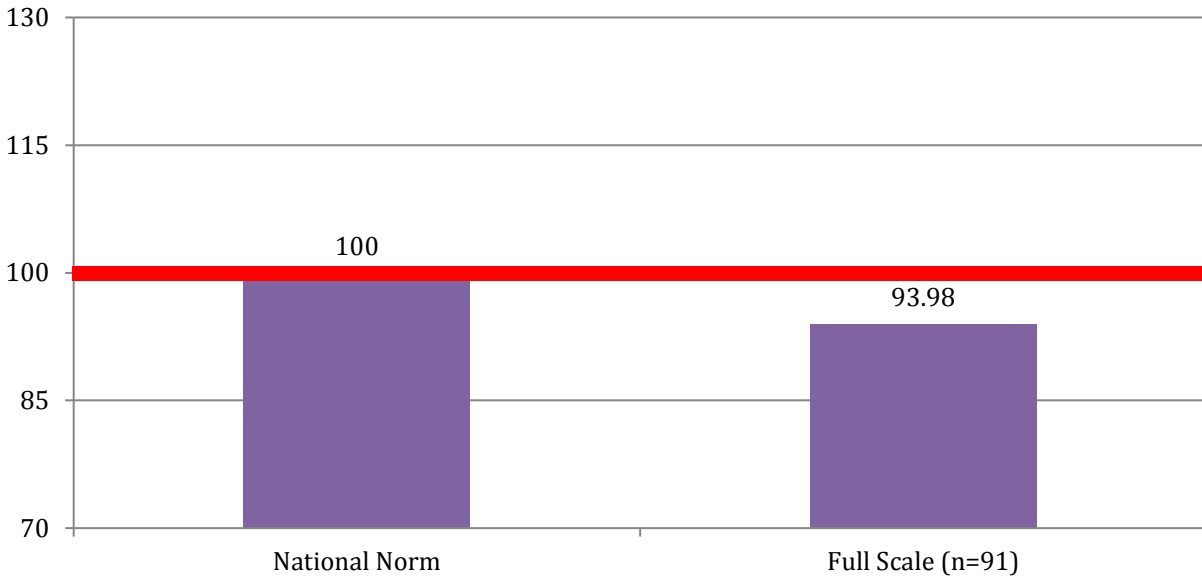
Results of the assessment found that the overall full scale average score was 103.9 (range from 65 to 132). An analysis of variance was completed to determine if time in program influenced student performance. A total of 34 children were assessed. Students who were in the program two years on average had slightly higher scores (m=105.0) compared to those in their first year (m=103.8). These differences were not significant. The students' strengths on this assessment were in the areas of attention and flexibility. Attention measures how well a student can avoid distractions, concentrate on tasks and sustain attention. Flexibility describes how well a student can adapt to circumstances, including problem solving ability. A majority of the children scored within the average range with 63% scoring within the mid-point of the national average.

When comparisons were made to last year, the average scores were exactly the same (m=104). In 2014-2015, students also had a similar strength, which was in the area of flexibility.

