The Journal of Expanded Learning Opportunities

JELO

Researcher and Practitioner Dialogue: Advancing Program Quality and Research

Findings From an Afterschool STEM Learning Initiative: Links to Professional Development and Quality STEM Learning Experiences

Filling in the Gaps: How Developmental Theory Supports Social Emotional Learning in Afterschool Programs

Vol 1 • Issue 3 • Spring 2016

JELO Editorial Board Members

THE JOURNAL OF
Expanded Learning
Opportunities

Program Quality. STEM Learning. Social Emotional Development.

The third issue of The Journal of Expanded Learning (JELO) has all of these and more.

The vision of The JELO continues as this issue makes connections between research and practice. We are elated at the positive response to The JELO as a resource to the field, and at the nationwide attention The JELO is receiving. It has been an honor to engage with practitioners, researchers, and other stakeholders in the delivery of this journal.

The third issue of The JELO features a dialogue on the topic of program quality in expanded learning programs between Michael Funk, Afterschool Division Director for the California Department of Education (CDE), and Carol McElvain, Managing Technical Assistance Consultant for the American Institutes for Research (AIR).

We are proud to feature two articles that focus on STEM learning and social emotional learning, two topics of importance in the expanded learning field. These articles discuss links between professional development and STEM learning experiences as well as promising practices connected to social emotional development.

We continue to work towards The JELO's mission of fostering the discovery, collection and dissemination of scholarly research and deeper learning from a variety of disciplines related to expanded learning time. There is still much work ahead, but we know we are already having an impact.

Special thanks to the Center for Collaborative Communications and all our supporters who helped with the publication of this issue. We are grateful for your commitment to expanded learning and your ongoing support of this thriving field.

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Researcher and Practitioner Dialogue

with Carol McElvain, J.D. – American Institutes for Research and Michael Funk – California Department of Education

The expanded learning field continues to bring multiple stakeholders together to advance program quality and research. In this issue of The JELO, we talk to Carol McElvain, J.D. from the American Institutes for Research (AIR) and Michael Funk from the California Department of Education (CDE) about their ideas on program quality in the expanded learning field. Ms. McElvain is the Managing Technical Assistance Consultant at AIR. She directs AIR's expanded learning work, focusing on providing research-based, high-quality training, and professional development, and disseminating research results and policy reports to diverse audiences in the public education sector throughout the country. Mr. Funk is Director of the After School Division (ASD) at CDE. He led the development of a strategic plan for the ASD, building upon expanded learning to create programs that maximize outcomes for youth, families, school and communities. This work led to the development and implementation of California's Quality Standards for Expanded Learning Programs in 2014. Prior to his current work at CDE, Mr. Funk was the founder and executive director of the Sunset Neighborhood Beacon Center in San Francisco for two decades. He also started Experience Corps and Aspiranet Oakland Afterschool.

Ms. McElvain is representing the researcher perspective and Mr. Funk is representing the practitioner perspective. Following their responses below, both Ms. McElvain and Mr. Funk share their reflections on each other's perspectives, revealing a common vision to move the great work of this field forward.

Many states have developed and adopted quality standards for expanded learning programs. What value do these standards bring to the expanded learning field?

Michael: California's quality standards are the North Star for program quality. They give us a common vision and common language. This is critical if we are to maximize the unique scale of our state's expanded learning ecosystem. The standards make it possible to align the state's system of support, policy decisions, funding process and statewide evaluation. Of course, that alignment requires disciplined intentionality at all levels and is very hard work. That hard work is taking place in California right now. The implementation of the Expanded Learning Strategic Plan is underway, and

the first and most critical step was the development of the Quality Standards for Expanded Learning.

California's quality standards go one step further and include the "standards in action" which describe what the standard looks like at the program, student and staff levels. This makes the standards incredibly accessible and relevant. Since the California standards have been released I have heard countless people state that, "The Quality Standards affirm what we value. The California Department of Education is endorsing what we have always believed quality programs look like."

The context and guidance for how the standards should be used is just as important as what the standards articulate. In California, we have specified that the standards be used for site level continuous quality improvement. They are not to be used as a compliance tool for outsiders to judge the quality of a program, for ranking of programs, or for assessment to determine future funding.

Finally, the Quality Standards tell a story. They are the base of a very important narrative that needs to shift. Since the early 1990s, the Expanded Learning (afterschool) "brand" was primarily public safety. "Keep kids safe and off the streets." Gradually, the importance of childcare for low-income families and homework completion became part of the narrative. What we now know is that high-quality expanded learning opportunities are an engaging place of learning that is an integral part of a young person's education, preparing them for college, career and life. We need to position expanded learning programs as a place of learning. To that end, my office has just launched the Expanding Student Success campaign. At the heart of the effort is a direct line of communication between K-12 education leaders in order to tell the story of the power of high-quality expanded learning opportunities. We would not be able to tell that story if we did not have the Expanded Learning Quality Standards in place.

Carol: Only a small handful (less than 10) of states are not in the process of either developing or adopting quality standards. In some cases, states that are not actively working on their own standards have provided a variety of options for programs to assess themselves, such as the NAA core competencies, or the Weikert Center's Youth Program Quality Assessment, just to name a couple, so programs can begin to look actively at their own quality and plan for improvement. While most of the states who have participated in standards adoption have built their own state coalitions to build their programs' values into their standards, a recent crosswalk of existing state standards showed us that there is enough critical overlap in the main areas addressed to state that there is essential agreement on what quality is. These areas include safety, staffing, human relationships and youth development, activities and activity structure, as well as program administration and family engagement. Several states have already undergone revisions or expansions to their standards to include more specific guidance to programs on areas such as social and emotional learning, diversity and equity, sustainability, and program quality standards for older youth.

The value of adopting, promoting, and training to quality standards is first and foremost that high quality standards in action provide the best possible afterschool and summer learning programs for youth of all ages. There are many other elements, as well. In training, I often ask whether anyone was given the job of running an afterschool program as part of several other responsibilities they had at the time, without much more guidance than that. I am surprised each time at the number of hands raised in answer to that question. Program quality standards help any afterschool or summer learning program (regardless of funding source) provide the baseline for understanding what a good program should look like. They help build common understanding, a language for staff and other programs to talk with and help each other, and provide a pathway for improvement and professional development.

Standards bring other benefits such as informing key decision makers like policy makers and families of the elements they should be either funding or looking for when looking at available programs.

What does a quality after school or summer program look like to you?

Michael: Notwithstanding my listing all of the standards in action to answer this question, what I look for first is youth and staff who are engaged. When you walk into a room you can feel it. It is palpable. What creates engagement? I'll take this moment to plug the Learning In Afterschool and Summer's five elements. Learning that is active, collaborative, has meaning,

supports mastery, and expands horizons. These five elements constitute the foundation on which the California Quality Standards for Expanded Learning were designed. They are also easily understandable and relatively easy to observe. I also look for passion. Does the leader of the program have a passion for helping staff and students find their life's calling? Is it just a j-o-b or is it an opportunity to impact other humans in a way that is almost sacred?

Carol: I could go through a litany of elements of high quality programs but let's talk the essentials. When it comes to the critical part of a quality afterschool or summer school program, I look for programs that engage and respect youth and provide them with opportunities to develop their skills, interests, confidence, and provides encouragement for their growth and development. It's not a matter of the type of program or even the focus—it could involve recreation, STEM, arts, language or career development or really anything--it almost doesn't matter what focus the program has, as long as the basics of providing children and youth with the building blocks they need for success in life is present, the program is focusing on quality.

What do you think it costs to run a quality program?

Michael: The cost of quality is impacted by so many variables including the program's emphasis, the area's cost of living, staff to participant ratio and many others. The Wallace Foundation has developed a cost calculator that accounts for all these variables. http://www.wallacefoundation.org/cost-of-quality/pages/default.aspx.

I plugged the following variables into the calculator. The program had 100 slots, run by a community-based organization, located at a school, and operating five days per week for three hours a day, during the school year. The staff ratio was 15:1 because that is the lowest ratio that they have data for. Then, selecting a city for cost of living the calculator gave me the following information on the cost per participating student per day to run a quality program.

There are more studies looking at the true cost of quality. One thing we know for sure is that the current California rate of $7.50 per day per student is well below what is necessary and, sadly, has not increased since 2006.

Carol: I wish I could give you a straight dollar amount, but it's going to vary based on local factors such as the goals, services and structure of the program, average area salaries, what kind of staffing structure is involved in the program (volunteers, aides, certified teaching staff, youth development staff, etc.), the number of children participating and the ages, and whether transportation is a large factor in the budget, among other factors. Depending on the location and safety, for example, the budget line item for transportation might be the smallest or largest part of the budget with perfect justification.

A couple of things I think are highly important in developing a quality program are attention to who is responsible for running the program and whether time is built in adequately for program preparation

City	***Low Quality***	***Medium/High Quality***
San Francisco	*$18.44*	*$41.52*
Orange County	*$15.64*	*$34.02*
Los Angeles/Long Beach	*$14.58*	*$32.82*
Stockton	*$12.10*	*$27.23*
Bakersfield	*$11.28*	*$25.39*

and staff development. Over and over we have seen the value of a full-time program director focused on the development of and attention to quality in the program. While that's not to say that programs that do not have a full-time leader can't be of high quality, it certainly makes the job harder, because quality takes observation, planning, and development. Providing opportunities for staff to reflect on how the program is doing and get guidance on improving practices helps build a path toward quality, wherever your program is.

Think of the programs you visit. Do you feel the programs you see are quality programs? Why or why not?

Michael: If I am invited to a site visit, it is usually going to be a program that a school district or community-based organization considers high quality. It is probably the case that quality will vary from program to program in the same district or city and that quality can vary at different times of the year (or even the day) in the same program. The principle of continuous quality improvement means that regardless of how high quality the program appears, the work of improving things for our students and staff is never over. If I walk into a program that is obviously high quality, or into a program that is struggling, I am always going to ask the same questions: "How are you being intentional about improving the quality of your program?" "What influenced you to choose the area of focus you did?" and "What is your plan for improving the quality in that area of focus?" I am always more impressed by depth rather than breadth; therefore, any program choosing more than three standards to improve is not necessarily working harder at quality improvement.

Carol: I would say that for the most part, we see programs that offer a safe place and are run with good intentions by people who care about the youth and families in their programs. I know that sounds like I'm damning programs with faint praise, but I'm not. When I look at bullying, violence, and safety statistics for youth—particularly in the out of school time hours, keeping our children safe should be our number one priority. There are still too many children in this country who face going home alone every day.

That said, I also think rigid academic requirements or improved test scores that many schools and programs look for as markers of success have a tendency to make programs too uncreative and boring for too large a number of kids, particularly in higher poverty areas or in struggling schools. Adherence to program funding requirements without enough resources to adequately meet children's needs generally tends to lead to a rote program. Programs in that mode tend to be overly directive and rule-driven, and may not take families' needs into account. I really think this is because this is the best a lot of programs can do with the resources they are provided.

However, that is not to say that any community or program regardless of the level of poverty—urban, rural, sub- or exurban can't pull together to provide high quality programs for youth and their families. Some of the best programs we see are ones that honestly assess their resources and assets and provide support through youth and adult programming, job training, professional development time for staff, and a strong link to the school day. Focusing on the critical element of paying attention to youth and supporting them as they develop their interests, confidence, and skills goes a long way toward helping youth come to (and stay in) school, and where they can get more support to develop their academic skills.

What do we need to do to ensure programs run at that quality level?

A. What do practitioners need to do?

Michael: Practitioners need to implement the continuous quality improvement process as outlined in the California Department of Education web page: http://www.cde.ca.gov/ls/ba/as/implemetation.asp.

Then, practitioners need to seek resources to help them with quality improvement. California has a robust system of support for quality. Don't go at it alone! Bring in a fresh set of eyes to help you see what you might overlook.

Carol: Practitioners need to study quality standards and really make a concerted effort to look honestly at their programs to determine where their strengths and weaknesses are, then look at paths they can take to work on improving their program. Looking to each other as peers to support each other (either through peer assessment or regular professional development)

creates a stronger understanding of what quality in afterschool is and how programs can get there.

In trainings, I often tell practitioners that if they are going to pay attention to one thing, it should be attendance from day to day. This is not primarily because I think programs should be keeping track of this statistic for its own sake, but because I think daily attendance and its fluctuations can tell a program so much about how it is doing. The highest quality programs I've seen have a system in place where they follow up with youth and/or their families if attendance is off for more than two days. Often, these programs find out the real reason for not attending the program is something they can help with or help get the right people to assist. For example, a family may have lost its housing, or a local employer has changed its scheduling so that the program hours may need to be adjusted. Looking at attendance trends over time, a program might find that there is unchecked behavior or bullying issues in an activity, or just maybe that they need to shake up staffing or the activities that are offered to keep children engaged.

B. *What do researchers need to do?*

Michael: We need more researchers to tailor their work to inform quality improvement. We also need research for publishing and documenting the impact of the programs. Research should inform quality improvement.

Carol: We are thrilled with the recent focus on developing closer interim measures of youth success other than test scores in both school- and out-of-school time. Providing a research base for more effective models of this success would give policymakers and practitioners more options for how they structure their programs to be more engaging and creative, not just an extension of the school day.

As someone who works to apply research to the practice of running a high quality program, I would also welcome further dialogue about how to put research into practice in programs. For example, researchers could ask, "Where have we seen programs improve significantly from the process of going through quality assessment and continuous improvement planning?"

C. What do policy makers need to do?

Michael: In some cases, get out of the way! Policy makers and government agencies are starting to focus more on performance management than simple compliance. This shift is taking root across the country. We must help programs successfully meet the compliance requirements. If programs feel supported around compliance, the leadership can more easily focus on other aspects of quality.

Carol: Policy makers at all levels need to take a much more holistic approach to what children need to be successful and provide funding for programs with those goals. Although saying "more money" tends to make policymakers roll their eyes, we also need to be frank that most mid- to upper-income range families who can afford to do so participate in the type of afterschool and summer activities that lower income communities need to "prove" increased achievement. Asking afterschool and related programs to directly affect test scores is too long term and depends on too many other factors to be the measure of success for programs. Are the children happy? Healthy? Made to feel like they (and their voice) matter? Are children provided with a variety of engaging activities to better develop their interests? Do they have access to activities in which their family's circumstances might not allow them to participate? These are important elements that funded programs can address that I think are an investment well made in our youth that our policy makers can encourage (and fund).

D. What does the community need to do?

Michael: Our communities need to come together to build partnerships that bring support and opportunities to kids. The power of partnerships is often lost because people confuse attending meetings or community input with true engagement and collaboration. We need communities to build true partnerships, and for each institution in the community to also commit to a cycle of quality improvement.

Carol: The best thing a community can do is come together and leverage all of its resources and work toward a common goal—it can be as simple as raising healthy and happy children or as lofty as everyone in the community has access to a path to higher education. This is not to dismiss that bringing everyone together is easy: it's not. It is often difficult to get people to put aside their own interests toward that larger goal. It is possible, however. Whether it's a commitment to providing safe transportation to students so they can actually attend programs, or training a cadre of volunteers in

mentoring or tutoring skills so regular program staff can pursue improvement and development activities, or providing language classes to parents who are new to the country to help them feel welcome—every effort a community makes demonstrates commitment to the children of that community.

Researcher and Practitioner Reflections

Michael: I really didn't know what to expect when sharing my responses and then viewing Carol's. How near or how far apart would our perspectives be? I knew how closely Carol has worked with the Afterschool Networks across the country so it does not surprise me that her comments are informed by wisdom and a clear passion for what is good for kids. I discovered so many similarities in our perspectives.

I loved that when describing quality, Carol emphasized the importance of engagement and respectful opportunities for youth to develop their skills, interests and confidence. We are so on the same page. She went on to state that the design and focus of the program are in fact less important than these kinds of opportunities.

Carol also emphasized that program staff must have the capacity to reflect on their program and get guidance on improving practice to build a path towards quality. This is certainly in alignment with California's Senate Bill 1221 that dropped a lot of old accountability language and now requires programs to engage in a data driven cycle of continuous improvement.

Here is one of my favorite quotes. "… I also think rigid academic requirements or improved test scores that many schools and programs look for as markers of success have a tendency to make programs too uncreative and boring for too large a number of kids." Amen.

Carol: When I responded to a series of questions thinking deeply about the afterschool and expanded learning field and quality programs, I had a moment of panic the moment when I shared my responses. Although I am very passionate about the field and our work, was I too critical? Too far removed from day-to-day work? What would a practitioner think about these responses? However, I felt instantly calm once I read Michael Funk's responses to the same questions.

I feel as though we are strongly reiterating one another from different angles. We both value quality and believe it is possible, with appropriate development and planning. Being intentional in that planning—that is, knowing your ultimate goals and aligning your decisions toward meeting them—is essential. It was great to learn more about how California emphasizes "standards in action," to provide additional guidance to move toward quality, and to reiterate how quality improvement is a process that is never done.

It was good to see the calculations of costs for a program based on location, and the reference to Wallace's excellent cost calculator. Even more potent is the recognition that current funding levels are not adequate for our children. I hope that can build a call to action for the field to bring to policymakers to invest in our children's participation in expanded learning activities because they know it contributes to a child's successful development.

What most impressed me, though, is that the respected leader of the largest state-funded afterschool and expanded learning programs in the country clearly stated, essentially, that engagement is key for students. He didn't say "finishing their homework" or "increasing their test scores on phonemic awareness:" Instead, he said he looks for whether a leader has passion for helping their staff and students "find their life's calling" and a path toward it in engaging and meaningful ways. That is extraordinarily powerful and it makes me glad to be part of a field that emphasizes students' pursuit of happiness.

Findings From an Afterschool STEM Learning Initiative:

Links to Professional Development and Quality STEM Learning Experiences

Research-based article
Deborah Lowe Vandell, Ph.D., Rahila Simzar, Ph.D., Pilar O'Cadiz, Ph.D. and Valerie Hall, Ph.D. University of California, Irvine

Abstract

This study reports the results from a STEM learning initiative involving 96 public funded afterschool programs in California. Relations between professional development, staff beliefs, quality of STEM learning activities, and changes in student outcomes were examined over an academic year (2013-2014). STEM professional development experiences were linked positively to program staff beliefs about the value of STEM learning, which were linked to the quality of STEM learning activities reported at the programs, which were linked to several student outcomes, including gains in student work habits, math efficacy, science efficacy, and science interests. These findings support the utility of STEM professional development in afterschool settings.

Keywords: *afterschool, STEM learning, professional development, staff beliefs*

Improving the quality of science, technology, engineering, and math (STEM) education has become a national priority (Dabney et al., 2012; Krishnamurthi, Ballard, & Noam, 2014; National Research Council, 2011, 2012; Simzar & Domina, 2014). Although the majority of these efforts during the K-12 period have focused on improving in-school STEM learning, there is a growing awareness of the potential role of afterschool programs in promoting STEM learning (Bell, Lewenstein, Shouse, & Feder, 2009; National Research Council, 2015). However, efforts to introduce ongoing and high quality STEM experiences in out-of-school (OST) settings face serious challenges. One challenge is that a substantial proportion of afterschool staff members have limited education and training in STEM subjects (Vandell & Lao, 2015). A second challenge is high staff turnover (Vandell & Lao, 2015). A third challenge is structural barriers—many afterschool programs have weak relationships with host schools, which limit programs' access to STEM learning materials and opportunities to coordinate activities with classroom teachers (Bennett, 2015).

The purpose of the present study is to examine the effects of an afterschool professional development initiative in the State of California to determine (a) if professional development activities are linked to program staff beliefs about the importance of STEM learning; (b) if, in turn, staff beliefs are related positively to quality of STEM-related activities in the afterschool classrooms; and (c) finally, if the quality of STEM-related experiences is associated with changes in student STEM-related dispositions over an academic year.

A Compelling Need for Staff Professional Development

Although program staff are charged with leading engaging and meaningful learning activities at afterschool programs, their education and training is typically more limited than K-12 classroom teachers. K-12 classroom teachers have four-year college degrees as a minimum, and the majority (56%) have a master's degree or more (U.S. Department of Education, 2010). In contrast, less than half of afterschool staff members have four-year degrees and less than 20% have a master's degree (Nee, Howe, Schmidt, & Cole, 2006). In addition, K-12 classroom teachers complete hundreds of hours of pedagogical training and supervised field experiences prior to becoming the instructor of record in their classrooms. Staff members in afterschool programs do not typically undergo this type of preparation (Nee et al., 2006).

Thus, while many afterschool staff members bring energy and commitment to their work, there is a great need to expand staff development opportunities for further education and training in the field, especially if programs seek to expand their offerings to include enriched STEM (Dennehy & Noam, 2005). The present study examines the effects of one such effort to offer professional development at multiple afterschool sites. Here, professional development refers to a diverse set of activities such as trainings offered by other organizations, informal and formal meetings among staff members, meetings with classroom teachers, and coaching by internal and external advisors.

Context for the Present Study

There are a growing number of public and private efforts to create meaningful STEM learning opportunities in afterschool contexts (Bevan & Michalchik, 2013; Krishnamurthi et al., 2014). Included in these efforts is the work of 17 statewide afterschool networks that have sought to coordinate efforts to support afterschool STEM learning (National Research Council, 2015). The present study focuses on one such initiative that was developed by the California Afterschool Network and a consortium of foundations. This statewide initiative was a three-year project aimed at increasing STEM learning opportunities in publicly funded afterschool programs serving low-income, ethnically diverse students.

Figure 1 presents the logic model underlying this state-level initiative. The logic model is sequential, with Professional Development and Curricula Innovation support represented in the box on the left side of Figure 1.