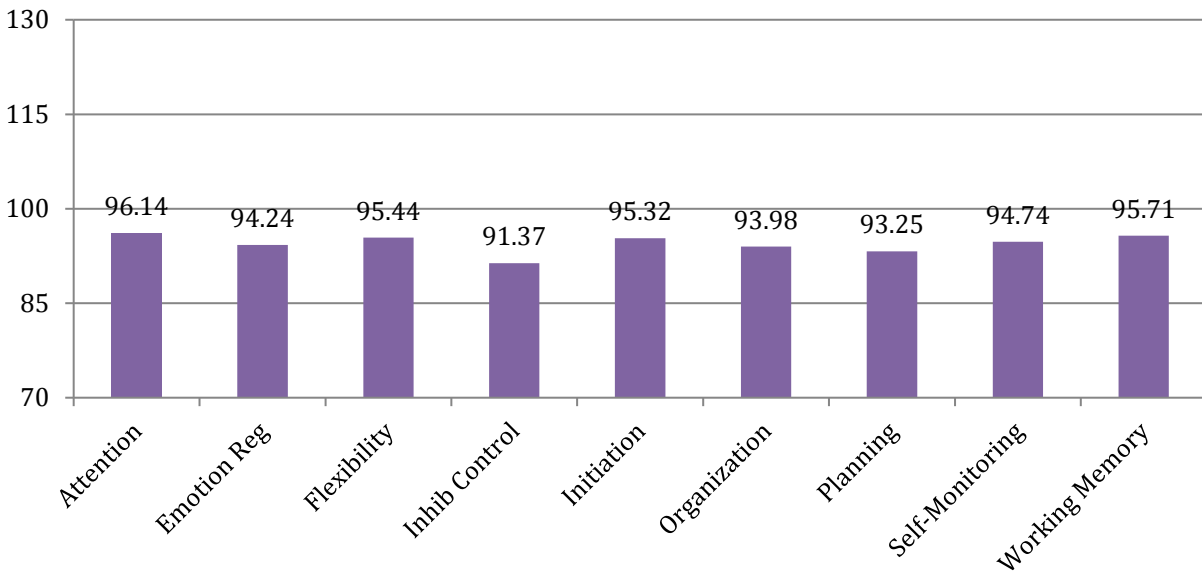
In-School Program

The CEFI was completed for students in the school day program at mid-year (winter).

**Comprehensive Executive Functioning Inventory Ratings
Mid-Year 2015-16
Mandela Only**



**Comprehensive Executive Functioning Inventory Ratings
Mid-Year 2015-16
Mandela Only**



Generally, students demonstrated average executive functioning skills. Within this group of 91 students, 70% were in the average or above average range and 30% were below average.

String Skills

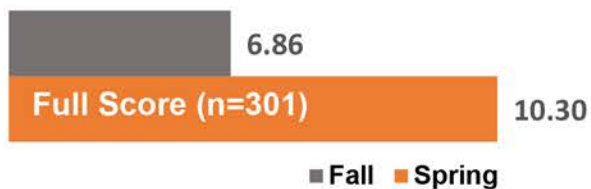
After School Program

Children learned fundamental skills during the weekly sessions over a nine-month period. To assess the improvement in the Sprouts' music skills, teachers rated each child four times over the year. The total score reflected ratings on right and left hand accuracy of their bow hold and finger positioning and the students' skills in using a correct playing position, following the leader and positioning their bow (scores could range from 0-9). Each quarter the student was rated on a more difficult composition. As a result the ratings were weighted to account for the increase of difficulty. The results found that students made a significant increase in technical skills by the end of the school year ($p < .001$; $d = 0.16$). This increase represented both an increase of technical skills and the skills to play more complex musical compositions.



By the spring, students played more complex musical compositions.

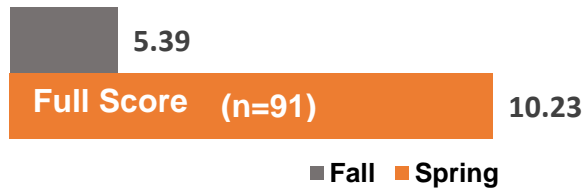
Students demonstrated significant increase in technical skills by the end of the school year.



In-School Program

There were three ratings for the school day students. When comparing fall technical proficiency ratings completed by faculty to spring ratings (using a weighted calculation system in the spring to account for the increased complexity of the skills), students demonstrated significant improvement from fall to spring ($p < .001$) with an effect size change of 1.77.

Elementary students demonstrated significant increase in technical skills by the end of the school year.



Family Outcomes

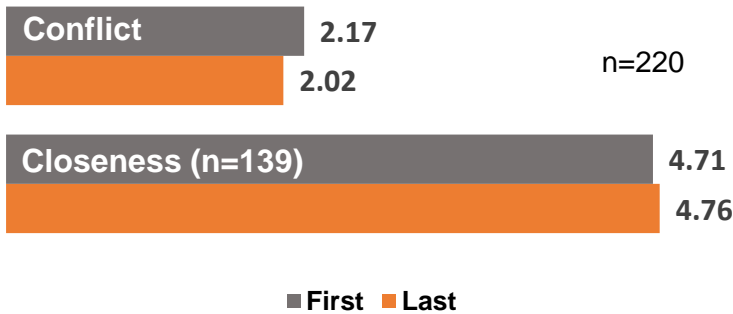
Child-Parent Relationships

After School Program

Parenting quality is more predictive of long-term academic achievement of students than high quality early childhood education (Beleskey et al., 2007). A key component of both the Suzuki and El Sistema methods of music instruction, of which the String Sprouts program is modeled, is parent involvement. For these reasons, String Sprouts sought ways to support and include families in the music education process. This was implemented by actively involving parents in the music classes, providing them with resources to practice at home with their children, and meeting with the families after each lesson to discuss teaching and parenting strategies, making parents were an integral part of the String Sprouts program.