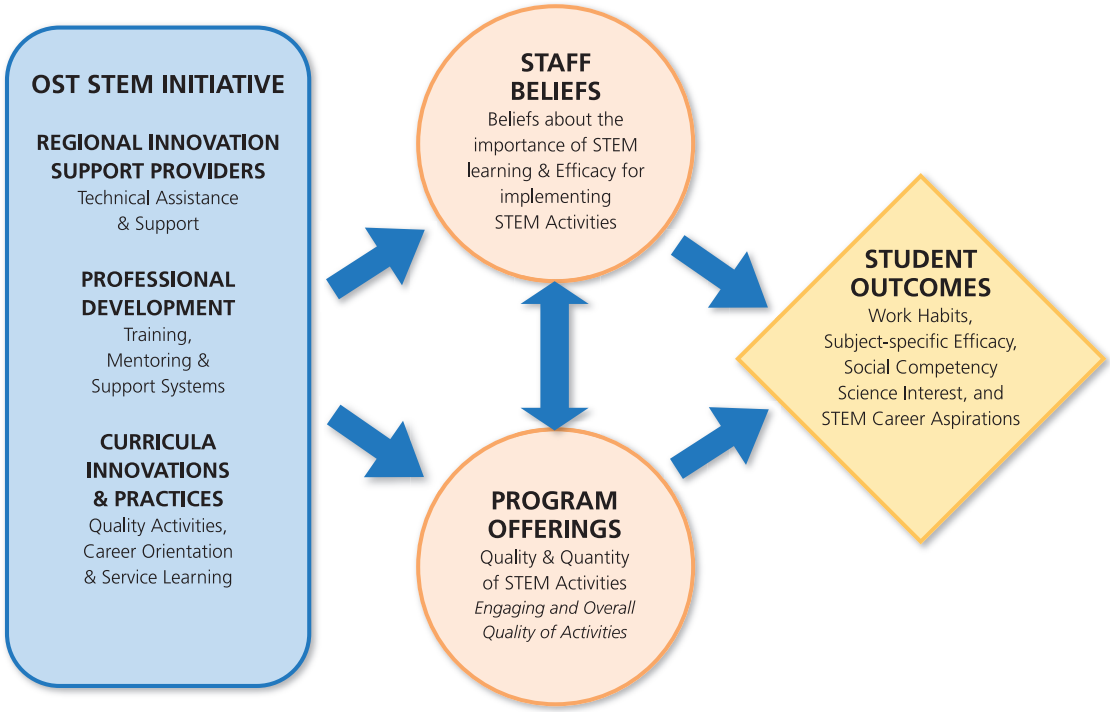

Figure 1. Logic model for the out-of-school time STEM initiative. Professional Development and Curricula Innovation support is represented by the box on the left. Professional development was expected to yield improvements in (a) Staff Beliefs about the value of STEM learning and feelings of efficacy when implementing STEM activities, and (b) Program Offerings (the quantity and quality of STEM activities offered by programs). Staff Beliefs and Program Offerings were expected to be mutually reinforcing, as illustrated by the bi-directional arrow between the two circles. Staff Beliefs and Program Offerings were then expected to yield improvements in Student Outcomes, the diamond box on the far right of the figure. Student outcomes included student reported work habits, student reports of efficacy in math and science, science interest, and career aspirations in the STEM domain.

Professional development was expected to yield improvements in (a) staff beliefs about the value of STEM learning and feelings of efficacy when implementing STEM activities, and (b) the quantity and quality of STEM activities offered by programs. Staff beliefs and program offerings were expected to be mutually reinforcing, as illustrated by the bi-directional arrows. Staff beliefs and program activities were then expected to yield improvements in student outcomes, the box on the far right of the figure. Student outcomes included student reported work habits, feelings of efficacy in math and science, science interest, and career aspirations in the STEM domain. These student dispositions are important predictors of students' likelihood to pursue STEM topics in the future (Bell et al., 2009; Bevan & Michalchik, 2013).

Method Participants

A total of 601 afterschool program sites, located in five of California's afterschool regions, participated in the STEM learning initiative in 2013-14. These five regions were originally selected in 2012-13, following a statewide competition. As part of the initiative, programs received technical assistance from Regional Innovation Support Providers (RISPs) who facilitated access to high quality staff training materials and curricular resources and who assisted partnerships among programs and support agencies. In this paper, we focus on the effectiveness of the initiative in 2013-14 at 96 program sites with all five regions represented by at least eight program sites.

Measures

A research team from the University of California, Irvine was responsible for overseeing data collection. Surveys were administered to program staff and to students using an online format. Program staff also reported the quantity and quality of STEM activities on a daily basis using STEM Activity Documentation Forms.

Program staff surveys. Online surveys were designed based on studies and administered to 178 staff in fall of 2013 and to 90 staff in spring of 2014 in which program staff reported various demographic characteristics (gender, age, ethnicity), educational background (highest level obtained), professional experience, and job tenure in their current position (Noam & Sneider, 2010). Staff reported their professional development activities, which included how often they attended (1) general professional development training, (2) STEM-related trainings, (3) staff meetings on general topics, and (4) staff meetings on STEM topics in the past academic year. Staff also reported how often they met with classroom teachers to discuss STEM concepts being taught in school (Vandell, Warschauer, O'Cadiz, & Hall, 2008). A complete list of these measures and corresponding items are provided in Appendix A.

Staff reported their beliefs about the value of STEM learning for youth and their feelings of confidence (efficacy) when implementing STEM learning activities (adapted from Vandell et. al., 2008). Staff beliefs about the value of STEM learning for youth was assessed with seven items (e.g., "I think students look forward to coming to the afterschool program when we have STEM activities going on"). Staff efficacy for implementing STEM activities was assessed with seven items asking staff to report on their sense of competency leading STEM activities (e.g., "I feel confident about teaching Science, Technology, Engineering, and/or Mathematics in the afterschool program"). These constructs were scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A complete list of items and internal consistencies of the scales for pre- and post- surveys, which were all acceptable, are provided in Appendix B.

Student surveys. Online surveys based on literature were administered to 3,738 students in fall 2013 and to 1,871 students in spring 2014. Students self-reported their work habits, math efficacy, science efficacy, social competencies, science interest, and science career aspirations (Noam & Sneider, 2010; Tyler-Wood, Knezek, & Christensen, 2010; Vandell, et al., 2008). Students' work habits were assessed using six items (e.g., "I follow the rules in my classroom"). Both efficacy measures (math and science) were assessed using four items each (e.g., "I am good at math/science"). Science interest was assessed using 22 items (e.g., "Science is something I get excited about"). Social competencies were assessed using seven items (e.g., "I work well with other kids") and students' science career aspirations were assessed using four scales (e.g., "I will have a career in Science, Technology, Engineering, or Mathematics"). These constructs were scored on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). A complete list of items and internal consistencies of the scales for pre- and post- surveys ranging from acceptable to excellent, are provided in Appendix C.

STEM Activity Documentation Forms. These forms were developed by the authors to document specific activities at program sites. Staff recorded the following information about each STEM activity that was implemented: (a) date and duration of the activity; (b) number of students participating in the activity; (c) name of activity and STEM content area addressed; and (d) 4-point ratings of the level of student engagement, level of challenge, and overall assessment of success of the activity. A total of 2,457 STEM activities were reported during 2013-14.

Results

Program Staff

A total of 178 program staff at 78 sites reported their background characteristics. As shown in Table D1 (Appendix D includes Tables 1 through 8), a substantial majority of the staff was female (72%). The staff was ethnically diverse: 46% were Hispanic, 25% were white, 11% were Asian and 6% were African American. The staff was relatively young, with almost half (49%) being between 18 and 25 years, and 30% being between 26 and 35 years. The educational background of the staff varied widely. One-fourth reported having completed a four-year college degree, and 10% reported having post-graduate education. The remainder (65%) had less than a college degree, with the highest proportion (1/3) reporting "some college."

Staff reported diverse professional experience. The majority (61%) of the program staff reported having experience working in an afterschool setting (e.g., leading activities and/or working directly with youth) and approximately half (51%) of the program staff had experience working as a classroom aide or teaching assistant. Finally, staff reported the length of employment at the program site. Here, 29% reported working at the respective program sites for less than six months. Almost half of the program staff (47%) reported having worked at their program site for less than three years.

Program Students

Surveys were completed by 3,738 students during the fall 2013 data collection. These students were fairly evenly divided by gender (49% male and 51% female). The majority of the students were in elementary school, with most of the students (72%) being in Grades 3 through 5. Twenty percent of the students who provided surveys were in middle school. Less than 1% of the students were in high school (Grades 9 through 12).

Types of STEM Activities That Occurred in the Afterschool Programs

A total of 2,457 STEM activities were reported by 84 staff at 53 program sites. As shown in Table D2, the majority (55%) of STEM activities focused on science. Typically, 28 students participated in each activity. Activities were between 30 and 59 minutes in duration. The majority of the reported activities involved students who were in third, fourth and fifth grade (46%, 54% and 47%, respectively). Staff reported that students were "mostly" engaged during 36% of the activities implemented and that they were "very" engaged during 56% of the activities implemented (an average of 3.48 on a rating scale from 1 to 4). Lastly, staff reported that the activities implemented went "mostly" well approximately 38% of the time and "very" well approximately 53% of the time (an average of 3.43 on a rating scale from 1 to 4).

Professional Development as it Relates to Staff Beliefs About STEM Learning

Our first substantive analysis asks if specific types of professional development were related to staff beliefs about the importance of STEM learning for youth and to staff feelings of efficacy when implementing STEM activities. Tables D3 and D4 present standardized regression coefficients predicting staff beliefs about the importance of STEM learning and efficacy for implementing STEM activities, respectively.

In Table D3, Models 1, 2, 3, and 4 examine associations between specific types of professional development activities and staff beliefs about the importance of STEM learning. Model 1 indicates that higher levels of staff training during the past academic year is associated with a .32σ increase in staff-reported beliefs about the importance of STEM learning. Model 2 indicates that a one-σhigher level of STEM staff attending training during the past academic year is associated with a .29$\sigma\sigma$ increase in staff-reported beliefs about the importance of STEM learning. Model 3 indicates that a one-σ increase in the frequency of staff meetings to discuss program issues is associated with a .29σ increase in staff-reported beliefs about the importance of STEM learning. Lastly, Model 4 indicates that a one-σ increase in the frequency of staff meetings to discuss STEM programming is associated with a .27σ increase in staff-reported beliefs about the importance of STEM learning.

In Table D4, Models 1, 3, 4, 5 and 6 show associations between specific types of professional development activities and staff feelings of efficacy when implementing STEM activities. Model 1 indicates that, on average, a one-σ increase in staff attending training during the past academic year is associated with a .29σ increase in staff-reported efficacy for implementing STEM activities. Model 3 indicates that a one-σ increase in the frequency of staff meetings to discuss program issues is associated with a .30σ increase in staff-reported efficacy for implementing STEM activities. Model 4 indicates that a one-σ increase in the frequency of staff meetings to discuss STEM programming is associated with a .36σ increase in staff-reported efficacy for implementing STEM activities. Model 5 indicates that a one-σ increase in the frequency of staff meetings with classroom teachers to discuss STEM concepts being taught in school is associated with a .28σ increase in staff-reported efficacy for implementing STEM activities. Lastly, Model 6 indicates that a one-σ increase in the frequency of staff meetings with parents about STEM activities is associated with a .23σ increase in staff-reported efficacy for implementing STEM activities.