To assess the parent-child relationship, caregivers were asked to complete the Child-Parent Relationship Scale (CPRS). The CPRS is a self-report instrument completed by caregivers to assess their perceptions of their relationship with their child (ages 3 – 12). The 15 items are rated on 5-point Likert scales and the ratings can be summed into groups of items corresponding to conflict and closeness subscales. The 8-item conflict subscale measures the degree to which a parent feels that his or her relationship with a particular child is characterized by negativity. The 7-item closeness scale assesses the extent to which a parent feels that the relationship is characterized by warmth, affection, and open communication. The CPRS is completed by caregivers upon their child's entry into the program and then again in the spring, each year through the third grade. Results from the CPRS indicated a significant increase in parents' closeness ($p=.05$; $d=0.16$) and decreased conflict ratings ($p=.007$; $d=0.26$) between their first and last assessment. These results suggest that the parent-child relationship benefited from their participation in the program.

Student caregivers' demonstrated significantly increased relationship scores with their children and decreased conflict.



In-School Program

A different approach was used with school day parents. A focus group was conducted in the spring of 2016. Parents were asked to rate various aspects of Mandela Elementary, including String Sprouts. String Sprouts received one of the highest ratings (9 on a 10-point scale with 10 being excellent). When asked why, parents reported that their child was learning to “actually play” music and were performing better than other children parents had listened to in older grades in school (such as siblings or friends’ children). Parents reported their children enjoy String Sprouts and talk about music with them at home. The only suggestion for improvement was to allow students to bring the instruments home.

Evaluation of the Implementation of String Sprouts

After School

The String Sprouts Program Evaluation Survey was used to assess the opinions and perceptions of caregivers and teachers regarding the String Sprouts music program. The survey was designed and administered by the Omaha Conservatory of Music (OCM) and analyzed by the Munroe-Meyer Institute evaluation team. The results from this survey will be used to improve future classes and assist the OCM in its long-range planning. Results are based on 301 questionnaires completed by caregivers as well as five questionnaires completed by teachers. The following summarizes the themes based on both the ratings and responses to the open-ended survey questions.

Strengths of the Program

Access to Quality Programs. Caregivers appreciated access to a free opportunity to participate in the program. They valued their teachers and the instructional methods and tools that the teachers used.

Skills Development. Caregivers described the most inspirational moment they had encountered in String Sprouts was their sprout’s ability to learn a new skill and watching their Sprout accomplish something so difficult. The majority of caregivers mentioned significant improvements primarily in two areas, their Sprout’s musical ability (e.g., strings, bowings, finger numbers, and/or alphabet) and/or improvements in their motor skills (e.g., holding instrument, putting fingers down, etc.).

Teachers also emphasized the role of the Sprouts program in helping students grow socially, academically, and musically. Several described the joy of watching connections between Sprouts and caregivers grow as they spent time playing and learning together. The excitement felt after a Sprout learned a new skill and experienced success was also described by several teachers as their most inspirational moment in the String Sprouts program.

Feedback from Teachers. Teacher feedback to parents regarding their children was highly valued. They indicated that the best feedback they had received from a teacher were related to home practice ideas. Reminders to “just have fun” and to praise their Sprout were also helpful. They also appreciated the teachers’ praise of the caregiver and on their child’s progress.

“Music is a big part of our lives, and learning to play an instrument has helped my sprout learn much more than mechanics and theory.”

A Sprout Parent

Challenges

Teachers were asked to identify the biggest challenges they encountered when working with students, caregivers, OCM, and off-site hosts in the String Sprouts programs. Three challenges emerged most often among all teachers—lack of motivation and engagement, communication, and structural barriers.

Engagement. Caregiver and/or student motivation and engagement was a common theme throughout teachers’ responses regarding challenges associated with the String Sprouts program. Several teachers reported difficulties engaging parents in discussions during the parent class as well as getting them to ask questions, despite evidence that their Sprout was struggling. One teacher noted that this issue was particularly salient with larger class sizes. Spotty attendance, busy schedules, caregiver frustration, and students’ lack of focus were also listed as barriers to student and caregiver engagement.

Implementation. Caregivers noted that their biggest challenge was getting their Sprout to practice consistently. Being patient with their Sprout was also cited as a challenge. Parents

also indicated that it would be helpful to have more information on their child’s instrument, curriculum, musical pieces, and theory.

Communication. Communication was acknowledged as a major challenge for many of the teachers. Teachers expressed concerns about caregivers not checking their email regularly, thus impeding their ability to provide them with the necessary information. Receiving information from OCM regarding registration, lesson plans, video availability, and performance dates in a timely manner was also described by some as a challenge.

Areas for Improvement

Teachers and caregivers were asked to share any suggestions they had for improving the String Sprouts program. While the specific responses varied widely, the majority suggestions focused on two main areas: 1) communication and distribution of materials and 2) curriculum improvements.

Communication. Communication and the timely dissemination of information and materials were frequently cited as areas for improvement. For instance, two teachers noted the importance of getting videos and sound files uploaded in a timely manner. In the words of one teacher, “How can we expect them to give their best and work at home without providing these resources in a timely fashion?”

In addition to timely communication and distribution of materials, teachers also highlighted the need for more information regarding the Sprouts program. Specifically, teachers indicated that additional information on how to use Betty (The Better Registry), the record system used by OCM, as well as information regarding caregiver classes, upcoming techniques, lessons/songs, and performance dates would be very helpful. One teacher suggested providing teachers with a short video of upcoming class components for them to review. Another suggested adding additional curriculum meetings to help teachers get ideas for classes and to ensure they are clear on expectations regarding teaching methods.

Caregivers and teachers recommend more time for review and practice of music as a way to promote confidence and skill.

Curriculum. Teachers offered many suggestions for improving the String Sprouts curriculum, such as adding new books (including sing-along story books) into the rotation, allowing more time for games, and adding an extra lesson to ensure students have a solid understanding before moving on to rhythms. Other teachers offered similar ideas for tweaking curriculum to more effectively convey the material and to help ensure students are retaining what they have learned.

Caregivers also cited a number of ways the String Sprouts curriculum could be improved. Suggestions included the provision of additional learning tools (e.g., more videos, handouts, notes, flashcards, and games) for parents and students to help reinforce concepts learned during class. While many expressed their appreciation for the videos provided this year, numerous parents also emphasized how adding even more videos and handouts focusing on specific techniques and songs would be highly beneficial, especially if they could be accessed online.

Other caregivers suggested slowing down the curriculum and allowing more time for review during class. As one parent explained, “My Sprout got frustrated because he would practice things all week and then in class there was never review, always moving on to new things... He even asked why he had to practice if they didn't do it in class again.” In the words of another parent, “I noticed my daughter felt more confident and wanted to practice more when she had time to really learn a song.” Learning new songs right before the Sprouting Up ceremonies and the symphony performance was also a concern for a few parents, who suggested more focused practice on the songs that students would actually be performing. Adding break-out sessions for struggling students and introducing fingers sooner and more slowly were also mentioned.



Conclusion and Recommendations

After School Program

Student Outcome Key Findings

- Students significantly improved their receptive vocabulary with effects within the targeted zone ($d = 0.53$).
- Students' social-emotional skills were within the average range and were stable over time. Significant improvements were in the areas of initiative ($d=0.18$) and self-control ($d=0.20$).
- Kindergarten bound students demonstrate school readiness skills within the average. Scores did not differ significantly based on their time in program. There was a trend towards higher scores with children in the program longer (two years).
- Kindergarten bound students' demonstrated executive functioning skills within the average range. Strengths were in the areas of flexibility and attention.

Family Outcome Key Findings:

- Parent-child relationships significantly increased in closeness ratings ($d = 0.16$) and significantly decreased in conflict ratings ($d = 0.26$) between their first and last assessment.

In-School Program

Student Outcome Key Findings

- Students significantly improved their academic achievement skills with effects within the targeted zone ($d = 0.40$ or greater across most constructs).
- Students' executive functioning skills were within the average range.

Overall Recommendations:

- Continue to identify strategies to increase the number of children and families in poverty who enroll in to the String Sprouts program.
- Identify strategies to enhance both child and parent engagement.
- Consider adding more time to review and practice music to build student confidence and skill.

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Evaluation Team for After School Program

Barb Jackson, Ph.D. Principal Investigator

Amanda Mills, Kari Price, Project Leads

Sarah Baird
Nicole Buchholz
Colleen Gibilisco
Jen Harmon
Amber Rath
Adriana Rey
Colleen Schmit
Megan Shepard
Terry Stone
Cynthia Villanueva
Jenni Villegas
Becky Zessin

Data for the In-School Program was analyzed and provided by:

Dr. Lisa StClair, Ed.D.

Omaha Program Evaluation Services

Munroe-Meyer Institute
Interdisciplinary Center for Program Evaluation
A University Center for Excellence in
Developmental Disabilities Education, Research and Service

University of Nebraska Medical Center
985450 Nebraska Medical Center
Omaha, Nebraska 68198-5450
Telephone: (402) 559-7368
Website: www.unmc.edu/mmi



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