Staff Beliefs Linked to the Quality of STEM Learning Activities

Our second set of substantive analyses asks if staff beliefs are linked to the quality of STEM activities at the afterschool programs. Table D5 presents the

standardized regression coefficients relating staff beliefs to two measures of STEM activity quality and Table 6 presents standardized regression coefficients relating staff efficacy for implementing STEM activities to two measures of STEM activity quality. The analytical model views activity quality as a product of these staff beliefs net of determinants such as staff gender, ethnicity, and the number of students participating in the activity. Because the reports of STEM activities reported by staffs that share a site are not independent, we clustered standard errors on site identification to account for the non-random assignment of staff into sites.

In Table D5, Models 1 and 2 indicate that, on average, a one-σ increase in staff beliefs about the importance of STEM learning is associated with a .25σ increase in staff reports of student engagement during STEM activities and a .14σ increase in staff reports of how well the STEM activities went overall. In Table D6, Models 1 and 2 indicate that a one-σ increase in staff efficacy for implementing STEM activities is associated with a .27σ increase in staff reports of student engagement during STEM activities and a .09σ increase in staff reports of how well the STEM activities went overall.

The Quality of the STEM Learning Activities Related to Student Outcomes

Our third set of analyses asks if the quality of the STEM learning activities predicts changes in student outcomes over the academic year. Tables D7 and D8 present standardized regression coefficients predicting six student outcomes (work habits, math efficacy, science efficacy, social competency, science interest, and science career aspirations). The analytical model views each student outcome as a function of prior functioning in the domain and other determinants such as measures of activity quality (student engagement and how activities went overall) and student gender. Because student outcomes for students that share a site are not independent of one another, we cluster standard errors on site identification to account for the non-random assignment of students into sites.

Student engagement in STEM activities. In Table D7, Models 1 through 5 show significant relations between staff reports of student engagement in STEM activities and student outcomes. Specifically, Model 1 indicates that, on average, a one-σ increase in staff reports of student engagement during STEM activities is associated with a .06σ increase in student reports of work habits. Models 2 and 3 indicate that a one-σ increase in staff reports of student engagement during STEM activities is associated with a .06σ increase in student reports of math efficacy and a .13σ increase in student reports of science efficacy, respectively. Model 4 indicates that a one-σ increase in staff reports of student engagement during STEM activities is associated with a .18σ increase in student reports of social competency and Model 5 indicates that a one-σ increase in staff reports of student engagement during STEM activities is associated with a .08σ increase in student reports of science interest.

Overall STEM activity quality. In Table D8, Models 1 through 5 show significant relations between staff reports of how well the STEM activities went overall and student outcomes. Specifically, Model 1 indicates that, on average, a one-σ increase in staff reports of how well the activities went overall is associated with a .08σ increase in student reports of work habits. Models 2 and 3 indicate that a one-σ increase in staff reports of how well the activities went overall is associated with a .14σ increase in student reports of math efficacy and a .04σ increase in student reports of science efficacy, respectively. Model 5 indicates that a one-σ increase in staff reports of how well the activities went overall is associated with a .20σ increase in student reports of social competency and Model 5 indicates that a one-σ increase in staff reports of how well the activities went overall is associated with a .11σ increase in student reports of science interest.

Discussion

This study examined relations between professional development, staff beliefs, program activities, and student outcomes in a large, systemic effort to support STEM learning in California afterschool programs. The logic model guiding the initiative posited that specific types of professional development activities would relate positively to staff beliefs about the value of STEM programming, which would relate to the quality of STEM activities offered at the afterschool programs, which were expected to support gains in student outcomes.

Findings were consistent with this theory of change. In particular, staff who were exposed to more training activities (both general and STEM-specific) and who attended more staff meetings to discuss general program issues and STEM programming reported stronger beliefs about the value of STEM learning and stronger feelings of efficacy when implementing STEM activities. These findings support the value of a multi-prong approach to professional development within the afterschool context, one that incorporates dedicated training activities, staff meetings, and close links with host schools (Vandell & Lao, 2015).

Also consistent with the STEM initiative's theory of change, the current study found that these staff beliefs were linked to the quality of STEM activities at the participating programs. Staff who endorsed the importance of STEM learning and who felt capable of implementing STEM activities reported higher levels of student engagement in the afterschool programs' STEM activities and the overall quality of the STEM activities implemented. Links between staff beliefs and their practices have been reported in the early childhood (Sheridan, Edwards, Marvin, & Knoche, 2009; Zaslow, 2009) and K-12 in-school (Loucks-Horsley, Stiles, Mundry, Love, & Hewson, 2010) contexts, but have not been specifically studied previously in afterschool programs.

Finally, student engagement in STEM activities in the afterschool programs predicted relative gains in students' work habits, math efficacy, science efficacy, social competency, and science interest over the school year. The strongest relations were found between student engagement and students' math efficacy and social competency. These findings represent one of the first cases in which STEM professional development has been linked to positive student outcomes in the afterschool context.

It is noteworthy that the program staff who participated in the current initiative are similar to the staff profile at many U.S. afterschool programs (National Research Council, 2015; Peter, 2002, 2009; Vandell & Lao, 2015). A substantial majority of the program staff in the current study had less than a college degree. The majority of the program staff members were young adults, between 18 and 25 years of age and had brief tenures in their current position. Almost one in three of the program staff reported working at the program for less than six months. Because their education, training, and prior experience is limited, staff may particularly benefit from ongoing and continuing professional development opportunities that provide curricula supports accompanied by dedicated trainings and opportunities to connect with other program staff, parents, and classroom teachers on STEM-related topics. Importantly, these experiences can enrich students' STEM experiences in afterschool settings and support growth in students' interests and efficacy in the STEM domain.

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Appendix A

Staff Survey Initiative-based Professional Development and Support Items

Measure	Item
Professional developments	
Staff attending training during the past academic year	Did you attend any professional development opportunities during the past academic year (on any subject/topic)? If so, approximately how many sessions?
Staff attending training related to STEM activities during the past academic year	Did you attend any STEM-related professional development opportunities during the past academic year? If so, approximately how many sessions?
Frequency of staff meetings to discuss program issues	How often do you meet with other staff at this afterschool program to discuss program issues (without students)?
Frequency of staff meetings to discuss STEM programming	How often do you meet with other staff at this afterschool program to discuss STEM programming (without students)?
Frequency of staff meetings with classroom teachers to discuss STEM concepts being taught in school	During this past academic year, how often did you discuss STEM concepts being taught in school with classroom teachers?
Program offerings	
Frequency of meetings with parents about STEM activities	During this past academic year, how often did you talk with parents about STEM activities in the program (e.g. individually, over the phone, sent information)?
Frequency of staff holding STEM related events or meetings for parents	During this past academic year, how often did you hold STEM-related events or meetings for parents (e.g., science fair, family math night)?

Appendix B

Staff Survey Belief and Efficacy Items

Beliefs about the importance of STEM learning (7 items, pre-α = .73 / post-α = .79)

I think most program directors expect staff to do hands-on activities in the afterschool program.

In general, I think these students (in the afterschool program) are very capable of doing hands-on science activities.

In general, I think most of these students have a hard time understanding STEM concepts.

In general, I feel well-prepared to teach hands-on STEM concepts/activities

I think the students enjoy doing STEM activities.

I think the students see the relevance of the STEM activities we do in the program to "real life."

I think students look forward to coming to the afterschool program when we have STEM activities going on.

I don't think there is enough time here at the program for students to learn much about STEM.

Efficacy for implementing STEM activities (7 items, pre-α = .77 / post-α = .79)

Overall I am satisfied with the STEM experiences that students are having in the program.

I have a strong background in at least one area of Science, Technology, Engineering, and/or Mathematics.

Science, Technology, Engineering, and/or Mathematics are important subjects for students to learn.

I do not know enough about Science, Technology, Engineering, and/or Mathematics to teach any of them well.

I do not have enough support from the afterschool program to teach hands-on STEM curriculum.

I enjoy teaching Science, Technology, Engineering, and/or Mathematics (STEM activities).

I feel confident about teaching Science, Technology, Engineering, and/or Mathematics in the afterschool program.

Appendix C

Student Items

Measure and items	Reliability pre/post
Work habits (6 items)	α = .77 / α = .81
I follow the rules in my classroom	
I work well by myself	
I am careful and neat with my work	
I make good use of time at school	
I finish my work on time	
I keep track of my things at school	
Reading efficacy (4 items)	α = .81 / α = .84
I am interested in reading	
I am good at reading	
I expect to do well in reading this year	
I would be good at learning something new in reading	
Math efficacy (4 items)	α = .86 / α = .88
I am interested in math	
I am good at math	
I expect to do well in math this year	
I would be good at learning something new in math	
Science efficacy (4 items)	α = .87 / α = .89
I am interested in science	
I am good at science	
I expect to do well in science this year	
I would be good at learning something new in science	
Social competencies (7 items)	α = .88 / α = .90
I work well with other kids	
I can make friends with other kids	
I can talk with people I don't know	
I can tell other kids they are doing something I don't like	
I can tell a funny story to a group of kids	
I can stay friends with other kids	
I can tell other kids what I think even if they disagree with me	

Appendix C (continued)

Student Items

Measure and items	Reliability pre/post
Science interest (22 items)	α = .93 / α = .95
Science is something I get excited about	
I like to take things apart to learn more about them	
I like to participate in science projects	
I'd like to get a science kit as a gift (for example, a microscope, magnifying glass, a robot, etc.)	
I like to see how things are made (for example, ice-cream, a TV, an iPhone, energy, etc.)	
I like to watch programs on TV about nature and discoveries	
I am curious to learn more about science, computers, or technology	
I like to work on science activities	
When I grow up and have kids, I will take them to a science museum	
I would like to have a science or computer job in the future	
I want to understand science (for example, to know how computers work, how rain forms, or how airplanes fly)	
I enjoy visiting science museums or zoos	
I get excited about learning new discoveries or inventions	
I like reading science magazines	
I pay attention when people talk about recycling to protect our environment	
I am curious to learn more about cars that run on electricity	
Science interest (22 items - continued)	α = .93 / α = .95
I get excited to find out that I will be doing a science activity	
I enjoy reading science fiction books	
I do science-related activities that are not for schoolwork	
I like science	
Science is one of my favorite subjects	
I take science only because it will help me in the future	
Science career (4 items) σ	α = .85 / α = .86
I will have a career in Science, Technology, Engineering, or Mathematics	
I will make it into a good college and major in an area needed for a career in Science, Technology, Engineering, or Mathematics	
I will graduate with a college degree in a major needed for a career in science	
I will get a job in a science-related area	
Likelihood of future success (7 items)	α = .91 / α = .92
I will graduate from high school	
I will go to college	
I will have a job that pays well	
I will be able to own my own home	
I will have a job that I enjoy doing	
I will have a happy family life	
I will be respected in my community	

Appendix D

Tables 1 through 8

Table D1

Demographic and Educational Background of Program Staff: Fall, 2013 (N = 178 staff)

	obs.	mean/%
Gender		
Female	128	72%
Male	50	28%
Race/ethnicity		
African American	11	6%
American Indian	2	1%
Asian	14	8%
Filipino	5	3%
Hispanic	82	46%
Pacific Islander	5	3%
White	45	25%
Other	9	5%
Age		
18-25 years	87	49%
26-35 years	53	30%
36-45 years	20	11%
46-55 years	7	4%
over 55 years	5	3%
Educational background		
High school diploma or GED	18	10%
Attended classes/training not related to a degree	5	3%
Attended college	59	33%
Completed two-year college degree (AA)	28	16%
Completed four-year college degree (BA)	45	25%
Attended graduate school	9	5%
Completed Master's degree	7	4%
Completed Doctoral degree	2	1%
Professional experience		
School administrator	12	7%
Student support staff (e.g., social worker, psychologist, nurse)	18	10%
Administrative staff (e.g., office manager, receptionist)	34	19%
Classroom teacher	37	21%
Instructional specialist (e.g., music, art, special education, ELL)	41	23%

Table D2

Descriptive information for STEM activities implemented (N = 2,457 activities)

	obs.	mean/%	SD	Min.	Min.
STEM content area					
Science	1355	55%		0.00	0.00
Technology	786	32%		0.00	0.00
Engineering	510	21%		0.00	0.00
Math	942	38%		0.00	0.00
Number of Students	2424	27.9	19.83	0.00	0.00
Duration	2437	2.65	1.01	1.00	1.00
Grade					
First	602	24.5%		0.00	0.00
Second	847	34.5%		0.00	0.00
Third	1117	45.5%		0.00	0.00
Fourth	1336	54.4%		0.00	0.00
Fifth	1164	47.4%		0.00	0.00
Sixth	683	27.8%		0.00	0.00
Seventh	228	9.3%		0.00	0.00
Eighth	168	6.8%		0.00	0.00
Ninth	4	0.2%		0.00	0.00
Tenth	4	0.2%		0.00	0.00
Eleventh	4	0.2%		0.00	0.00
Twelfth	4	0.2%		0.00	0.00
Measures of activity quality					
Student engagement	2427	3.48	0.65	1.00	4.00
Overall activity quality	2410	3.43	0.67	1.00	4.00

Note: STEM content area and grade variables are dummy variables on a scale = 0-1 (1 = yes, 0 = no); duration variable coded as 1 = 15-29 minutes, 2 = 30-44 minutes, 3 = 45-59 minutes, 4 = 60-89 minutes, 5 = 90-120 minutes; student engagement coded as 1 = not at all engaged, 2 = somewhat engaged, 3 = mostly engaged, 4 = very engaged; overall activity quality coded as 1 = not well at all, somewhat well, mostly well, very well.

Table D3

Standardized regression coefficients predicting staff beliefs about the importance of STEM learning (N= 90 staff)

Dependent variable = staffs' spring 2014 beliefs	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Professional developments							
Staff attending training during the past academic year	0.32** (0.11)						
Staff attending training related to STEM activities during the past academic year		0.29** (0.10)					
Frequency of staff meetings to discuss program issues			0.29* (0.12)				
Frequency of staff meetings to discuss STEM programming				0.27* (0.12)			
Frequency of staff meetings with classroom teachers to discuss STEM concepts being taught in school					0.16 (0.11)		
Program Offerings							
Frequency of meetings with parents about STEM activities						0.14 (0.11)	
Frequency of staff holding STEM related events or meetings for parents							0.04 (0.12)
Gender							
Male	-0.28 (0.24)	-0.22 (0.23)	-0.28 (0.24)	-0.23 (0.24)	-0.18 (0.24)	-0.18 (0.24)	-0.21 (0.24)
Race/ethnicity							
Hispanic	-0.28 (0.27)	-0.23 (0.27)	-0.18 (0.27)	-0.23 (0.28)	-0.23 (0.27)	-0.20 (0.27)	-0.20 (0.28)
Other	-0.07 (0.2 9)	0.02 (0.30)	-0.09 (0.30)	-0.12 (0.31)	-0.14 (0.30)	-0.06 (0.30)	-0.02 (0.30)
Constant	0.20 (0.22)	0.14 (0.22)	0.20 (0.23)	0.22 (0.24)	0.17 (0.23)	0.16 (0.23)	0.16 (0.24)
R^2	0.115	0.101	0.082	0.071	0.034	0.034	0.017
Observations	87	89	90	89	90	90	90

Note: Standard errors in parentheses; training scales = 1 – 6; meeting scales = 1 – 7; controls are in reference to White, Female staff; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table D4

Standardized regression coefficients examining relations between professional development and staff feelings of efficacy when implementing STEM activities (N= 90 staff)

Dependent variable = staffs' spring 2014 efficacy	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Professional developments							
Staff attending training during the past academic year	0.29*						
	(0.11)						
Staff attending training related to STEM activities during the past academic year		0.20					
		(0.11)					
Frequency of staff meetings to discuss program issues			0.30**				
			(0.11)				
Frequency of staff meetings to discuss STEM programming				0.36**			
				(0.11)			
Frequency of staff meetings with classroom teachers to discuss STEM concepts being taught in school					0.28*		
					(0.11)		
Program Offerings							
Frequency of meetings with parents about STEM activities						0.23*	
						(0.11)	
Frequency of staff holding STEM related events or meetings for parents							0.04
							(0.12)
Gender							
Male	-0.08	-0.04	-0.03	0.00	0.05	0.10	-0.21
	(0.24)	(0.23)	(0.23)	(0.22)	(0.23)	(0.23)	(0.24)
Race/ethnicity							
Hispanic	-0.13	-0.10	-0.12	-0.22	-0.19	-0.15	-0.20
	(0.26)	(0.27)	(0.26)	(0.26)	(0.26)	(0.27)	(0.28)
Other	0.26	0.34	0.23	0.18	0.08	0.16	-0.02
	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.30)
Constant	0.01	-0.04	0.02	0.07	0.03	-0.01	0.16
	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.24)
R^2	0.11	0.07	0.11	0.15	0.09	0.07	0.017
Observations	87	89	90	89	90	90	90

Note: Standard errors in parentheses; training scales = 1 – 6; meeting scales = 1 – 7; meetings with teachers scale = 1 – 6; controls are in reference to White, Female staff; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table D5

Standardized regression coefficients of staff beliefs about the importance of STEM learning predicting measures of STEM activity quality (N= 1,052 activities)

	Student engagement (1)	Overall activity quality (2)
Staff beliefs about the importance of STEM learning	0.25*** (0.03)	0.14*** (0.03)
Controls		
Male	0.13*** (0.03)	0.26*** (0.04)
Hispanic	-0.19*** (0.06)	-0.27*** (0.06)
Other	-0.15** (0.05)	-0.41*** (0.05)
Number of students in activity	-0.14*** (0.03)	-0.22*** (0.03)
Constant	-0.11*** (0.03)	-0.07* (0.03)
R^2	0.09	0.13
Observations	1,241	1,237

Notes. [a] Represents a site-level mean of the measure; standard errors in parentheses; controls are in reference to White, Female staff; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table D6

Standardized regression coefficients of staff efficacy for implementing STEM activities predicting measures of STEM activity quality (N= 1,052 activities)

	Student engagement (1)	Overall activity quality (2)
Staff beliefs about the importance of STEM learning	0.27*** (0.03)	0.09** (0.03)
Controls		
Male	0.17*** (0.03)	0.28*** (0.04)
Hispanic	-0.11* (0.05)	-0.20*** (0.06)
Other	-0.11* (0.05)	-0.38*** (0.05)
Number of students in activity	-0.16*** (0.03)	-0.23*** (0.03)
Constant	-0.08** (0.03)	-0.05 (0.03)
R^2	0.11	0.12
Observations	1,241	1,237

Note: [a] Represents a site-level mean of the measure; standard errors in parentheses; controls are in reference to White, Female staff; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table D7

Standardized regression coefficients of staff reports of student engagement during STEM activities predicting relative changes in student outcomes (N = 1,372 students)

Dependent variable = student outcomes in the spring of 2014	Work habits (1)	Math efficacy (2)	Science efficacy (3)	Social competency (4)	Science interest (5)	Science career aspirations (6)
Student engagement [a]	0.06**	0.13***	0.03	0.18***	0.08***	-0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Controls						
Male	-0.11*	0.22***	0.35***	0.17***	0.38***	0.56***
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)
Student baseline measures in the fall 2013						
Work habits	0.52***					
	(0.02)					
Math efficacy		0.47***				
		(0.02)				
Science efficacy			0.59***			
			(0.02)			
Social competency				0.44***		
				(0.02)		
Science interest					0.57***	
					(0.02)	
Science career aspirations						0.50***
						(0.02)
Constant	0.02	-0.14***	-0.20***	-0.09**	-0.20***	-0.31***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
R^2	0.35	0.24	0.39	0.23	0.35	0.32
Observations	1,372	1,365	1,365	1,365	1,363	1,346

Note: [a] Represents a site-level mean; standard errors in parentheses; controls are in reference to Female students; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table D8

Standardized regression coefficients of overall STEM activity quality predicting changes in student outcomes (N = 1,372 students)

Dependent variable = student outcomes in the spring of 2014	Work habits (1)	Math efficacy (2)	Science efficacy (3)	Social competency (4)	Science interest (5)	Science career aspirations (6)
Overall activity quality [a]	0.08 ***	0.14***	0.04	0.20***	0.11***	-0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Controls						
Male	-0.11*	0.22***	0.35***	0.199***	0.38***	0.55***
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)
Student baseline measures in the fall 2013						
Work habits	0.52***					
	(0.02)					
Math efficacy		0.47***				
		(0.02)				
Science efficacy			0.59***			
			(0.02)			
Social competency				0.46***		
				(0.02)		
Science interest					0.57***	
					(0.02)	
Science career aspirations						0.50***
						(0.02)
Constant	0.01	-0.14***	-0.20***	-0.10**	-0.20***	-0.31***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
R^2	0.35	0.24	0.40	0.24	0.36	0.32
Observations	1,372	1,365	1,365	1,365	1,363	1,346

Note: [a] Represents a sitelevel mean; standard errors in parentheses; controls are in reference to Female students; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Filling in the Gaps:

How Developmental Theory Supports Social Emotional Learning in Afterschool Programs

Practitioner-based article - scholarly paper based on literature review

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Abstract

This paper examines studies, census reports, and afterschool data to shed light on how afterschool programs can help close the opportunity, achievement, and learning gap found in traditional education. The theories of Bronfenbrenner and Gardner can inform programming during out-of-school time, improving the ability of programs to craft curriculum that can close the education gap through social emotional development. Census and afterschool data show that minority and/or impoverished children are most in need of social emotional and academic support, but are given the least access to high quality afterschool programs. Research shows that, while brain-building often stops with early childhood interventions, it is essential for school-age children as well. The paper closes with recommendations for SAFE (sequenced, active, focused, explicit) programming and best practices for implementation.

Keywords: *social emotional learning, afterschool, promising practices, program implementation*

Many of the institutionalized inequalities of the education system hinder the ability to reach learners of every race, socioeconomic standing, and family background equally. Formal public education systems are primarily locally funded, abide by strict curriculum guidelines and standardized assessments, and attempt to decrease the opportunity, achievement, and learning gaps for minorities (U.S. Department of Education, 2014). Afterschool programs have a similar structure; however, they are unrestricted by curriculum guidelines, standardized accountability, and, for the most part, state and federal mandates. They have the ability to support academic success and social emotional competence through individualization to students' needs and background.

School curricula are developed with the hope of achieving student success, yet become impeded by challenges within the traditional classroom and the bureaucracy of education. In Smith and Kovac's (2011) survey, teachers saw preparing students for standardized tests as "reducing the quality of instruction they are able to provide students" (p. 210). Quality instruction cultivates success by connecting students' social emotional and academic skills. Afterschool programs can facilitate real-life application of academic content through collaboration with teachers and families (Afterschool Alliance, 2011). This article explores ways afterschool programs can promote and encourage social emotional learning for students who are failing academically or behaviorally within the public education system.

Environmental Contexts

Children's social emotional development is affected by economic conditions, beliefs, and educational family structures. According to the U.S. Bureau of Labor Statistics (2015), 68.2% of single mothers, 81.2% of single fathers, and 59.1% two-parent households are in the workforce. Low-income children are limited by their comparative lack of access to resources and experiences (Bandura, 2001). In addition, high stress levels can affect brain development in regions associated with language and reading (Noble et al., 2015). The United States Department of Education Office of Civil Rights found that "the United States has a great distance to go to meet our goal of providing opportunities for every student to succeed" (U.S. Department of Education, 2014, para. 4). Because of their ability to understand the environments in which their students develop, afterschool programs can help support success for all students.

Bronfenbrenner's Biological Model of Human Development examines the environmental contexts in which children live (Bronfenbrenner & Morris, 2006). Bronfenbrenner focuses on the events a child experiences, or Proximal Processes. The characteristics of the developing Person, the Context of the environment, and the historical Time are all factors in the Proximal Process. Within these processes are systems of influence. The smallest systems have direct contact with the child and the largest systems consist of societal norms that indirectly shape the environment. Afterschool programs are found in the two smallest systems that hold direct influence over the child, the microsystem and mesosystem (Bronfenbrenner, 1994).

Each microsystem consists of people and places that are frequent in the developing child's life (e.g., home, grandma's house, school, afterschool, etc.). Through their microsystems, the child develops tools they will use "to accomplish the tasks and goals that give meaning, direction, and satisfaction to their lives" (Bandura, 2001, p. 4).

Influencers in each microsystem provide basic necessities and maintain consistent structure. In environments which do not provide these prerequisites, social emotional development is focused on avoiding dysfunction rather than advancing competence. Students are likely to develop traits that best fulfill the behavioral expectations to which they are exposed (Thompson, 2014). For students from an unstable home microsystem, social expectations in structured environments such as school or afterschool may cause challenging behavior. These environments have expectations that are often unfamiliar or uncomfortable.

For this reason, learning about the social norms and behavioral expectations in each child's home environment microsystem is our first recommendation. This is one step that can help reduce the achievement gap.

Afterschool Context

If an afterschool program's behavioral expectation varies drastically from those in other environments, afterschool program educators must understand how to work within both systems to further students' social emotional competence. Durlak and Weissberg (2007) proved that when afterschool programs implemented sequenced, active, focused, and explicit (SAFE) curriculum, it enhanced students' social emotional development. This helped close the gap in supports, resources and interactions that low-income children experience.

For example, Paul and Sally have similar socioeconomic status, family structure, and live in a similar neighborhood but have different experiences growing up (see Table 1). At age 3 Sally experiences a major social change at home, and has challenging behaviors due to the bilateral nature of social and emotional development (Lerner, Bowers, Geldhof, Gestsdóttir, & DeSouza, 2012). From ages 5-15, Sally adapts as she receives guidance around these behaviors, and develops greater social emotional competence, with stronger relationships and improved communication. As Paul develops, he only learns the limited communication skills he's accustomed to at home, causing him complications in other environments where communication is open. During the final and greatest variance between their environments, Sally's family becomes financially unstable, limiting their necessities such as the food budget. Sally's academic success and communication skills began to suffer. Her home and afterschool program microsystems may be able to hypothesize that hunger or stress is the cause of the undesirable behaviors and academic trouble, and collaborate to find a solution.

Table 1. Case Study Detail, "Paul" & "Sally".

Age	"Paul" Lives with both parents	"Sally" Lives with both parents
0-5	Mother stays at home, Father works	Mother stays at home from age 0-3, both parents work 40+ hours/week from age 3+
5-15	Only communicates pertinent information with parents	Has open communication with parents at all times
15+	Recession occurs, lifestyle slightly changes	Recession occurs, lifestyle drastically changes, limited necessities available

Bronfenbrenner and Morris (2006) assert that when dealing with a destabilized home environment there is "greater impact in reducing dysfunction rather than in enhancing [a child's] knowledge about and skill in dealing with the external environment" (p. 803). Understanding this position can help afterschool professionals move towards constructive behavior management techniques instead of disciplining behaviors. Over time, the child and their environment (the proximal processes) change, and behavior management and social emotional development goals at home and in the afterschool program need to adapt together to support the child.

These philosophies can apply to students who are in severely disadvantaged situations, where preventing dysfunction is the goal. Disadvantaged situations may include challenges in one or all of the following elements: family structure, socioeconomic standing, neighborhood, parent or guardian education level, instability, and lack of necessities. In these situations, afterschool programs can "improve the quality of the environment" by being a part of the solution, and in turn "increase the developmental power of promising processes" (Bronfenbrenner & Morris, 2006, p. 808). If the family context is unable to intervene, the child's other microsystems (such as an afterschool program) have the responsibility of intervening.

Children often look to peers for guidance. Within the afterschool program, a student's peer group is a central component of the microsystem. Peer groups encourage developmentally generative or developmentally disruptive characteristics dependent on their dispositions. Peers can set in motion proximal processes that strengthen or hinder outcomes. In afterschool programs, advancing students' social emotional

development through building developmentally generative characteristics within peer groups is essential.

The contexts of family, school, afterschool and peer groups have the opportunity to work together towards encouraging positive outcomes, understanding each student's needs, and making resources accessible. A student's brain-building, through the use of enriching experiences, is extremely prevalent in early childhood interventions (Shonkoff, Boyce, & McEwen, 2009; Lenroot & Giedd, 2006).

By age 5, the brain has reached 90% of its adult size, but is continuously undergoing transformation. Between ages 4 to 18, the part of the brain controlling emotions, memory, and language changes dramatically. The area that regulates communication across parts of the brain and links brain function to behaviors and feelings continues to change and mature at a rapid rate beyond the age of 40. This means that brain-building must continue through school-age and beyond (Blakemore & Choudhury, 2006; Lenroot & Giedd, 2006; Nagy, Westerberg, & Klingberg, 2004; Paus et al., 2001). Figure 1 illustrates numerous ways that afterschool programs stimulate continued brain development in school-age youth. Afterschool programs have the potential to facilitate development in nearly every area of the brain through their unique blending of academic, social-emotional, physical, and 21st century learning experiences (Shernoff, 2010; Beets, Beighle, Erwin, & Huberty, 2009; Silva, 2008; Blakemore & Choudhury, 2006; Zeif, Louver, & Maynard, 2006; Posner & Vandell, 1999) (see Figure 1).

Afterschool programs which have an understanding of the unique contexts that influence each child work to close gaps in the ability of the home and other microsystems to advance development. Programs can identify what is missing for a child to have the social emotional skills to be successful in all contexts. Equipped with an awareness of the gaps, programs can help children develop skills in areas that are lacking.

Reaching all Learners through SAFE Curriculum

Reaching all learners is an overwhelming task. Yet the need is high. According to Baker (2014), the average Caucasian student at age 13 reads at the same level as an African-American student at 17. In addition, 61% of African-Americans and 50% of Latinos living in low-income situations would enroll their students in structured and focused afterschool programs if they were available (Afterschool Alliance, 2009). Each student has a unique social emotional skill set and individual learning style. The Campaign for Educational Equity emphasized that increasing access to high-quality afterschool programs is essential to achieving educational equity (Afterschool Alliance, 2013).

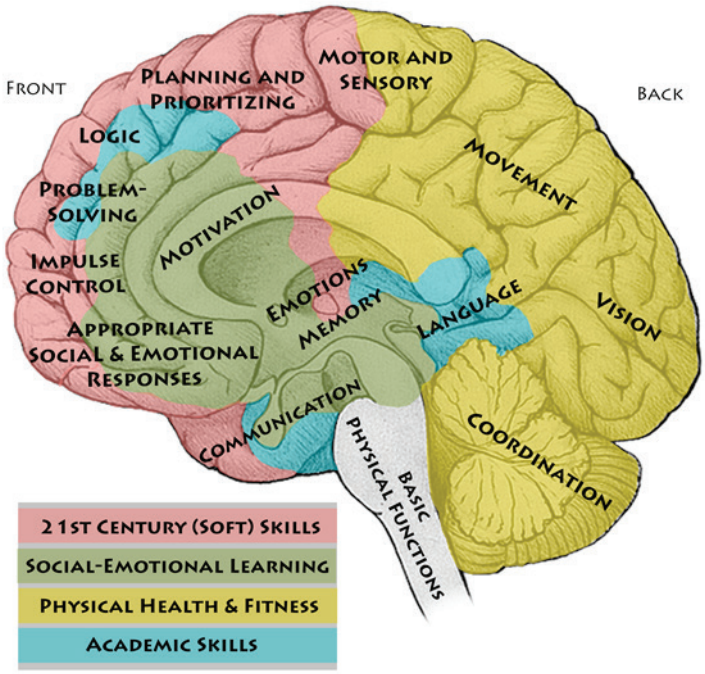


Figure 1. *How Afterschool Impacts Brain Development. Reprinted from Brain-Building in Afterschool by E. Scott, 2016, Hartford, CT: Connecticut After School Network. Retrieved from* http://ctafterschoolnetwork.org/brain-building-in-afterschool/. *[Copyright 2016 by the Connecticut After School Network. Reprinted with permission.*

Vandell, Reisner, and Pierce (2007) demonstrated the potential of afterschool programs to increase academic scores through application of personal skills and talents. Programs can partner with traditional education to build complementary learning. Afterschool activities can encourage 21st Century Skills such as problem solving, teamwork, and critical thinking (Hart, 2008). Though these skills may be addressed in the traditional classroom, a meta-analysis conducted by Durlak, Weissberg, and Pachan (2010) illustrated that when students participate in the skills being taught, such as by the Active element of SAFE curriculum, acquisition of knowledge occurs in a more effective and efficient manner.

The ability to continually reach and encourage academic growth in afterschool programs requires an understanding of progression in academic knowledge, environmental influences, and learning styles. Understanding these characteristics enables afterschool programs to create engaging activities while promoting academic growth. It is essential that learning builds on the background knowledge students receive from the school curriculum, social emotional capabilities, and school philosophies. Once there is an understanding of a student's social emotional development, thoughtfully structured curriculum is a key to their success. Afterschool programs which integrate Sequenced, Active, Focused, and Explicit (SAFE) curriculum have shown positive social emotional development gains (Durlak, Weissberg, & Pachan, 2010). This includes structuring behavioral expectations similar to the school district students attend, collaboration with teachers to expand on curriculum, and developing partnerships that facilitate joint training between school and afterschool program personnel in current teaching techniques. For this reason thoughtful implementation of SAFE curriculum is a tool to be utilized when introducing social emotional curriculum within afterschool programs.

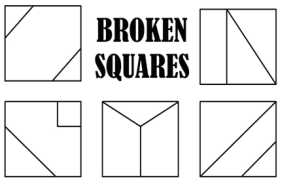
Considering Student Ability and Interest in SAFE Curriculum

Student interest and talents should drive the afterschool program curriculum, and be based on SAFE components. When incorporating explicit activities, students must comprehend the skills they are practicing in order to make improvement (Durlak, Weissberg, & Pachan, 2010). In afterschool, it is important for staff to avoid the mistake of providing students with simplistic activities.

Gardner's Seven Multiple Intelligences provide afterschool programs the tools to implement SAFE activities. Current criticisms of Gardner's Multiple Intelligences include lack of empirical support and flaws in some of the research supporting the theory (McConnell, 2015). However Armstrong (2009) asserted that the Multiple Intelligence model is conducive to the needs of after school professionals when developing complex instruction which encourages confidence and trust in oneself and others.

The process of participating in activities not only teaches students how to complete the task (e.g, build with Legos) but also teaches social strategies (e.g., building with Legos with a partner). Gardner and Hatch (1989) assert that individuals have multiple ways of showing intelligence. The intelligences are Logical-Mathematical, Linguistic, Spatial, Musical, Bodily-Kinesthetic, Interpersonal, and Intrapersonal. Afterschool program staff can gather information on students' learning styles from teachers, guardians, and their own observations.

These intelligences are listed individually, however Gardner found that they rarely act independently (Brualdi, 1996; Gardner & Hatch, 1989). This is something for afterschool programs to consider. Due to the large number of students a program can serve daily, it would be nearly impossible to consider each student's environmental history, social emotional zone of development, and individual interests when creating activities. However, Gardner states that to



Goal: Learn to work as a team by accomplishing a group task

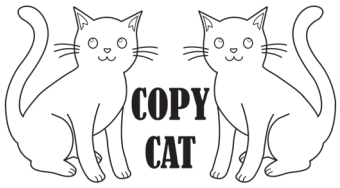
Description: Working in groups, assemble five equal squares from a box of assorted pieces

Student Skill Level Adjustment:
Easy: Explicit instructions, each square ends up an individual color
Middle: General instructions, some squares end up an individual color
Hard: No instructions, all squares are multi-colored

Skills Required: Trust in others, confidence, verbal communication, creativity, spatial awareness, initiative, hand-eye coordination

Adapted from: PEER Center, BU School of Public Health, http://peer.hdwg.org/sites/default/files/5d%20WorkingAsAMultidisciplinaryTeam-PeerRole-Peer_Training.pdf

Figure 2. Activity with Skill-Level Adjustments, Broken Squares Example



Goal: Learn teamwork by creating an image and copying it

Description: Pairs of students take turns describing a simple image while the other person draws the image sight unseen.

Student Skill Level Adjustment:
Easy: Communicator can use all vocabulary, drawers and copiers have set size and original drawing parameters
Middle: Restrict communicator vocabulary, set some size and original drawing parameters for drawers and copiers
Hard: Restrict communicator vocabulary, no original drawing parameters for drawers and copiers

Skills Required: Trust in others, confidence, verbal communication, spatial awareness, attention to detail, initiative, giving and following explicit instructions

Adapted from: PEER Center, BU School of Public Health, http://peer.hdwg.org/sites/default/files/3c%20BacktoBackDrawings-CommunicationSkills-Peer_Training.pdf

Figure 3. Activity with Skill-Level Adjustments, Copy Cat Example

have a functional society all seven intelligences must be present. For education, this means that focusing solely on Language Arts and Math skills is actually a hindrance to intelligences outside of logic and verbal (Gardner & Hatch, 1989; Brualdi, 1996). Afterschool programs can encourage student interest and talents by focusing on activities that reinforce traditional education skills and foster success through many or all intelligences. Reflecting on a student's abilities (intelligences) and their contribution to an activity can prevent a student with low self-efficacy from having a negative experience and reacting with challenging behaviors. Figures 2 and 3 feature example activities which illustrate this.

Case Studies

The New Hampshire Extended Learning Opportunities (ELO) targets at risk students and promotes success through student interest. One teacher learned that potential high school dropouts enjoyed rap, but struggled with traditional English classes. The teacher worked collaboratively with students to develop curriculum which challenges them to display confidence in their own abilities, and reflect on the experience. Through following interest, the curriculum incorporated musical intelligence and specific developmental needs allowing the students to experience academic success and the highest level of cognition. These students were able to develop individualized learning portfolios, reaching a knowledge level of metacognition and cognitive level of creation (Heer, 2012) versus failing English.

This model demonstrates what partnerships between school and community providers can accomplish. By understanding student needs in adverse developmental situations this teacher was able to show success while applying the highest level of thinking skills. In the hierarchy of cognitive processes, many high order skills require social emotional abilities, such as working in inter- and intrapersonal settings, reflection, direct purpose, confidence, and the ability to respond constructively to environmental influences. Using multiple intelligences and social emotional abilities can encourage positive experiences for students. Incorporating daily strategies that build on students' interests and needs is a good starting point for afterschool programs to implement social emotional curriculum (as shown in Appendix A).

An excellent example of this is the California Afterschool Outcome Measures Project (CAOMP), which tracks data based on student input, school staff academic and behavioral data, as well as afterschool professionals' interaction quality and availability of level appropriate activities. CAOMP's focus within social emotional growth surveys afterschool professionals' and classroom teachers' observations of student social behavior, intrinsic and extrinsic motivation, and work habits. CAOMP incorporates student surveys initiating self-reflection of students' social emotional development regarding interactions with afterschool professionals, interactions with peers, and interest and engagement in activities. Due to programs participating in persistent data collection such as CAOMP, there is evidence that social emotional curriculum supports closing achievement gaps (Vandell, 2013).

A recent case study by Humans of New York story cited a teacher at the Mott Hall Bridges Academy who used to run an afterschool program for 5-12 year olds. One activity he created was a group building challenge (using manila folders, tape, and straws). The first attempt at implementation was unsuccessful. The next day, however, he bought yellow hard hats, and found "they transformed the kids. The hats made them feel like builders. . . . Other kids saw them through the window and asked to join, until all the hats were gone" (Stanton, 2015, para. 1). This one simple act encouraged social emotional gains, high levels of cognitive functioning, and academic skills.

Ramapo for Children is an organization which offers programs for youth who have academic, social, or emotional special needs. Its mission, to "help young people learn to align their behaviors with their aspirations," mirrors the intention of the building challenge (Ramapo for Children, About Us, n.d., para. 2). The children's social emotional toolbox develops through a four-tiered pyramid: (a) relationships and role models, (b) implementation of clear expectations, (c) structures and routines, adapting to individual needs, and (c) responding, reflecting, and repairing. Similar to SAFE programs, this pyramid is sequenced, responds actively to the needs of individuals, focuses on data driven practices and provides explicit structure for participants. The success of its toolbox is exemplified through its partnerships with Urban Assembly, which is "dedicated to empowering underserved

youth by providing them with the academic and life skills necessary for postsecondary success" (The Urban Assembly, Our Mission, n.d., para. 1).

The parallel missions allowed Ramapo and Urban Assembly to provide teachers and students with trainings to develop social and emotional needs demonstrated through their partnership with the New Technology School located in a Harlem, NY public housing project. Jeff Chetriko, principal of New Tech in Harlem, stated the trainings, "gave students an opportunity to see a world outside of Harlem and helped prove to them that they are worth something," creating a school atmosphere that students and staff were proud of due to the new ability to talk about issues versus the previous norm of resorting to violence (Ramapo for Children, Our Impact, n.d., para. 6). The school previously was unsafe, unwelcoming, and ultimately counterproductive in providing students with quality education; however, there was a 33% reduction in suspensions and 40% reduction in behavioral incidents after the installation of a social emotional curriculum (Ramapo for Children, Our Impact, n.d., para. 3).

Conclusion: Filling in the Gaps with SAFE Afterschool

Youth in adverse environments are more likely to be unsupervised in the hours after school then youth in more advantageous environments (Afterschool Alliance, 2014). Likewise, parents reported that programs in their area often did not include challenging and enriching environments (Afterschool Alliance, 2014). This seems to suggest that students most in need of social emotional development are the least likely to receive the necessary support. Understanding students' social emotional processes, personal interest, and abilities in these communities can help develop SAFE afterschool programs and begin to close the opportunity, learning, and achievement gaps. There is need for SAFE and purposefully designed activities in afterschool programs where the factors of low socioeconomic standing, unstable environments, and low educational funding are pervasive. The ability to function productively, understand and thrive in institutionalized social systems, and achieve social emotional competence is required to succeed in today's societal structure (Bandura, 2001). SAFE afterschool programs have been found to improve students' self-efficacy and academic performance, while decreasing developmentally disruptive characteristics. Durlak and Weissberg (2007) conducted a meta-analysis of 69 different programs which served children ages 5-18 across the country. Programs which continuously used SAFE structure and simultaneously aligned with the school day improved students standardized test scores, improved social behaviors, and reduced problem behaviors compared to programs without consistent social emotional curriculum (Bennett, 2015; Durlak & Weissberg, 2013; Vandell, Reisner, & Pierce, 2007) (see Figure 4). Afterschool programs which connect social emotionally centered curriculum and student interest can utilize the toolboxes provided through the example of Ramapo for Children and the California Afterschool Outcome Measures Project.

Success develops from a student's ability to use cognitive and social emotional skills collectively (Farnham, Fernando, Perigo, Brosman, & Tough, 2015). Developing these competencies is the first step to help students succeed in traditional education. Afterschool programs are in a position to make

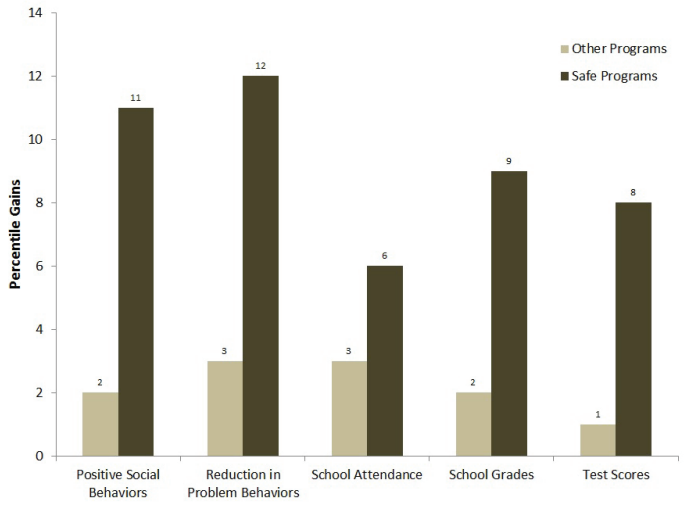


Figure 4. *Average percentile gains on selected outcomes for participants in SAFE vs. other afterschool programs. Reprinted from Expanding Minds and Opportunities: Leveraging the Power of Afterschool and Summer (p. 196), by T. K. Peterson (Ed.), 2013, Washington, DC: Collaborative Communications Group. Copyright 2013 by Collaborative Communications Group. Reprinted with permission.*

change and impact the closing of the opportunity, learning and achievement gaps in education.

Recommendations for Practitioners

Afterschool programs and educators, particularly those who serve children from low-income or at-risk families, are encouraged to consider the following steps. First, consider the contexts or microsystems that each child in your program has been exposed to. Are any unmet needs impacting the child's behavior or performance? What skills has the child developed as a result? What skills are missing or need to be developed more fully?

Second, keeping this insight in mind, consider how your afterschool program can be a support. Can you help families find or access resources to address unmet needs? How can your behavior management strategies encourage a positive behavior that builds a social emotional skill (like communication or self-regulation) rather than just halting an unwanted behavior? How can you build up self-esteem in areas where it may be lacking?

Third, build and implement a SAFE curriculum. Sequence your activities, so that each activity builds on the ideas and skills explored in the activities that came before.

Start by thinking in week-long units, with new ideas appearing at the start of the week, and building knowledge and skills as the week progresses. Make your activities Active, so that students participate in fun, hands-on learning, practice new skills, and in activities which are related to their interests. Focus your activities, devoting specific, regularly scheduled time to developing the social emotional and academic skills your students need most. Be Explicit, defining what skills the students are learning and practicing. Tell students before the activity what they will be learning, and afterwards, check in to see if they learned what you were hoping and how they felt about the experience. For more specific ideas and a glossary of terms, explore Appendix A and Appendix B to jumpstart the process of integrating SAFE curriculum to promote social-emotional and academic success in the children you serve.

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Appendix A

Jumpstart Social Emotional Learning: Activities to Understand Your Students' Interests and Experiences and to Build Personalized Social Emotional Learning.

Thumb Up, Thumb Flat, Thumb Down

When students arrive and throughout the program, have them show "Thumb Up" if they are having a good day, "Thumb Flat" if they are having an okay day, or "Thumb Down" if they are having a difficult day. Incorporate this into the staff's routine with the students, having staff show how their day is going with their thumbs as well. It is a simple tool to check in with the students and for students to check in with staff, leading to a safe, understanding atmosphere.

One Word Share

Upon arrival, have students and staff members individually choose one word that describes them right now. Go around in the large group or in small groups sharing the word. No discussion of the word anyone chose is allowed, which creates the safety to be honest. They can share an emotion they are having, an interest of theirs, or even something silly; the intent is to promote authenticity and build knowledge of each person over time, not simply in the moment of sharing.

Silent Cheers

Have each staff member and student go around and say something they enjoy (e.g., tacos, soccer, painting, math). If it is something that you like as well, silently wave your hands in the air as if you were cheering. This will help staff and students cultivate relationships based on common interests and learn what students are interested in, to support interest-based activity development.

Commonality Line

In an area that students and staff can stand and step forward, create two lines facing each other. Have one person say a statement that applies to them. (e.g., "I have two sisters," "I am 10 years old," escalating to personal statements, "I am in foster care," "I have two moms," etc.) Everyone that the statement applies to silently steps forward for a brief moment, looking around, and then returns to the original line. As the activity progresses, the hope is to learn more about the students and staff's home-life and encourage understanding that we have similar and different experiences but we are all still standing together.

Safe Box

Create a box in which students and staff can put writings or drawings anonymously. On a predetermined time randomly choose a writing or drawing from the box to share. The box should be safe and have no instructions other than you are not allowed to bring others down. You may vent about anything but cannot specifically mention names or reference specific people (e.g., "I am frustrated with the way Johnny bothers me during homework club" is not allowed, but "I am frustrated when people distract me during homework club" is fine). This activity is designed to build discussion and empathy, and should be implemented once a safe atmosphere has been created among the staff and students.

Appendix B

Glossary of key terms

Achievement Gap: refers to any significant and persistent disparity in academic performance or educational attainment between different groups of students, such as white students and minorities, for example, or students from higher-income and lower-income households.

Assistance Assumption: skills that students are able to accomplish with assistance from a more competent peer or adult (their instructional level).

Bloom's Taxonomy: a classification system used to define and distinguish different levels of human cognition (i.e., thinking, learning, and understanding).

Bodily-Kinesthetic Intelligence: the ability to use one's mental abilities to coordinate one's own bodily movements. This intelligence challenges the popular belief that mental and physical activity are unrelated.

Chronosystem: encompasses change or consistency over time not only in the characteristics of the person but also of the environment in which that person lives (e.g., changes over the life course in family structure, socioeconomic status, employment, place of residence, or the degree of chaos and ability in everyday life).

Cognitive Process Dimension: represents a continuum of increasing cognitive complexity — from lower order thinking skills to higher order thinking skills.

Complex Instruction: Cooperative learning is a form of classroom instruction that structures collaborative interactions among learners to achieve the teacher's learning goals. This includes assigning competencies, multiple abilities, heterogeneous grouping, and equalization of academic status.

Context: a series of nested systems that affect the developing person ranging from micro to macro.

Developmental Competence: demonstrated acquisition and further development of knowledge and skills — whether intellectual, physical, social emotional, or a combination of them.

Developmentally Disruptive: includes such characteristics as impulsiveness, explosiveness, distractibility, inability to defer gratification, or, in a more extreme form, ready resort to aggression and violence; in short, difficulties in maintaining control over emotions and behavior. At the opposite pole are such Person attributes as apathy, inattentiveness, unresponsiveness, lack of interest in the surroundings, feelings of insecurity, shyness, or a general tendency to avoid or withdraw from activity.

Developmental Dysfunction: refers to the recurrent manifestation of difficulties on the part of the developing person in maintaining control and integration of behavior across situations.

Developmentally Generative: involves such active orientations as curiosity, tendency to initiate and engage in activity alone or with others, responsiveness to initiatives by others, and readiness to defer immediate gratification to pursue long-term goals.

Exosystem: comprises the linkages and processes taking place between two or more settings, at least one of which does not contain the developing person, but in which events occur that indirectly influence processes within the immediate setting in which the developing person lives (e.g., for a child, the relation between home and the parent's workplace; for a parent, the relation between the school and the neighborhood group).

Generality Assumption: skills that students are able to accomplish without assistance (their independence level).

Intelligence (Gardner): the capacity to solve problems or to fashion products that are valued in one or more cultural setting.

Knowledge Dimension: classifies four types of knowledge that learners may be expected to acquire or contract —ranging from concrete to abstract.

Learning Gap: the difference between what a student has learned (i.e., the academic progress he or she has made) and what the student was expected to learn at a certain point in his or her education, such as a particular age or grade level. A learning gap can be relatively minor—the failure to acquire a specific skill or meet a particular learning standard, for example—or it can be significant and educationally consequential, as in the case of students who have missed large amounts of schooling.

Linguistic Intelligence: involves having a mastery of language. This intelligence includes the ability to effectively manipulate language to express oneself

rhetorically or poetically. It also allows one to use language as a means to remember information.

Logical-Mathematical Intelligence: consists of the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking.

Macrosystem: consists of the overarching pattern of micro-, meso-, and ecosystems characteristic of a given culture or subculture, with particular reference to the belief systems, bodies of knowledge, material resources, customs, life-styles, opportunity structures, hazards, and life course options that are embedded in each of these broader systems.

Mesosystem: comprises the linkages and processes taking place between two or more settings containing the developing person (e.g., the relations between home and school, school and workplace, etc.).

Microsystem: a pattern of activities, social roles, and interpersonal relations experienced by the developing person in a given face-to-face setting with particular physical, social, and symbolic features that invite, permit, or inhibit engagement in sustained, progressively more complex interaction with, and activity in, the immediate environment. Examples include such settings as family, school, peer group, and workplace.

Musical Intelligence: encompasses the capability to recognize and compose musical pitches, tones, and rhythms. (Auditory functions are required for a person to develop this intelligence in relation to pitch and tone, but not needed for the knowledge of rhythm.).

Opportunity Gap: refers to the ways in which race, ethnicity, socioeconomic status, English proficiency, community wealth, familial situations, or other factors contribute to or perpetuate lower educational aspirations, achievement, and attainment for certain groups of students.

Person: describing the developing person distinguished most by three types of characteristics that are most influential in shaping the course of future development through the capacity to affect the direction and power of proximal processes through the life course: dispositions that set proximal processes in motion and sustain their operation, resources of ability, experience, knowledge, and skill, demand characteristics that invite or discourage reactions from social environment that can foster or disrupt the operation of proximal processes.

Personal Intelligences: includes interpersonal feelings and intentions of others--and intrapersonal intelligence--the ability to understand one's own feelings and motivations. These two intelligences are separate from each other. Nevertheless, because of their close association in most cultures, they are often linked together.

Potential Assumption: skills that are within a student's potential (their challenge level).

Proximal Process: particular forms of interaction between organism and environment that operate over time and are posited as the primary mechanisms producing human development.

Spatial Intelligence: gives one the ability to manipulate and create mental images in order to solve problems. This intelligence is not limited to visual domains--Gardner notes that spatial intelligence is also formed in blind children.

Time: broken into three successive levels: microtime refers to continuity versus discontinuity in ongoing episodes of proximal processes, mesotime is the periodicity of these episodes across broader time intervals, such as days and weeks, macrotime focuses on the changing expectations and events in larger society, both within and across generations, as they affect and are affected by processes and outcomes of human development over the life course.

Zone of Proximal Development: the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers.

CENTRAL VALLEY
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CALL FOR PAPERS

We welcome the submission of papers for the fourth issue of The Journal of Expanded Learning Opportunities (JELO), a peer-reviewed, online, open access publication of the Central Valley Afterschool Foundation. The JELO connects research and promising practices throughout California and the nation, fostering a dialogue that engages both researchers and practitioners in the field. This issue will be published in the Spring of 2017.

The journal solicits original papers in two categories:

- **Research-based:** presentation of new research using data that includes an abstract, an introductory paragraph, a brief literature review, methods (quantitative and/or qualitative), results and implications. An example would be an academic or field study.
- **Practitioner-based:** presentation of an essay or brief focused on a specific promising practice that includes an abstract, introductory paragraph, discussion of the practice and recommendations for implementation, sustainability and scaling. An example would be a review of a program project/activity.

Suggested topics are inspired by the Learning in Afterschool and Summer (LIAS) principles and include:

- Active, project-based learning
- Collaborative learning and programs
- Applied learning activities
- Learning that supports mastery
- Learning that expands horizons
- Instructional strategies that promote student learning

Submission guidelines:

- Submit electronically using the email below
- Use word or rich text format
- Use APA 6th edition format (see guidelines: http://apastyle.org/)
- Do not to exceed 3,500 words for practitioner articles and 5,000 words for research articles (not including references and tables)
- Include in the electronic submission attachment a cover page with: manuscript title, indication of whether a research-based or practitioner-based submission, author(s), affiliation, address, phone, and email address
- Eliminate any author identifying references within the paper in order to ensure a blind review

Questions/Deadline information contact Kim Boyer: kboyer@centralvalleyafterschool.org